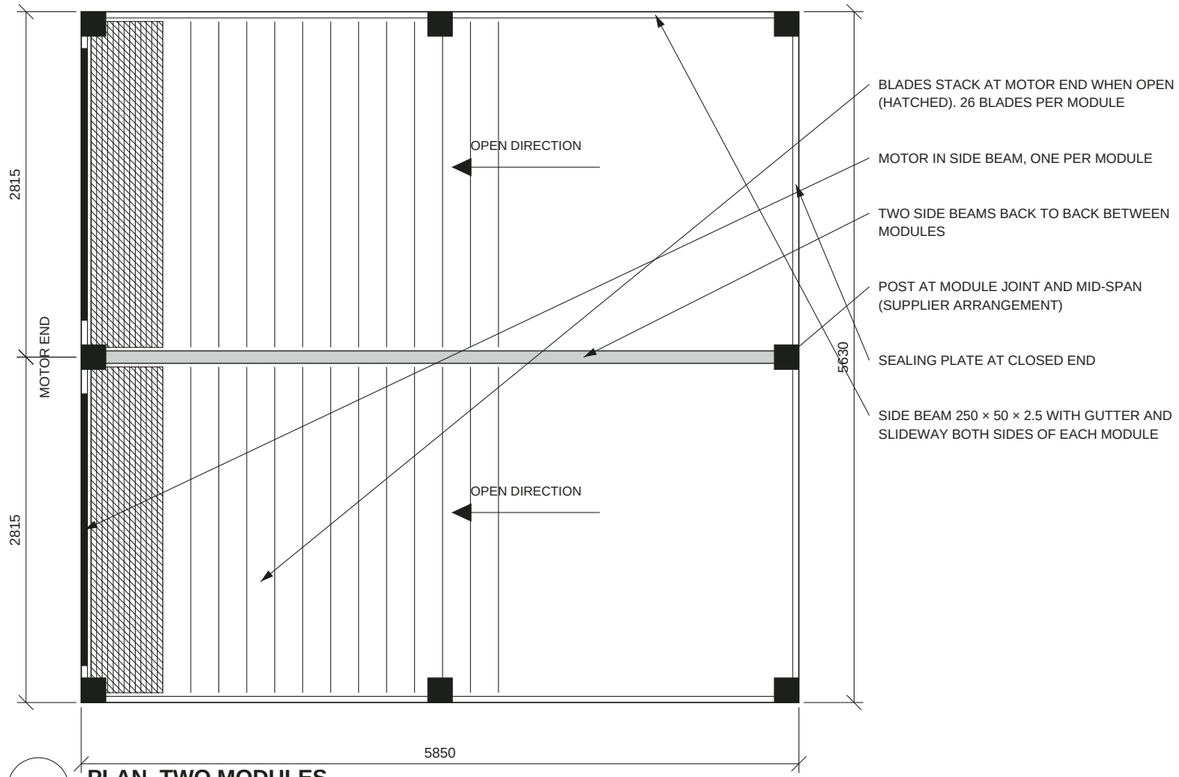
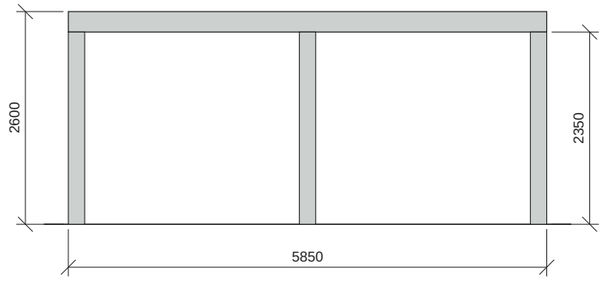
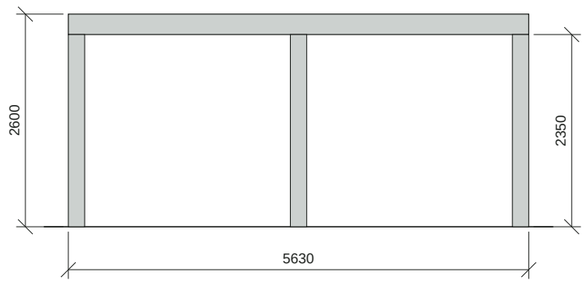


1 **PLAN, TWO MODULES**
1:50



2 **ELEVATION A (LONG SIDE)**
1:75



3 **ELEVATION B (MODULE ENDS)**
1:75

NOTES

1. Arrangement from the supplier shop drawing for a 5850 × 5630 mm roof in two modules. Each roof is drawn to suit its site.
2. Module width (blade length) 4.2 m max. Retract length 6 m max per module.
3. Blades retract towards the motor end. A sealing plate closes the opposite end.
4. Motor and LED cables run inside the posts to a junction box. Electrical work by a registered electrician.
5. Over 30 m², a building consent is required.

