NZ LOUVRES™

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NZ Louvres ™

Technical Design Manual

ENGINEERING REPORT

NZ Louvres™
Date: 06/09/2022
www.nzlouvres.co.nz

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CONTENTS

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ENGINEERING REFERENCES & DESIGN INFORMATION FOR NZ LOUVRES SYSTEMS AND SUPPORT FRAMES

Design has been carried out using the following Standards and Design Codes of practice:

Structural Design Actions:
Part 0: General principles – AS/NZS 1170.0:2002
Part 1: Permanent, imposed and other actions – AS/NZS 1170.1:2002
Part 2: Wind Actions – AS/NZS 1170.2:2011

Aluminium Structures:
Part 1: Limit state design – AS/NZS 1664.1:1997
Part 2: Allowable stress design – AS/NZS 1664.2:1997

Timber-framed Buildings:
NZS 3604:2011

Louvre Blade (and Pivot system):
The proprietary louvre blades and pivot system are not included in this Technical Design Manual. More detailed technical information regarding the louvre blades and pivot system is available from NZ Louvres upon request.

CATEGORIES, TYPES AND INTENDED PURPOSES OF PRODUCER STATEMENTS

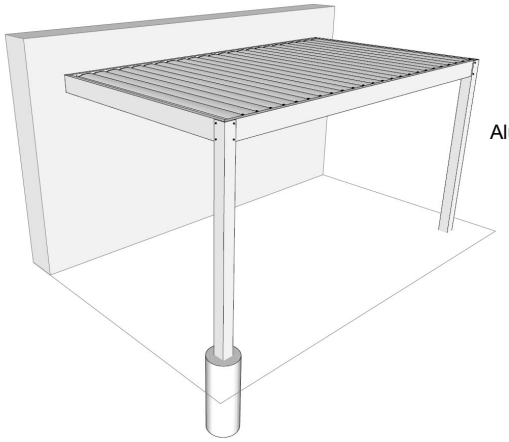
Design	PS1 Producer Statement Design	Used by designers to certify specific design elements comply with specified standards or codes in order to comply with the provisions ofthe Building Code.
	PS2 Producer Statement Design Review*	Used by people undertaking a peer review of all or part of a design to say that the design or the specified part of the design complies with specified standards or codes in order to comply with the provisions of the Building Code.
Construction	PS3 Producer Statement Construction	Used by constructors or trades people to certify that the specified building work that they have undertaken complies with the building consent.
	PS4 Producer Statement Construction Review*	Used by people undertaking a peer review of specified building work undertaken by constructors or trades people to certify that the building work that has been undertaken complies with the building consent.

* not required

TYPICAL DETAILS: ALUMINIUM BEAM & POST STRUCTURES

THREE BASIC BEAM DESIGNS

1. SIMPLY SUPPORTED



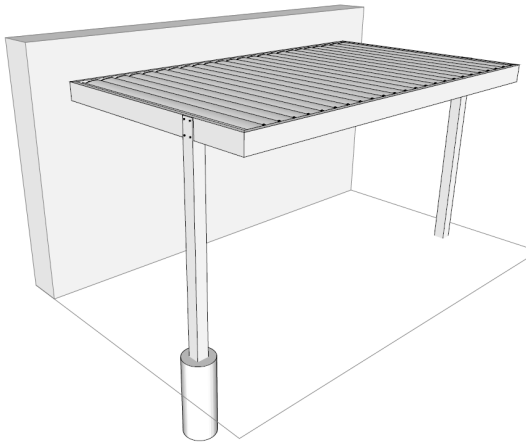
DESIGN RULES:

The use of the TDM is intended for louvre roof structures <30m^2 only. Any louvre roof ≥ 30m^2 compulsory requires Specific Engineering Design.

For all wind loads – L, M, H, VH & EH

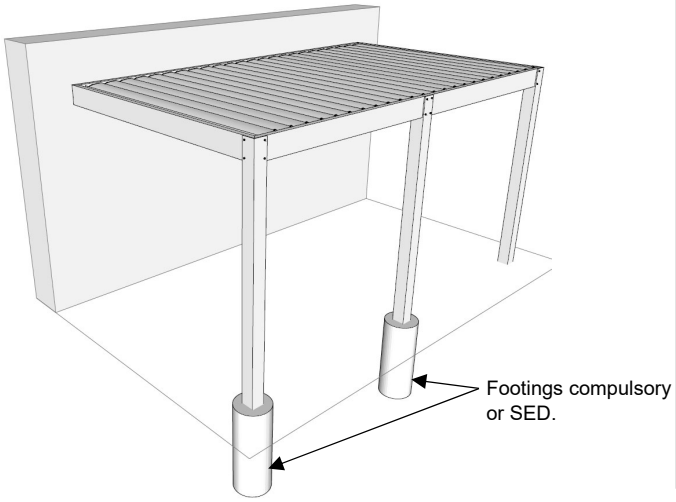
Simply supported: 1 x post footings min. or SED is required.

2. SINGLE CANTILEVER



Max. single cantilever distance = 1200mm from centre of support post.

3. CONTINUOUS SPAN



2 x Post footings are compulsory or SED is required.

Footings are the preferred option, and if it is removed and opt to fix to patio slab or timber deck structure then approval is required as per NZL discretion.

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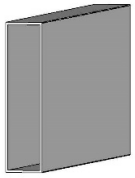
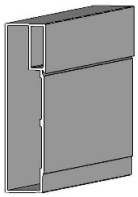
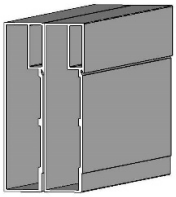
BEAM TYPES



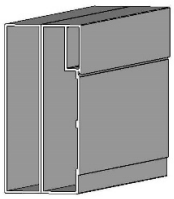
200 x 50 x 3



225 x 55 x 3



2/225 x 55 x 3

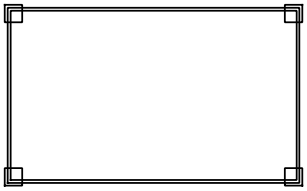


225 x 50 x 3 + 225 x 55 x 3

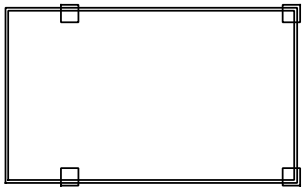
ALUMINIUM BEAMS
200 x 50 x 3
2/200 x 50 x 3
225 x 55 x 3
2/225 x 55 x 3
225 x 50 x 3 (External DB) + 225 x 55 x 3
ALUMINIUM POST
150 x 150 x 3

TYPICAL CONFIGURATIONS

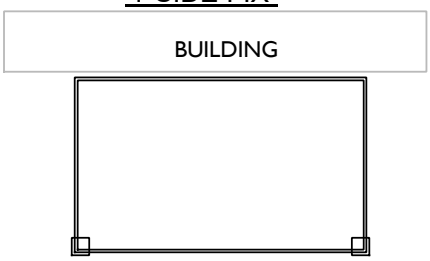
FREE-STANDING



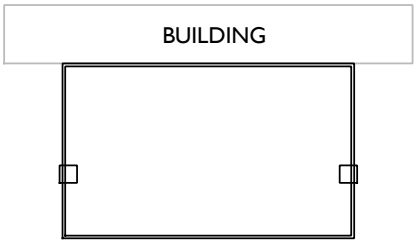
FREE-STANDING CANTILEVER



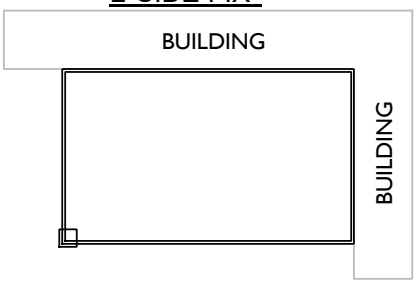
1-SIDE FIX



1-SIDE FIX CANTILEVER



2-SIDE FIX



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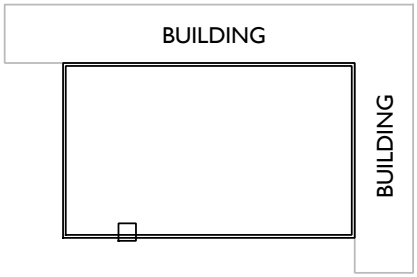
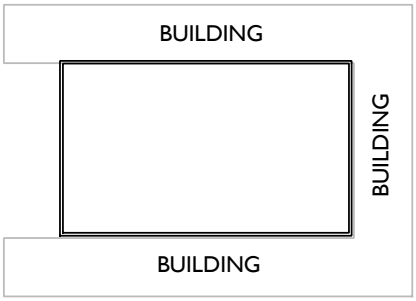
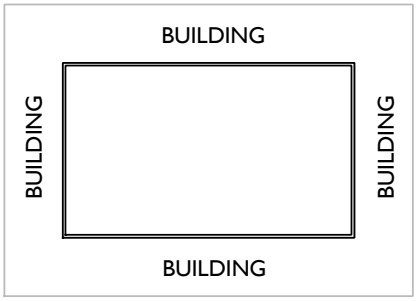


3-SIDE FIX



FULL INSERT



*Note:

Refer to standard NZL fixing details as per pre-approved engineering diagrams, if any details exceed the standard engineering parameters an SED (Specific engineering design) will be required.

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ENGINEERING SPECIFIERS GUIDE

ALL PAGES REFER TO - ENGINEERING REPORT

1 WIND ZONE

WIND ZONE

DETERMINE WIND ZONE FROM NZS3604:2011 (Latest version)

(SECTION 5) L M H VH EH (Please circle one)

2 STRUCTURAL TYPE & DIMENSIONS

PAGE 6

STRUCTURAL TYPE & DIMENSIONS

DETERMINE STRUCTURE TYPE EITHER:

Please Tick One

1) SIMPLY SUPPORTED (Fig. 1 Pg 6) ☐
2) CANTILEVER (Fig. 2 Pg 6) ☐
3) CONTINUOUS SPAN (Fig. 3 Pg 6) ☐

DETERMINE REQUIRED DIMENSIONS FROM APPROPRIATE FIGURE

LOUVRE BEAM

3 LOUVRE SPAN

LOUVRE SPAN

CHECK LOUVRE MAX. SPAN - REFER TABLE 1, PAGE 9

MAX. ALLOWABLE LOUVRE BLADE SPAN ALWAYS 4000mm

NOT OK, over span (choose alternative structure type or alter structure to suit)

OK

4 BEAM SIZE

PAGES 10 - 20

BEAM SIZE

DETERMINE TRIBUTARY LENGTH FOR BEAM.

DESIGN - REFER APPROPRIATE LOUVRE AND BEAM

DESIGN CALCULATIONS. FIG. 1 - 5 PAGES 11 - 20

TRIBUTARY LENGTH: ……mm

NOT OK, over span Or over loaded (increase beam size or alter structure to suit)

DETERMINE BEAM SIZE FROM TABLE 2 PAGE 10

OK

5 POST SIZE

PAGES 21 - 28

POST SIZE

DETERMINE TRIBUTARY AREA (ROOF AREA) TRIBUTARY LENGTH AND POST HEIGHT

TRIB. ROOF AREA: L_1……x L_2 ……= m^2

TRIB. EDGE LENGTH:_____mm

POST HEIGHT: _____ mm

L_1 = ½ x Beam Span

Refer to Figures 6 – 9 on pages 22 - 23

SPECIFY POST SIZE FROM APPROPRIATE TABLE FOR SPECIFIED WIND ZONE REFER PAGES 22 - 23, 24 - 28

POST SIZE:

NOT OK, over height (increase structure to reduce roof area or add extra post)

1 FOOTING SIZE

PAGE 29

FOOTING SIZE

MEASURE TRIBUTARY AREA LOADING POST. TRIBUTARY AREA:

REFER APPROPRIATE FIGURE PAGES 22, 23

DETERMINE REQUIRED CONCRETE VOLUME FROM PAGE 29 & CHOOSE APPROPRIATE FOOTING SIZE

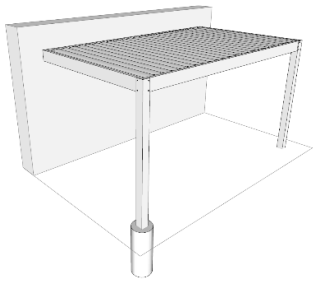
CONCRETE VOLUME: _____m^3

FOOTING SIZE: _____

NOT OK, too large (alter structure to reduce roof area or add extra post)

CHART: CALCULATE OPENING ROOF SPANS

TABLE 1

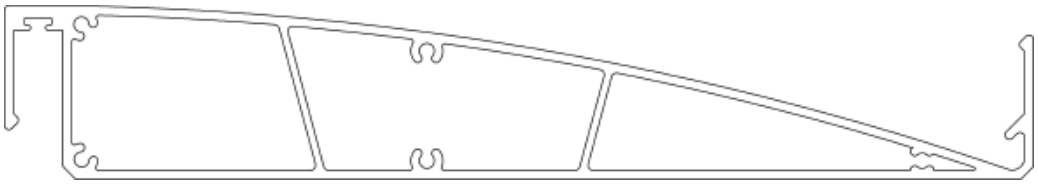


OVERHEAD ADJUSTABLE AND FIXED

WIND ZONE	Load description	L	M	H	VH	EH
Ultimate design factored wind speed at building		115km/h	133km/h	158km/h	179km/h	198km/h
		32 m/s	37 m/s	44 m/s	50 m/s	55 m/s
Ultimate Limit State loads (kPa)	downthrust	+0.92	+1.23	+1.74	+2.24	+2.71
	uplift	-1.15	-1.53	-2.17	-2.80	-3.39

NZL Louvre blades allowable max. span for all wind loads always 4.0m (internal dimension between beams)

louvre image	louvre type	L	M	H	VH	EH
	NZL	4000mm	4000mm	4000mm	4000mm	4000mm



BLADE SECTION

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CHART: BEAM CALCULATION

TABLE 2

TO CALCULATE TRIBUTARY LENGTH FOR BEAMS

Typically, the tributary length for simply supported beams only is half the length of the louvre span (refer note below). Determining the tributary length is shown through figures 1 - 5 on pages 11 to 23 of this engineering Design Manual report.

Notes: Care must be taken when calculating the tributary length for mid beams on continuous spanning structures as half the louvre span on either side of the beam may not be equal.

Spans exceeding 5000mmm to have technical review by NZL HO before used on plans

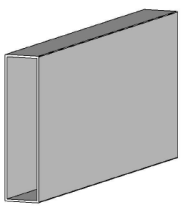
Beam span is measured between centre of posts.

Roof Beams		**Max Beam Span (mm)**						
Wind Zone	Tributary length (m) of louvre - 1/2 louvre span	1	1.25	1.5	1.75	2	2.5	3.0
	Beam Size (mm)							
LOW	200x50x3 RHS	5250	5000	4850	4650	4500	4000	3600
	225x55x3 RHS	5850	5500	5150	4900	4700	4500	4000
	2-225x55x3 RHS	6500	6450	6400	6200	5850	5600	5500
	2-225x50/55x3 RHS (external double beam)	6500	6450	6400	6200	5850	5600	5500
MEDIUM	200x50x3 RHS	4900	4600	4300	4100	3900	3500	3000
	225x55x3 RHS	5500	5250	5000	4750	4500	4000	3700
	2-225x55x3 RHS	6500	6350	6200	6000	5600	5500	5300
	2-225x50/55x3 RHS (external double beam)	6500	6350	6200	6000	5600	5500	5300
HIGH	200x50x3 RHS	4500	4000	3800	3550	3300	3200	2700
	225x55x3 RHS	5400	4600	4200	4000	3600	3300	3000
	2-225x55x3 RHS	6500	6250	6000	5700	5500	4650	4250
	2-225x50/55x3 RHS (external double beam)	6500	6250	6000	5700	5500	4650	4250
VERY HIGH	200x50x3 RHS	3950	3700	3300	3100	2850	2450	2300
	225x55x3 RHS	4500	4000	3550	3400	3250	3000	2800
	2-225x55x3 RHS	5900	5450	5150	4800	4400	4200	4000
	2-225x50/55x3 RHS (external double beam)	5900	5450	5150	4700	4400	4200	4000
EXTRA HIGH	200x50x3 RHS	3650	3250	3000	2800	2600	2400	2100
	225x55x3 RHS	4500	4000	3500	3400	3200	2500	2400
	2-225x55x3 RHS	5850	5400	5100	4600	4400	4000	3700
	2-225x50/55x3 RHS (external double beam)	5800	5350	5100	4600	4400	4000	3700

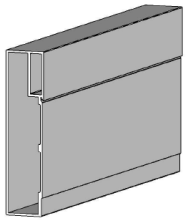
Fix double beams together with min. 2/12g x 20mm SS Hardtec screws 61mm and 126mm up from bottom of beam at max. 600mm centre spacings.

Use continuous flexible sealant/adhesive along top and bottom between box sections.

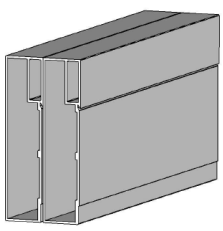
BEAM TYPES



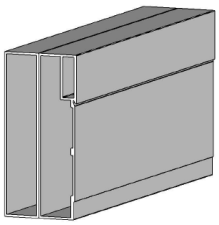
200 x 50 x 3



225 x 55 x 3



2/225 x 55 x 3



225 x 50 x 3 + 225 x 55 x 3
(external double beam)

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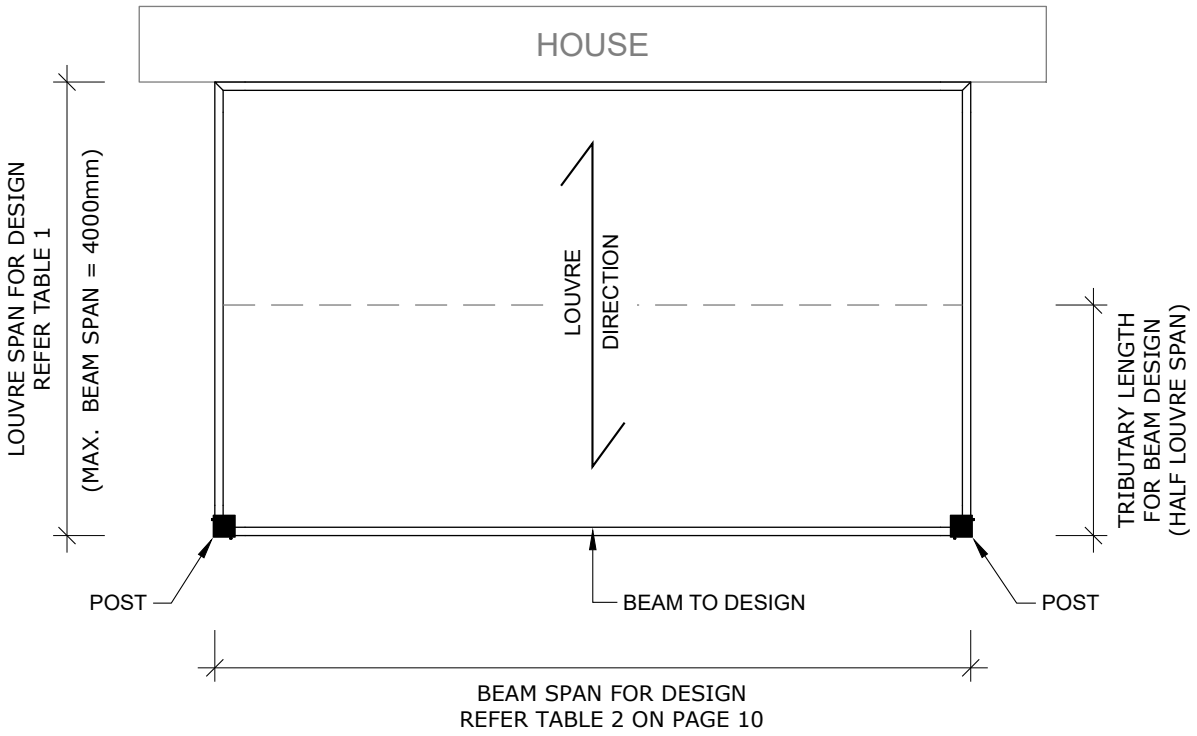
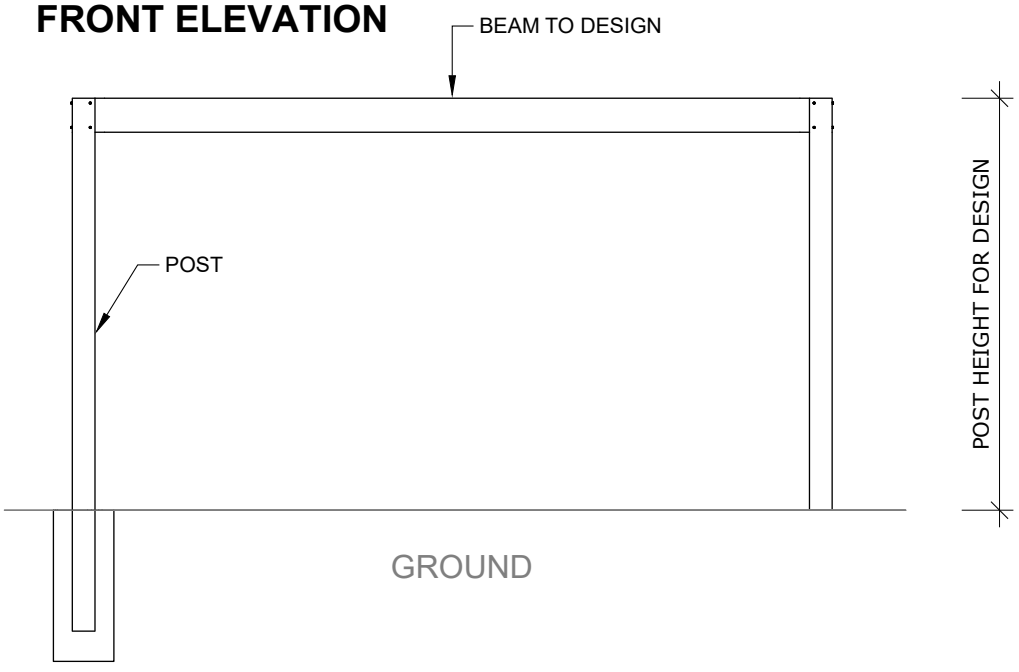
TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE - TYPICAL STRUCTURE

TYPICAL DETAIL: **SIMPLY SUPPORTED BEAM** FIGURE 1

PLAN VIEW - LOUVRE AND BEAM DESIGN



FRONT ELEVATION



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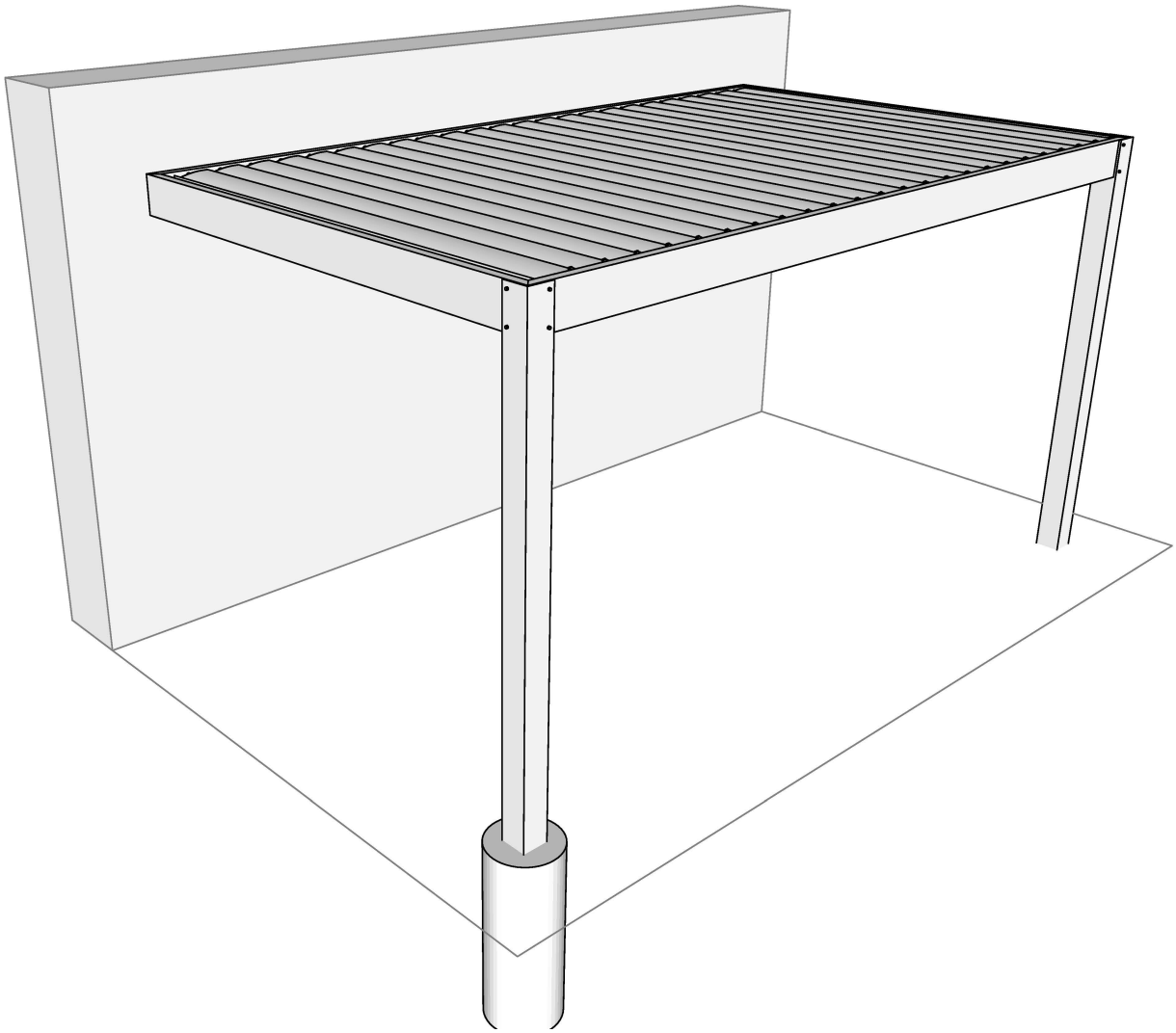
TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE – TYPICAL STRUCTURE

