



NZBC Clause B1 Structure - Design

Seismic Restraint of Non-Structural Building Elements

Project number: 16121905

Company name: Insol Ltd

Date: 21 July 2023

Location: All Regions within NZ (Excluding Alpine Regions and Lee Zones)

Victoria Park Market, Unit 72B, 210 Victoria Street,
Auckland 1010, New Zealand.

p: +64 9 216 7104
e: info@teambrevity.com



Building Code Clause(s) B1

PRODUCER STATEMENT – PS1 – DESIGN

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

ISSUED BY: BVT Consulting Ltd
(Design Firm)

TO: Insol Ltd
(Owner/Developer)

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

IN RESPECT OF: Structural Design of Aluminum Louvre Canopy as outlined in BVT report # 16121905
(Description of Building Work)

AT: All locations within New Zealand - Excluding Alpine Regions and Lee Zones, See attached report
(Address)

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

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

.....
(Extent of Engagement)

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

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

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

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

Alternative solution as per the attached schedule

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

Insol - Opening roof support structure and numbered 16121905 - Sheets 1-11
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions see attached report #16121905
- (ii) All proprietary products meeting their performance specification requirements;

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


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

I, Matthew Bishop am: CPEng 243276 # Reg Arch #
(Name of Design Professional)

I am a Member of: IPENZ NZIA and hold the following qualifications: BE (Hons)

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ:

SIGNED BY: Matthew Bishop (Signature) 
(Name of Design Professional)

ON BEHALF OF BVT Consulting Ltd Date: 21.07.23
(Design Firm)

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

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.
THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, IPENZ AND NZIA

1. Overview

This report is a detailed document defining the structure's design criteria and recording key decisions or outcomes. It outlines design loading, structural modelling assumptions, material properties, foundation requirements and design standards. This report also defines the calculation procedure and checking principles to be followed, providing a clear explanation of the full design.

2. Means of Compliance

2.1 B1 Compliance

The design of the structures are in compliance with the New Zealand Building Code (NZBC), section B1. The following standards have been used:

- AS/NZS 1170: 2001
- AS 1664.1: 1997
- NZS 3603: 1993
- NZS 3604: 2011

2.2 B2 Compliance

We are not able to provide B2 compliance because there is no effective verification method for B2 contained within the Building Code.

However, as per the agreement noted in ACENZ Advisor May-July 2016 - Subsection: Producer Statements we can confirm that for the structural elements shown in our documentation:

Design Life

Structures have a design life of 25 years.

Aluminium

All aluminium is to be 6060 alloy with a T5 temper.

Connections

All fasteners are aluminium or stainless steel of 304 or 316 grade. Where aluminium is fixed to steel, packers will be used between the aluminium and steel connections to prevent corrosion. Bituminous protective coating is used between any connection between raw aluminium and concrete.

Timber

Timber treatment has been selected in accordance with Table 1A of B2/AS1.

Concrete

Concrete covers have been selected in accordance with NZS 3101 - Part 1 - Section 3.

Mild Steel

All mild steel is to be fully galvanised in accordance with the "Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings" AS/NZS 2312: 2014. We note that this is on a time to first maintenance basis.

3. The Structure General

The structure has been assessed under the loading requirements of AS/NZS 1170:2001.

The structure is an opening canopy roof consisting of proprietary Louvres either: AU-OR-LVR, SLRS-OR-LVR or SLRS-OR-LVR Louvres fixed to a support assembly comprised of Aluminium RHS Beams and 100 x 100 x 3 SHS posts. The support posts shall be anchored to a concrete foundation as per drawing #16121905-02 or structure designed by others with sufficient capacity to withstand the canopy roof loads.

Fixing details, permissible member sections, spans and materials have been outlined on the attached drawings #16121905 sheets 1-11

The design life of the structure is 25 years.

4. Location

The structure may be located anywhere within New Zealand with two exceptions:

1. The structure may not be located in a wind zone classified as a Lee Zone.
2. The structure may not be located in an Alpine region, Alpine regions are defined as 1200m and 900m above sea level in the North and South Islands respectively.

Any Structure located in areas outlined above will require specific engineering design.

5. Design Actions

5.1 Load Cases

LC1: 1.2G + Wu (Downforce)

LC2: 0.9G - Wu (Uplift)

LC3: 1.2G + Su

5.2 Wind Actions

Wind Zones: Low - Extra High as per table 1.

Table 1 - Design Wind Speeds

Wind Region	Design Wind Speed, V_{des} (m/s)
Low	32
Medium	37
High	44
Very High	50
Extra High	55

5.3 Snow Actions

Snow Region: N1-N5

Classification: Sub Alpine

Shape factor: 0.7

6. Specifications

All standards stated are the latest versions available at the time of design:

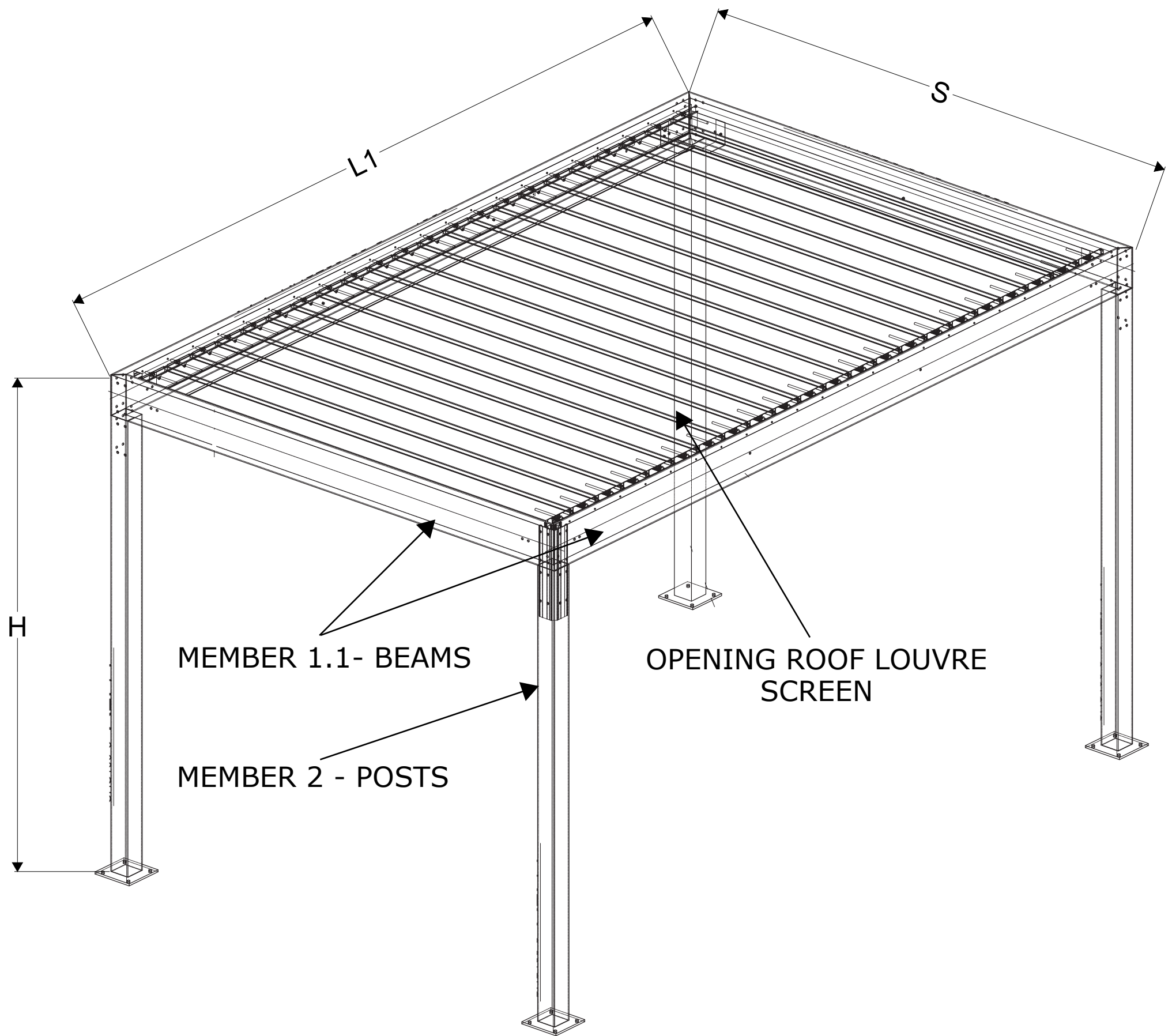
- All workmanship to comply with with NZS 3404.1, AS/NZS 1665, AS/NZS 1554
- All cold formed steel sections to AS/NZS 1163 - G350
- All hot rolled steel plate to AS/NZS 3678 - G250
- All aluminium alloy sections to AS/NZS 1866

7. Proprietary Items

The following proprietary items have been specified as part of this project:

- 10G S/S Self Tapping Tek Screws
- 12G S/S Self Tapping Tek Screws
- RAMSET M10 Dynabolts
- 10G Wood Screws
- 12G Wood Screws
- M6 Machine Screws
- M8 Coach Screws

Appendix A - Supporting Documentation



MEMBER 1.1- BEAMS

MEMBER 2 - POSTS

OPENING ROOF LOUVRE SCREEN

H

L1

S

NOTES:
 1. PERMISSIBLE MEMBER 1.1 SECTIONS AND SPANS ARE OUTLINED IN TABLES 1A - 1F ON SHEETS 2-3.
 2. PERMISSIBLE MEMBER 2 AND 3 SECTIONS AND SPANS ARE OUTLINED IN TABLES 3 - 4 ON SHEET 7.
 3. ALL SECTIONS ARE TO BE ALUMINIUM 6063 T5 OR EQUIVALENT

DESIGNER:



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 492 Moorhouse Ave
 Christchurch
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 www.bvt.co.nz

Tolerances (unless specified)	1-100	<1000	>1000
	± 2	± 10	± 70



Rev	Description
D	FOR CONSENT

Designed	BVT CONSULTING LTD	15/12/16
Drawn	BVT CONSULTING LTD	15/12/16
Approved	BVT CONSULTING LTD	04/05/17

INSOL
 OPENING ROOF SUPPORT STRUCTURE - SINGLE UNIT
 GENERAL ASSEMBLY

Scale
 Do not Scale

NOTES:

1. TO USE THE SPANS OUTLINED IN TABLES 1-4 THE OPENING ROOF MUST BE LOCATED IN BOTH ONE OF THE SPECIFIED WIND ZONES AND SNOW REGIONS. IF FOR EXAMPLE THE STRUCTURE IS LOCATED AT 300m ABOVE SEA LEVEL IN THE SOUTH ISLAND AND IN A LOW WIND ZONE, DUE TO THE SNOW LOADING THE SPANS MUST BE TAKEN AS IF THE STRUCTURE WAS LOCATED IN A MEDIUM WIND ZONE.