PROFILES (mm), SUPPLIER DATA

Louvre blade	228 × 40 × 1.8, T6
Side beam	250 × 50 × 2.5
Gutter	142 × 55 × 1.5, LED groove
Slideway	142 × 80 × 2.0
Post	200 × 200 × 3.0
Colour	RAL 7024 shown

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GENERAL ARRANGEMENT: RETRACTABLE LOUVRE ROOF

TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

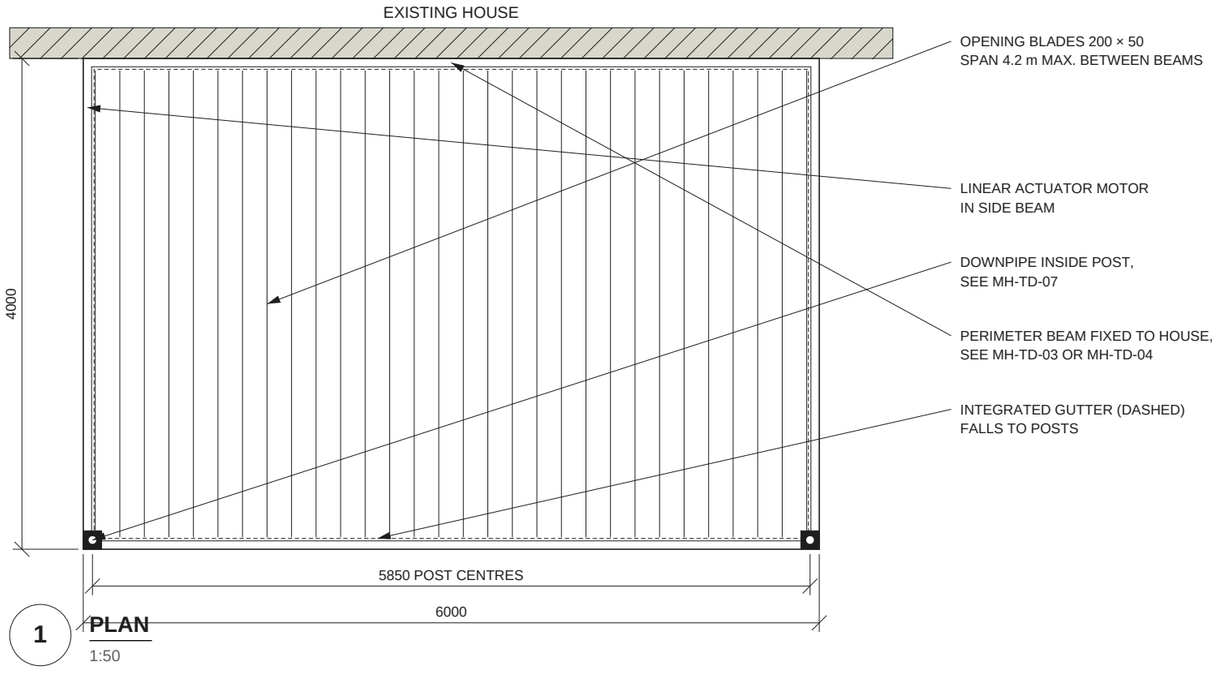
Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

DWG NO	**MH-TD-01**
SCALE	AS SHOWN @ A3
DATE	13/11/2026

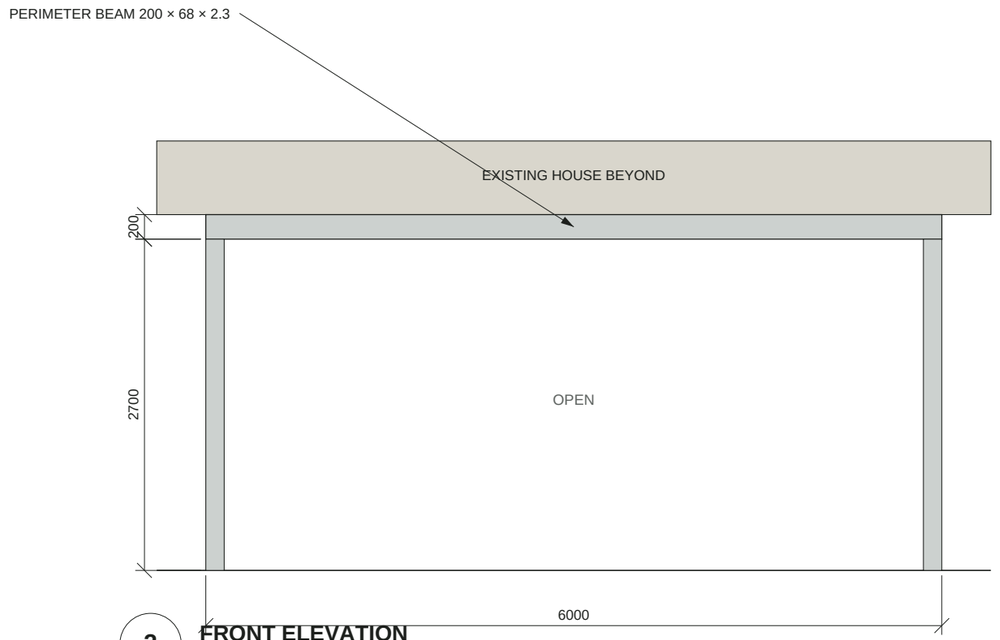
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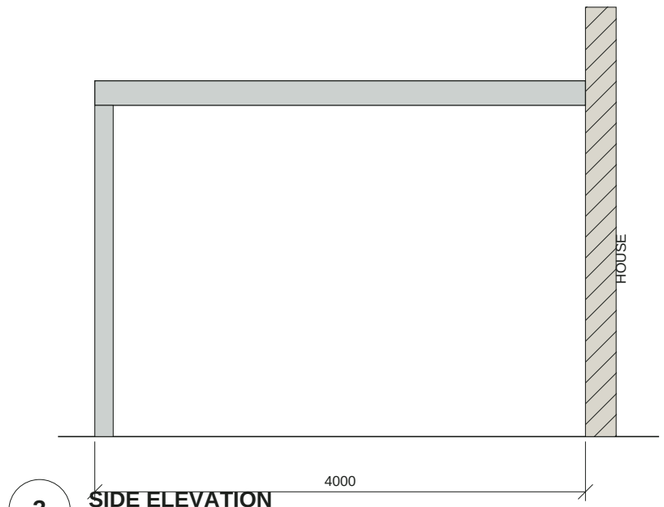
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1 **PLAN**
1:50