TYPICAL DETAIL: **SIMPLY SUPPORTED BEAM** FIGURE 1 - 3D ISOMETRIC VIEW

3D VIEW - LOUVRE ROOF



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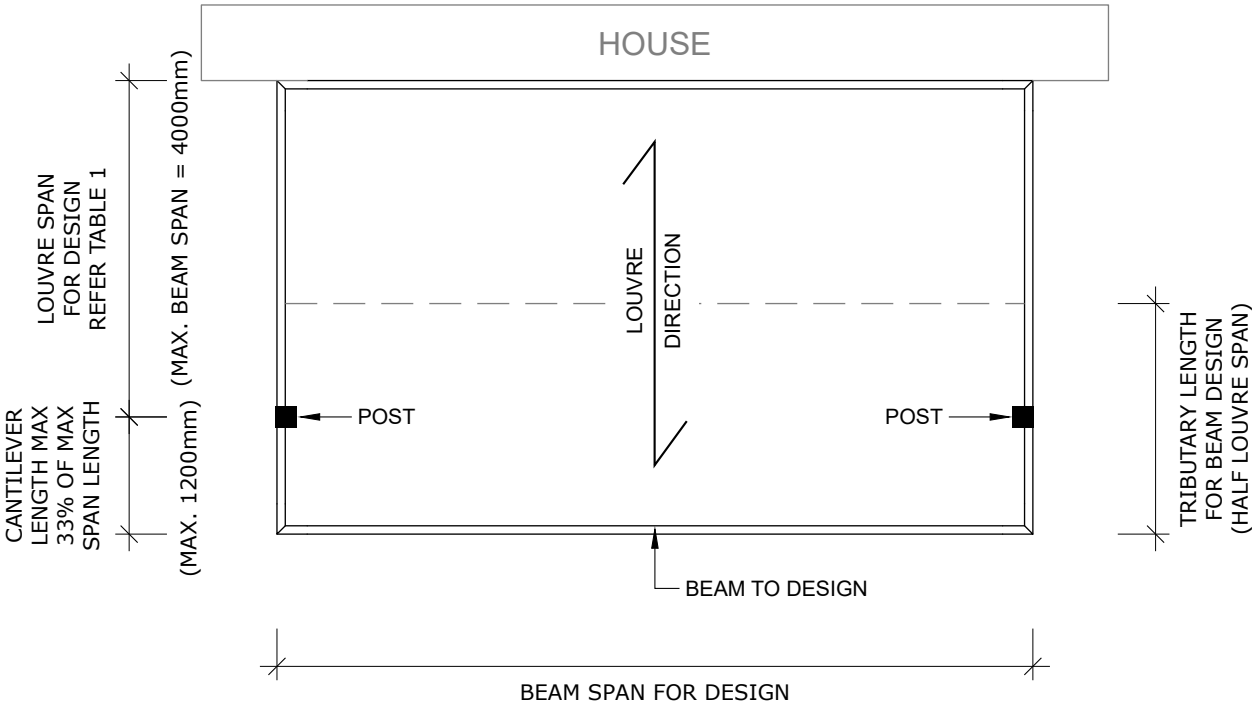
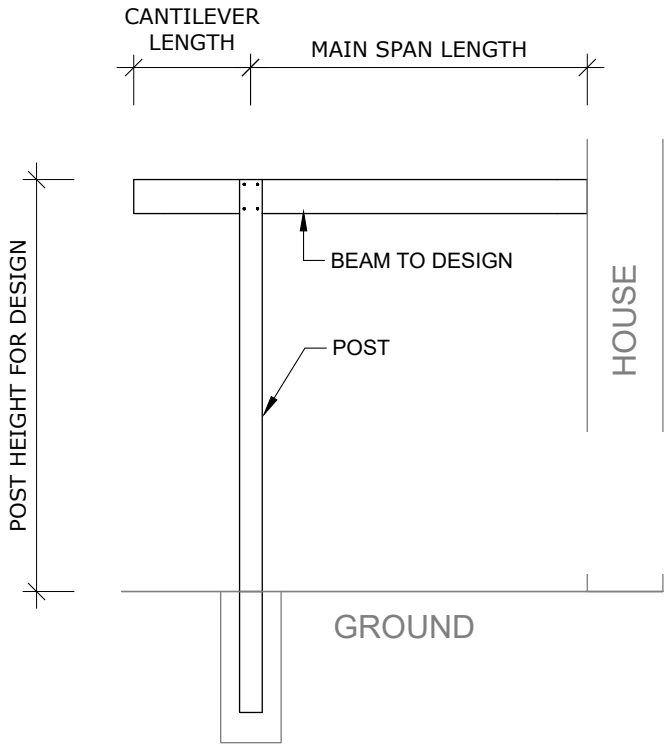
TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE – TYPICAL STRUCTURE

TYPICAL DETAIL: **CANTILEVER BEAM** FIGURE 2

PLAN VIEW - LOUVRE AND BEAM DESIGN



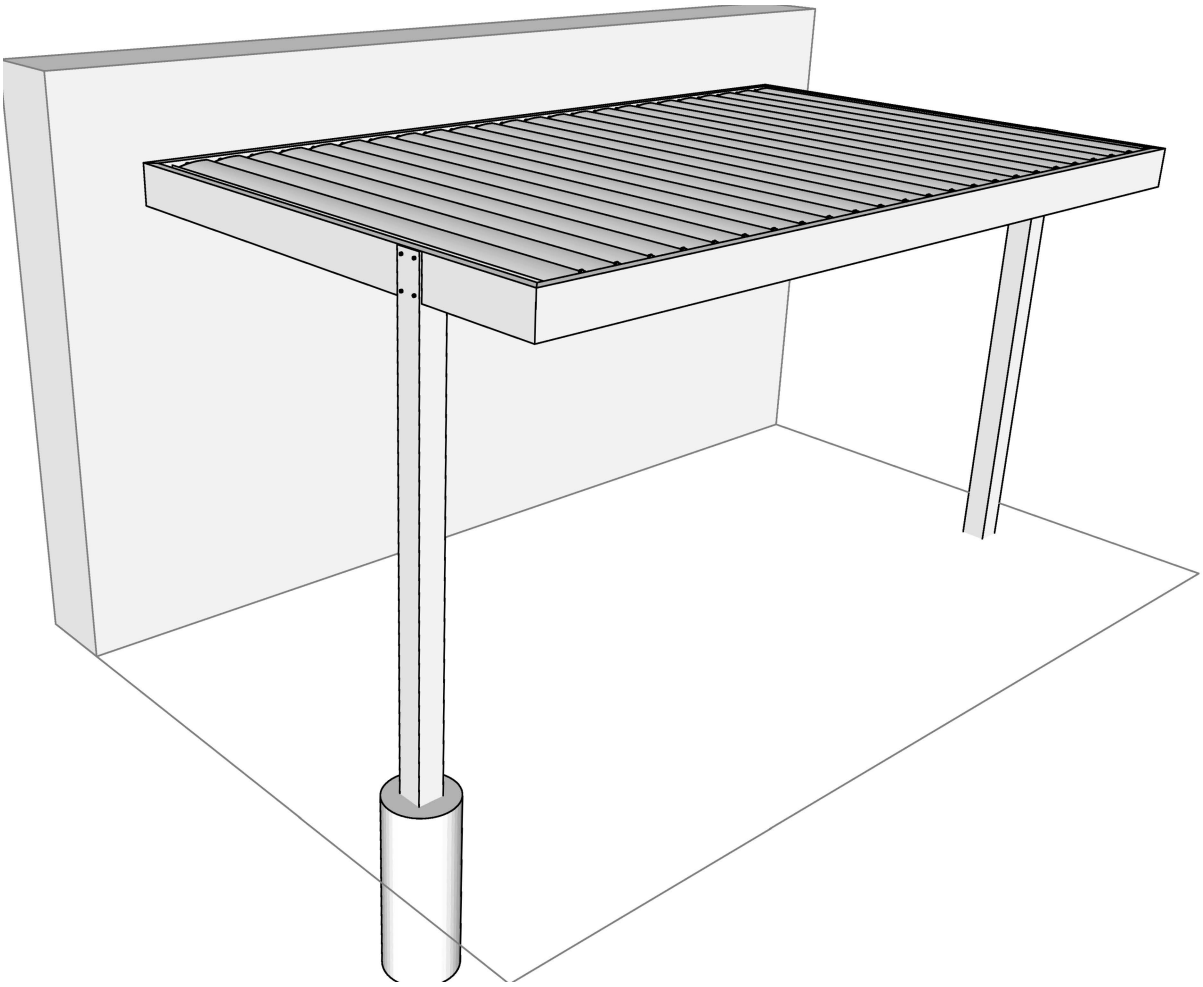
SIDE ELEVATION



TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE – TYPICAL STRUCTURE

TYPICAL DETAIL: CANTILEVER BEAM FIGURE 2 – 3D ISOMETRIC VIEW

3D VIEW - LOUVRE ROOF



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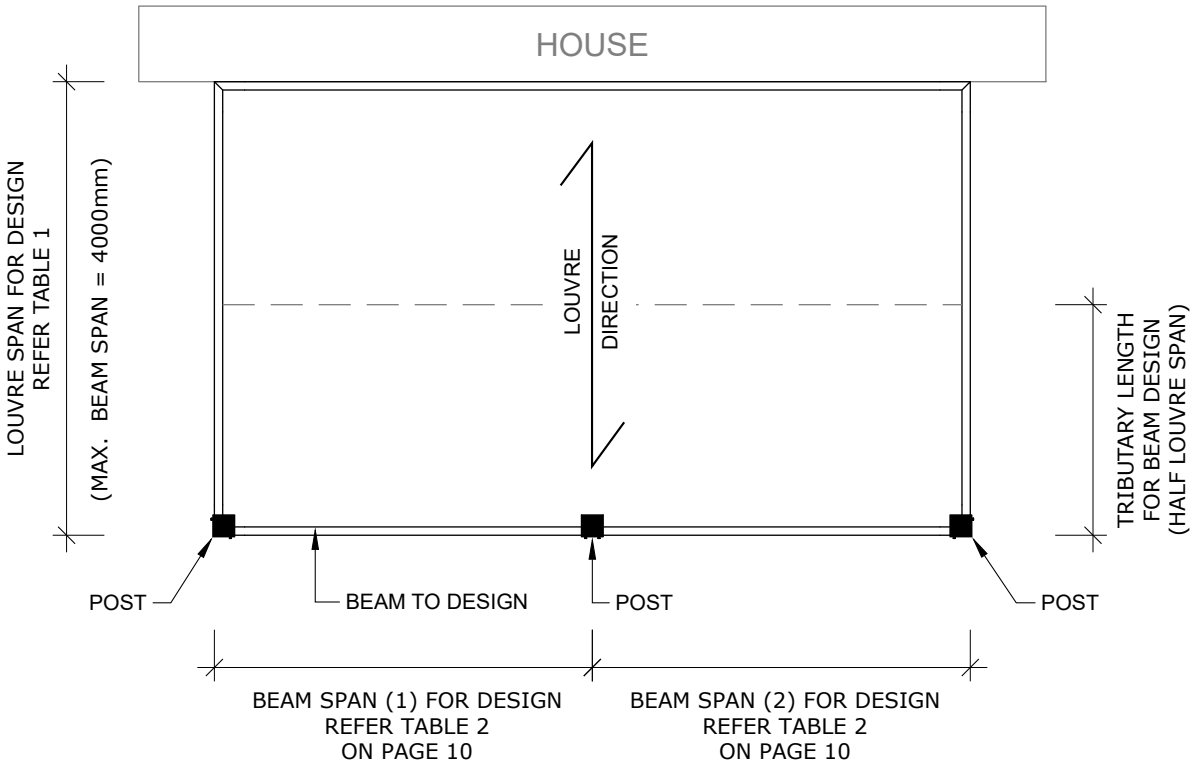
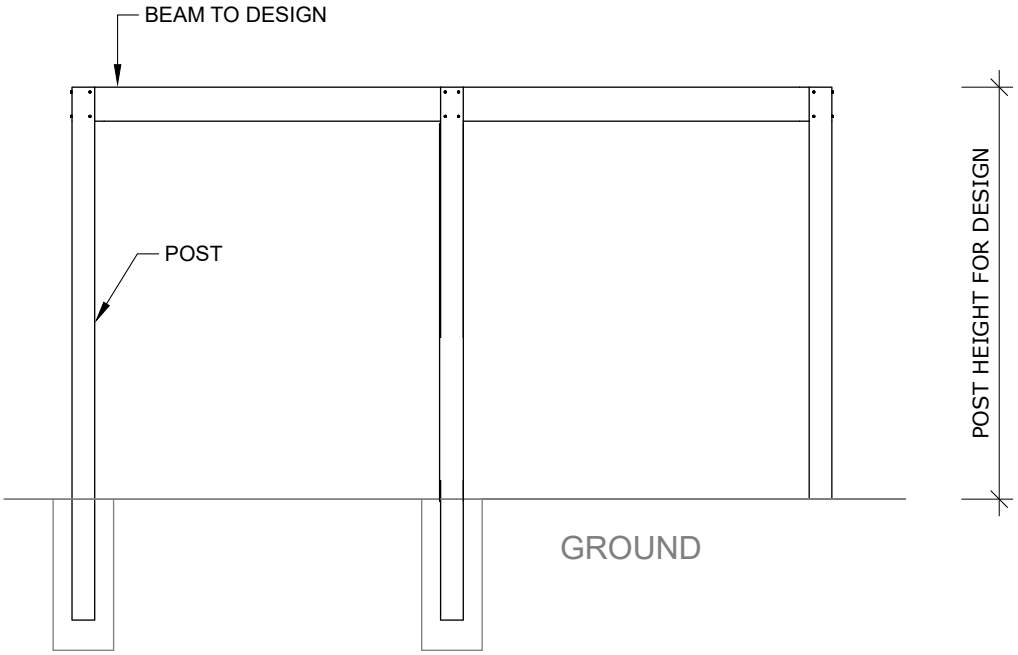
TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE – TYPICAL STRUCTURE

TYPICAL DETAIL: CONTINUOUS BEAM SPAN OPTION 1 FIGURE 3

PLAN VIEW - LOUVRE AND BEAM DESIGN



FRONT ELEVATION



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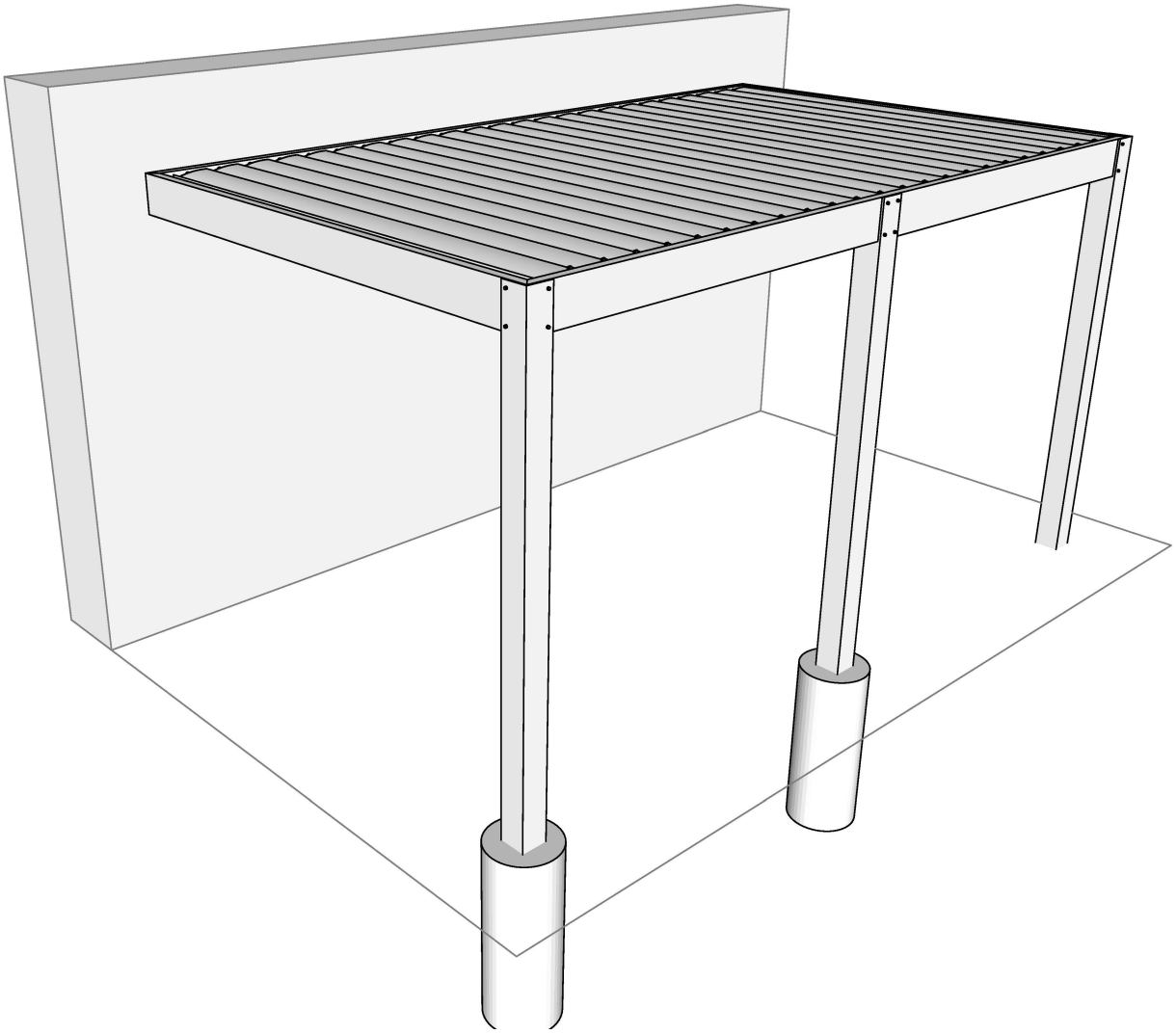
TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE – TYPICAL STRUCTURE

TYPICAL DETAIL: CONTINUOUS BEAM SPAN OPTION 1 FIGURE 3 – 3D ISOMETRIC VIEW



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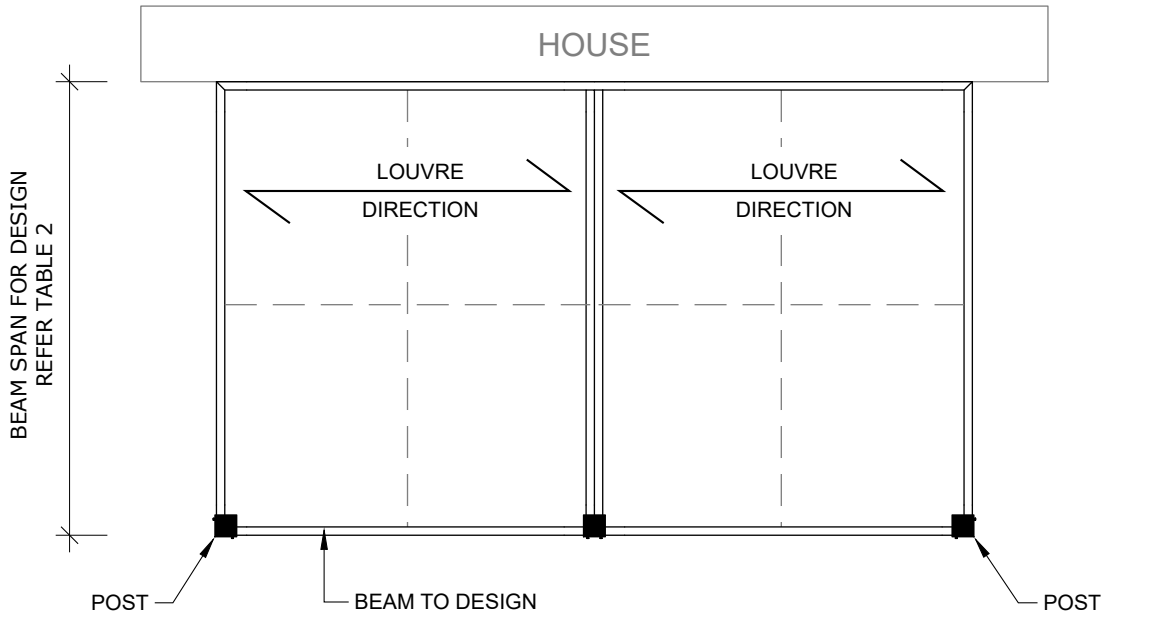
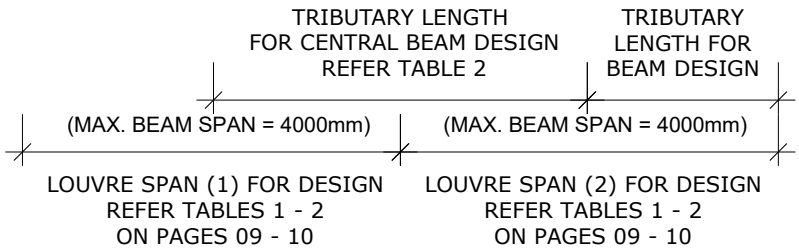
TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE – TYPICAL STRUCTURE