2. THESE SPAN TABLES ARE ONLY VALID IF THE STRUCTURE IS LOCATED IN A SUB ALPINE ZONE. SUB ALPINE IS DEFINED AS BELOW 1200m & 900m ABOVE SEA LEVEL (ASL) IN THE NORTH AND SOUTH ISLANDS RESPECTIVELY. ANY LOCATIONS ABOVE THIS ARE CONSIDERED ALPINE AND SPECIFIC ENGINEERING IS REQUIRED.

3. THE MAXIMUM SOLARIS XL LOUVRE SPANS REFERRED TO IN TABLES 1A - 1F ARE GIVEN IN TABLE 3 ON SHEET 4.

TABLE 1A 200x50x3 RHS BEAM - PERMISSIBLE LENGTH, L (m)										
WIND ZONE & SUB ALPINE SNOW REGION		LOUVRE SPAN, S (m)								
		1	1.5	2	2.5	3	3.5	4	4.5	5
LOW &	NORTH ISLAND < 400m ABOVE SEA LEVEL	5.3	4.8	4.4	4.2	4.0	3.9	3.7	3.6	3.5
MEDIUM &	ALL OF NZ < 400m ABOVE SEA LEVEL	4.9	4.4	4.1	3.9	3.7	3.5	3.4	3.3	3.2
HIGH &	ALL OF NZ < 800m ABOVE SEA LEVEL	4.4	4.0	3.7	3.5	3.3	3.2	3.1	3.0	2.9
VERY HIGH &	ALL OF NZ	4.1	3.7	3.5	3.3	3.1	3.0	2.9	2.8	Unsafe
EXTRA HIGH &	ALL OF NZ	3.9	3.6	3.3	3.1	3.0	2.9	2.8	2.7	Unsafe

TABLE 1B 250x50x3 RHS BEAM - PERMISSIBLE LENGTH, L (m)										
WIND ZONE & SUB ALPINE SNOW REGION		LOUVRE SPAN, S (m)								
		1	1.5	2	2.5	3	3.5	4	4.5	5
LOW &	NORTH ISLAND < 400m ABOVE SEA LEVEL	5.8	5.3	4.9	4.6	4.4	4.2	4.1	4.0	3.9
MEDIUM &	ALL OF NZ < 400m ABOVE SEA LEVEL	5.4	4.8	4.5	4.3	4.1	3.9	3.8	3.7	3.6
HIGH &	ALL OF NZ < 800m ABOVE SEA LEVEL	4.9	4.4	4.1	3.9	3.7	3.5	3.4	3.3	3.2
VERY HIGH &	ALL OF NZ	4.5	4.1	3.8	3.6	3.4	3.3	3.2	3.1	Unsafe
EXTRA HIGH &	ALL OF NZ	4.3	3.9	3.6	3.4	3.3	3.1	3.0	2.9	Unsafe

TABLE 1C 300x50x3.5 RHS BEAM - PERMISSIBLE LENGTH, L (m)										
WIND ZONE & SUB ALPINE SNOW REGION		LOUVRE SPAN, S (m)								
		1	1.5	2	2.5	3	3.5	4	4.5	5
LOW &	NORTH ISLAND < 400m ABOVE SEA LEVEL	6.0	5.9	5.4	5.1	4.9	4.7	4.6	4.4	4.3
MEDIUM &	ALL OF NZ < 400m ABOVE SEA LEVEL	6.0	5.4	5.0	4.7	4.5	4.3	4.2	4.1	4
HIGH &	ALL OF NZ < 800m ABOVE SEA LEVEL	5.4	4.9	4.6	4.3	4.1	3.9	3.8	3.7	3.6
VERY HIGH &	ALL OF NZ	5.1	4.6	4.2	4.0	3.8	3.7	3.6	3.5	Unsafe
EXTRA HIGH &	ALL OF NZ	4.8	4.3	4.0	3.8	3.6	3.5	3.4	3.3	Unsafe

DESIGNER:



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Approved	BVT CONSULTING LTD	04/05/17

INSOL
 OPENING ROOF
 MEMBER 1.1 SPAN TABLES

Scale
 Do not Scale

NOTES:

1. TO USE THE SPANS OUTLINED IN TABLES 1-4 THE OPENING ROOF MUST BE LOCATED IN BOTH ONE OF THE SPECIFIED WIND ZONES AND SNOW REGIONS. IF FOR EXAMPLE THE STRUCTURE IS LOCATED AT 300m ABOVE SEA LEVEL IN THE SOUTH ISLAND AND IN A LOW WIND ZONE, DUE TO THE SNOW LOADING THE SPANS MUST BE TAKEN AS IF THE STRUCTURE WAS LOCATED IN A MEDIUM WIND ZONE.

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3. THE MAXIMUM SOLARIS XL LOUVRE SPANS REFERRED TO IN TABLES 1A - 1F ARE GIVEN IN TABLE 3 ON SHEET 4.

TABLE 1D 2/200x50x3 RHS BEAM - PERMISSIBLE LENGTH, L (m)										
WIND ZONE & SUB ALPINE SNOW REGION		LOUVRE SPAN, S (m)								
		1	1.5	2	2.5	3	3.5	4	4.5	5
LOW &	NORTH ISLAND < 400m ABOVE SEA LEVEL	6.0	6.0	6.0	6.0	5.9	5.7	5.5	5.3	5.2
MEDIUM &	ALL OF NZ < 400m ABOVE SEA LEVEL	6.0	6.0	6.0	5.7	5.4	5.2	5.0	4.9	4.8
HIGH &	ALL OF NZ < 800m ABOVE SEA LEVEL	6.0	5.9	5.4	5.1	4.9	4.7	4.6	4.4	4.3
VERY HIGH &	ALL OF NZ	6.0	5.5	5.1	4.8	4.6	4.4	4.3	4.1	Unsafe
EXTRA HIGH &	ALL OF NZ	5.8	5.2	4.8	4.6	4.4	4.2	4.0	3.9	Unsafe

TABLE 1E 2/250x50x3 RHS BEAM - PERMISSIBLE LENGTH, L (m)										
WIND ZONE & SUB ALPINE SNOW REGION		LOUVRE SPAN, S (m)								
		1	1.5	2	2.5	3	3.5	4	4.5	5
LOW &	NORTH ISLAND < 400m ABOVE SEA LEVEL	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.9	5.7
MEDIUM &	ALL OF NZ < 400m ABOVE SEA LEVEL	6.0	6.0	6.0	6.0	6.0	5.7	5.5	5.4	5.2
HIGH &	ALL OF NZ < 800m ABOVE SEA LEVEL	6.0	6.0	6.0	5.7	5.4	5.2	5.0	4.9	4.8
VERY HIGH &	ALL OF NZ	6.0	6.0	5.6	5.3	5.1	4.9	4.7	4.6	Unsafe
EXTRA HIGH &	ALL OF NZ	6.0	5.7	5.3	5.0	4.8	4.6	4.5	4.3	Unsafe

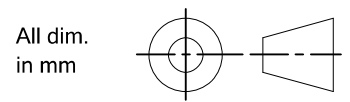
TABLE 1F 2/300x50x3.5 RHS BEAM - PERMISSIBLE LENGTH, L (m)										
WIND ZONE & SUB ALPINE SNOW REGION		LOUVRE SPAN, S (m)								
		1	1.5	2	2.5	3	3.5	4	4.5	5
LOW &	NORTH ISLAND < 400m ABOVE SEA LEVEL	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6
MEDIUM &	ALL OF NZ < 400m ABOVE SEA LEVEL	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.9
HIGH &	ALL OF NZ < 800m ABOVE SEA LEVEL	6.0	6.0	6.0	6.0	6.0	5.8	5.6	5.5	5.3
VERY HIGH &	ALL OF NZ	6.0	6.0	6.0	5.9	5.6	5.4	5.3	5.1	Unsafe
EXTRA HIGH &	ALL OF NZ	6.0	6.0	6.0	5.6	5.4	5.2	5.0	4.9	Unsafe

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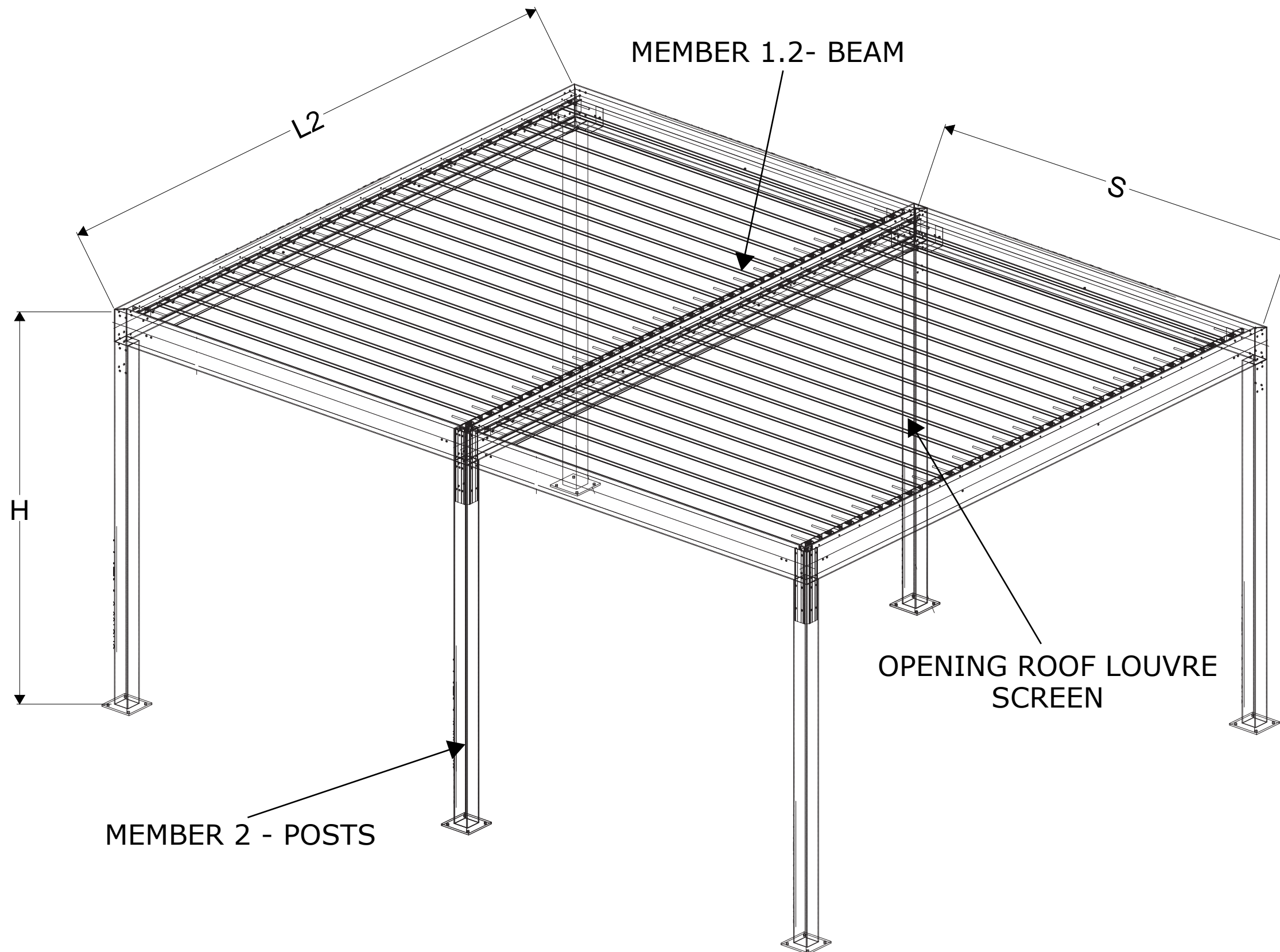