2 **FRONT ELEVATION**
1:50



3 **SIDE ELEVATION**
1:50

NOTES

1. Example size shown. Each roof is drawn to suit the site.
2. Blades span 4.2 m max. Longer roofs are split into modules with an intermediate beam.
3. Open edges over 6 m between supports get an intermediate post.
4. Over 30 m², a building consent is required. 20–30 m² attached at ground level may be exempt where an LBP designs or supervises (Schedule 1, exemption 17A).
5. Rain sensor closes the roof automatically.

PROFILES (mm)

Post	150 × 150 × 3.0
Perimeter beam	200 × 68 × 2.3
Mid beam	170 × 68 × 2.3
Blade	200 × 50 × 1.8
Gutter	89 × 58 × 1.5
Finish	Powder coat

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GENERAL ARRANGEMENT: OPENING LOUVRE ROOF

TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

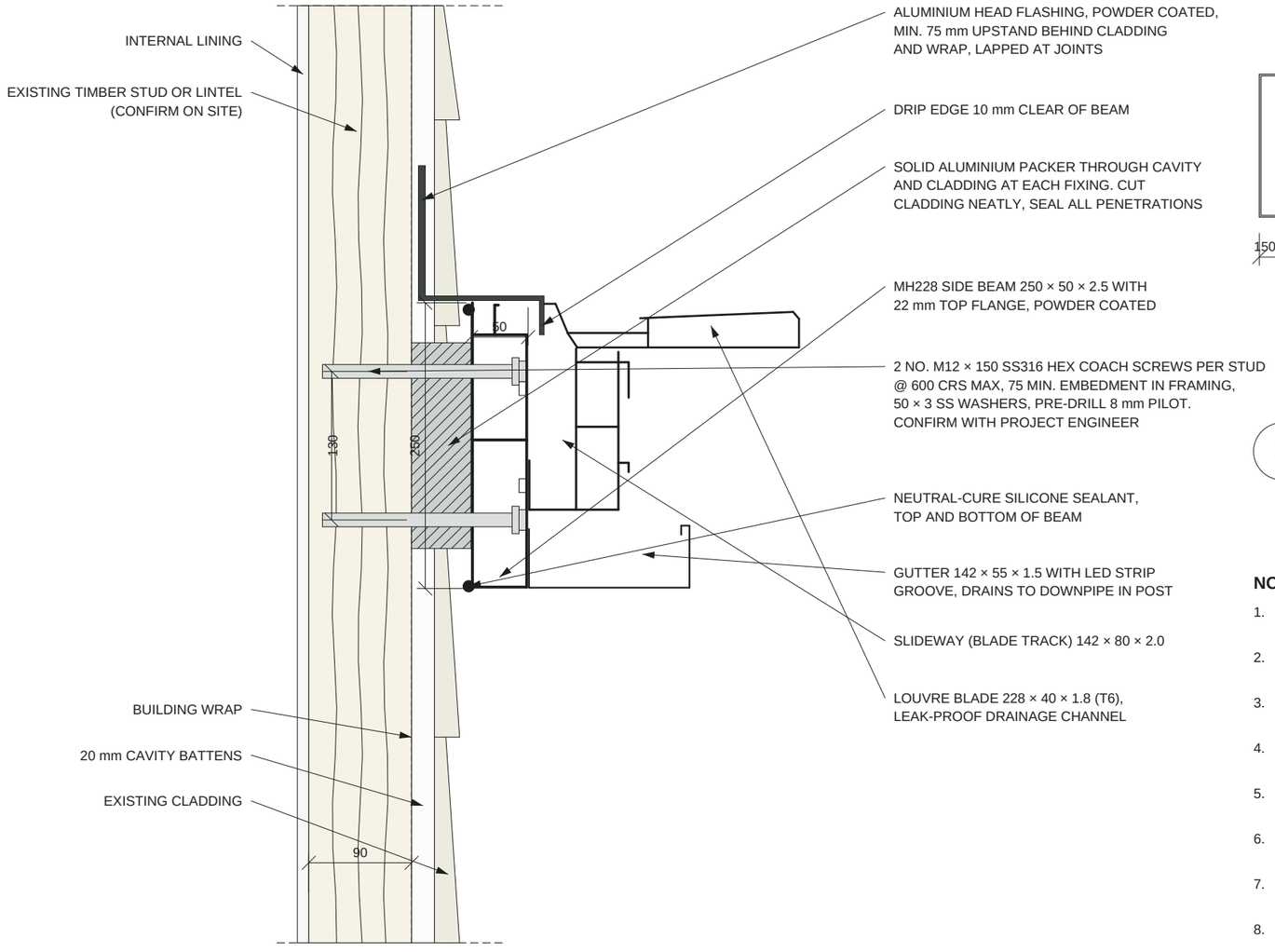
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SCALE	1:50 @ A3
DATE	13/11/2026