TYPICAL DETAIL: **CONTINUOUS BEAM SPAN OPTION 2** FIGURE 4

PLAN VIEW - LOUVRE AND BEAM DESIGN





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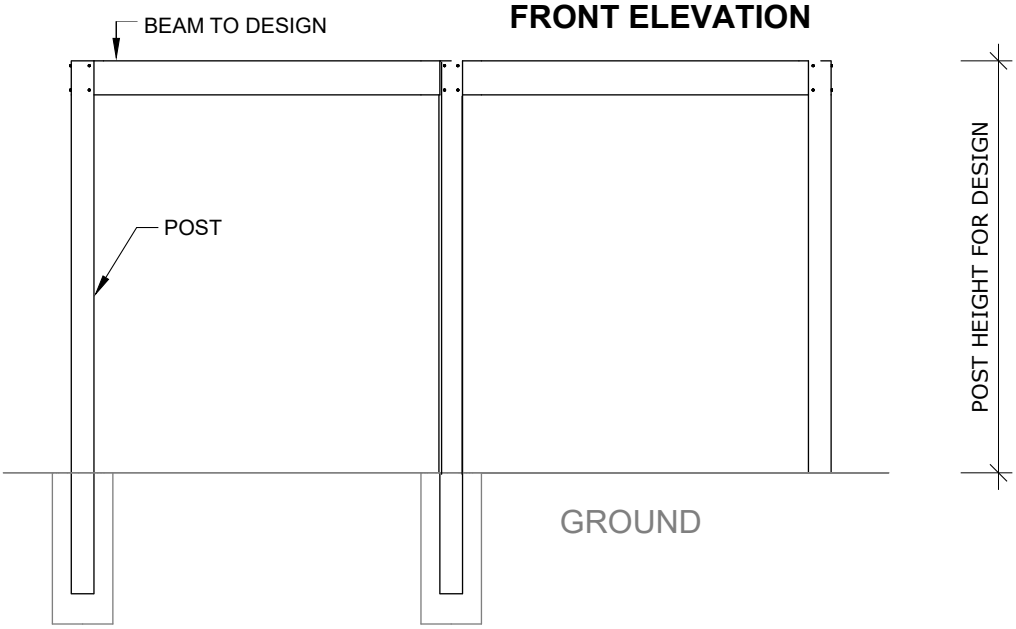
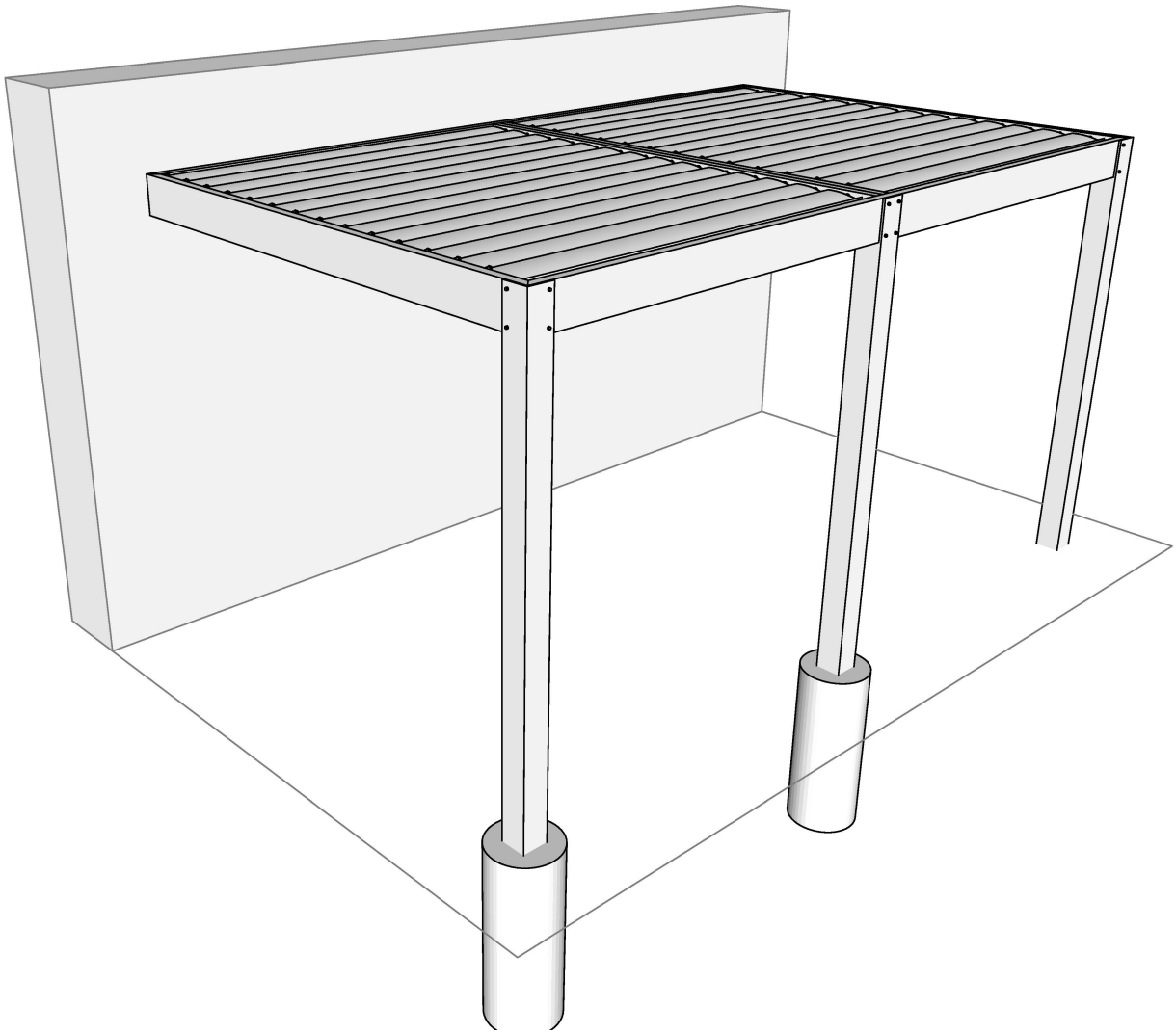


TECHNICAL DETAILS: STRUCTURE ATTACHED TO HOUSE – TYPICAL STRUCTURE

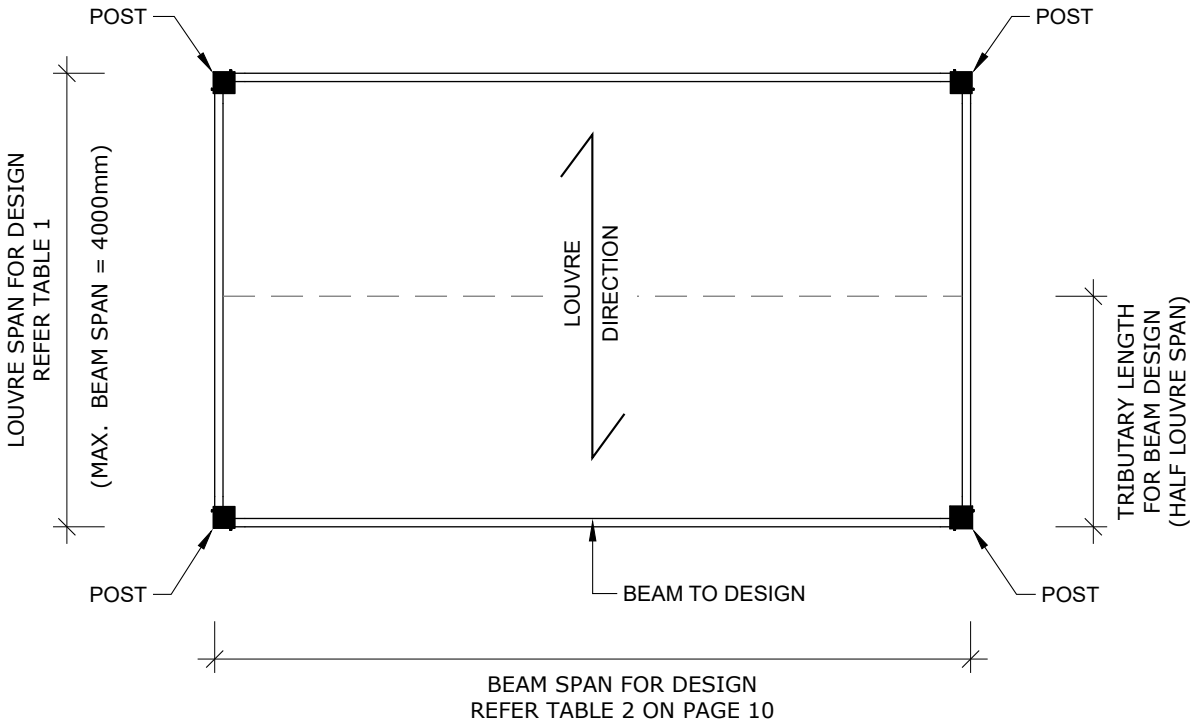
TYPICAL DETAIL: CONTINUOUS BEAM SPAN OPTION 2 FIGURE 4 – 3D ISOMETRIC VIEW



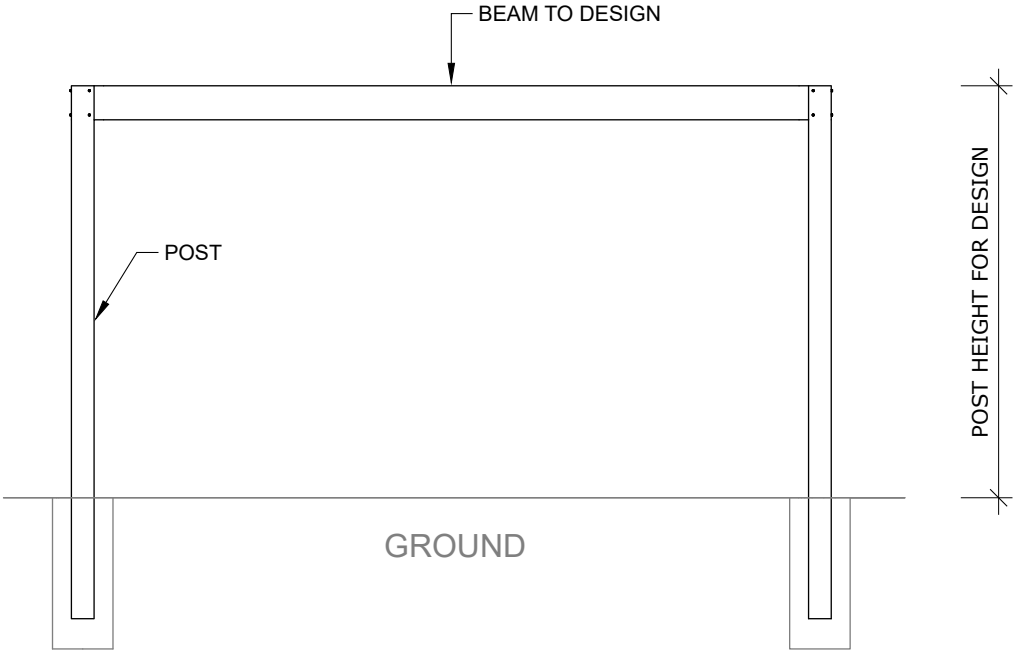
TECHNICAL DETAILS: FREESTANDING - TYPICAL STRUCTURE

TYPICAL DETAIL: FREESTANDING SIMPLY SUPPORTED BEAM OPTION 1 FIGURE 5A

PLAN VIEW - LOUVRE AND BEAM DESIGN



FRONT ELEVATION



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TECHNICAL DETAILS: FREESTANDING – TYPICAL STRUCTURE

TYPICAL DETAIL: FREESTANDING SIMPLY SUPPORTED OPTION 1 FIGURE 5A – 3D ISOMETRIC VIEW

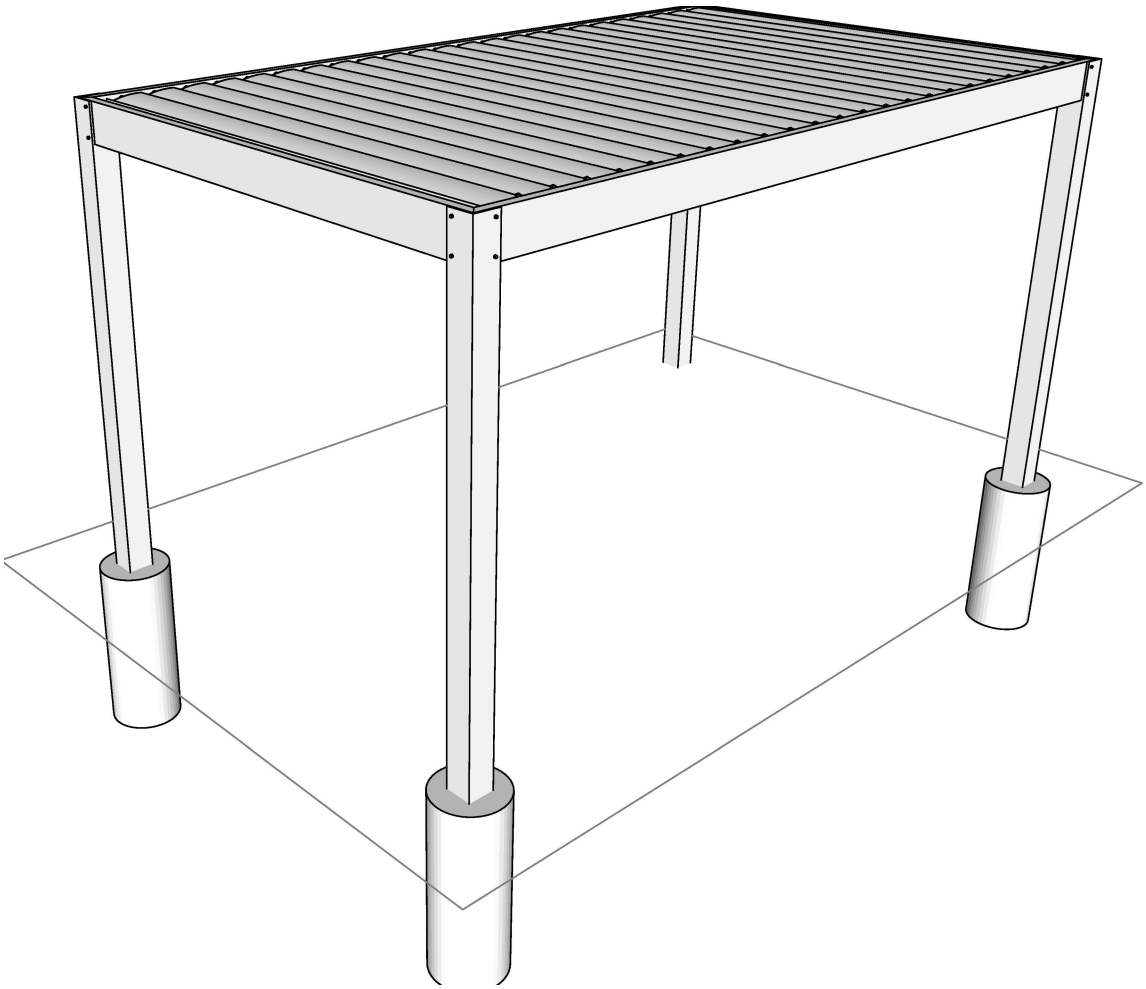

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CHART: POST CALCULATION

SPECIFIYING POSTS

To use the following tables, you need to know the Tributary Area (Roof Area) on the post, the Tributary Edge Length (LE) and the height of the post. For Tributary Area and Tributary Edge refer to pages 25 & 26

POST LOADS

Wind speeds taken from NZS 3604: 2011, are ultimate limit state wind speeds.

L = Low wind speed

M = Medium wind speed

H = High wind speed

VH = Very high wind speed

EH = Extra high wind speed

	ULS (capacity)					SLS (deflection)				
Wind Zone	L	M	H	VH	EH	L	M	H	VH	EH
Factored design wind speed at building (m/s)	32	37	44	50	55	27	31	37	42	46
Drag pressure on beam (kPa) (for C_{fig} = 1.45)	0.74	0.99	1.40	1.81	2.18	0.54	0.71	1.01	1.30	1.55
Drag pressure on roof (kPa) (for C_{fig} = 0.04)	0.02	0.03	0.04	0.05	0.06	0.01	0.02	0.03	0.04	0.04

Notes:

This Design Manual is for louvre roofs with open sides except where it is fixed to existing structure, and this Design Manual beam and post design tables and charts do not cover enclosed side screens (panels / ziptracks) fixed to post sides.
For adding side screens, please consult with NZ Louvres who will provide the necessary design guidance or SED.

Always first check worst case post location with largest Tributary Area.

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POST AND FOOTING DESIGN: FIGURES

TYPICAL DETAIL

SIMPLY SUPPORTED BEAM (FIGURE 6) **AND CANTILEVERED BEAM** (FIGURE 7)

FIGURE 6

PLAN VIEW SIMPLY SUPPORTED BEAM

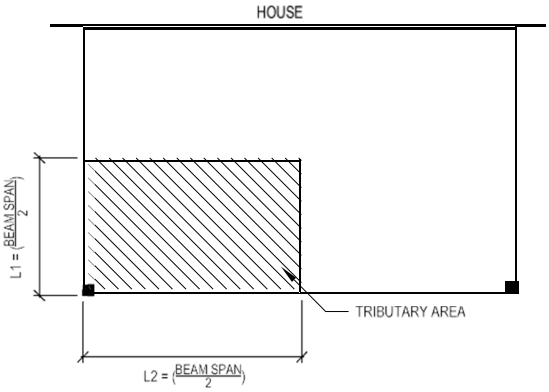
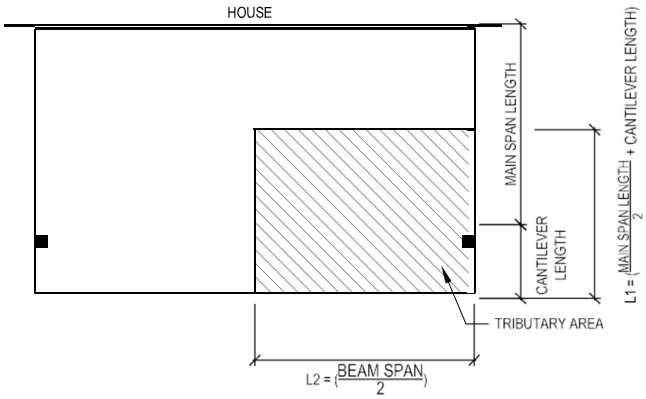


FIGURE 7

PLAN VIEW CANTILEVERED BEAM



NOTES

1. THE TRIB AREA FOR A POST AND FOOTING IS THE PRODUCT OF HALF THE DISTANCE TO THE ADJACENT SUPPORTS IN EACH DIRECTION L_E; L1 X L2 (SEE FIG.6)
2. WHERE A POST SUPPORTS A CANTILEVER, CONSIDER FOR THE FULL CANTILEVER LENGTH (SEE FIG.7)
3. TRIBUTARY EDGE LENGTH (L_E) IS USED TO SELECT POST SIZE.
   FOR A STRUCTURE ATTACHED TO A BUILDING ON LESS THAN TWO SIDES, L_E = L1 (PERPENDICULAR TO BUILDING)
   FOR A STRUCTURE ATTACHED TO A BUILDING ON TWO OR MORE SIDES, L_E = THE LONGER OF L1 & L2
   FOR A FREE STANDING STRUCTURE, L_E = THE LONGER OF L1 & L2 (SEE FIG.9)

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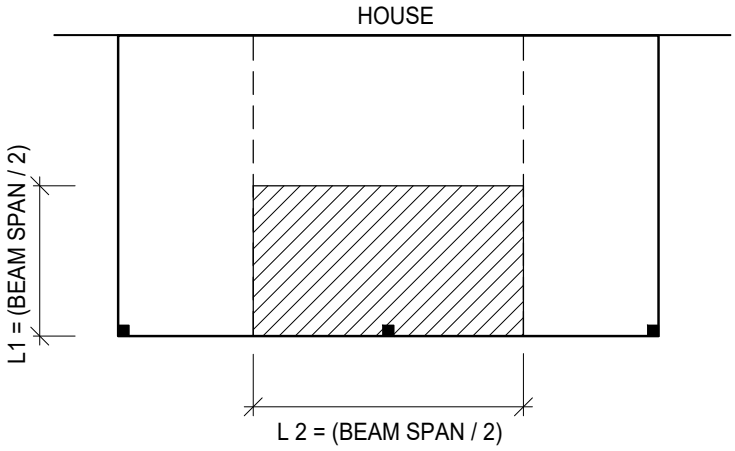
TYPICAL DETAIL **CONTINUOUS BEAM** (FIGURE 8)

FIGURE 8
PLAN VIEW CONTINUOUS BEAM

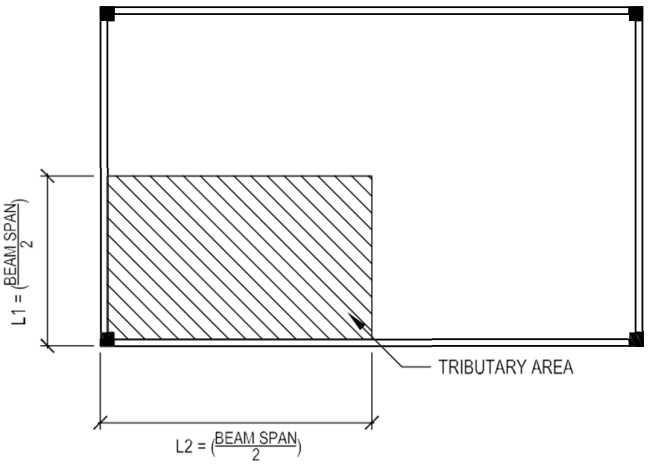


TYPICAL DETAIL **FREE STANDING BEAM** (FIGURE 9)

FIGURE 9
PLAN VIEW

L2 is longer than L1
therefore L_E = L2

Refer Note 3.



NOTES

1. THE TRIB AREA FOR A POST AND FOOTING IS THE PRODUCT OF HALF THE DISTANCE TO THE ADJACENT SUPPORTS IN EACH DIRECTION L_E; L1 X L2 (SEE FIG.6)
2. WHERE A POST SUPPORTS A CANTILEVER, CONSIDER FOR THE FULL CANTILEVER LENGTH (SEE FIG.7)
3. TRIBUTARY EDGE LENGTH (L_E) IS USED TO SELECT POST SIZE.
   FOR A STRUCTURE ATTACHED TO A BUILDING ON LESS THAN TWO SIDES, L_E = L1 (PERPENDICULAR TO BUILDING)
   FOR A STRUCTURE ATTACHED TO A BUILDING ON TWO OR MORE SIDES, L_E = THE LONGER OF L1 & L2
   FOR A FREE STANDING STRUCTURE, L_E = THE LONGER OF L1 & L2 (SEE FIG.9)

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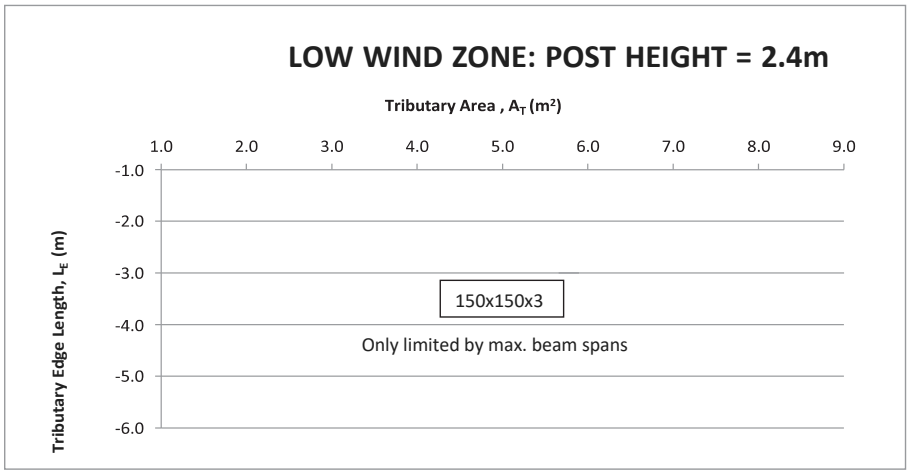
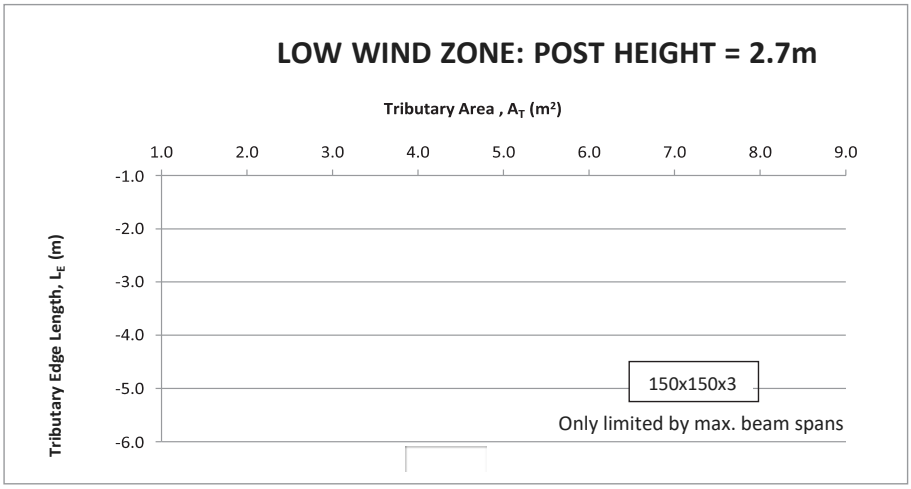
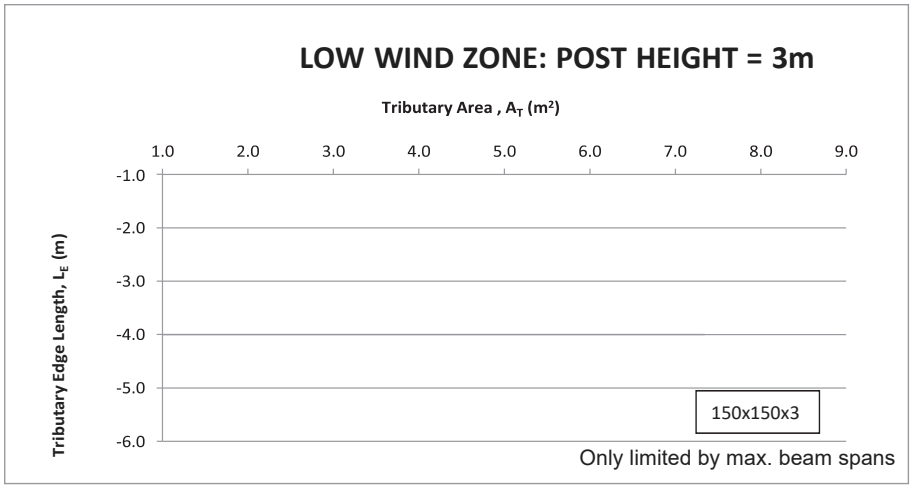
POST CALCULATION: LOW WIND ZONE







NOTE: Max. design height for post is 3.0m. Height is defined from ground level (top of concrete footing)
If exceeding the graph limits it will need to be reviewed as per NZL discretion.
No Aluminium posts to be substituted without verification by a CPEng Structural Engineer.