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Approved	BVT CONSULTING LTD	04/05/17

INSOL
 OPENING ROOF
 MEMBER 1.2 SPAN TABLES

Scale
 Do not Scale



NOTES:

1. PERMISSIBLE MEMBER 1.2 SECTIONS AND SPANS ARE OUTLINED IN TABLES 2A - 2F ON SHEETS 5-6.
2. PERMISSIBLE MEMBER 2 AND 3 SECTIONS AND SPANS ARE OUTLINED IN TABLES 3 - 4 ON SHEET 7.
3. ALL SECTIONS ARE TO BE ALUMINIUM 6063 T5 OR EQUIVALENT

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All dim. in mm

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INSOL
 OPENING ROOF SUPPORT
 STRUCTURE - MULTIPLE UNITS
 GENERAL ASSEMBLY

Scale: Do not Scale

NOTES:

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3. THE MAXIMUM SOLARIS XL LOUVRE SPANS REFERRED TO IN TABLES 1A - 1F ARE GIVEN IN TABLE 3 ON SHEET 4.

WIND ZONE & SUB ALPINE SNOW REGION	LOUVRE SPAN, S (m)								
	1	1.5	2	2.5	3	3.5	4	4.5	5
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	3.7	3.4	3.1	3.0	2.8	2.8	2.6	2.5	2.5
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	3.5	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.3
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	3.1	2.8	2.6	2.5	2.3	2.3	2.2	2.1	2.1
VERY HIGH & ALL OF NZ	2.9	2.6	2.5	2.3	2.2	2.1	2.1	2.0	Unsafe
EXTRA HIGH & ALL OF NZ	2.8	2.5	2.3	2.2	2.1	2.1	2.0	1.9	Unsafe

WIND ZONE & SUB ALPINE SNOW REGION	LOUVRE SPAN, S (m)								
	1	1.5	2	2.5	3	3.5	4	4.5	5
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	4.1	3.7	3.5	3.3	3.1	3.0	2.9	2.8	2.8
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	3.8	3.4	3.2	3.0	2.9	2.8	2.7	2.6	2.5
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	3.5	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.3
VERY HIGH & ALL OF NZ	3.2	2.9	2.7	2.5	2.4	2.3	2.3	2.2	Unsafe
EXTRA HIGH & ALL OF NZ	3.0	2.8	2.5	2.4	2.3	2.2	2.1	2.1	Unsafe

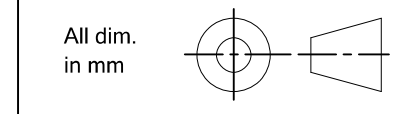
WIND ZONE & SUB ALPINE SNOW REGION	LOUVRE SPAN, S (m)								
	1	1.5	2	2.5	3	3.5	4	4.5	5
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	4.6	4.2	3.8	3.6	3.5	3.3	3.3	3.1	3.0
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	4.2	3.8	3.5	3.3	3.2	3.0	3.0	2.9	2.8
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	3.8	3.5	3.3	3.0	2.9	2.8	2.7	2.6	2.5
VERY HIGH & ALL OF NZ	3.6	3.3	3.0	2.8	2.7	2.6	2.5	2.5	Unsafe
EXTRA HIGH & ALL OF NZ	3.4	3.0	2.8	2.7	2.5	2.5	2.4	2.3	Unsafe

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INSOL
 OPENING ROOF
 MEMBER 1.2 SPAN TABLES

Scale
 Do not Scale

WIND ZONE & SUB ALPINE SNOW REGION	LOUVRE SPAN, S (m)								
	1	1.5	2	2.5	3	3.5	4	4.5	5
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	5.4	5.0	4.6	4.4	4.2	4.0	3.9	3.7	3.7
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	5.0	4.5	4.2	4.0	3.8	3.7	3.5	3.5	3.4
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	4.6	4.2	3.8	3.6	3.5	3.3	3.3	3.1	3.0
VERY HIGH & ALL OF NZ	4.3	3.9	3.6	3.4	3.3	3.1	3.0	2.9	Unsafe
EXTRA HIGH & ALL OF NZ	4.1	3.7	3.4	3.3	3.1	3.0	2.8	2.8	Unsafe

WIND ZONE & SUB ALPINE SNOW REGION	LOUVRE SPAN, S (m)								
	1	1.5	2	2.5	3	3.5	4	4.5	5
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	6.0	5.4	5.1	4.8	4.6	4.4	4.2	4.2	4.0
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	5.6	5.0	4.7	4.4	4.2	4.0	3.9	3.8	3.7
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	5.0	4.6	4.2	4.0	3.8	3.7	3.5	3.5	3.4
VERY HIGH & ALL OF NZ	4.7	4.2	4.0	3.7	3.6	3.5	3.3	3.3	Unsafe
EXTRA HIGH & ALL OF NZ	4.5	4.0	3.7	3.5	3.4	3.3	3.2	3.0	Unsafe

WIND ZONE & SUB ALPINE SNOW REGION	LOUVRE SPAN, S (m)								
	1	1.5	2	2.5	3	3.5	4	4.5	5
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	6.0	6.0	5.7	5.4	5.2	5.0	4.8	4.7	4.5
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	6.0	5.6	5.2	5.0	4.7	4.5	4.4	4.2	4.2
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	5.7	5.1	4.7	4.5	4.3	4.1	4.0	3.9	3.7
VERY HIGH & ALL OF NZ	5.3	4.7	4.5	4.2	4.0	3.8	3.7	3.6	Unsafe
EXTRA HIGH & ALL OF NZ	5.0	4.5	4.2	4.0	3.8	3.7	3.5	3.5	Unsafe

NOTES:
1. TO USE THE SPANS OUTLINED IN TABLES 1-4 THE OPENING ROOF MUST BE LOCATED IN BOTH ONE OF THE SPECIFIED WIND ZONES AND SNOW REGIONS. IF FOR EXAMPLE THE STRUCTURE IS LOCATED AT 300m ABOVE SEA LEVEL IN THE SOUTH ISLAND AND IN A LOW WIND ZONE, DUE TO THE SNOW LOADING THE SPANS MUST BE TAKEN AS IF THE STRUCTURE WAS LOCATED IN A MEDIUM WIND ZONE.

2. THESE SPAN TABLES ARE ONLY VALID IF THE STRUCTURE IS LOCATED IN A SUB ALPINE ZONE. SUB ALPINE IS DEFINED AS BELOW 1200m & 900m ABOVE SEA LEVEL (ASL) IN THE NORTH AND SOUTH ISLANDS RESPECTIVELY. ANY LOCATIONS ABOVE THIS ARE CONSIDERED ALPINE AND SPECIFIC ENGINEERING IS REQUIRED.

3. THE MAXIMUM SOLARIS XL LOUVRE SPANS REFERRED TO IN TABLES 1A - 1F ARE GIVEN IN TABLE 3 ON SHEET 4.

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INSOL
OPENING ROOF
MEMBER 1.2 SPAN TABLES

Scale
Do not Scale

DRG No.
16121905-01 SHEET 6 of 11

TABLE 3 100X3 SHS POST - PERMISSIBLE HEIGHT, H (m)		
WIND ZONE & SUB ALPINE SNOW REGION	COLUMN HEIGHT, H (m)	
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	3.0	
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	3.0	
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	3.0	
VERY HIGH & ALL OF NZ	3.0	
EXTRA HIGH & ALL OF NZ	3.0	

TABLE 4 LOUVRE - PERMISSIBLE SPAN, S (m)				
WIND ZONE & SUB ALPINE SNOW REGION	AURORA LOUVRE	SOLARIS LOUVRE	SOLARIS LOUVRE XL	
LOW & NORTH ISLAND < 400m ABOVE SEA LEVEL	3.5	4.0	5.0	
MEDIUM & ALL OF NZ < 400m ABOVE SEA LEVEL	3.5	4.0	4.9	
HIGH & ALL OF NZ < 800m ABOVE SEA LEVEL	3.5	4.0	4.8	
VERY HIGH & ALL OF NZ	3.3	3.8	4.5	
EXTRA HIGH & ALL OF NZ	3.3	3.8	4.5	

NOTES:

1. TO USE THE SPANS OUTLINED IN TABLES 1-3 THE OPENING ROOF MUST BE LOCATED IN BOTH ONE OF THE SPECIFIED WIND ZONES AND SNOW REGIONS. IF FOR EXAMPLE THE STRUCTURE IS LOCATED AT 300m ABOVE SEA LEVEL IN THE SOUTH ISLAND AND IN A LOW WIND ZONE, DUE TO THE SNOW LOADING THE SPANS MUST BE TAKEN AS IF THE STRUCTURE WAS LOCATED IN A MEDIUM WIND ZONE.