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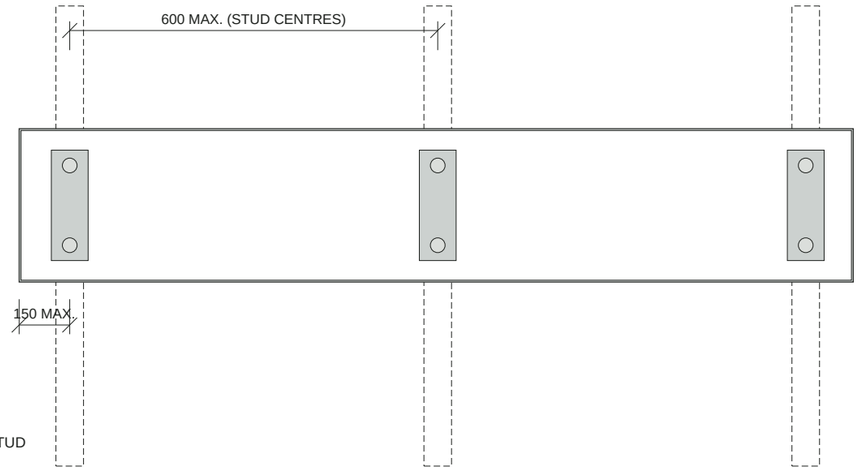
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1 **SECTION AT WALL**
1:5



2 **ELEVATION OF WALL FIXING**
1:10

NOTES

1. Confirm the wall framing on site before fixing. Fix only into solid timber: studs, lintels or a boundary joist. Do not fix into cladding alone.
2. Where framing is not at suitable centres, fit a 140 × 45 H3.2 timber ledger to the framing first, to engineer's design.
3. Fixings: stainless steel grade 316 within 500 m of the sea, otherwise grade 304 minimum (NZBC B2, E2).
4. Head flashing to be installed before the beam. Lap behind the cladding and building wrap, and seal at ends.
5. Separate aluminium from treated timber and dissimilar metals with an inert spacer or tape.
6. Elevation: studs shown dashed. Two fixings at every stud, and within 150 mm of each end of the beam.
7. Gutter falls to downpipe outlets in posts. Overflow outlet at each end of the gutter.
8. Read with MH-TD-01/02 general arrangement and MH-TD-07 drainage detail.

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WALL FIXING: TIMBER-FRAMED WALL

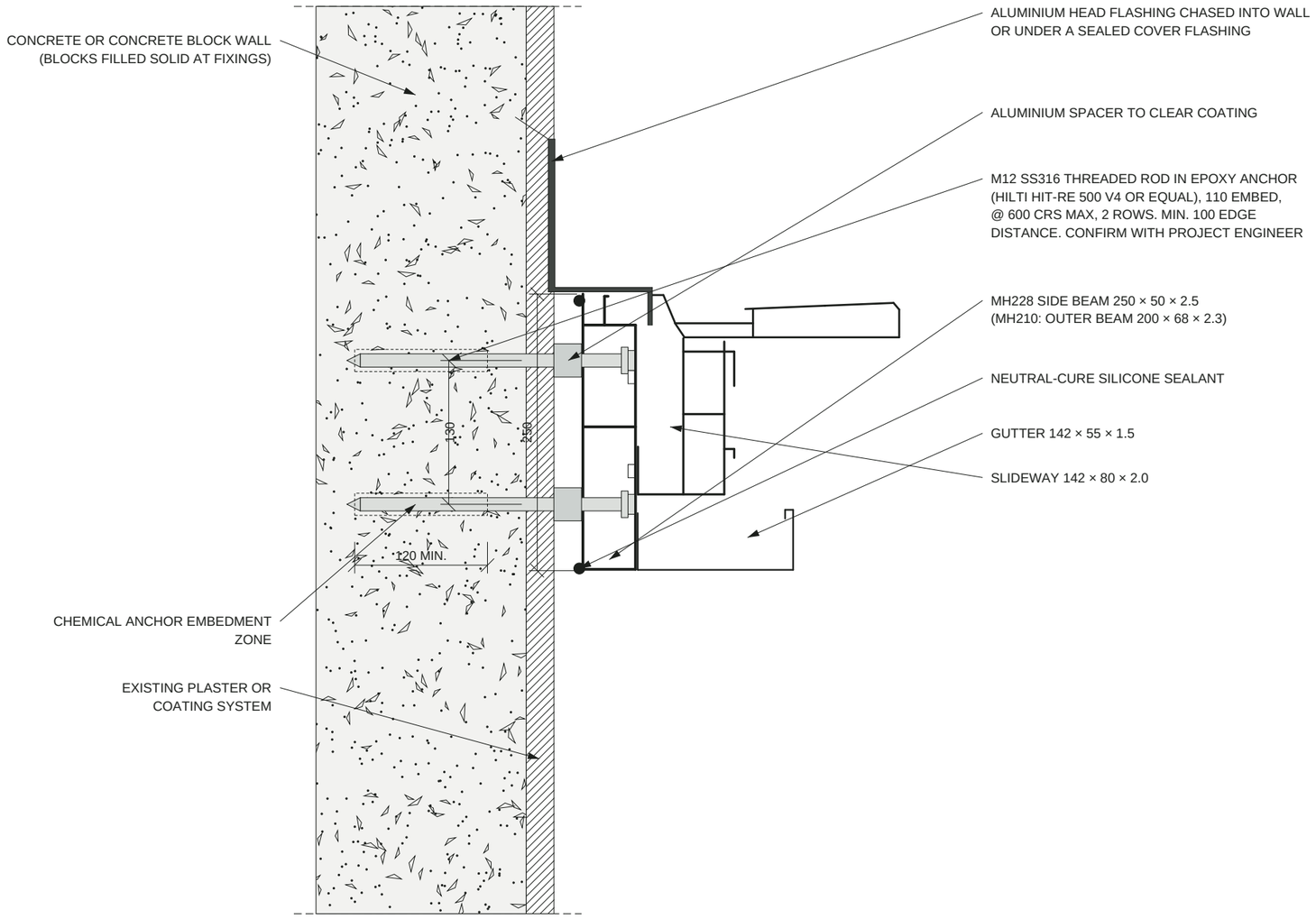
TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