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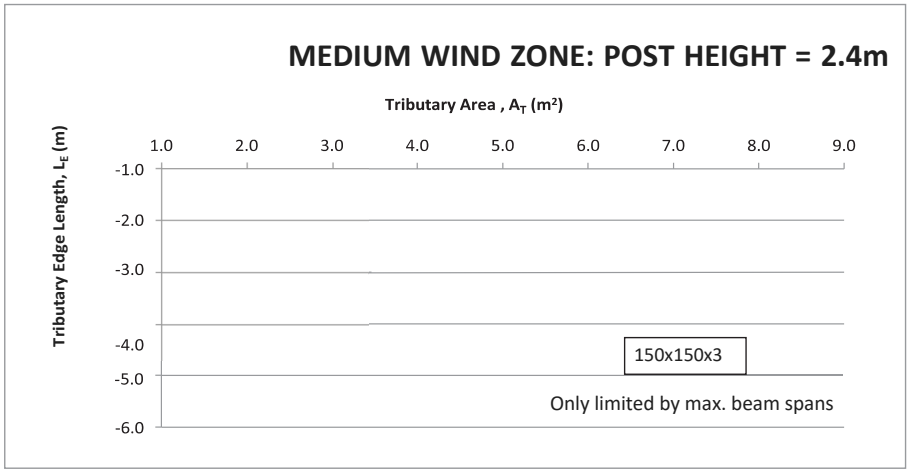
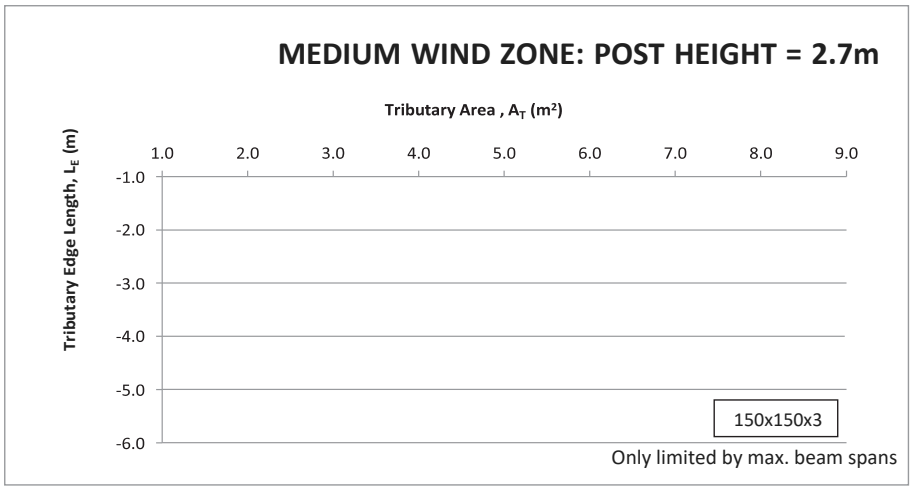
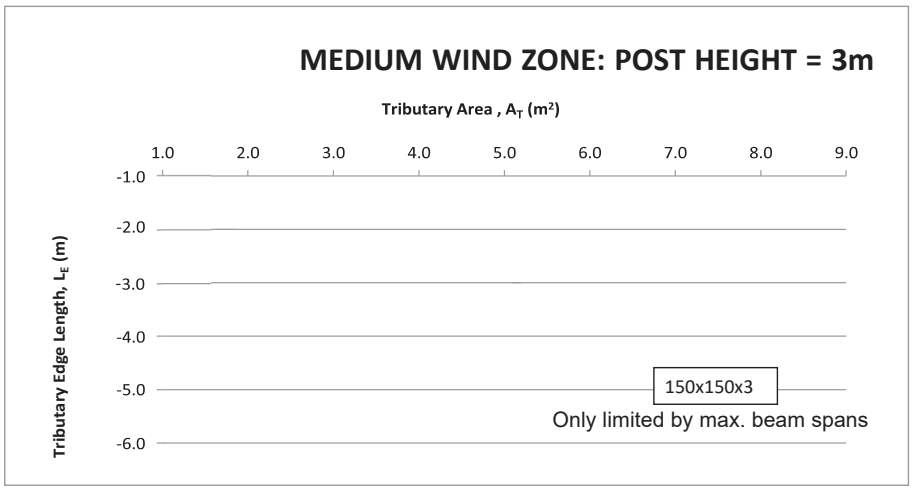
POST CALCULATION: MEDIUM WIND ZONE







NOTE: Max. design height for post is 3.0m. Height is defined from ground level (top of concrete footing)
If exceeding the graph limits it will need to be reviewed as per NZL discretion.
No Aluminium posts to be substituted without verification by a CPEng Structural Engineer.

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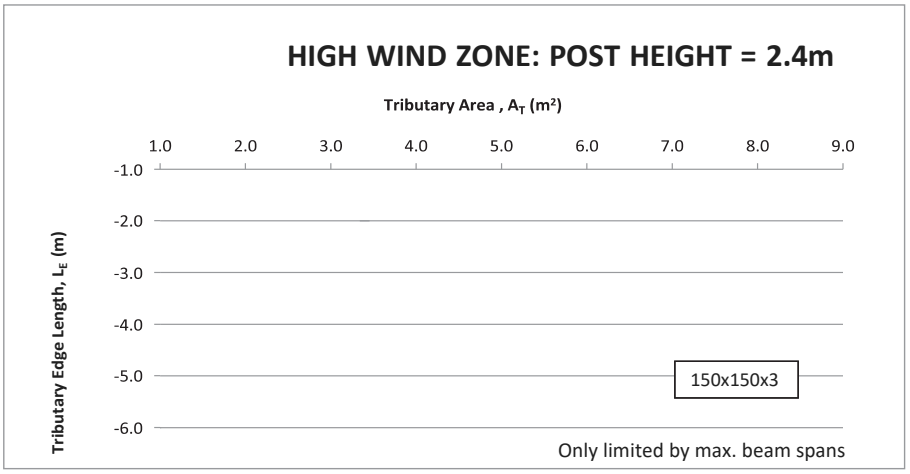
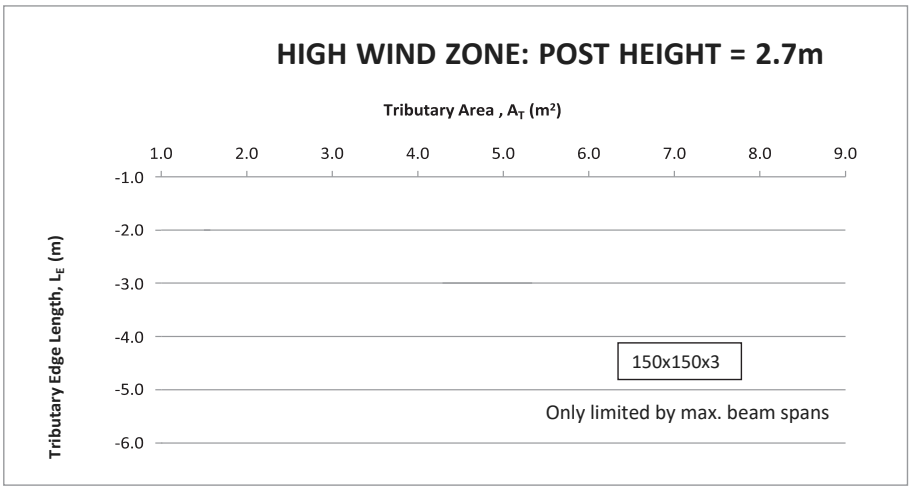
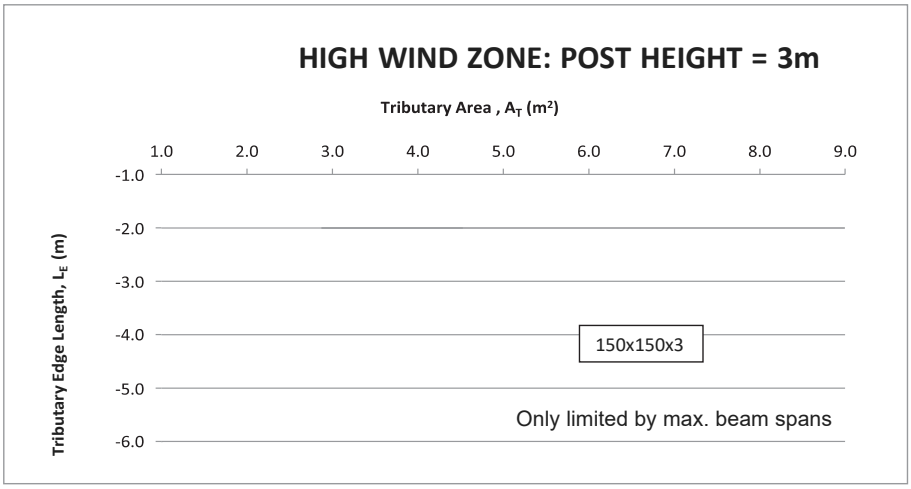
POST CALCULATION: HIGH WIND ZONE

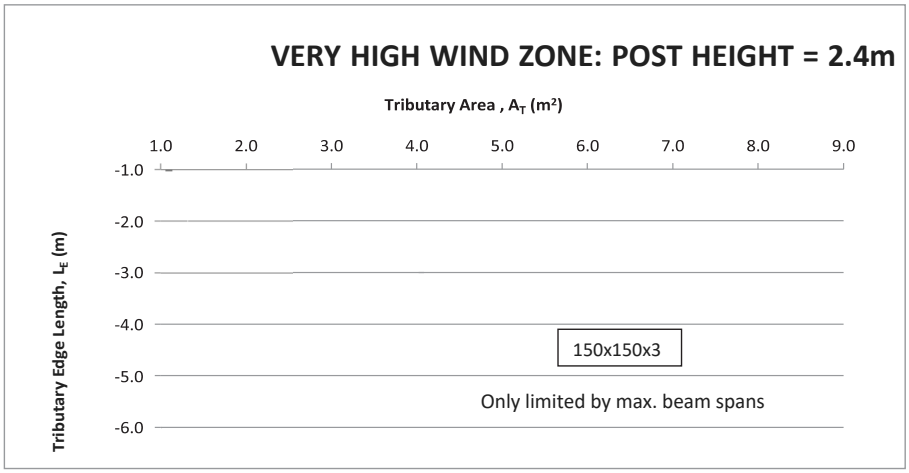


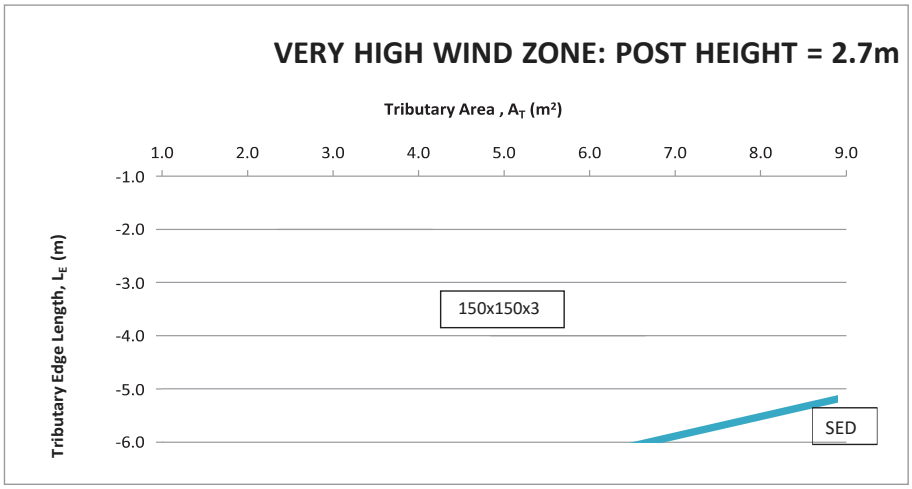


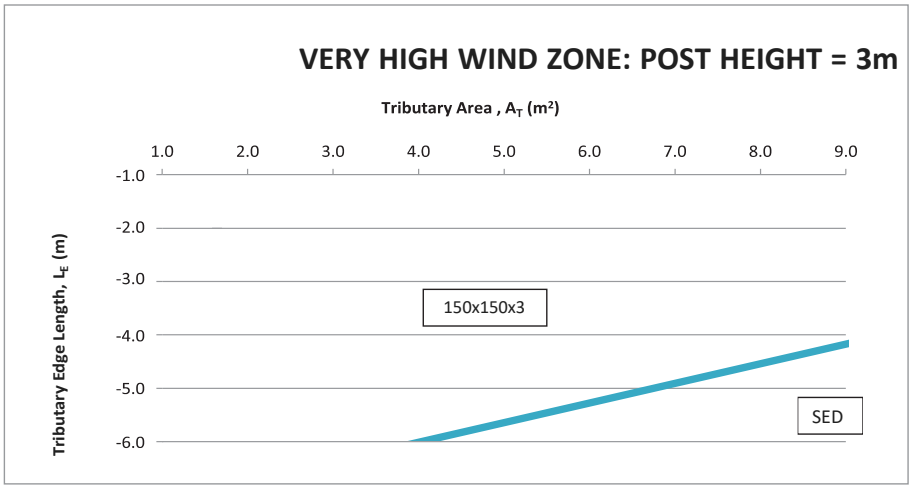


NOTE: Max. design height for post is 3.0m. Height is defined from ground level (top of concrete footing)
If exceeding the graph limits it will need to be reviewed as per NZL discretion.
No Aluminium posts to be substituted without verification by a CPEng Structural Engineer.

POST CALCULATION: VERY HIGH WIND ZONE







NOTE: Max. design height for post is 3.0m. Height is defined from ground level (top of concrete footing)
If exceeding the graph limits it will need to be reviewed as per NZL discretion.
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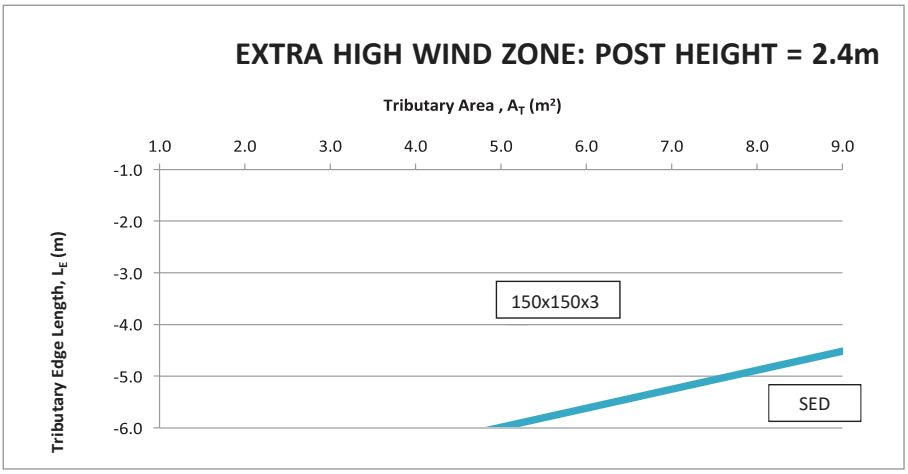
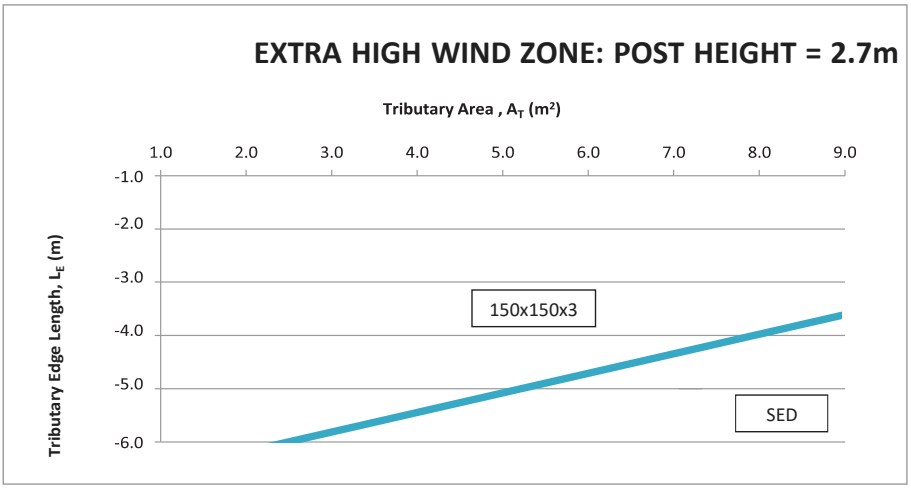
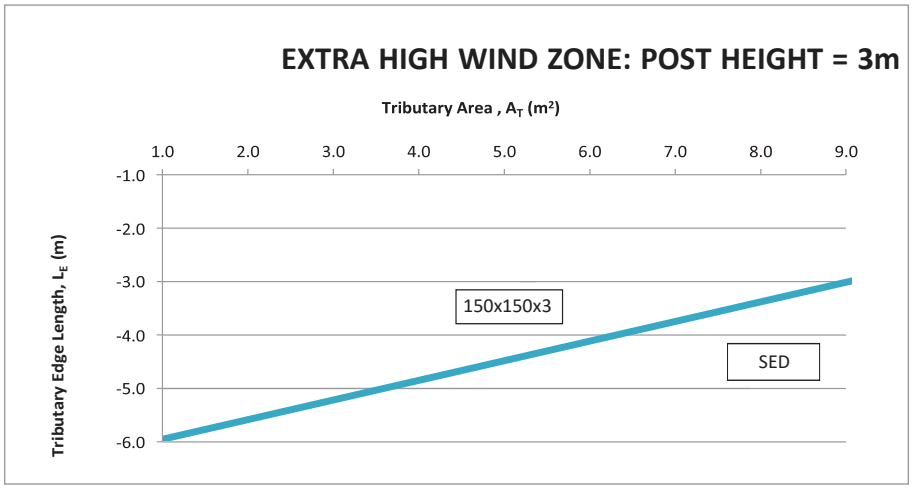
POST CALCULATION: EXTRA HIGH WIND ZONE







NOTE: Max. design height for post is 3.0m. Height is defined from ground level (top of concrete footing)
If exceeding the graph limits it will need to be reviewed as per NZL discretion.
No Aluminium posts to be substituted without verification by a CPEng Structural Engineer.

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POST FOOTING CALCULATION

Post Footing Calculations

"GOOD GROUND"

Ground conditions are considered a minimum of "good ground" as per NZS3604, within minimum soil properties as follow:

Geotechnical ultimate bearing capacity = 300kPa (apply 0.5 safety factor)

Undrained shear strength = 100kPa (apply 0.5 safety factor)

Geotechnical ultimate skin friction capacity = 20kPa (apply 0.5 safety factor)

Questionable ground conditions must be reviewed by engineer!

- If louvre frame is supported by building on less than 2 sides, uplift AND bracing must be considered for footing calculations (Tables 1a, 1b & 2)
- If louvre frame is supported by building on 2 or more sides, uplift only need be considered (Tables 1a & 1b only)

TABLE 1a MINIMUM CONCRETE VOLUME FOR ROOF TRIBUTARY ROOF AREA ON POST TO RESIST UPLIFT

	Concrete Volume Required (m^3)				
Wind Zone:	L	M	H	VH	EH
Tributary Area (m^2)					
1.0	0.03	0.04	0.06	0.08	0.10
2.0	0.06	0.09	0.12	0.16	0.20
3.0	0.09	0.13	0.19	0.25	0.30
4.0	0.12	0.17	0.25	0.33	0.40
5.0	0.15	0.21	0.31	0.41	0.50
6.0	0.18	0.26	0.37	0.49	0.60
7.0	0.22	0.30	0.44	0.57	0.70
8.0	0.25	0.34	0.50	0.65	0.80
9.0	0.28	0.38	0.56	0.74	0.90

Design Procedure:

(1) Determine tributary area on post (determined previously for post design)

(2) From Table 1a, determine minimum concrete volume to resist uplift based on tributary area

(3) From Table 1b, determine footing dimensions required for minimum volume calculated in (2). If bracing is required to be considered, follow steps (4) and (5) below.

(4) From Table 2, determine footing dimensions based on post size selected. For ease of comparing, select same footing type as selected in (3)

(5) Use maximum of dimensions from (3) and (4)

TABLE 1b FOOTING DIMENSIONS REQUIRED FOR PARTICULAR VOLUMES FOR UPLIFT RESISTANCE

	Round Piles	
Volume (m^2)	450 Diameter	600 Diameter
	minimum depth (mm)	
0.1	700	600
0.2	800	700
0.3	900	800
0.4	1000	900
0.5	1150	1000
0.6	1250	1000
0.7	1350	1100
0.8	1550	1200
0.9	1650	1300
1.0	1800	1400

Note:
Round piles depths are calculated including skin friction so final concrete volume will differ to that in first column. For most projects the minimum footing depth will be 1000mm - 1200mm for 450mm dia. and 600mm dia. round concrete footings.

TABLE 2
MINIMUM FOOTING SIZES REQUIRED FOR BRACING OF EACH POST SIZE

	Round Piles		Square Piles	
Post Size	450 Diameter	600 Diameter	Square pad 450mm wide	Square pad 600mm wide
	minimum depth into ground (mm)			
150x150x3	1200	1200	1100	1100

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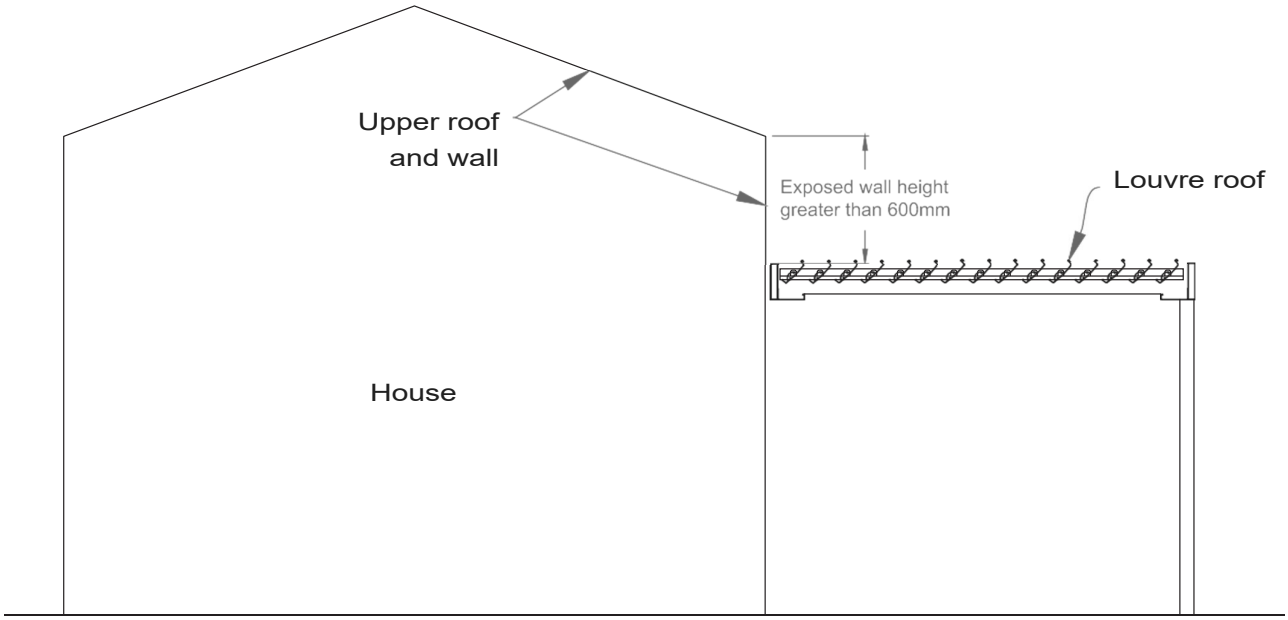
SNOW LOADS

Snow loadings: As required by NZS3604:2011 (Section 15)

1. if snow loads are required to be considered, the following equivalent wind zones should be referred to:
   for 1.0kPa snow load - apply minimum Medium Wind Zone
   for 1.5kPa snow load - apply minimum Very High Wind Zone
   for 2.0kPa snow load - apply minimum Extra High Wind Zone

2. where a louvre roof forms part of a lower roof meeting an upper wall and the exposed height of the upper wall is greater than 0.6m, the roof is defined as an abutting roof (similar to NZS3604:2011 15.3). in this situation, the louvre spans and beam spans determined from the NZ Louvre tables shall be multiplied by 0.8

Figure 9



Standards NZ 1.5 and 2.5 kPa snow loading zones NZS 3604:2011

For information about snow zones in New Zealand please see Figure 15.1 from NZS 3604:2011 Timber Framed Buildings.