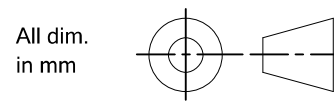
2. THESE SPAN TABLES ARE ONLY VALID IF THE STRUCTURE IS LOCATED IN A SUB ALPINE ZONE. SUB ALPINE IS DEFINED AS BELOW 1200m & 900m ABOVE SEA LEVEL (ASL) IN THE NORTH AND SOUTH ISLANDS RESPECTIVELY. ANY LOCATIONS ABOVE THIS ARE CONSIDERED ALPINE AND SPECIFIC ENGINEERING IS REQUIRED.

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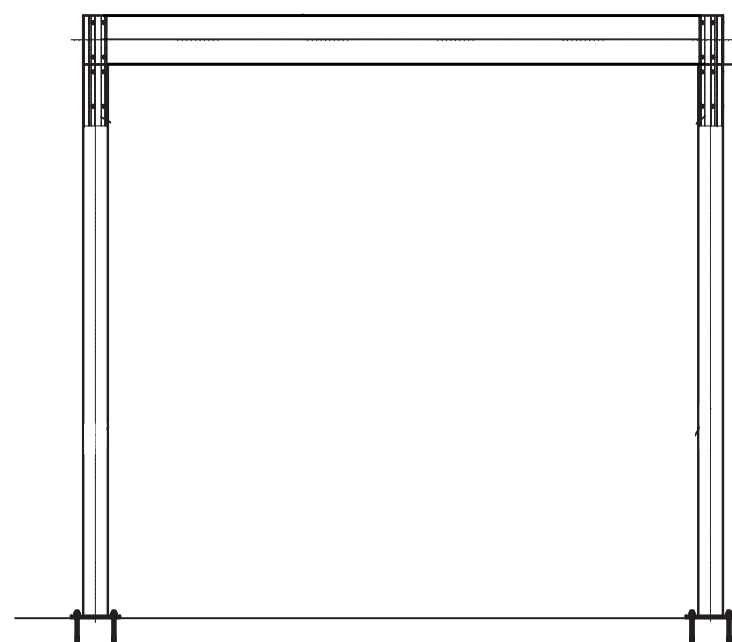


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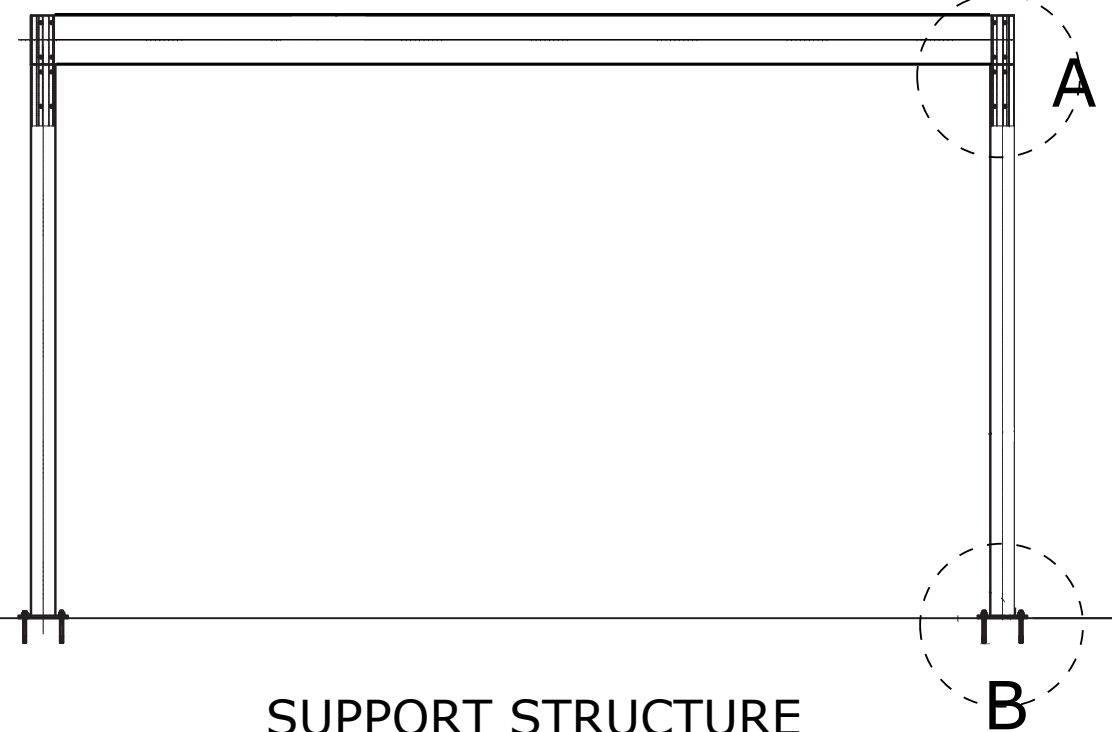
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INSOL
 OPENING ROOF
 MEMBER 3 AND LOUVRE SPAN
 TABLES

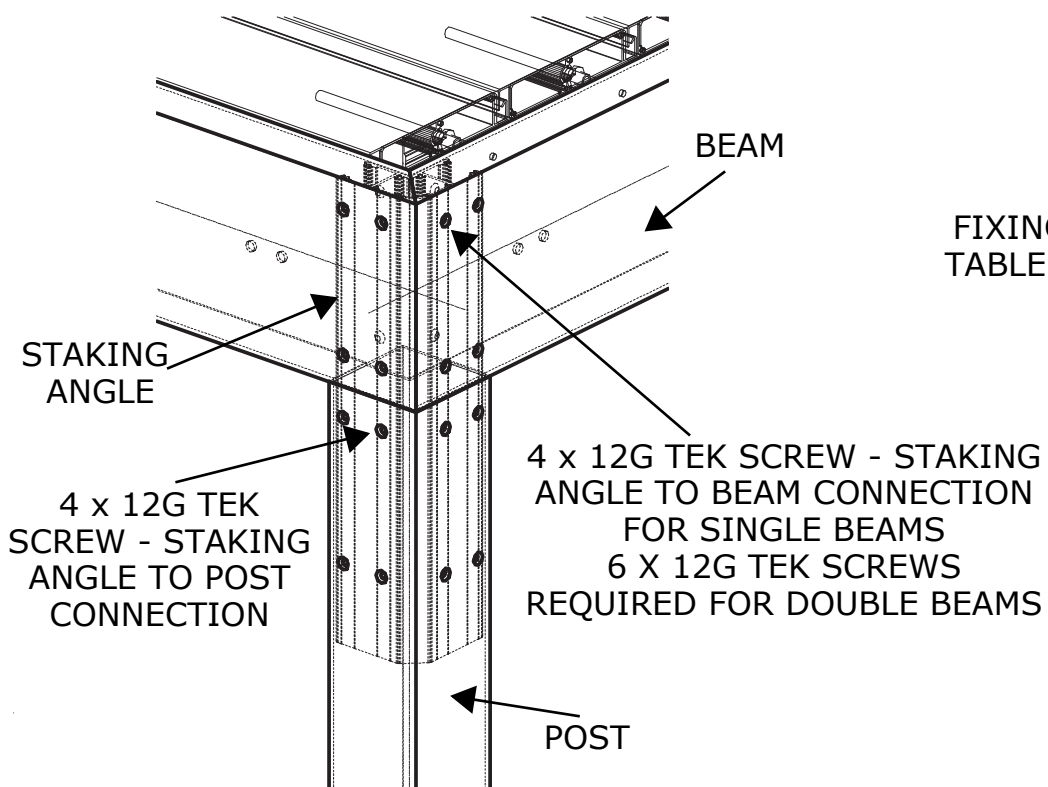
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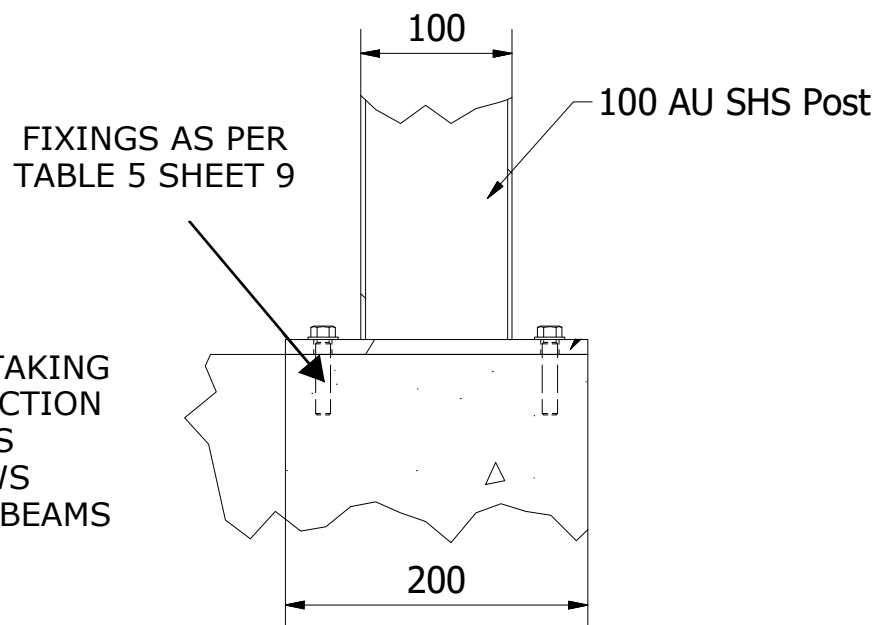
SUPPORT STRUCTURE
- END VIEW