DWG NO	**MH-TD-03**
SCALE	AS SHOWN @ A3
DATE	13/11/2026

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1 **SECTION AT WALL**
1:5

NOTES

1. Do not fix to brick veneer. Veneer is not structural. Fix through to the framing behind with engineer-designed spacers, or support the beam on posts at the wall line.
2. Concrete block walls: fix only into grout-filled cores. Fill cores at fixing points if required.
3. Anchor edge distances, embedment and spacing to the anchor manufacturer's data and engineer's design.
4. Fixings at max. 600 mm centres along the beam and within 150 mm of each end, unless the engineer specifies otherwise.
5. Stainless steel grade 316 within 500 m of the sea, otherwise 304 minimum (NZBC B2).
6. Read with MH-TD-01/02 general arrangement.

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WALL FIXING: CONCRETE OR BLOCK WALL

TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

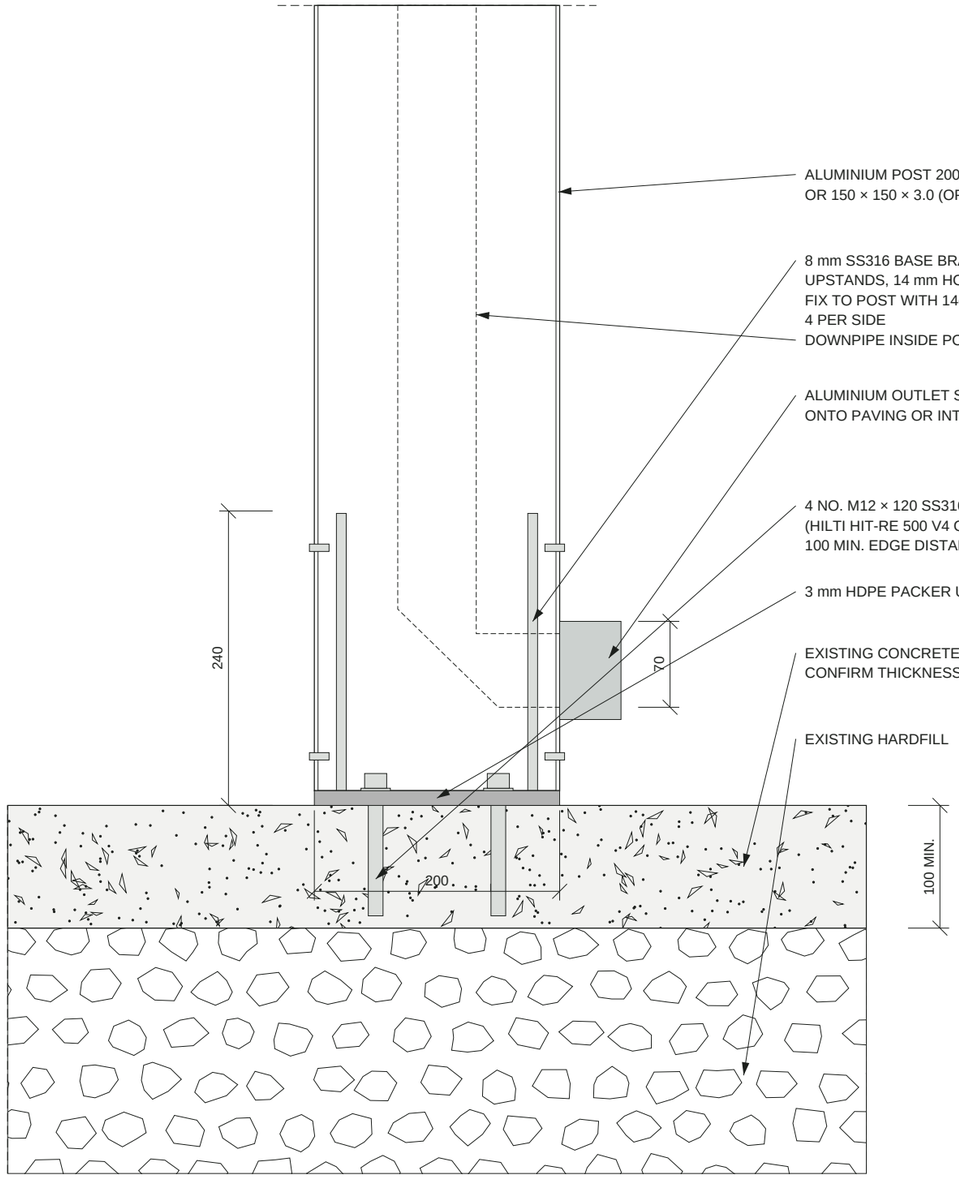
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SCALE	1:5 @ A3
DATE	13/11/2026