Note: rain sensor isolated in all snow load circumstances.

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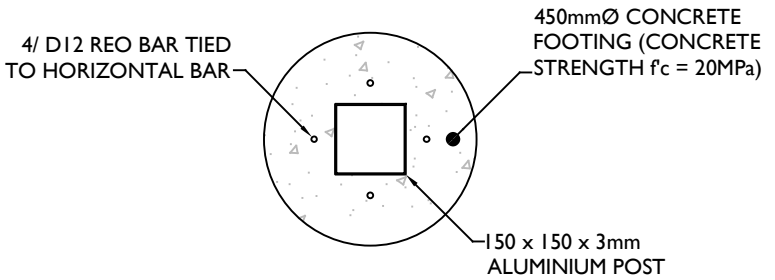
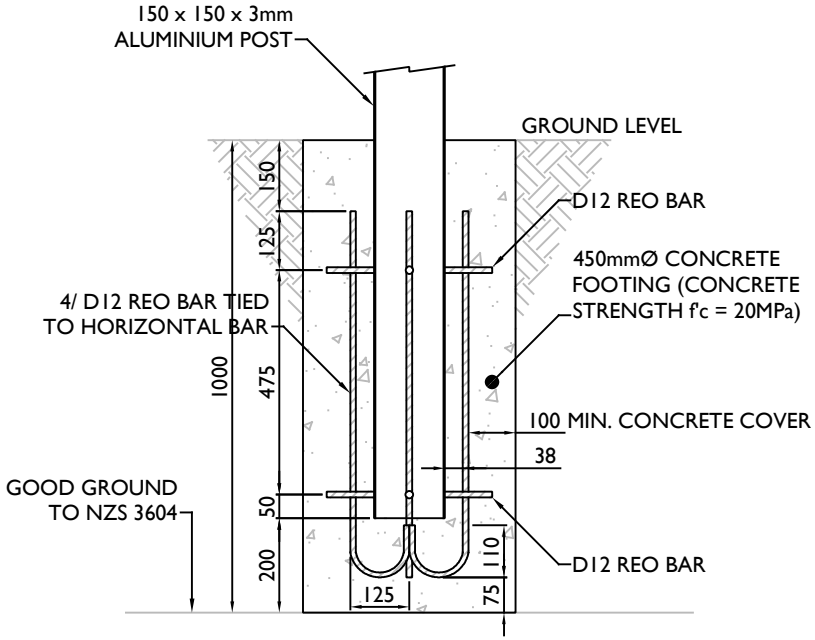
TECHNICAL DETAILS – FOOTINGS AND BASE FIXINGS

PFC-CO/450





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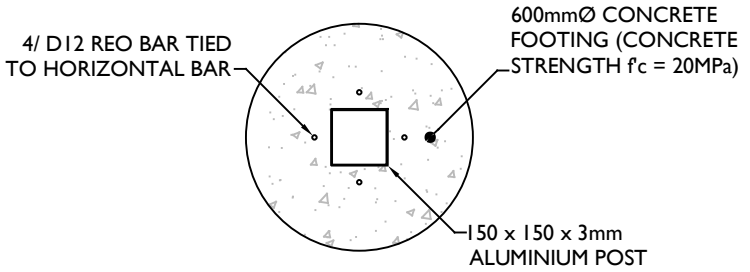
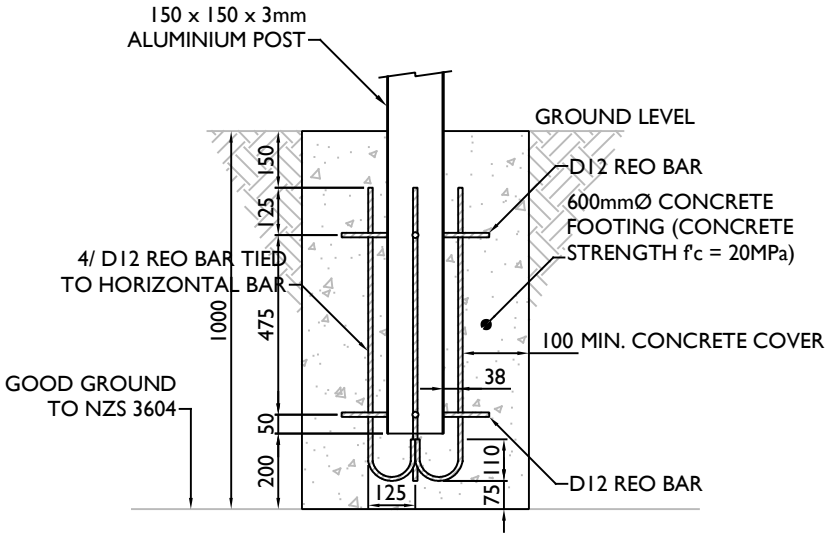
CLIENT	DRAWING TITLE: POST FOOTING CONNECTION CONC. FOOTING 450mmø	SCALE: 1:16 (A4)	ISSUE: B
	DRAWING REF: PFC-CO/450	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PFC-CO/600





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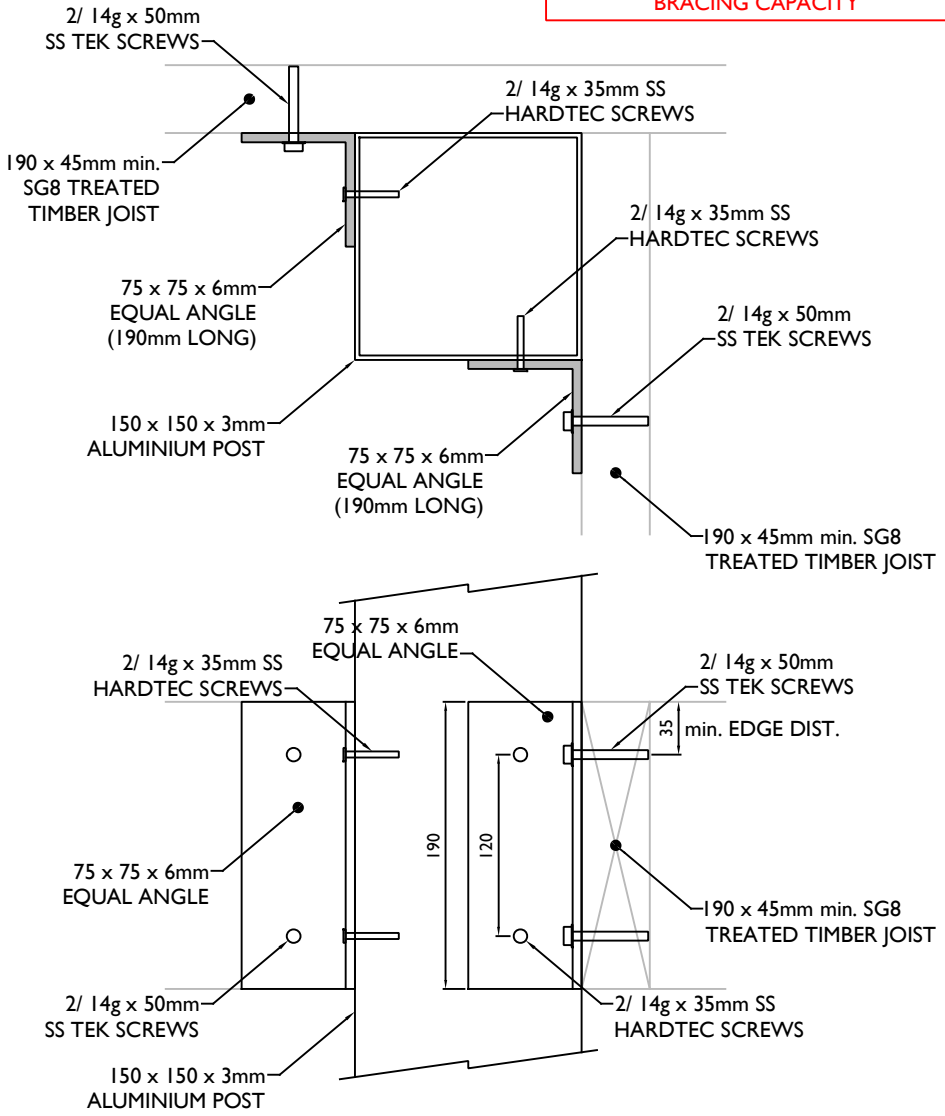
	DRAWING REF: PFC–CO/600	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PFC-DAB

CONNECTION FOR VERTICAL LOADING & WIND UPLIFT RESISTANCE ONLY. DOES NOT PROVIDE LATERAL BRACING CAPACITY



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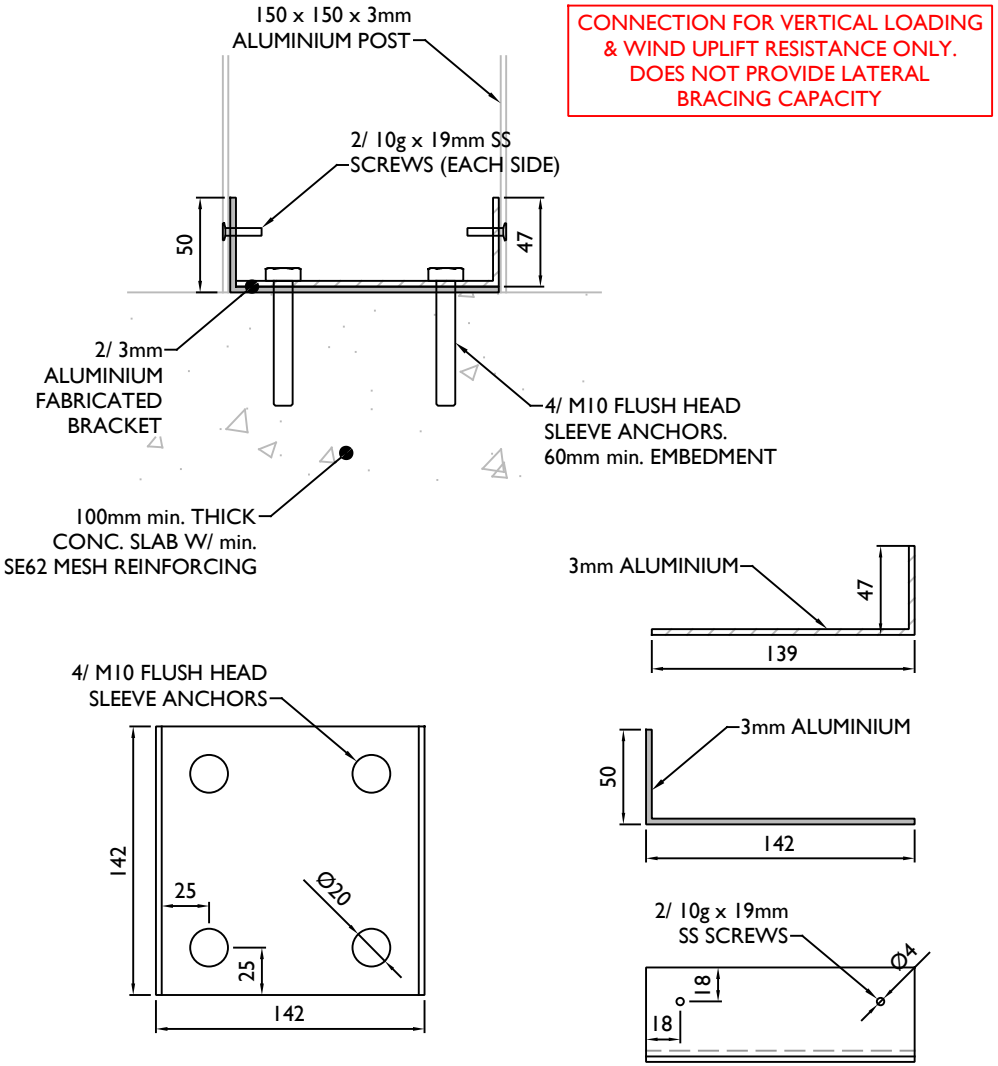
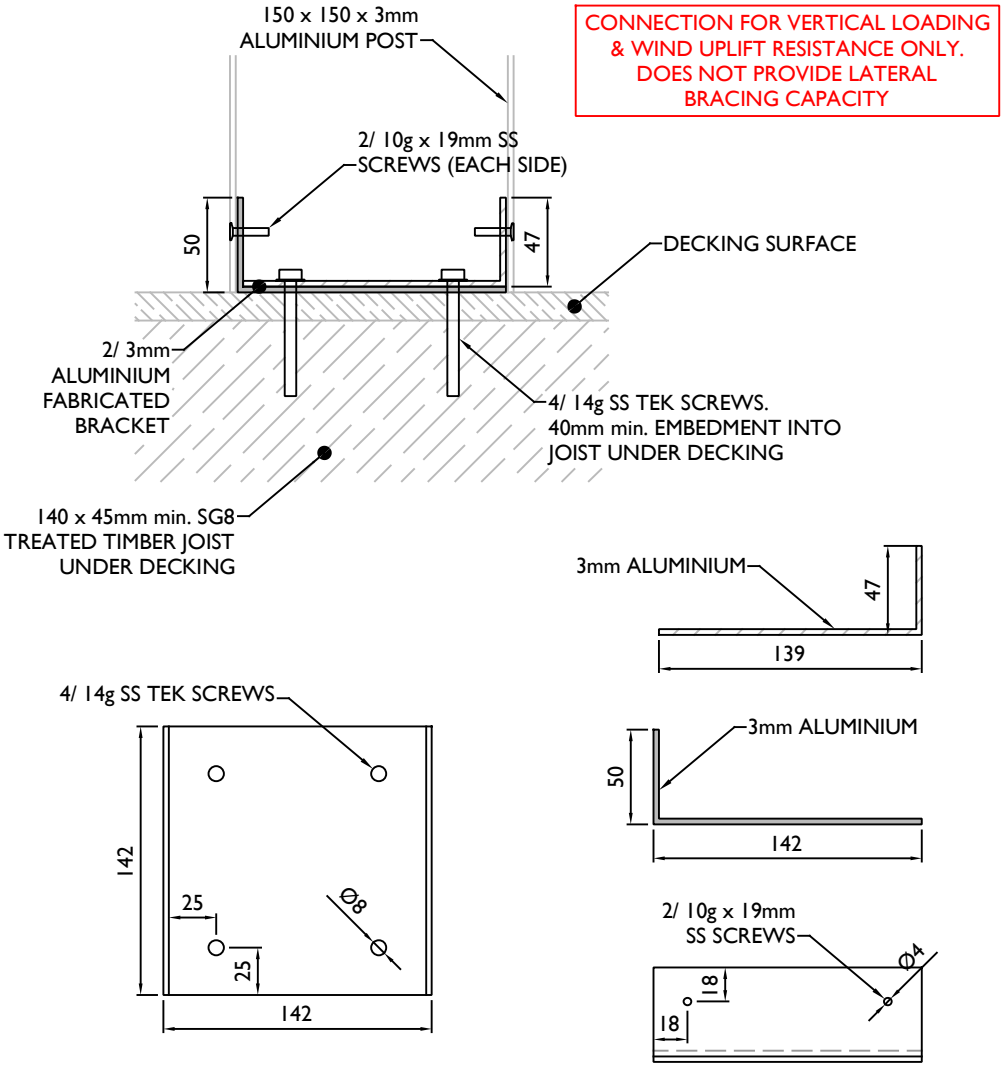
CLIENT	DRAWING TITLE: POST FOOTING CONNECTION DECK ANGLE BRACKET	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: PFC–DAB	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PFC-FMP



PFC-FMD



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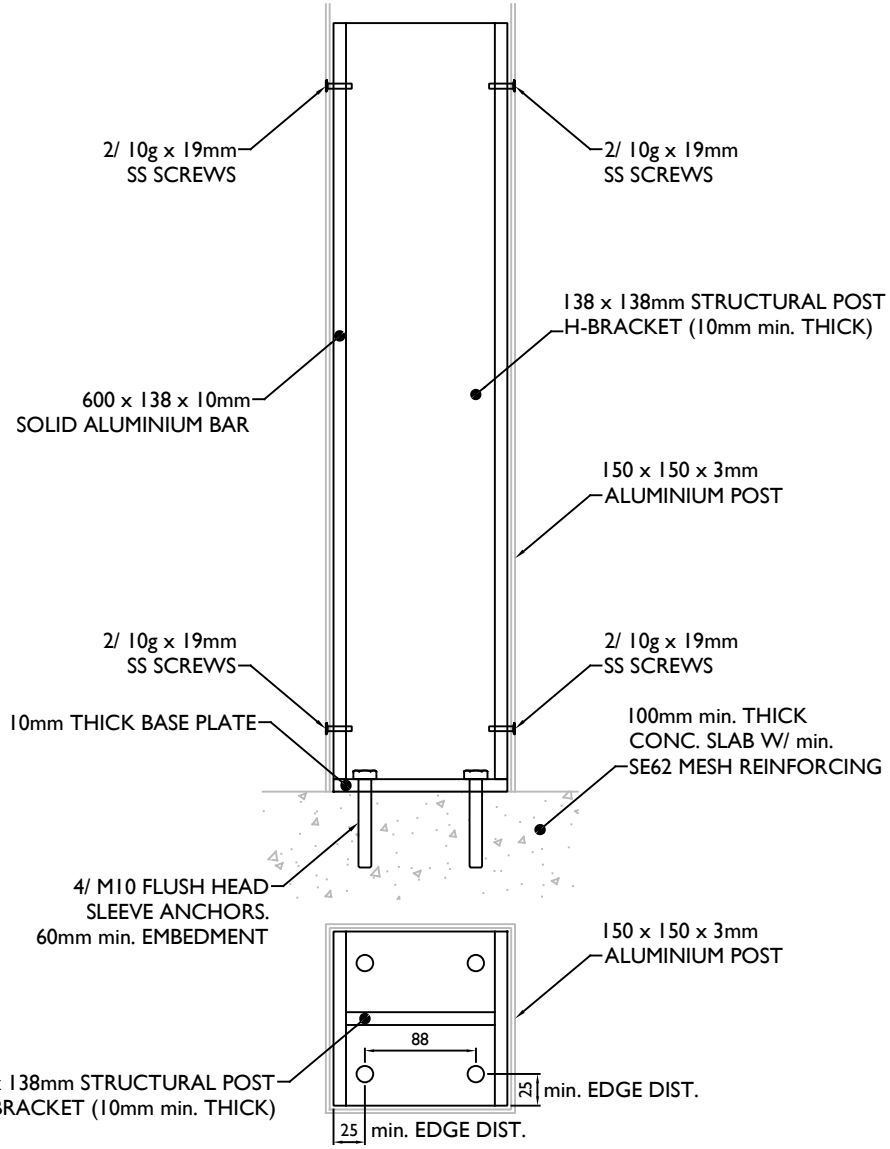
CLIENT	DRAWING TITLE: POST FOOTING CONNECTION FLUSH MOUNT TO PATIO/ DECK	SCALE: 1:4 (A4)	ISSUE: B
	DRAWING REF: PFC–FMP/D	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PFC-HDB



HDB CAN REPLACE A CONCRETE FOOTING WHEN:

- IT'S NOT POSSIBLE TO INSTALL A STANDARD 450mmØ OR 600mmØ CONCRETE FOOTING.
- FIXED TO CONCRETE WITH M10/ M12 SLEEVED ANCHOR BOLTS TO min. EMBEDMENT DEPTH AS REQUIRED BY PRODUCT SUPPLIER.
- CONCRETE SPECIFICATIONS min. 20MPa STRENGTH, & CONSTRUCTED AS PER NZ BUILDING CODE & NZS 3101 CONCRETE STRUCTURES STANDARD.
- CONCRETE SUBSTRATE THICKNESS min. 150mm WITH MESH REINFORCEMENT. CANNOT BE USED FOR WIND UPLIFT RESISTANCE IF NOT REINFORCED.
- DIMENSIONS FROM ANY CONCRETE EDGE min. 250mm OR AS PER ANCHOR BOLT PRODUCT SUPPLIER TECHNICAL RECOMMENDATIONS.
- HDB IS NOT DESIGNED FOR TIMBER DECKS. IF A HDB NEEDS TO BE FIXED TO DECK BEARERS, IT REQUIRES REINFORCEMENT & SED WILL BE REQUIRED.