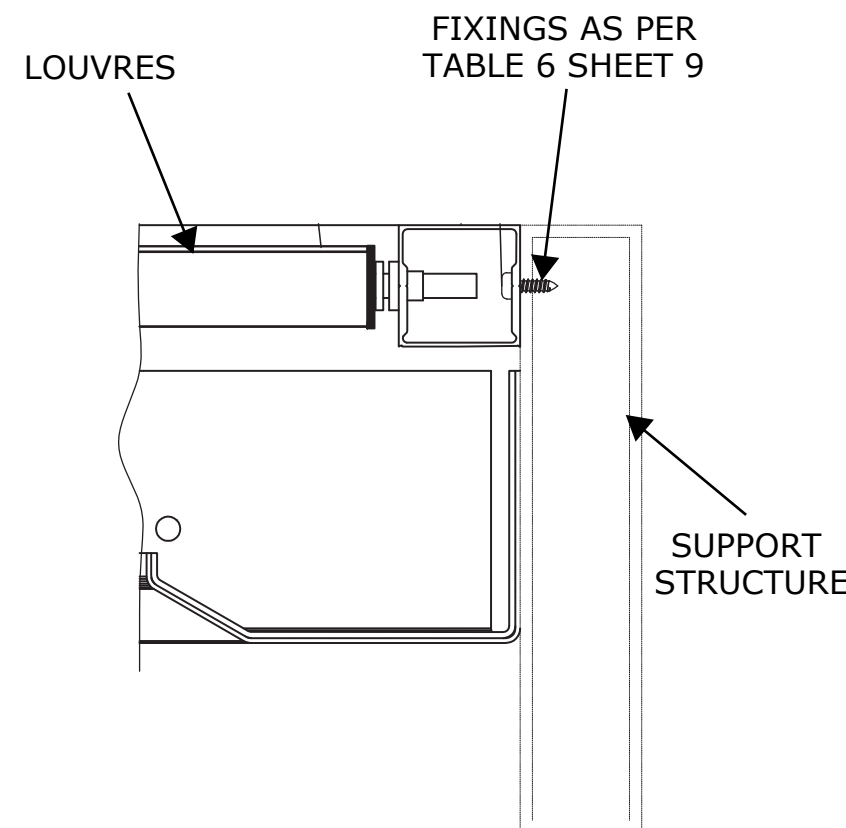
SUPPORT STRUCTURE
- SIDE VIEW



CONNECTION A -
POST TO BEAM



CONNECTION B -
POST FOOTING



CONNECTION C -
LOUVRE RAIL
TO STRUCTURE

- NOTES:
1. PERMISSIBLE MEMBER SECTIONS AND SPANS ARE OUTLINE IN TABLES 1-3 ON SHEETS 2-4.
 2. ALL SECTIONS ARE TO BE ALUMINIUM 6063 T5 OR EQUIVALENT
 3. ALL CONNECTIONS TYPES SPECIFIED MAY BE USED IN ANY WIND ZONE AND SNOW REGION

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INSOL
OPENING ROOF SUPPORT
STRUCTURE - CONNECTION
DETAILS

Scale Do not Scale

- NOTES:**
1. ALL CONNECTIONS TYPES SPECIFIED MAY BE USED IN ANY WIND ZONE AND SNOW REGION
 2. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 32MPa

TABLE 5 - CONNECTION B DETAILS	
FOOTING MATERIAL	REQUIRED ANCHORS
CONCRETE	4 x M10 DYNABOLTS 45mm EMBEDMENT
TIMBER	4 x M8 COACH SCREWS 80mm EMBEDMENT
STEEL	4 x 10G TEK SCREWS

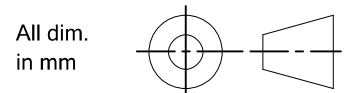
TABLE 6 - CONNECTION C DETAILS				
SUPPORT STRUCTURE TYPE	FIXING TYPE	WIND ZONE	FIXING CENTRES	
			LOUVRES UP TO 4000MM SPAN	LOUVRES BETWEEN 4000MM - 5000MM SPAN
TIMBER	S/S 12G X 50 WOOD SCREW	LOW / MEDIUM WIND ZONE	FIXINGS AT 350MM CENTRES	FIXINGS AT 175MM CENTRES
		HIGH / VERY HIGH / EXTRA HIGH WIND ZONE	FIXINGS AT 175MM CENTRES	FIXINGS AT 175MM CENTRES
BRICK VENEER	M8 RAWL PLUG & S/S 12G X 50 SELF-TAPPING SCREW	LOW / MEDIUM WIND ZONE	FIXINGS AT 350MM CENTRES	FIXINGS AT 175MM CENTRES
		HIGH / VERY HIGH / EXTRA HIGH WIND ZONE	FIXINGS AT 175MM CENTRES	FIXINGS AT 175MM CENTRES
CONCRETE	M8 RAWL PLUG & S/S 12G X 50 SELF-TAPPING SCREW	LOW / MEDIUM WIND ZONE	FIXINGS AT 350MM CENTRES	FIXINGS AT 175MM CENTRES
		HIGH / VERY HIGH / EXTRA HIGH WIND ZONE	FIXINGS AT 175MM CENTRES	FIXINGS AT 175MM CENTRES
STEEL UP TO 4MM THICK	S/S 12G X 25 SELF DRILLING SELF TAPPING SCREW	LOW / MEDIUM WIND ZONE	FIXINGS AT 350MM CENTRES	FIXINGS AT 175MM CENTRES
		HIGH / VERY HIGH / EXTRA HIGH WIND ZONE	FIXINGS AT 175MM CENTRES	FIXINGS AT 175MM CENTRES
STEEL OVER 4MM THICK	S/S M6 X 30 MACHINE SCREW	LOW / MEDIUM WIND ZONE	FIXINGS AT 350MM CENTRES	FIXINGS AT 175MM CENTRES
		HIGH / VERY HIGH / EXTRA HIGH WIND ZONE	FIXINGS AT 175MM CENTRES	FIXINGS AT 175MM CENTRES
ALUMINIUM	S/S 12G X 25 SELF DRILLING SELF TAPPING SCREW	LOW / MEDIUM WIND ZONE	FIXINGS AT 350MM CENTRES	FIXINGS AT 175MM CENTRES
		HIGH / VERY HIGH / EXTRA HIGH WIND ZONE	FIXINGS AT 175MM CENTRES	FIXINGS AT 175MM CENTRES

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 STRUCTURE - CONNECTION
 DETAILS

Scale
 Do not Scale

NOTES:
 1. ALL CONNECTIONS TYPES SPECIFIED
 MAY BE USED IN ANY WIND ZONE AND
 SNOW REGION

TABLE 7 - GUTTER CONNECTION DETAILS			
SUPPORT STRUCTURE TYPE	FIXING TYPE	FIXING FOR GUTTER CORNERS	FIXING CENTRES FOR GUTTERS
TIMBER	S/S 10G X 25 WOOD SCREW	2 X FIXINGS	1 X FIXING 100MM FROM EACH END AND AT 1500MM MAXIMUM CENTRES ALONG LENGTH
BRICK VENEER	RAWL PLUG & S/S 10G X 25 SELF-TAPPING SCREW	2 X FIXINGS	1 X FIXING 100MM FROM EACH END AND AT 1500MM MAXIMUM CENTRES ALONG LENGTH
CONCRETE	RAWL PLUG & S/S 10G X 25 SELF-TAPPING SCREW	2 X FIXINGS	1 X FIXING 100MM FROM EACH END AND AT 1500MM MAXIMUM CENTRES ALONG LENGTH
STEEL UP TO 4MM THICK	S/S 10G X 25 SELF DRILLING SELF TAPPING SCREW	2 X FIXINGS	1 X FIXING 100MM FROM EACH END AND AT 1500MM MAXIMUM CENTRES ALONG LENGTH
STEEL OVER 4MM THICK	S/S M6 X 30 MACHINE SCREW	2 X FIXINGS	1 X FIXING 100MM FROM EACH END AND AT 1500MM MAXIMUM CENTRES ALONG LENGTH
ALUMINIUM	S/S 10G X 25 SELF DRILLING SELF TAPPING SCREW	2 X FIXINGS	1 X FIXING 100MM FROM EACH END AND AT 1500MM MAXIMUM CENTRES ALONG LENGTH

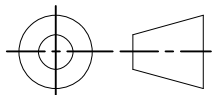
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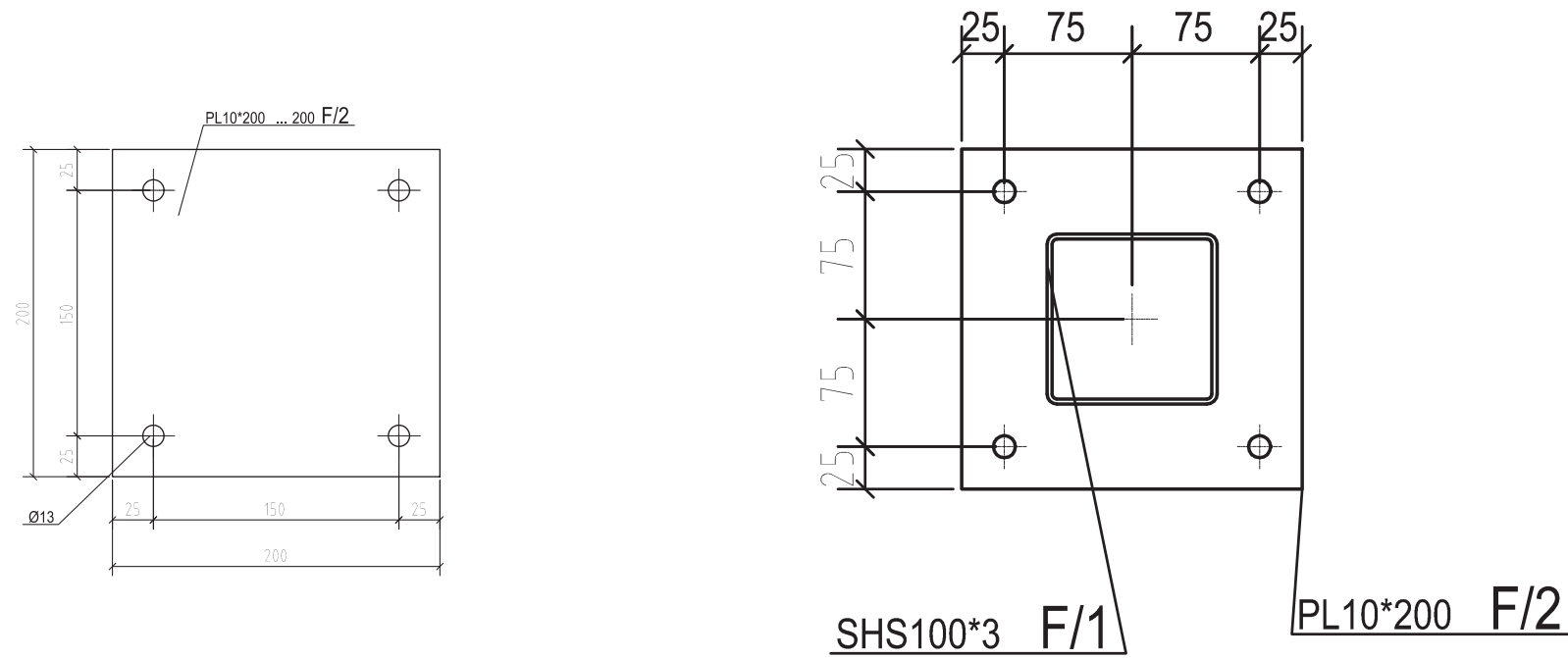
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 STRUCTURE - CONNECTION
 DETAILS