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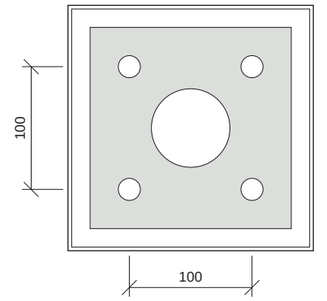
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1 **SECTION THROUGH POST BASE**
1:5



2 **PLAN OF BASE BRACKET**
1:5

NOTES

1. Use where the existing slab is at least 100 mm thick, sound and reinforced. Otherwise use footing detail MH-TD-06.
2. Edge distance from anchor to slab edge: min. 100 mm, or to the anchor manufacturer's data.
3. Drill, clean and install chemical anchors to the manufacturer's instructions.
4. Post base sits on packers so it is clear of standing water. Seal around the base.
5. Downpipe outlet discharges to an approved outfall (NZBC E1).
6. Plan dimensions shown for the 200 mm post. Reduce pro rata for the 150 mm post.

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POST FIXING: EXISTING CONCRETE SLAB

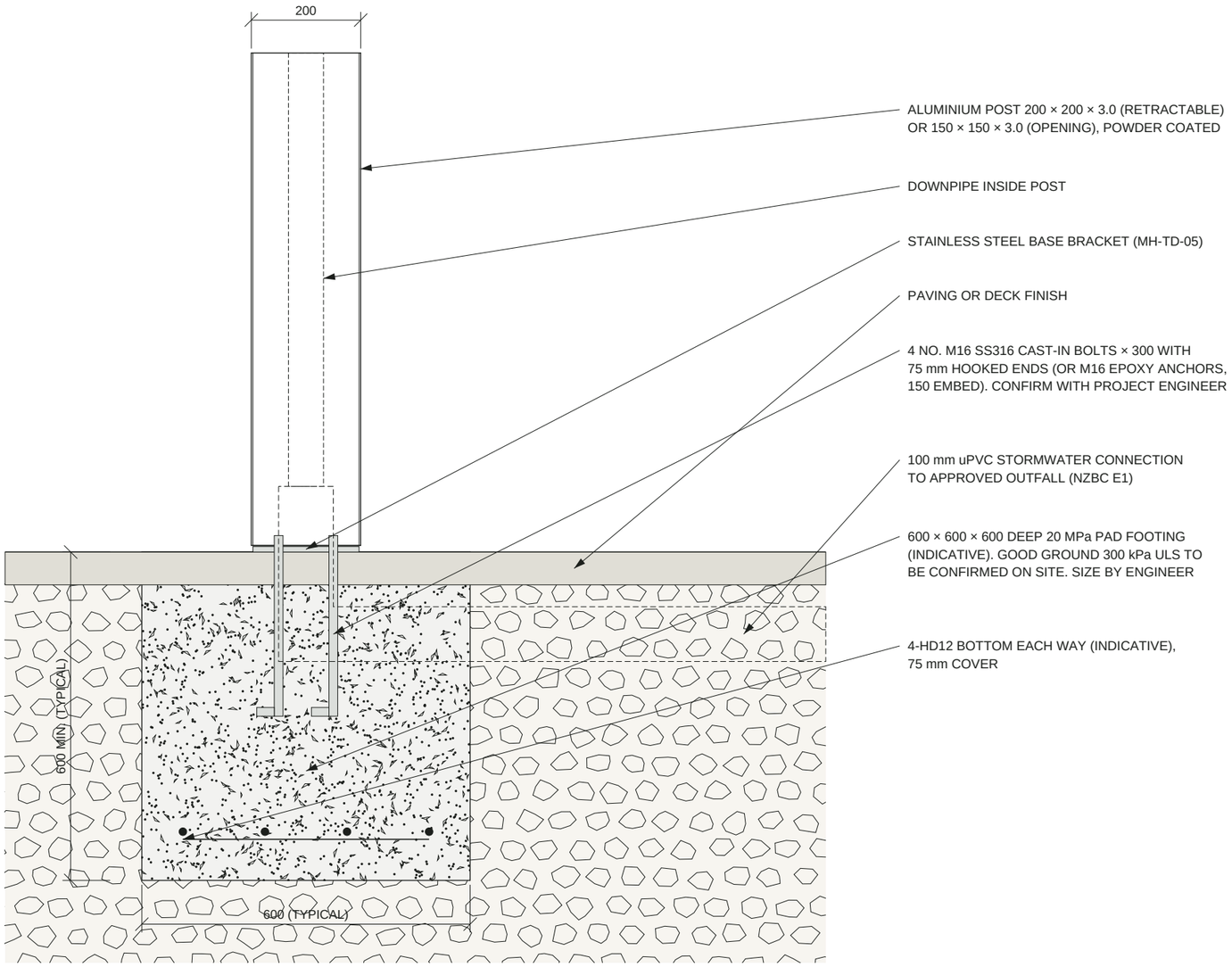
TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