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CLIENT	DRAWING TITLE: POST FOOTING CONNECTION HEAVY DUTY BRACKET	SCALE: 1:6 (A4)	ISSUE: B
	DRAWING REF: PFC–HDB	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

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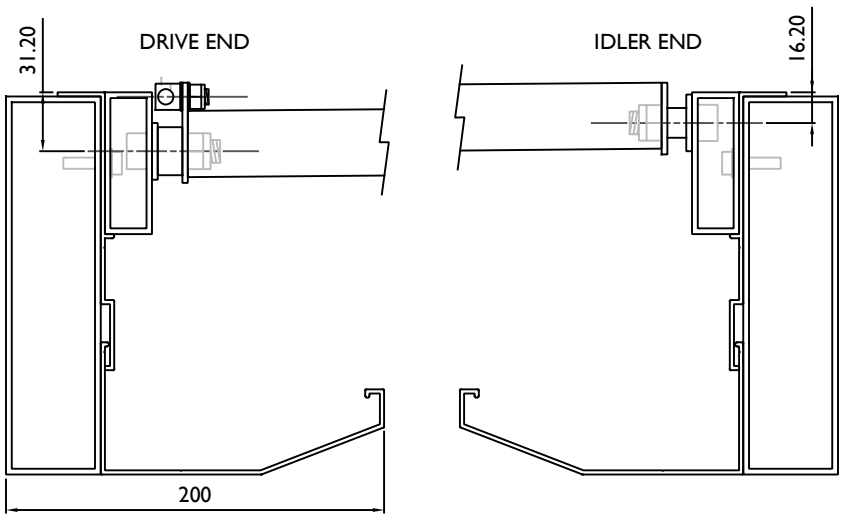
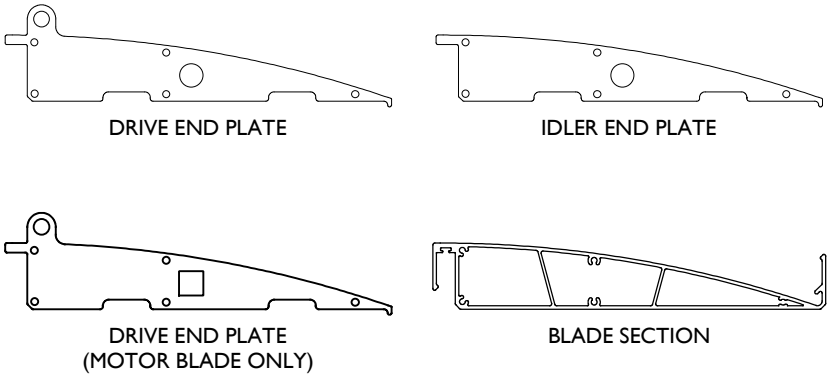
TECHNICAL DETAILS – TYPICAL STRUCTURE FIXING DETAILS

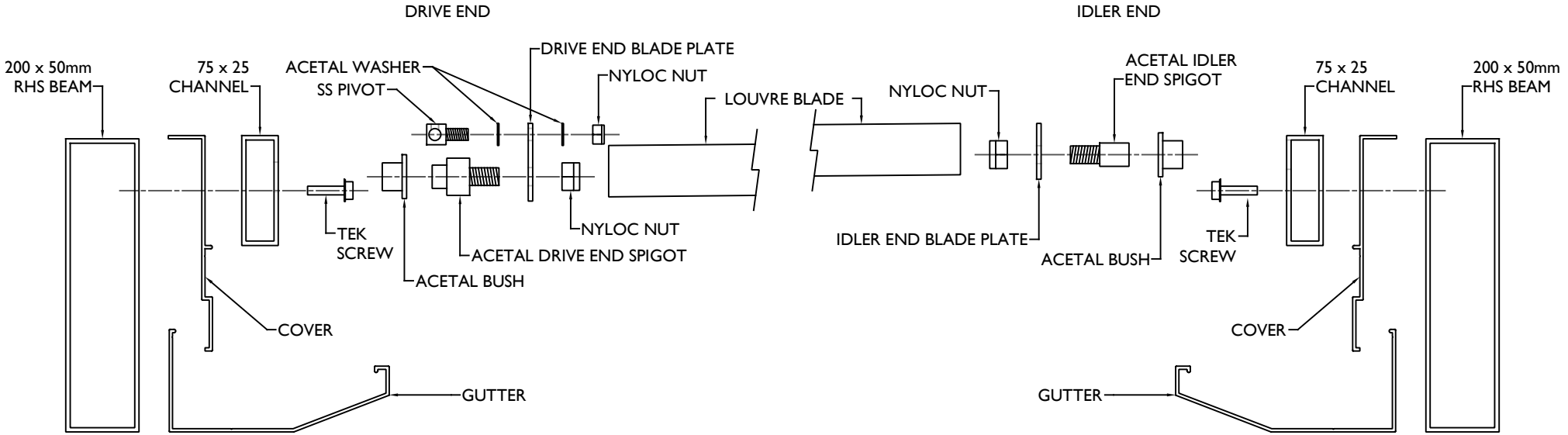
200 x 50mm FULL ASSEMBLY



BLADE END PLATE PROFILES



MULTIBODY PARTS



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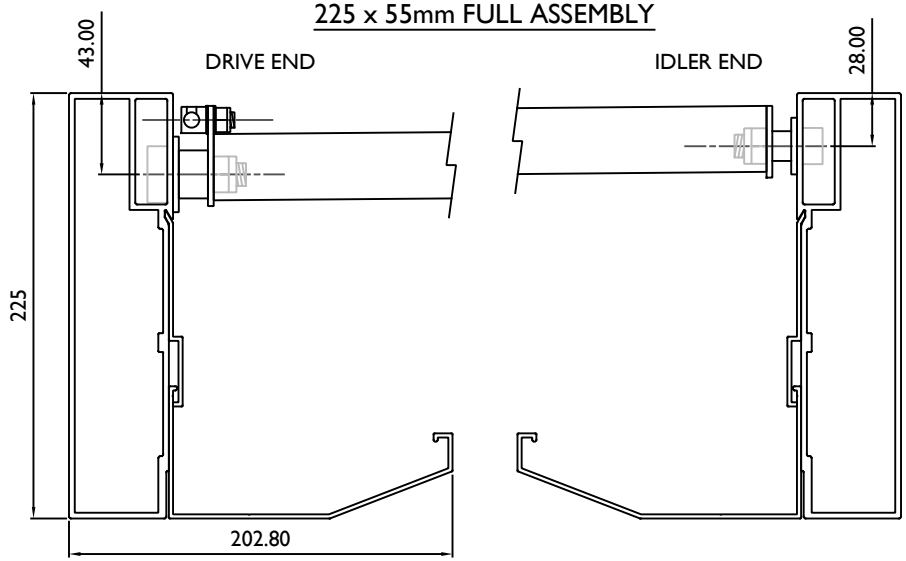
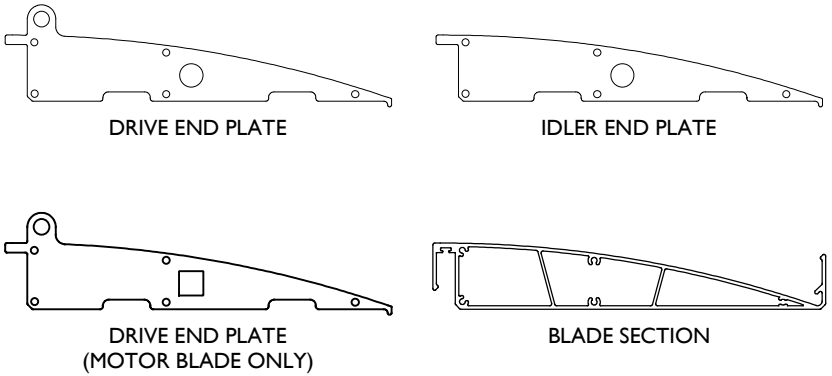
CLIENT	DRAWING TITLE: COMPONENT ASSEMBLY 200 x 50mm BEAM	SCALE: 1:4 (A4)	ISSUE: A
	DRAWING REF: 200mm ASSEMBLY	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

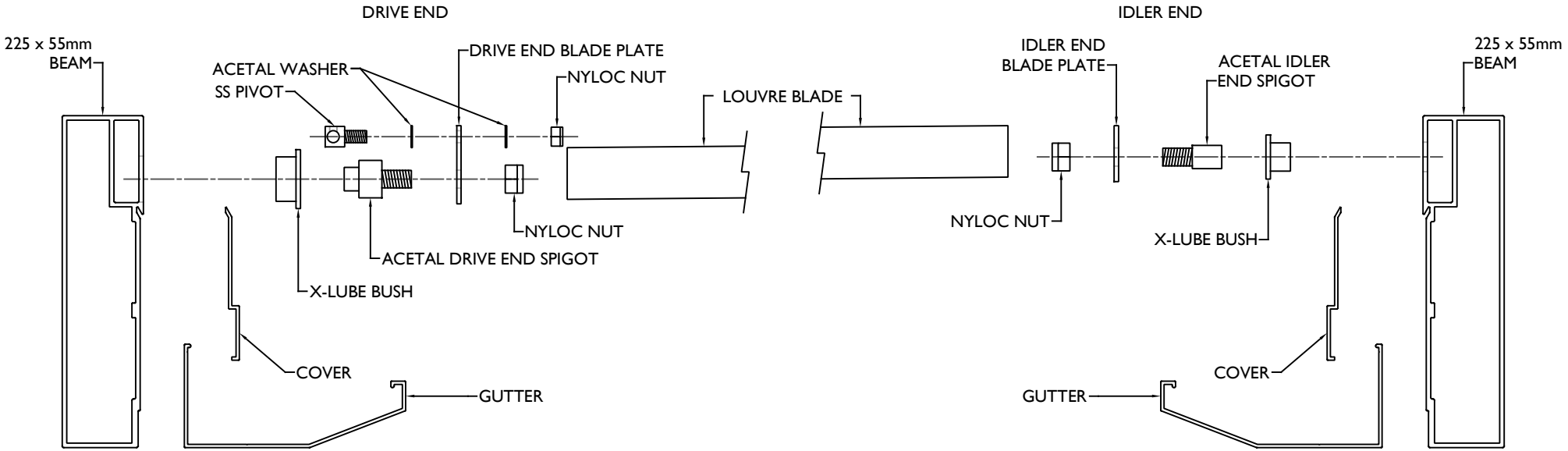
225 x 55mm FULL ASSEMBLY



BLADE END PLATE PROFILES



MULTIBODY PARTS



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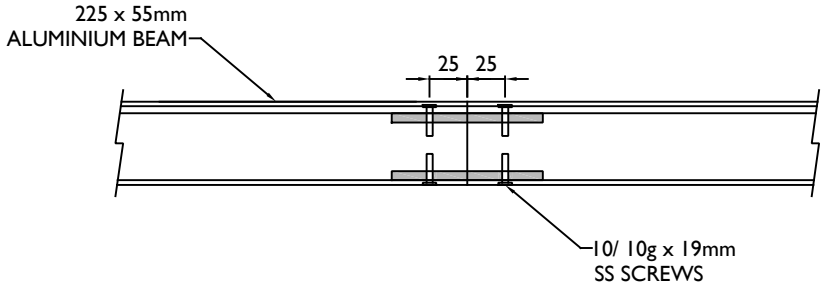
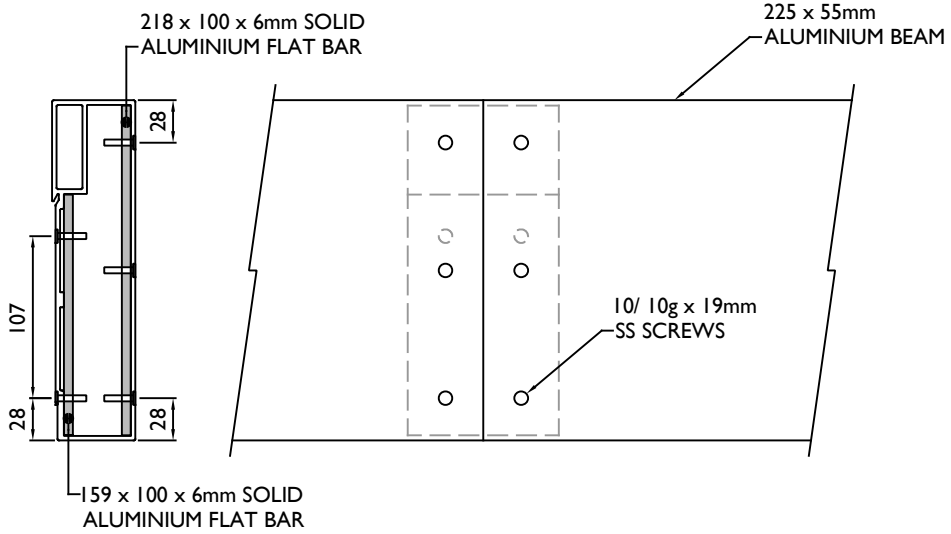
CLIENT	DRAWING TITLE: COMPONENT ASSEMBLY 225 x 55mm BEAM	SCALE: 1:4 (A4)	ISSUE: A
	DRAWING REF: 225mm ASSEMBLY	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BC-BJ/STR

JOIN MUST BE POSITIONED ABOVE POST FOR EXTERNAL BEAM APPLICATION. JOIN 450mm max. FROM FASCIA OR DIRECT BEAM FIXINGS





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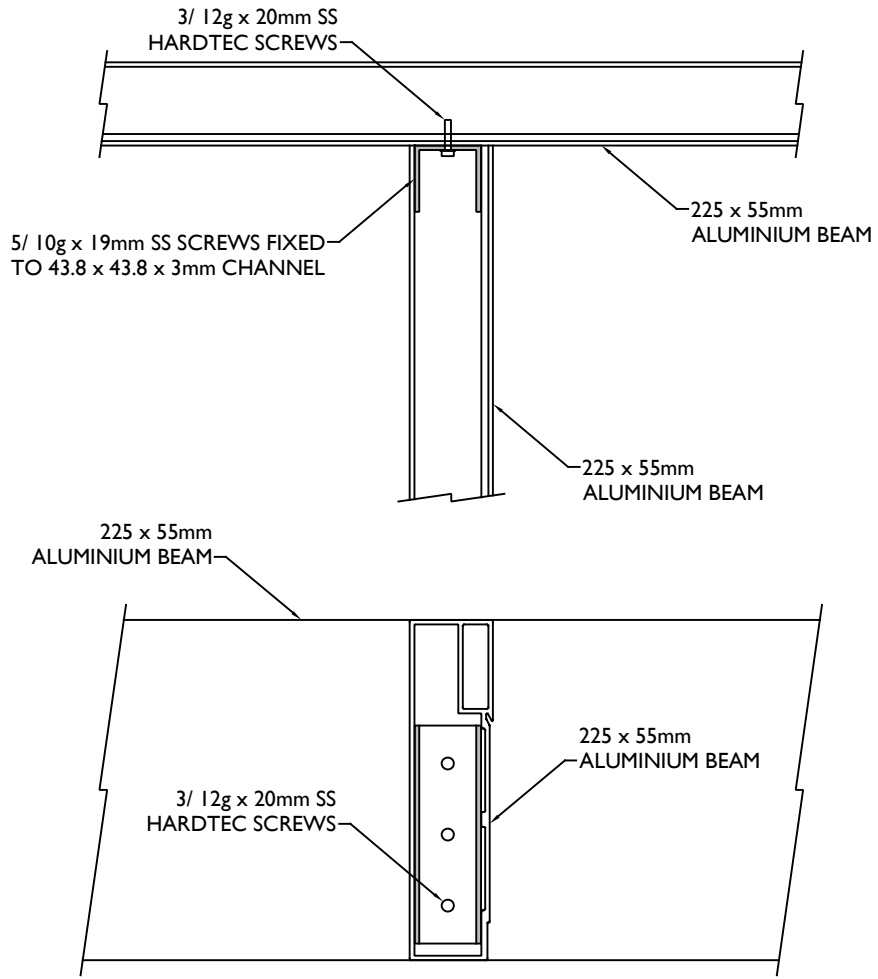
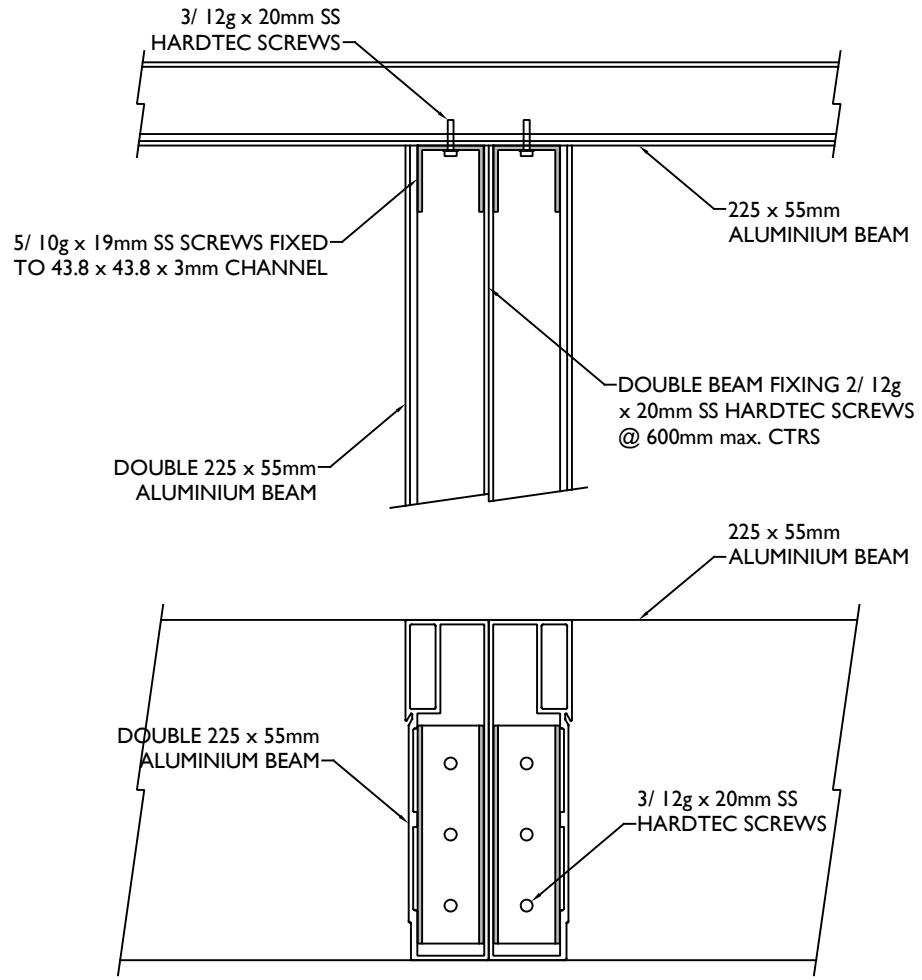
CLIENT	DRAWING TITLE: BEAM CONNECTION BUTT–JOIN STRAIGHT BEAM	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BC–BJ/STR	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BC-BJ90



BC-BJ90/DBL



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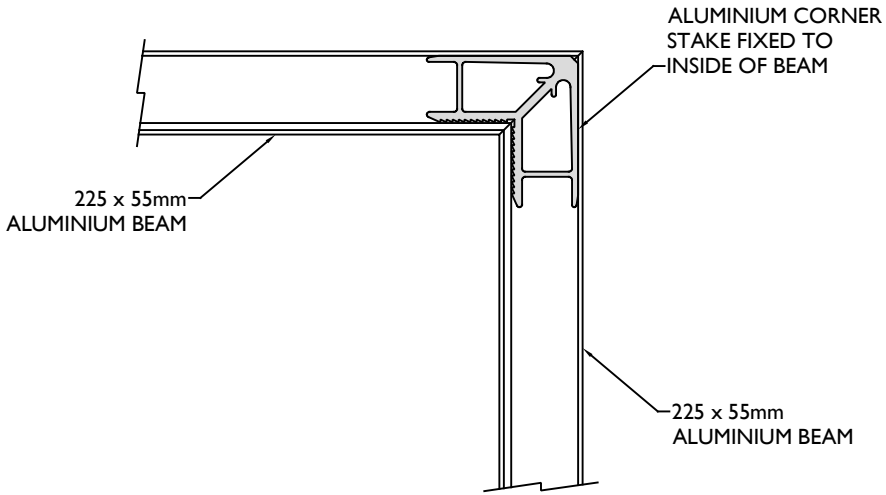
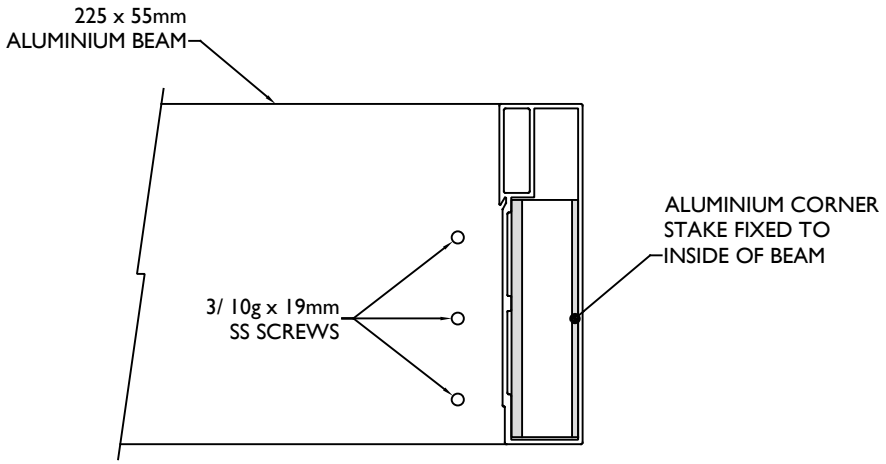
CLIENT	DRAWING TITLE: BEAM CONNECTION BUTT–JOIN 90°	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BC–BJ90	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

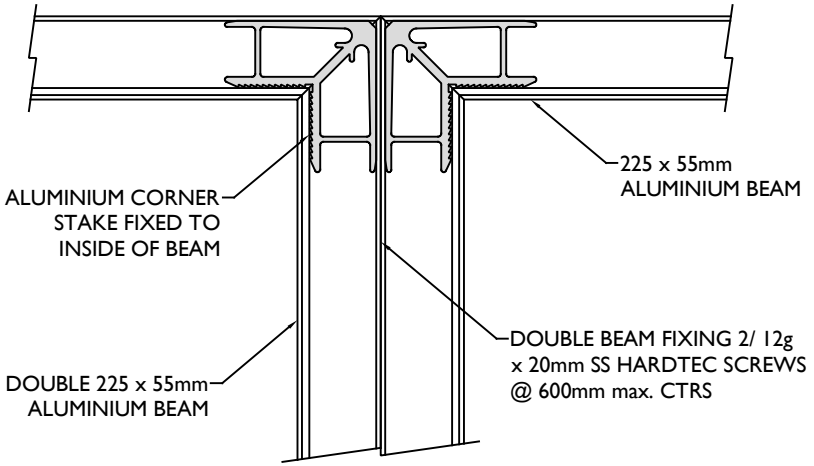
Latest revision date: 19/08/2022

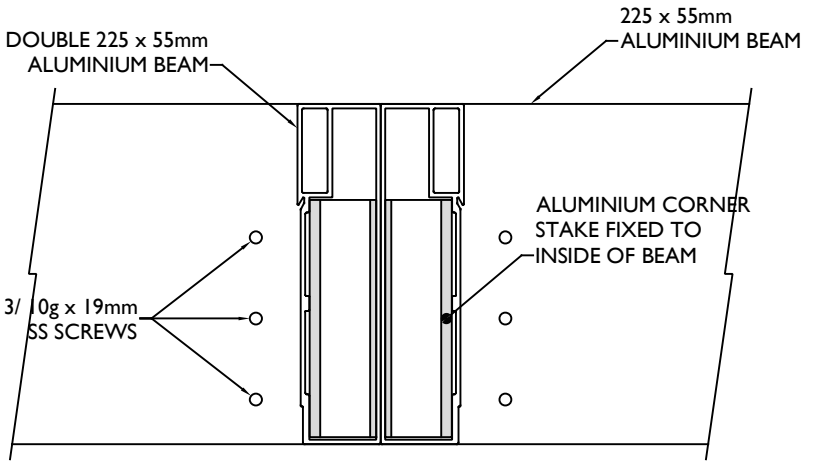
BC-CNR





BC-CNR/DBL





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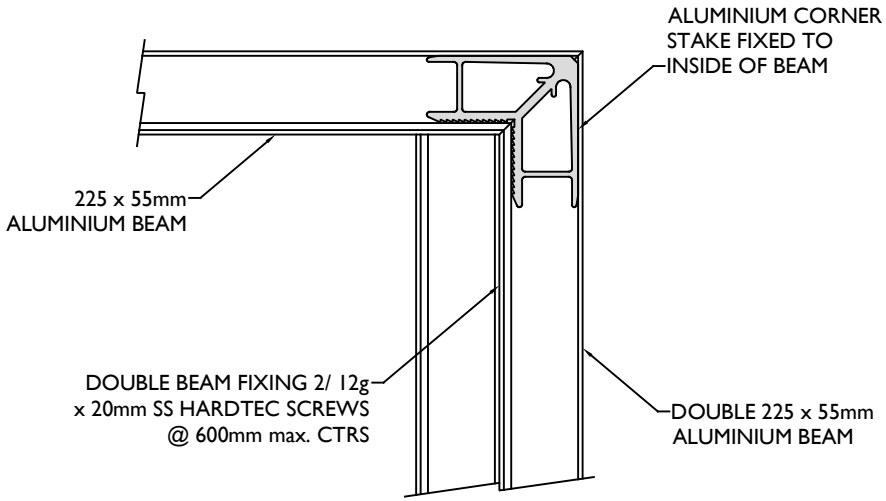
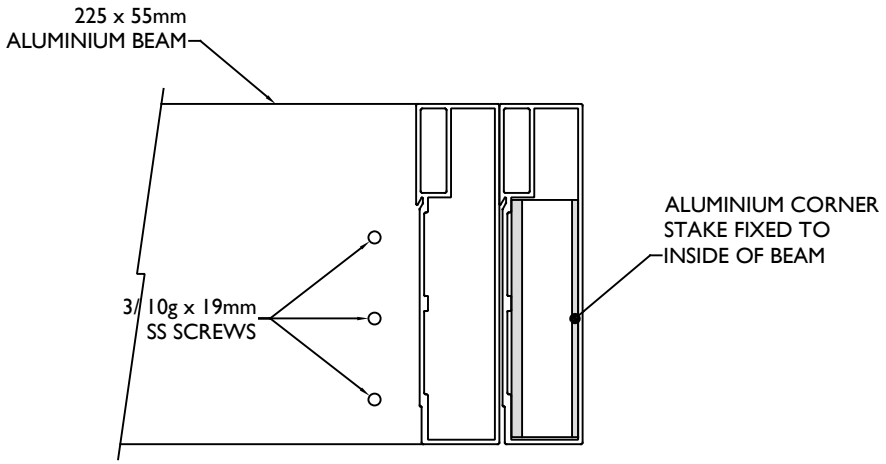
CLIENT	DRAWING TITLE: BEAM CONNECTION CORNER MITRE	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BC–CNR	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