Scale
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DRG No.
 16121905-01 SHEET 10 of 11

NOTES:
 1. ALL SECTIONS ARE TO BE ALUMINIUM 6063 T5 OR EQUIVALENT



FOOTPLATE DETAILS

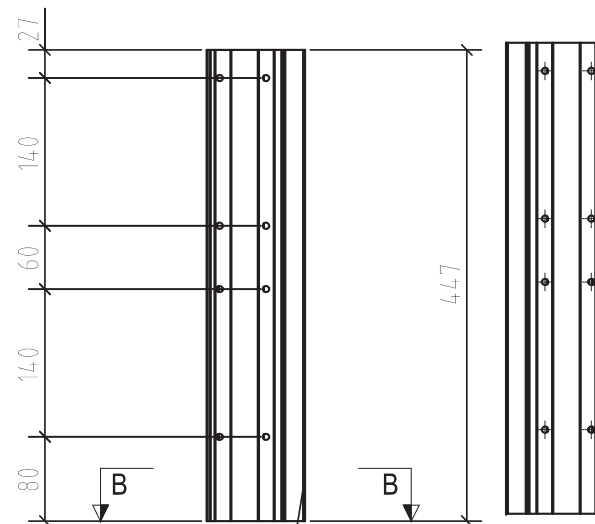
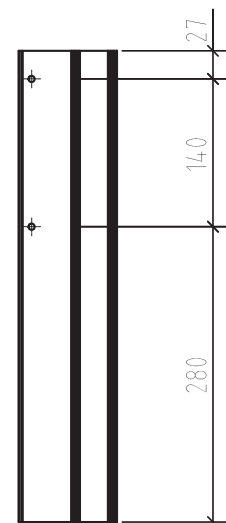
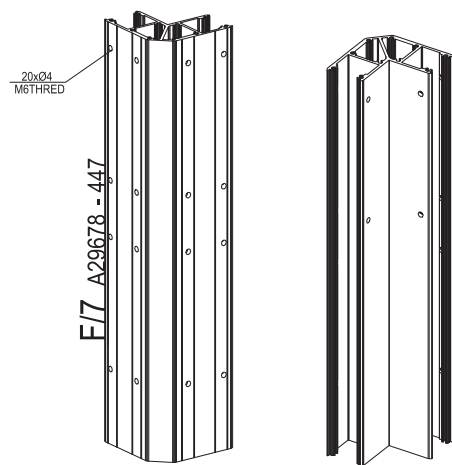
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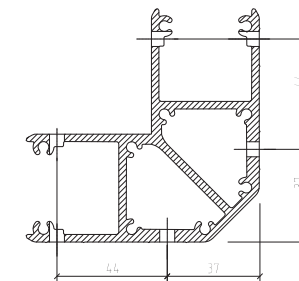
All dim. in mm



F/7 A29678 - 447
 INSOL EXTRUSION
 see drawing 614102



F/7 A29678 - 447
 INSOL EXTRUSION
 see drawing 614102



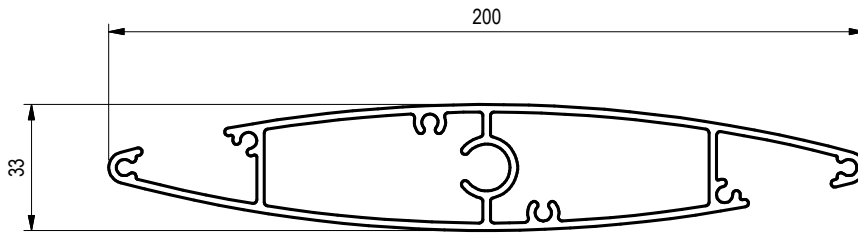
STAKING ANGLE DETAILS

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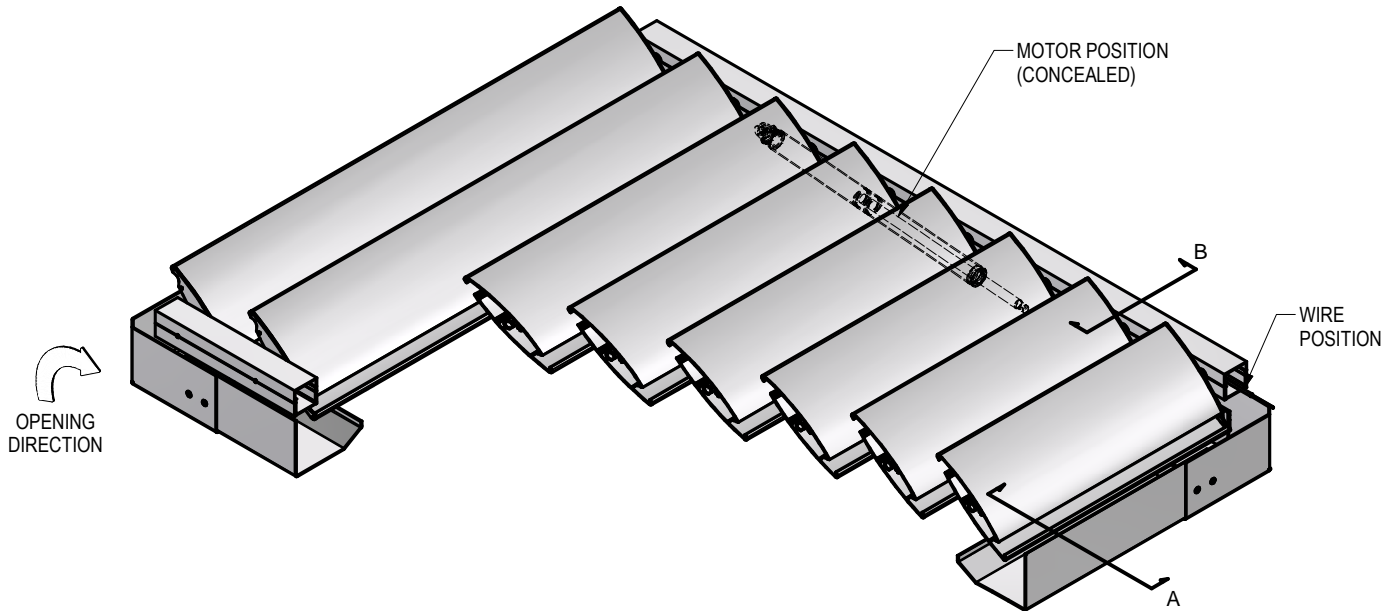
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 STRUCTURE - DETAILS

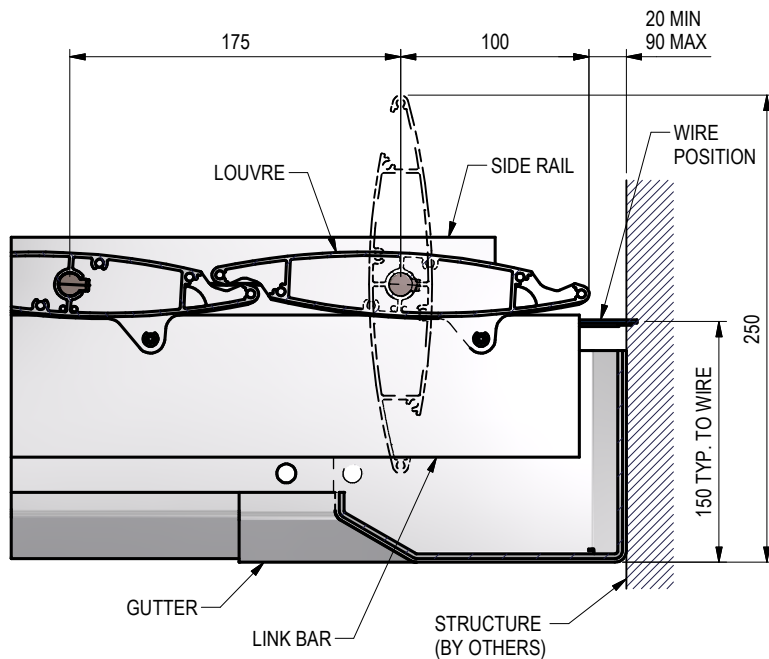
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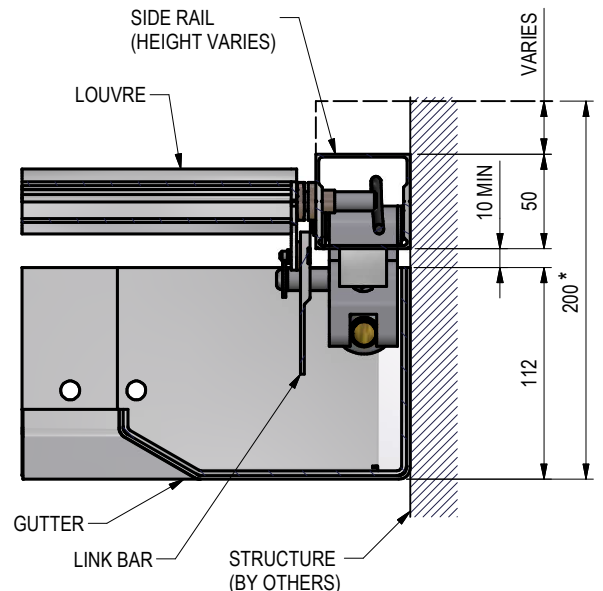
AU-OR-LVR - PROFILE