DWG NO	**MH-TD-05**
SCALE	1:5 @ A3
DATE	13/11/2026

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1 **SECTION THROUGH POST FOOTING**
1:10

NOTES

1. Footing size shown is indicative only. Size, depth and reinforcing to be designed by a Chartered Professional Engineer for the site wind zone and ground conditions.
2. Footings to bear on natural ground with a bearing capacity confirmed on site. Remove topsoil and soft material.
3. Check for underground services before excavating.
4. Post base sits 10–12 mm above finished paving on the stainless bracket. Seal around the base.
5. Read with MH-TD-05 and MH-TD-07.

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POST ON NEW CONCRETE FOOTING

TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

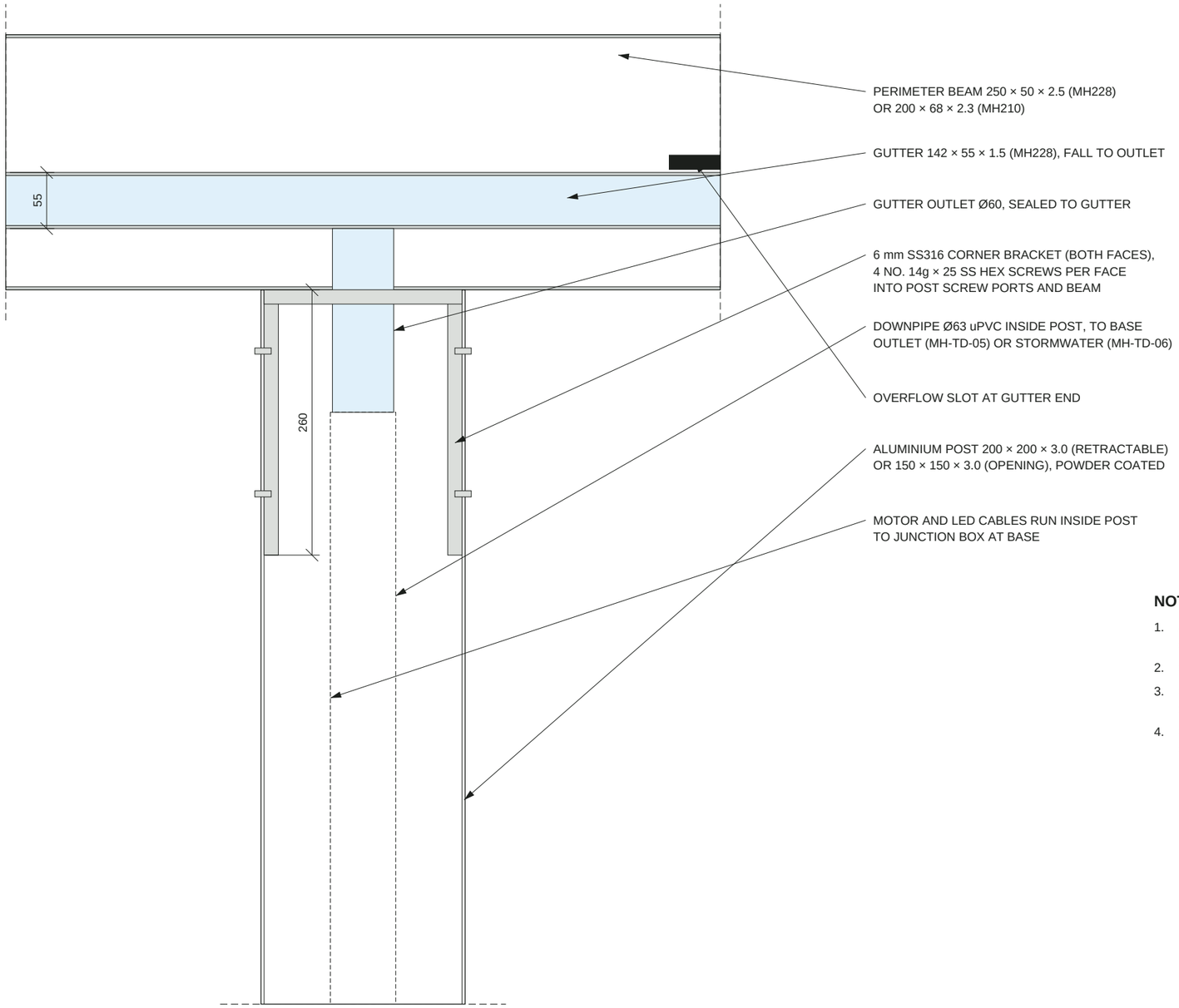
Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

DWG NO	**MH-TD-06**
SCALE	1:10 @ A3
DATE	13/11/2026

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1 **SECTION AT POST AND BEAM**
1:5

NOTES

1. At least one downpipe per gutter run. Larger roofs: one downpipe per 25 m² of roof, or to the gutter sizing in E1/AS1.
2. Seal all gutter joints and outlets with neutral-cure silicone.
3. Corner brackets and screws: stainless steel. Isolate from aluminium where required.
4. Clear leaves and debris from gutters every 6 months, or more often under trees.