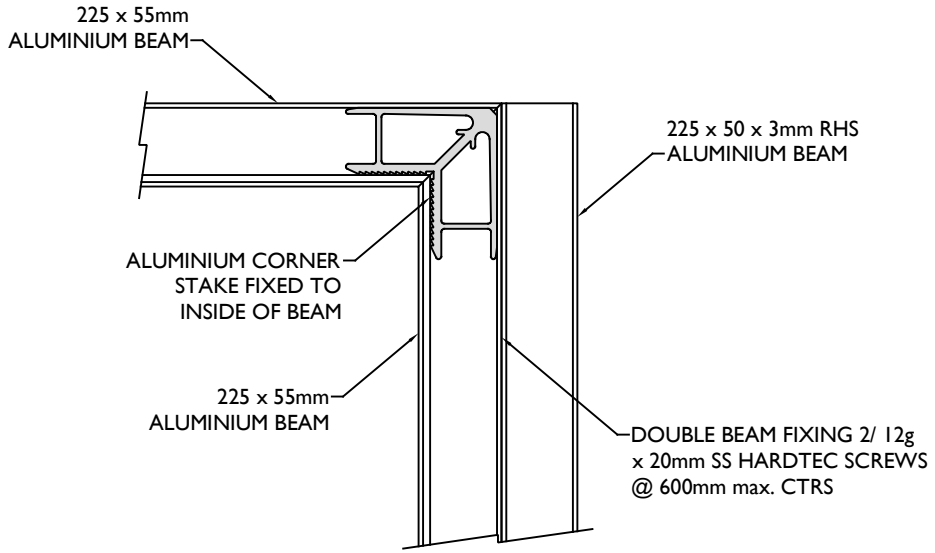
Latest revision date: 19/08/2022

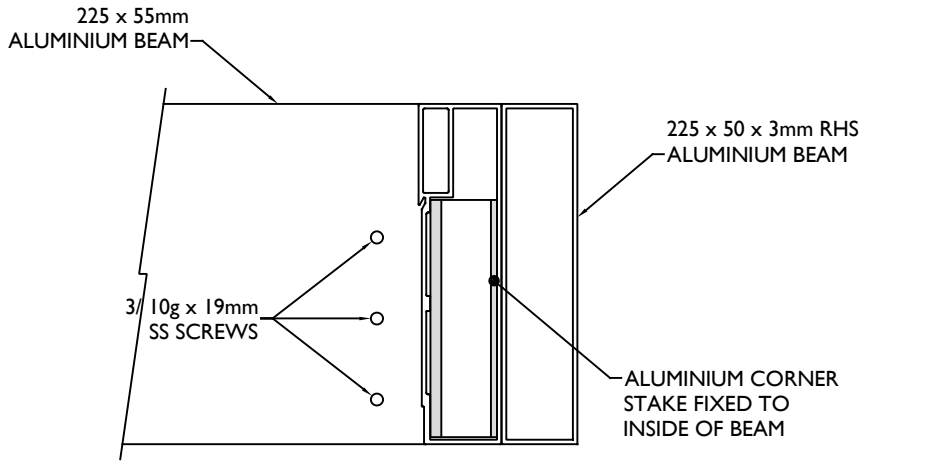
BC-CNR/INT





BC-CNR/EXT





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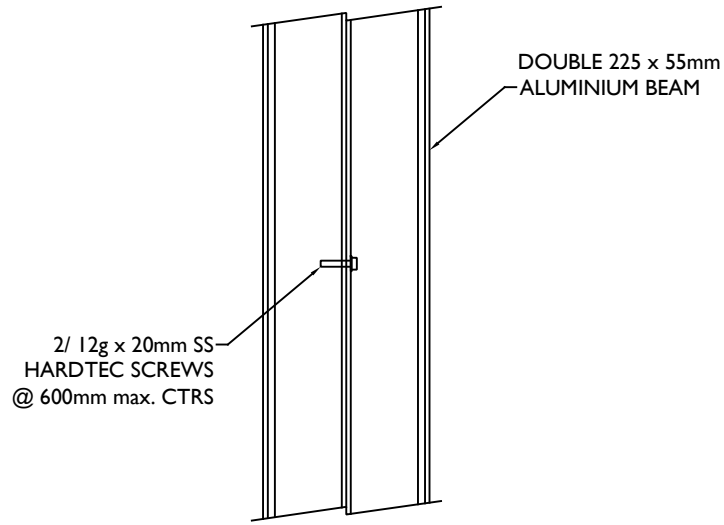
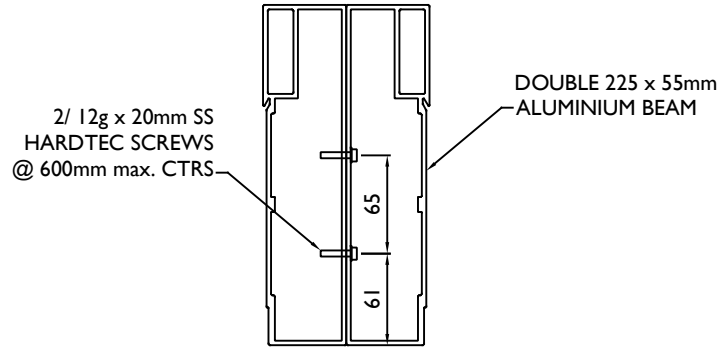
CLIENT	DRAWING TITLE: BEAM CONNECTION CORNER INT/ EXT DOUBLE BEAM	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BC–CNR/INT EXT	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

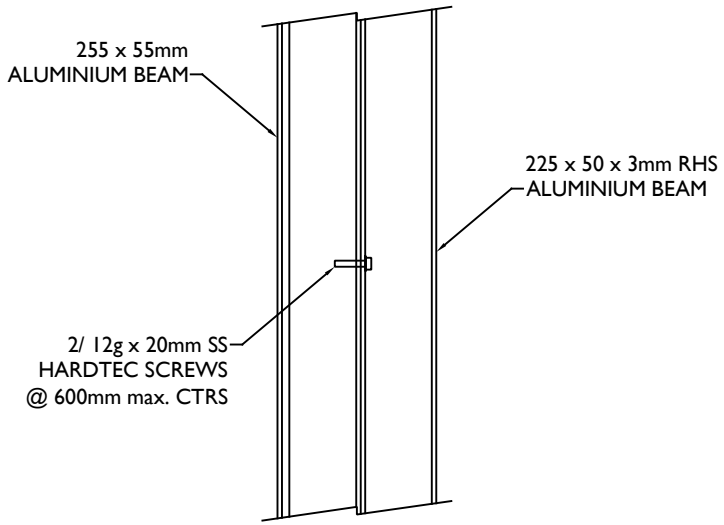
Latest revision date: 19/08/2022

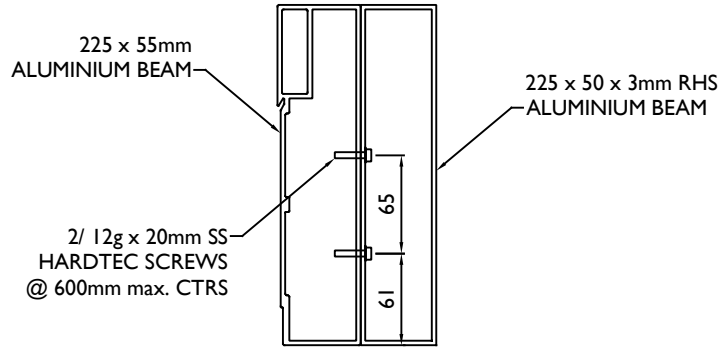
BC-DBL





BC-DBL/50





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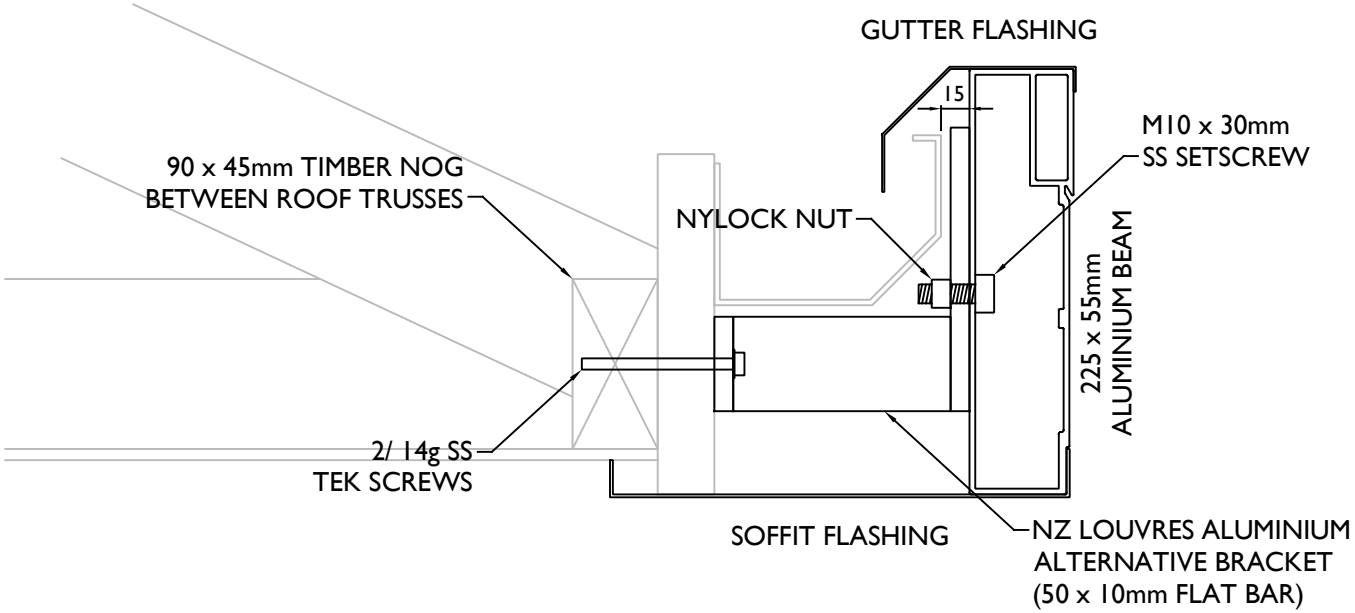
CLIENT	DRAWING TITLE: BEAM CONNECTION DOUBLE BEAM	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BC–DBL	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BF-ALT

400mm max. CENTRES BETWEEN ALTERNATIVE BRACKETS, 200mm max. TO BEAM JOINS/ ENDS

ROOF TRUSS DESIGNED AS PER SECTION 10 OF NZS 3604:2011



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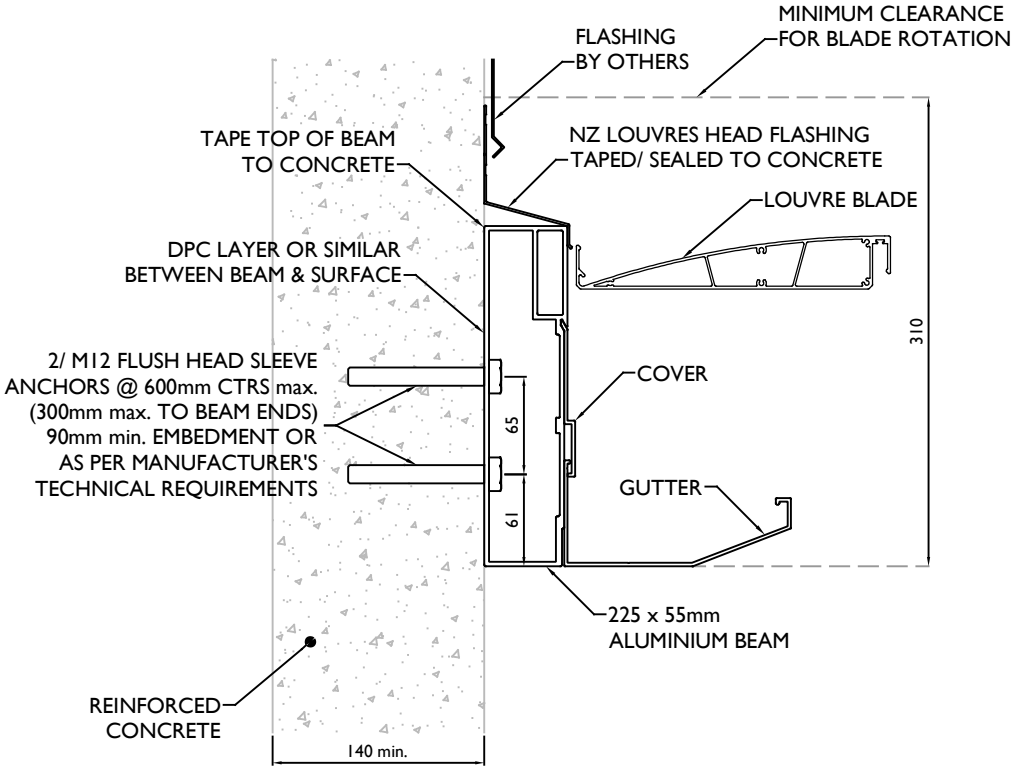
CLIENT	DRAWING TITLE: BEAM FIXING ALTERNATIVE BRACKET	SCALE: 1:4 (A4)	ISSUE: B
	DRAWING REF: BF–ALT	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BF-DF/CONC

COMPULSARY 12mm min. AIR GAP BETWEEN
BEAM & SURFACE IF NO FLASHING INSTALLED



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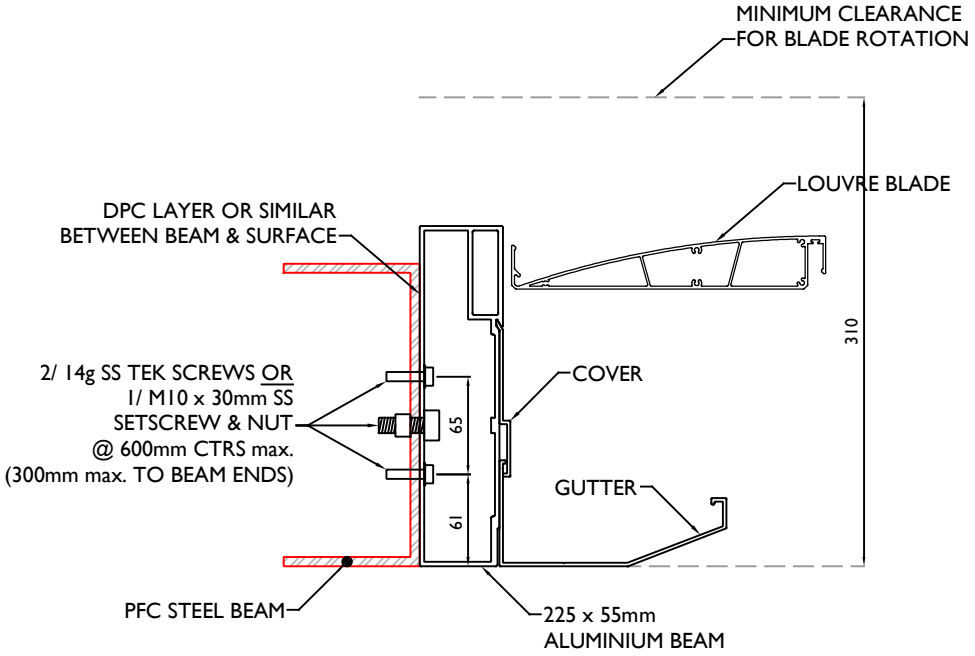
CLIENT	DRAWING TITLE: BEAM FIXING DIRECT FIX CONCRETE	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BF–DF/CONC	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BF-DF/STEEL



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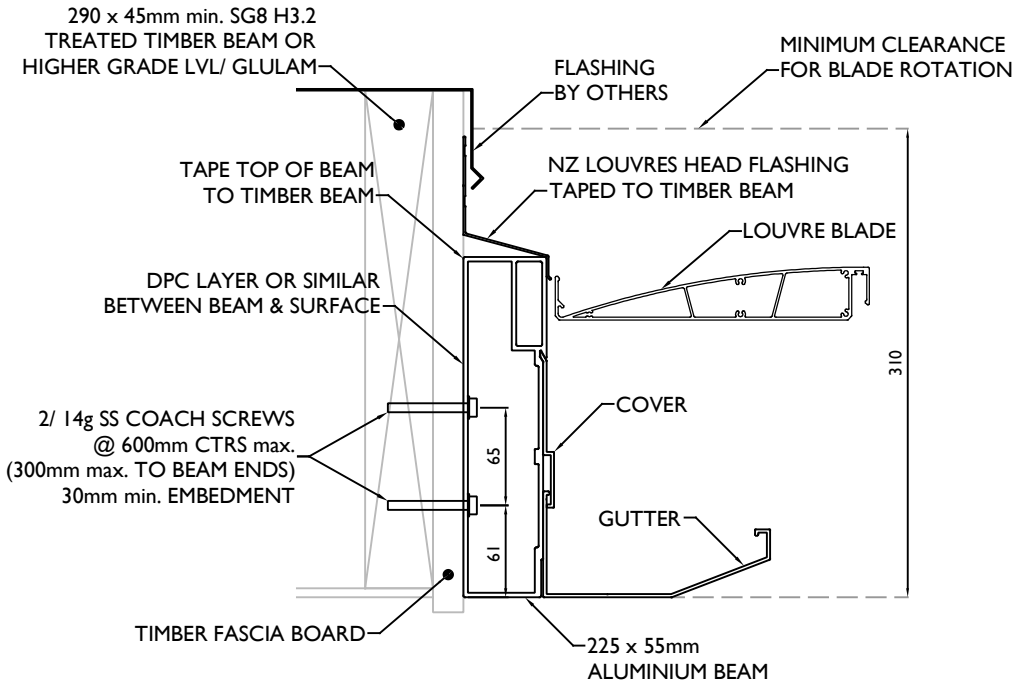
CLIENT	DRAWING TITLE: BEAM FIXING DIRECT FIX STEEL	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BF–DF/STEEL	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BF-DF/TIM



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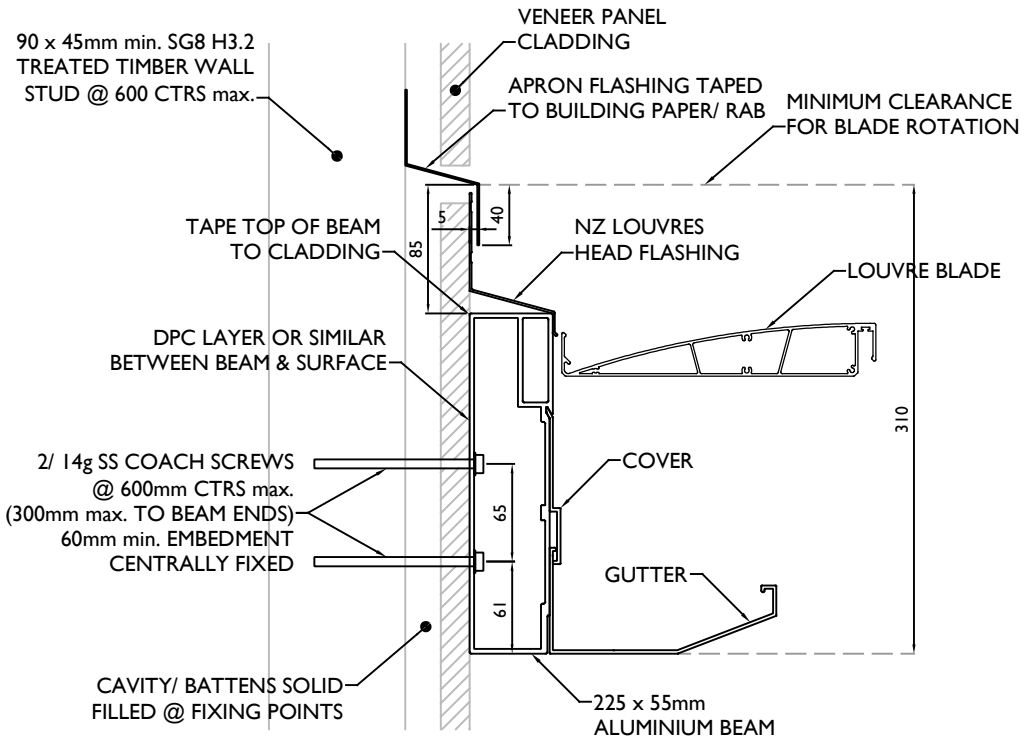
CLIENT	DRAWING TITLE: BEAM FIXING DIRECT FIX TIMBER	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BF–DF/TIM	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BF-DF/VEN

COMPULSARY 12mm min. AIR GAP BETWEEN BEAM & SURFACE IF NO FLASHING INSTALLED

TIMBER STRINGERS INSTALLED TO FRAMING IF STEEL FRAMED HOUSE



NZ LOUVRES™
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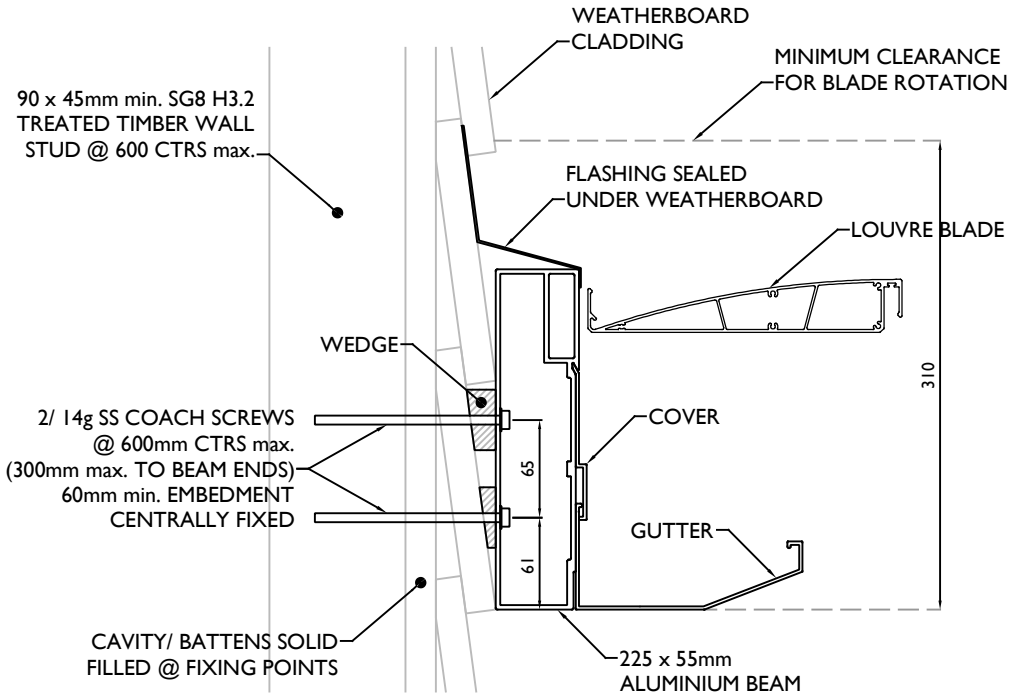
CLIENT	DRAWING TITLE: BEAM FIXING DIRECT FIX VENEER PANEL	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BF–DF/VEN	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BF-DF/WB

COMPULSARY 12mm min. AIR GAP BETWEEN BEAM & SURFACE IF NO FLASHING INSTALLED

TIMBER STRINGERS INSTALLED TO FRAMING IF STEEL FRAMED HOUSE



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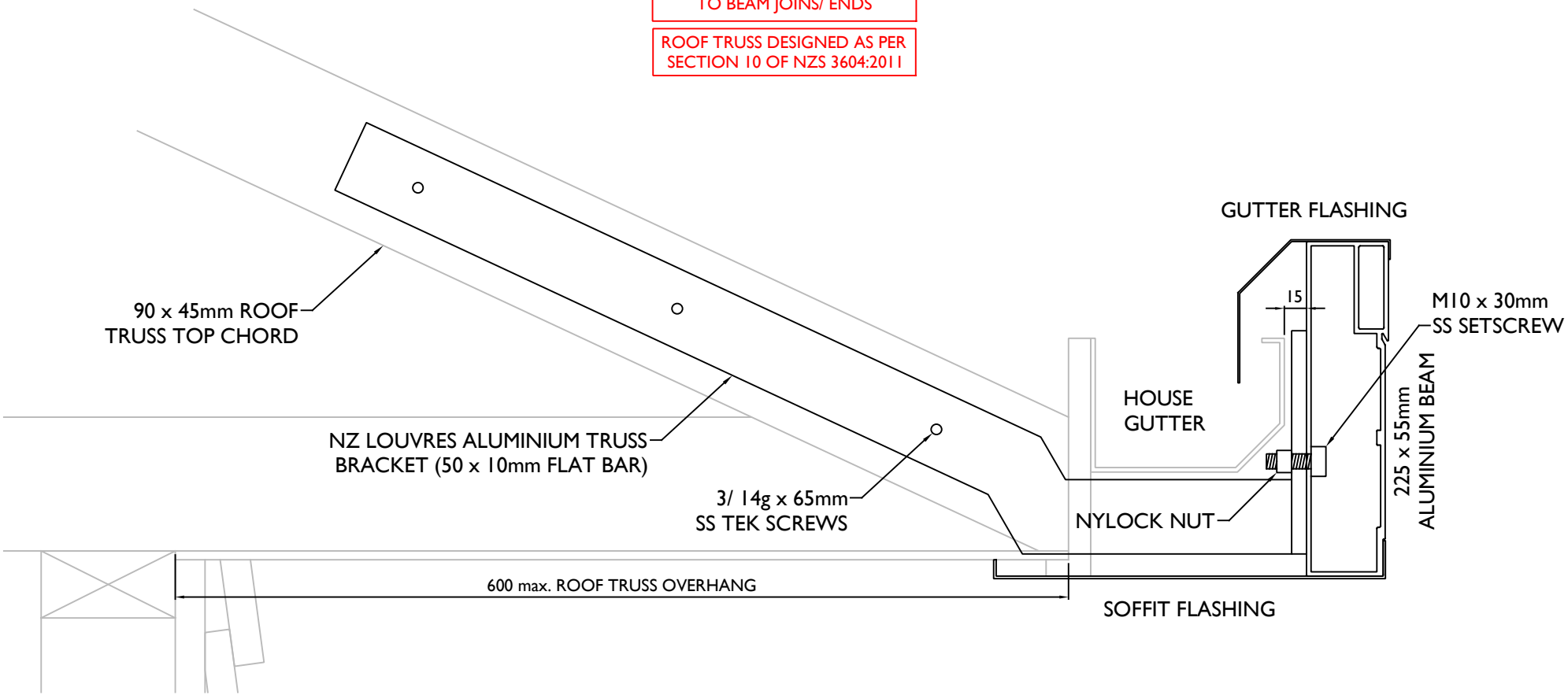
CLIENT	DRAWING TITLE: BEAM FIXING DIRECT FIX WEATHERBOARD	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: BF–DF/WB	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