LOUVRE PANEL



DETAIL A



DETAIL B

* MINIMUM INSTALLATION DEPTH, ALLOW 200mm TO ACCOMMODATE FALLS

**AURORA™ OPENING ROOF
Technical Data Sheet**

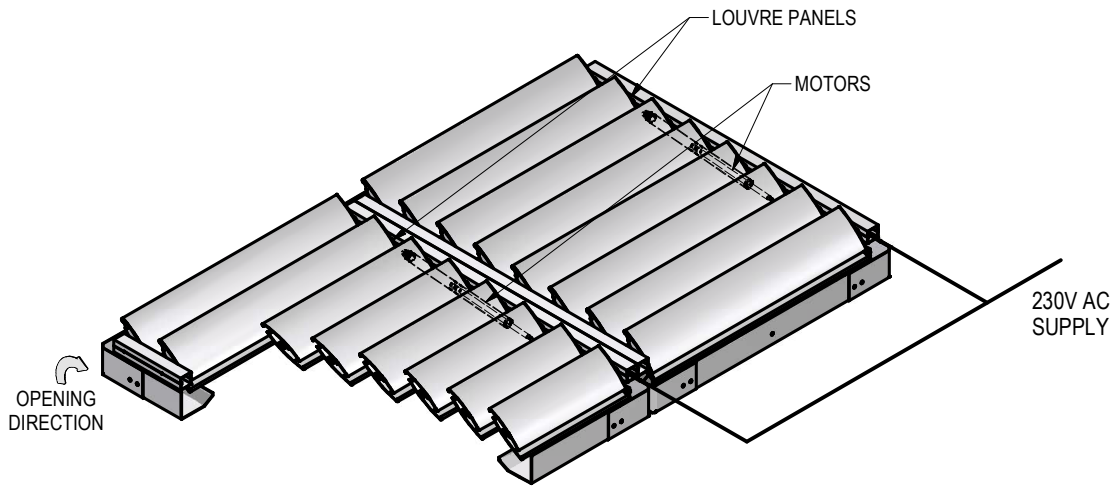


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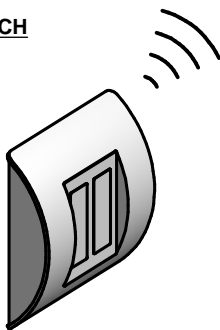
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Date: 24/04/2012
Page: 1 of 2

AU-OR-LVR Version 1

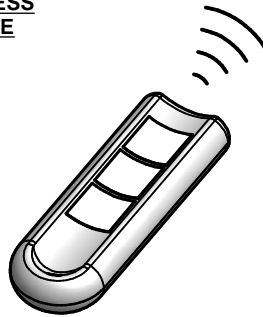
WIRING/CONTROL DIAGRAM



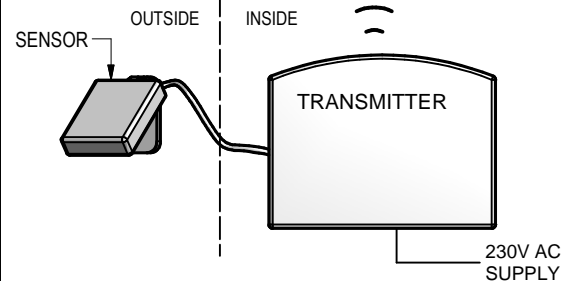
WIRELESS WALL SWITCH



WIRELESS REMOTE



WIRELESS RAIN SENSOR



Deflections/Spans for AU-OR-LVR

Wind Zone	Self Weight	Low	Medium	High	Very High	Extra High
m/s KPa	0.0 m/s 0.0 KPa	32 m/s 0.88 KPa	37 m/s 1.18 KPa	44 m/s 1.68 KPa	50 m/s 2.17 KPa	55 m/s 2.63 KPa
Service load kn/m	0.027	0.130	0.180	0.270	0.360	0.450
Span m	Numbers in cells are deflections in mm					
3.1	3.72	17.89	24.77	37.15	49.54	61.92
3.2	4.22	20.31	28.12	42.18	56.25	70.31
3.3	4.77	22.97	31.81	47.71	63.61	79.52
3.4	5.38	25.88	35.84	53.76	71.68	89.60
3.5	6.04	29.07	40.25	60.37	80.49	100.62
3.6	6.76	32.53	45.05	67.57	90.09	112.62
KEY:	Light Grey shading = Acceptable span		Dark Grey shading = Over recommended span		Black shading = Unsafe	

*Over Recommended Max Span' is the point at which Insol considers the deflection as 'unsightly'

*Deflection values assume operable louvres in the closed position (therefore no porosity factor)

*Deflection values assume simple support and do not take into account the integrity of any fixing.

*Deflection values assume a horizontal louvre (not tilted)

*Please contact Insol if your scenario is : Above 10m height, or is in a specific design location

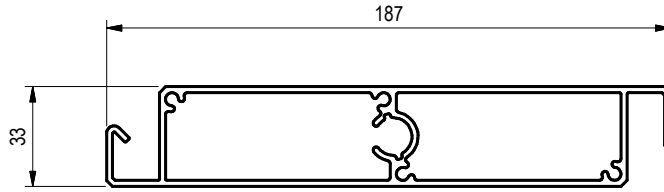
**AURORA™ OPENING ROOF
Technical Data Sheet**



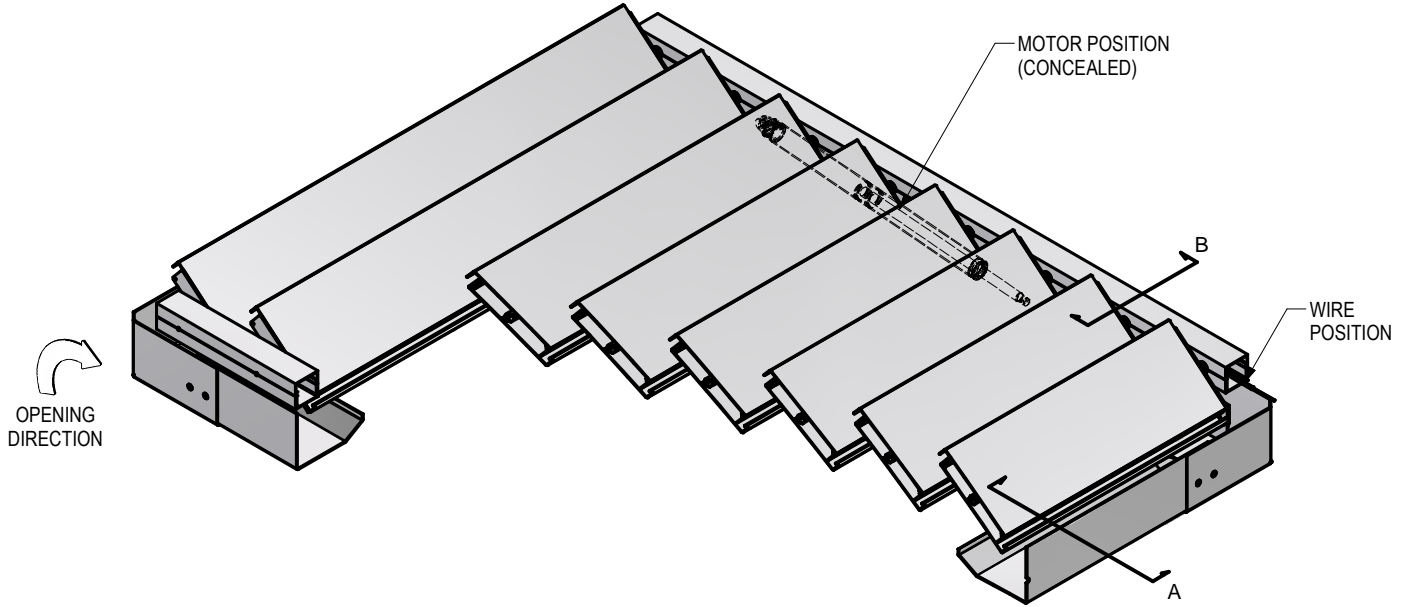
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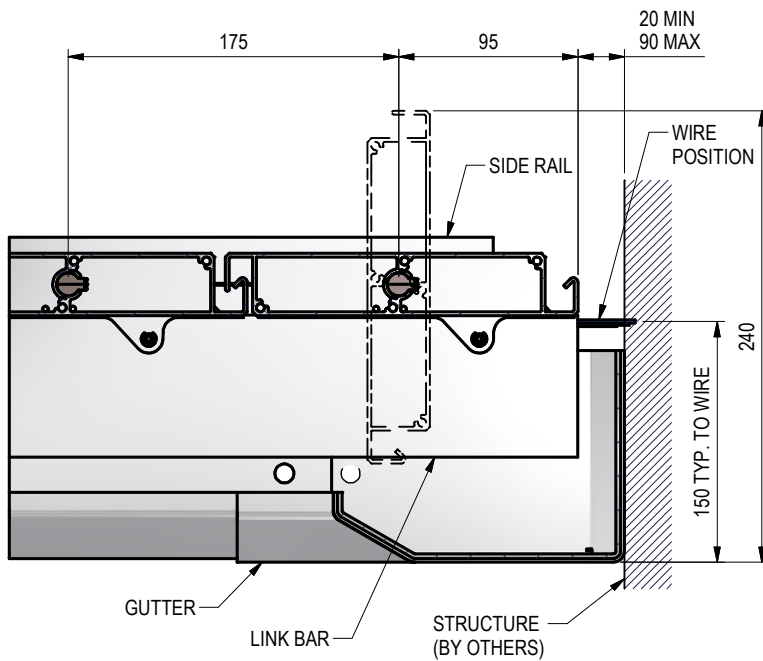
AU-OR-LVR Version 1