BF-TB

900mm max. CENTRES BETWEEN TRUSS BRACKETS, 450mm max. TO BEAM JOINS/ ENDS

ROOF TRUSS DESIGNED AS PER SECTION 10 OF NZS 3604:2011



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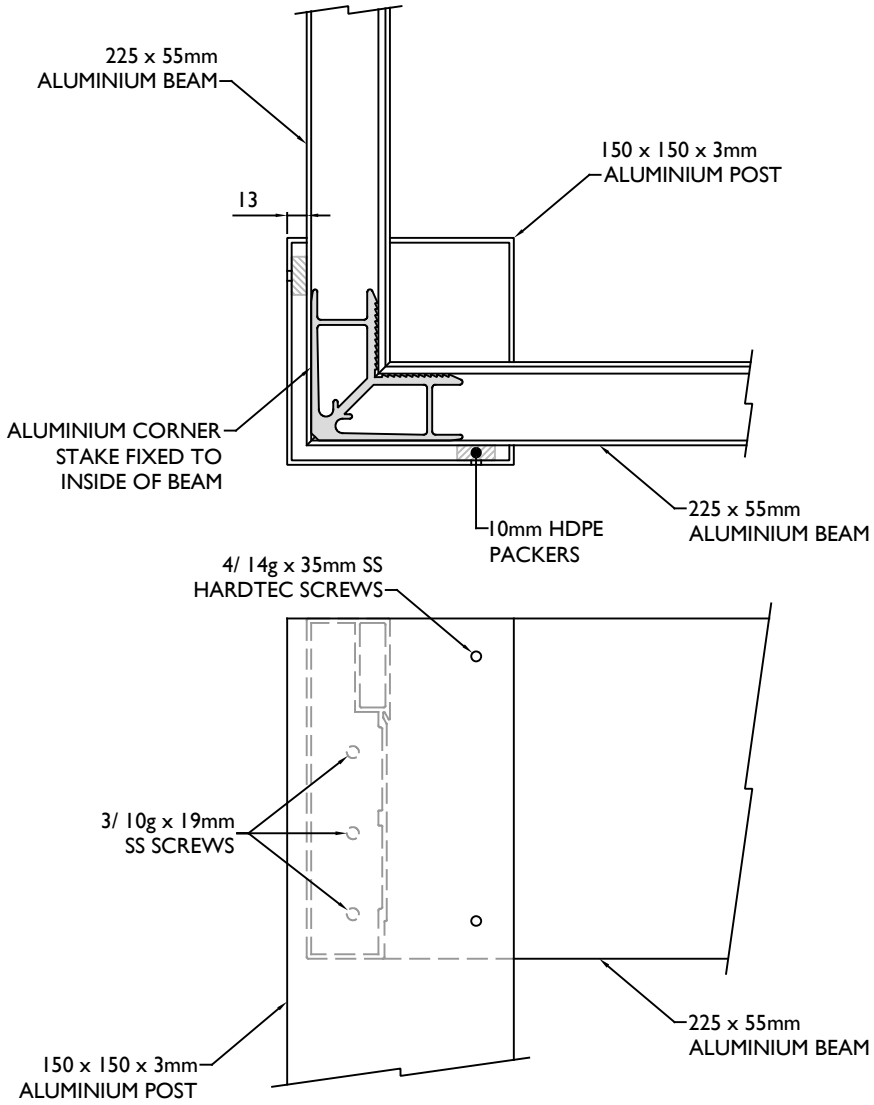
CLIENT	DRAWING TITLE: BEAM FIXING STANDARD TRUSS BRACKET	SCALE: 1:4 (A4)	ISSUE: B
	DRAWING REF: BF–TB	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PC-CNR



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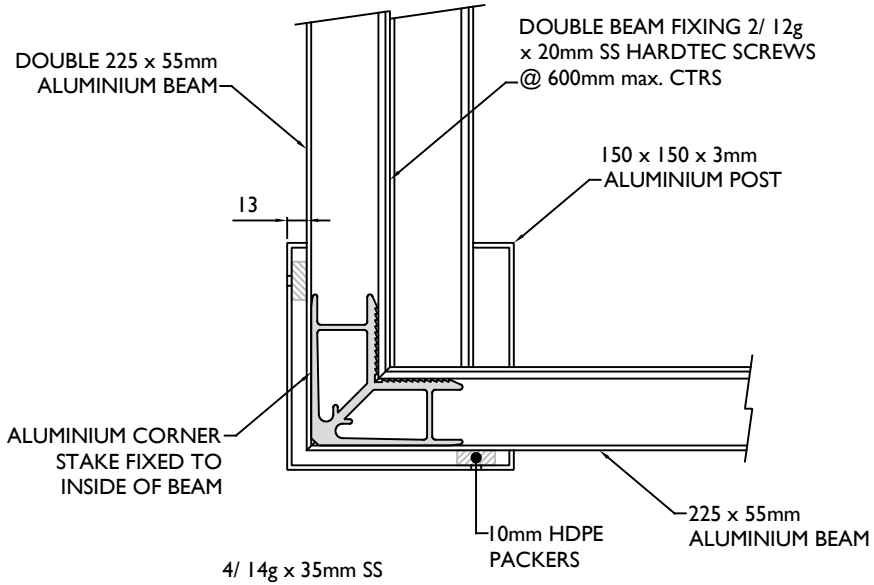
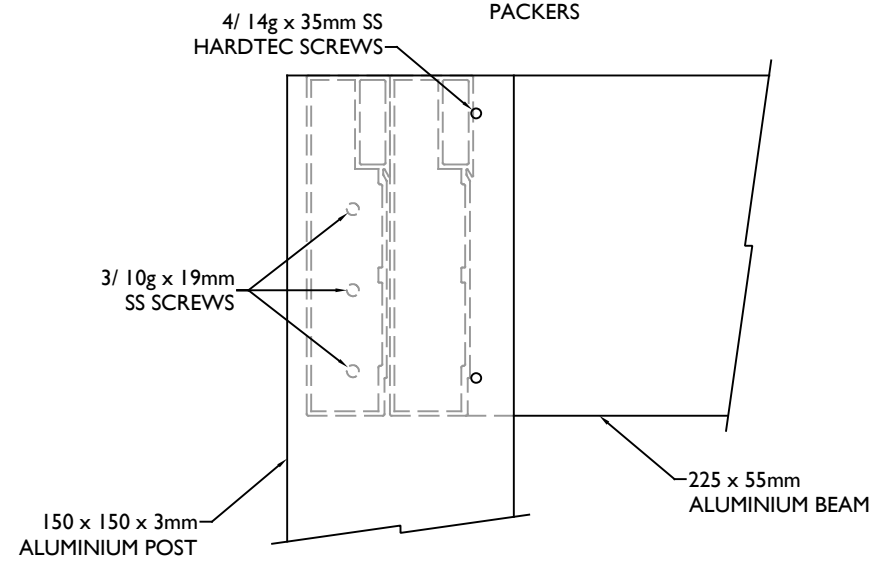
CLIENT	DRAWING TITLE: POST TOP CONNECTION CORNER FIXING	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: PC–CNR	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

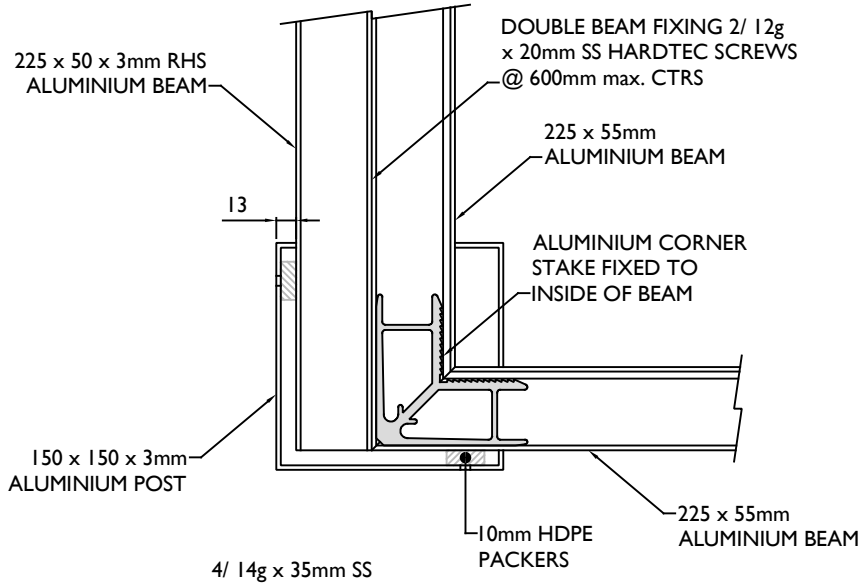
Latest revision date: 19/08/2022

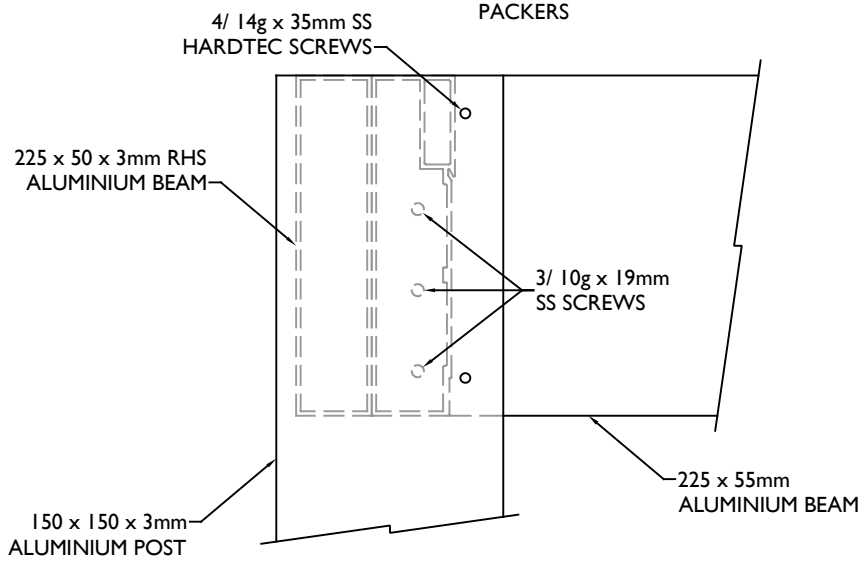
PC-CNR/INT





PC-CNR/EXT





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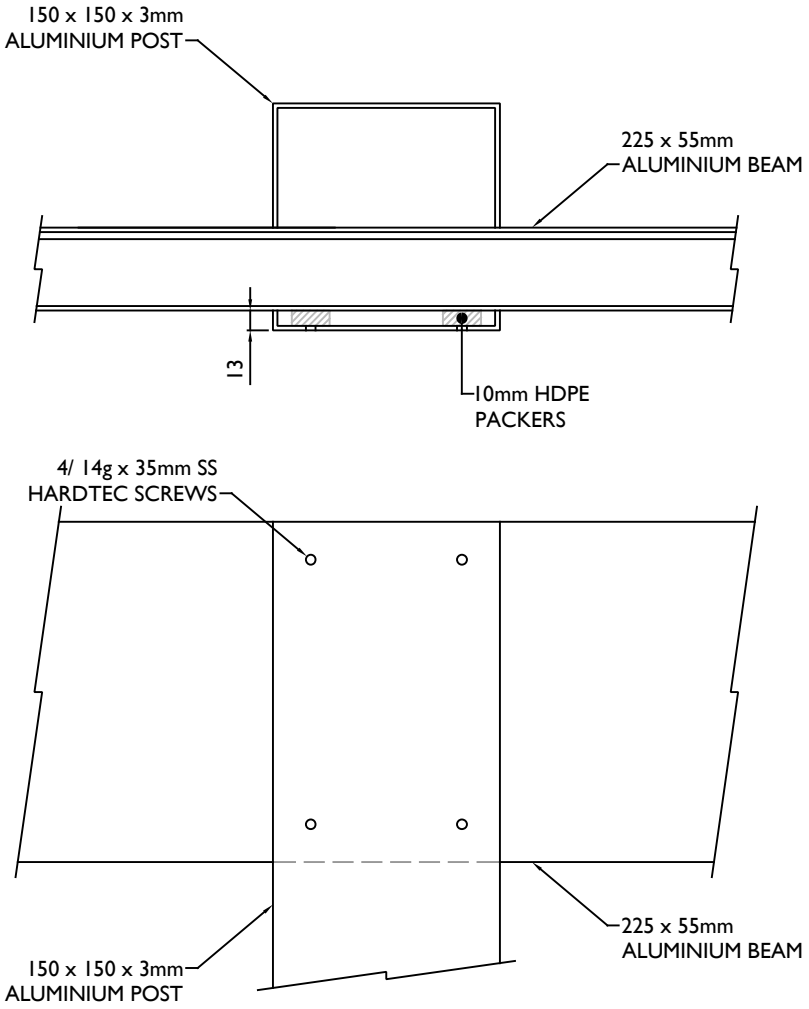
CLIENT	DRAWING TITLE: POST TOP CONNECTION CORNER INT/ EXT DOUBLE BEAM	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: PC–CNR/INT EXT	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PC-SDF



NZ LOUVRES™
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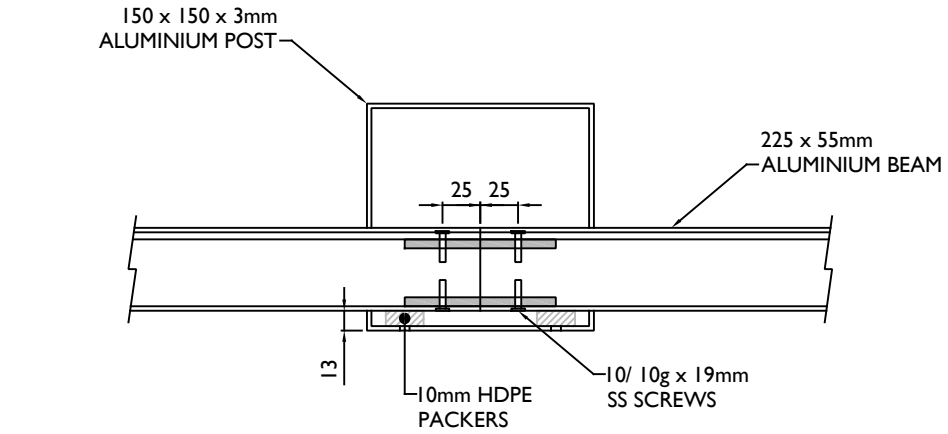
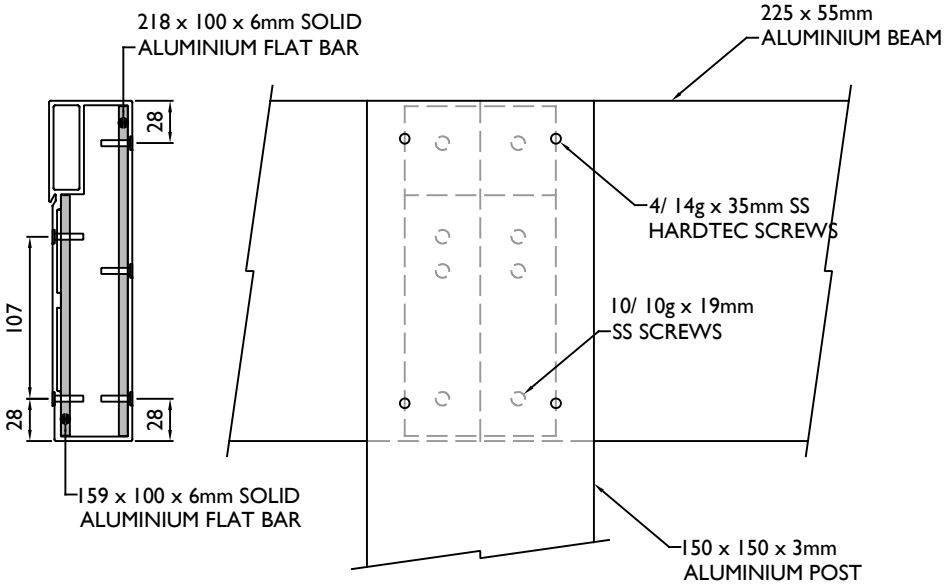
CLIENT	DRAWING TITLE: POST TOP CONNECTION SIDE FIXING	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: PC–SDF	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PC-SDF/BJ/STR





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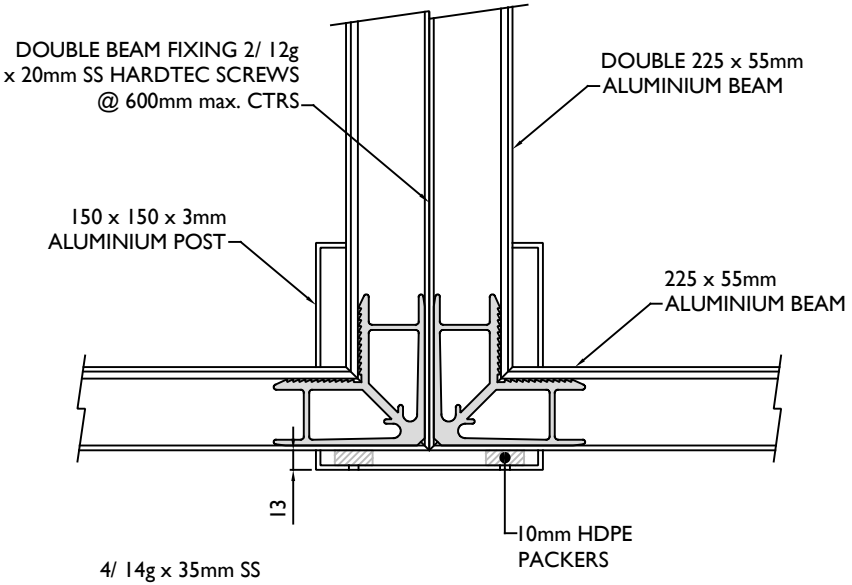
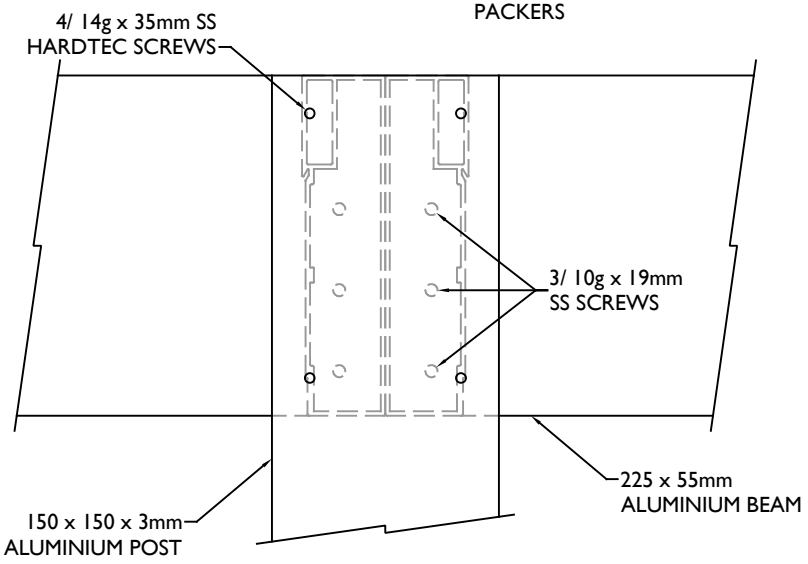
CLIENT	DRAWING TITLE: POST TOP CONNECTION SIDE FIXING BUTT–JOIN STRAIGHT	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: PC–SDF/BJ/STR	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022

PC-SDF/DBL





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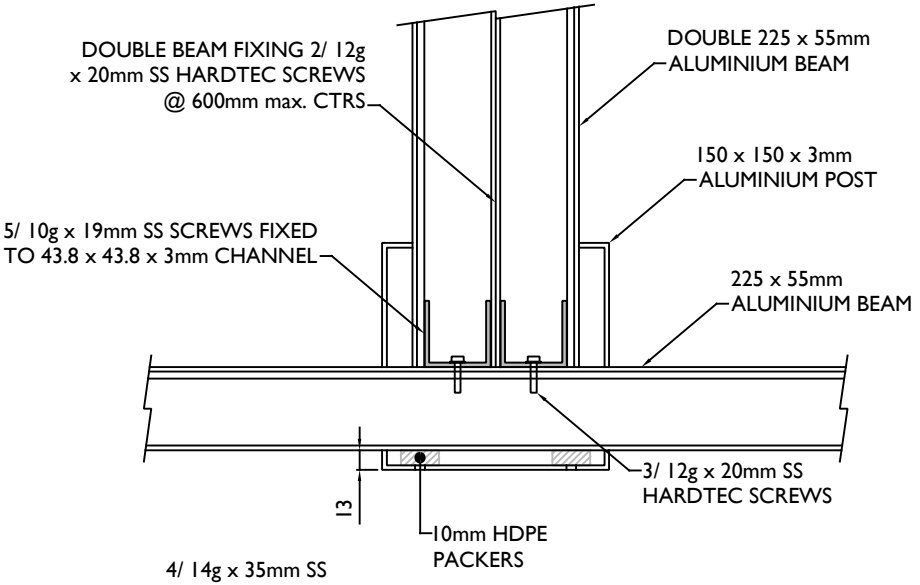

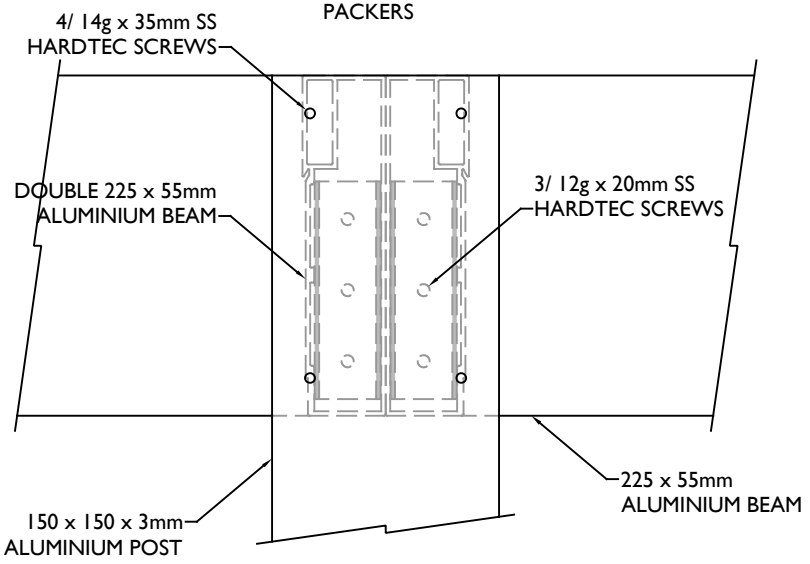

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CLIENT	DRAWING TITLE: POST TOP CONNECTION SIDE FIXING DOUBLE BEAM	SCALE: 1:5 (A4)	ISSUE: B
	DRAWING REF: PC–SDF/DBL	DATE: 01.07.2022	DRAWN BY: P.D
PROJECT NO.			FRAME / BLADE COLOUR

Latest revision date: 19/08/2022