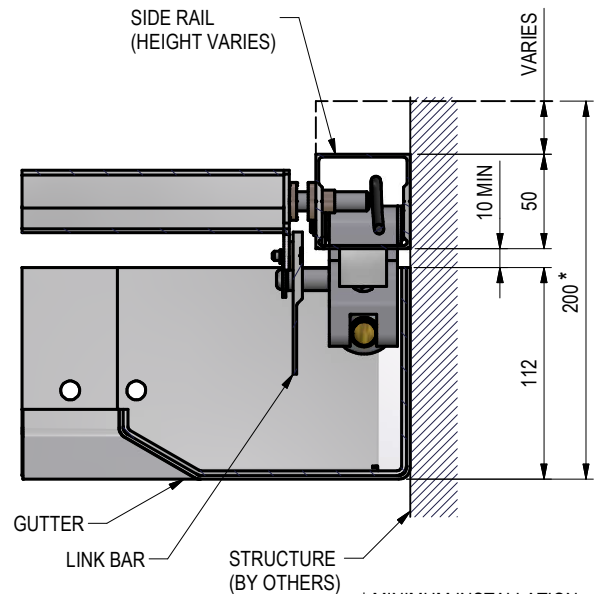
SLRS-OR-LVR - PROFILE



LOUVRE PANEL



DETAIL A



DETAIL B

* MINIMUM INSTALLATION DEPTH, ALLOW 200mm TO ACCOMMODATE FALLS

**SOLARIS™ OPENING ROOF
Technical Data Sheet**

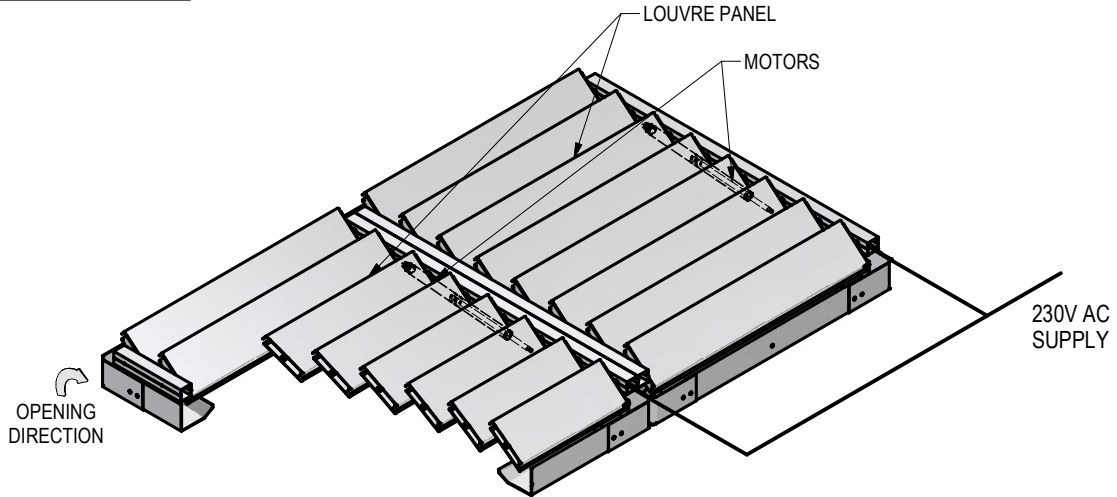


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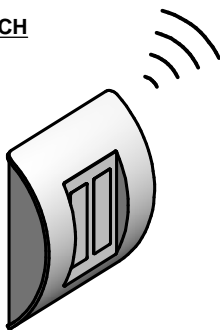
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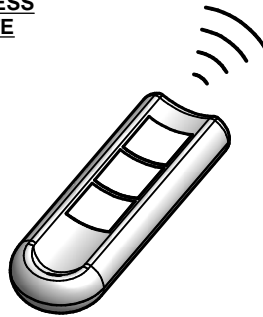
WIRING/CONTROL DIAGRAM



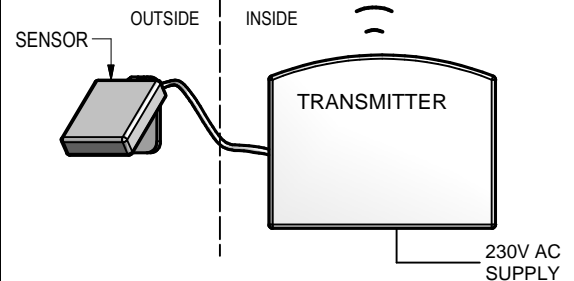
WIRELESS WALL SWITCH



WIRELESS REMOTE



WIRELESS RAIN SENSOR



Deflections/Spans for SLRS-OR-LVR

Wind Zone	Self Weight	Low	Medium	High	Very High	Extra High
m/s KPa	0.0 m/s 0.0 KPa	32 m/s 0.88 KPa	37 m/s 1.18 KPa	44 m/s 1.68 KPa	50 m/s 2.17 KPa	55 m/s 2.63 KPa
Service load kn/m	0.027	0.130	0.180	0.270	0.360	0.450
Span m	Numbers in cells are deflections in mm					
3.7	5.09	24.49	33.90	50.86	67.81	84.76
3.8	5.66	27.24	37.72	56.58	75.44	94.30
3.9	6.28	30.23	41.85	62.78	83.70	104.63
4.0	6.95	33.45	46.31	69.47	92.62	115.78
4.1	7.67	36.92	51.12	76.68	102.24	127.80
4.2	8.44	40.65	56.29	84.44	112.58	140.73
KEY:	Light Grey shading = Acceptable span		Dark Grey shading = Over recommended span		Black shading = Unsafe	

*Over Recommended Max Span' is the point at which Insol considers the deflection as 'unsightly'

*Deflection values assume operable louvres in the closed position (therefore no porosity factor)

*Deflection values assume simple support and do not take into account the integrity of any fixing.

*Deflection values assume a horizontal louvre (not tilted)

*Please contact Insol if your scenario is : Above 10m height, or is in a specific design location

**SOLARIS™ OPENING ROOF
Technical Data Sheet**



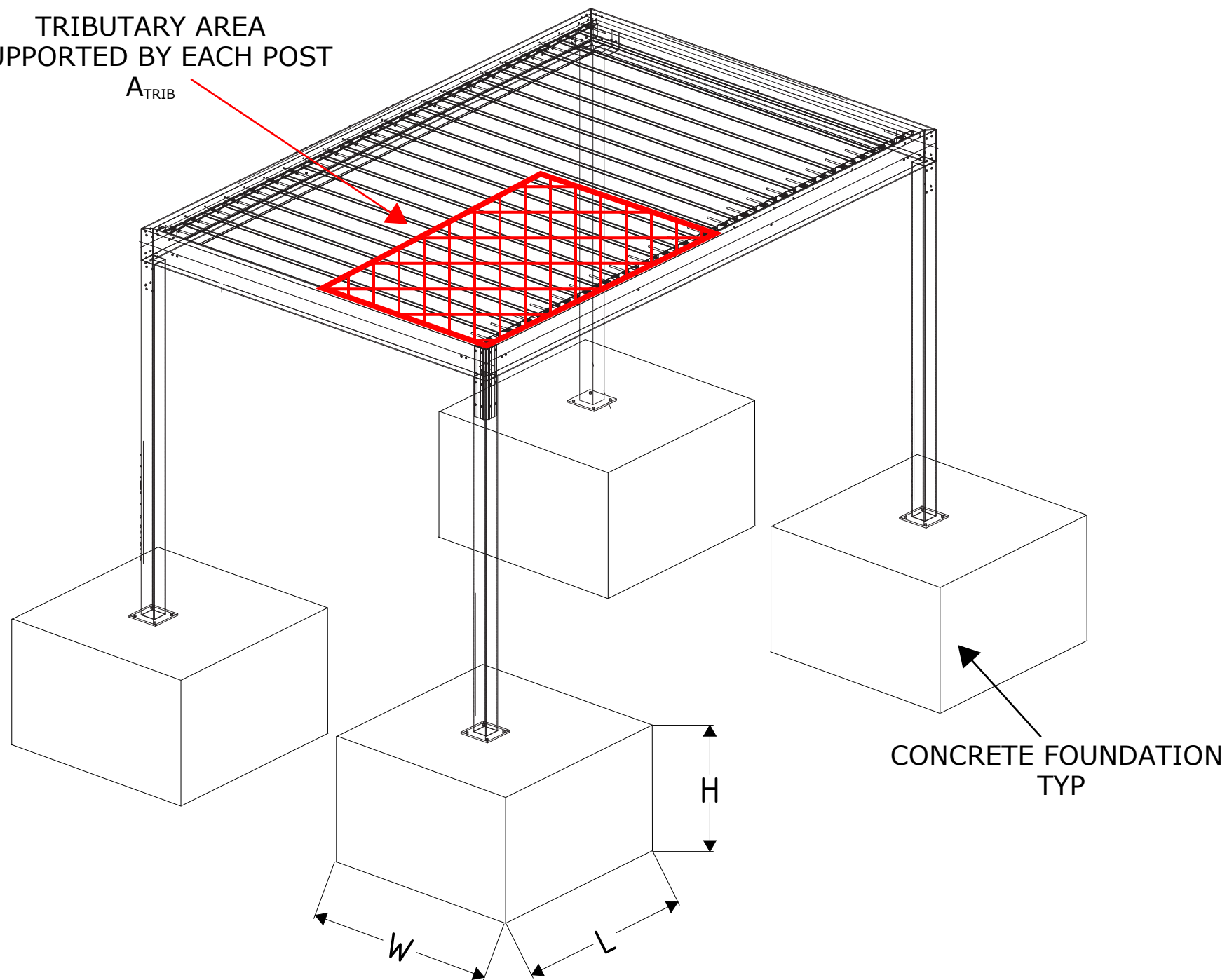
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Page: 2 of 2

SLRS-OR-LVR Version 1

TRIBUTARY AREA
SUPPORTED BY EACH POST

A_{TRIB}



OPENING ROOF LOUVRE CONCRETE FOUNDATION OVERVIEW

TABLE 8 LOUVRE - CONCRETE FOUNDATION MINIMUM DIMENSIONS				
WIND ZONE &	SUB ALPINE SNOW REGION	WIDTH, W (m)	LENGTH, L (m)	MINIMUM VOLUME PER M2 OF TRIBUTARY AREA, V (m3)
LOW &	NORTH ISLAND < 400m ABOVE SEA LEVEL	0.35	0.35	0.037
MEDIUM &	ALL OF NZ < 400m ABOVE SEA LEVEL	0.40	0.40	0.052
HIGH &	ALL OF NZ < 800m ABOVE SEA LEVEL	0.43	0.43	0.076
VERY HIGH &	ALL OF NZ	0.45	0.45	0.100
EXTRA HIGH &	ALL OF NZ	0.50	0.50	0.122

NOTES:

1. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20MPa.
2. CONCRETE TO HAVE A DENSITY OF 2400KG/M3
3. THE MINIMUM VOLUME OF EACH CONCRETE SLAB PER M2 OF ROOF TRIBUTARY AREA SUPPORTED BY THE POST IS GIVEN IN TABLE 8.
4. THE MINIMUM LENGTH AND WIDTH OF EACH FOUNDATION BLOCK HAS BEEN SPECIFIED IN TABLE 8.
5. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 32MPa
6. SOIL CONDITIONS AT THE BASE OF THE CONCRETE FOUNDATION SHALL HAVE A MINIMUM BEARING CAPACITY OF 50kPa

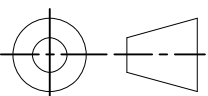
DESIGNER:



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Tolerances (unless specified)	1-100	<1000	>1000
	± 2	± 10	± 70

All dim. in mm



Rev	Description
D	FOR CONSENT

Designed	BVT CONSULTING LTD	15/12/16
Drawn	BVT CONSULTING LTD	15/12/16
Approved	BVT CONSULTING LTD	04/05/17

INSOL
OPENING ROOF SUPPORT
CONCRETE FOUNDATION
MINIMUM DIMENSIONS

Scale Do not Scale