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BEAM TO POST CONNECTION AND DRAINAGE

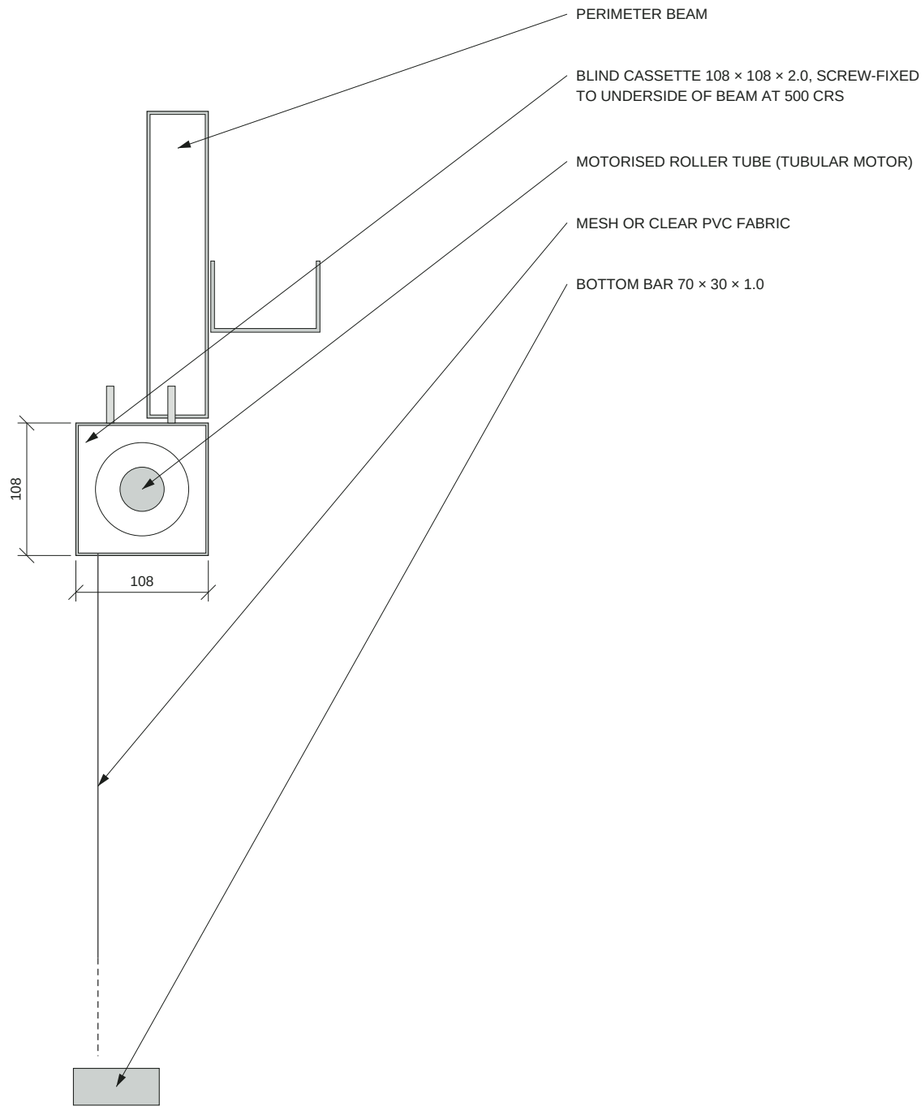
TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

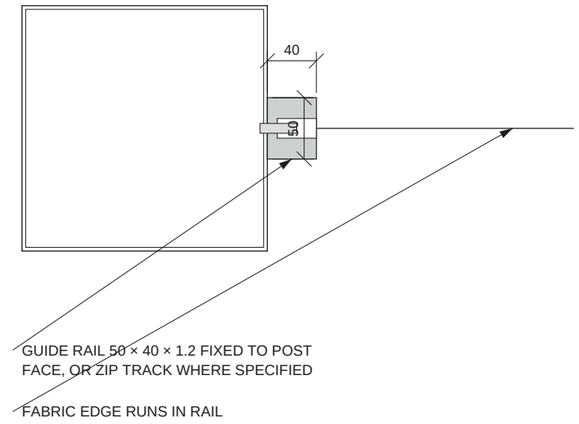
DWG NO	**MH-TD-07**
SCALE	1:5 @ A3
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1 **SECTION AT CASSETTE**
1:5



2 **PLAN AT GUIDE RAIL**
1:5

NOTES

1. Blinds fit between posts only, one blind per bay. Max. blind width 4.0 m.
2. Motor power: 230 V supply to each motor or a shared junction box. Electrical work by a registered electrician.
3. Wind sensor raises blinds automatically in strong wind where fitted.
4. Guide rails fixed with stainless screws at max. 500 mm centres.

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DROP-DOWN BLIND: CASSETTE AND GUIDE RAIL

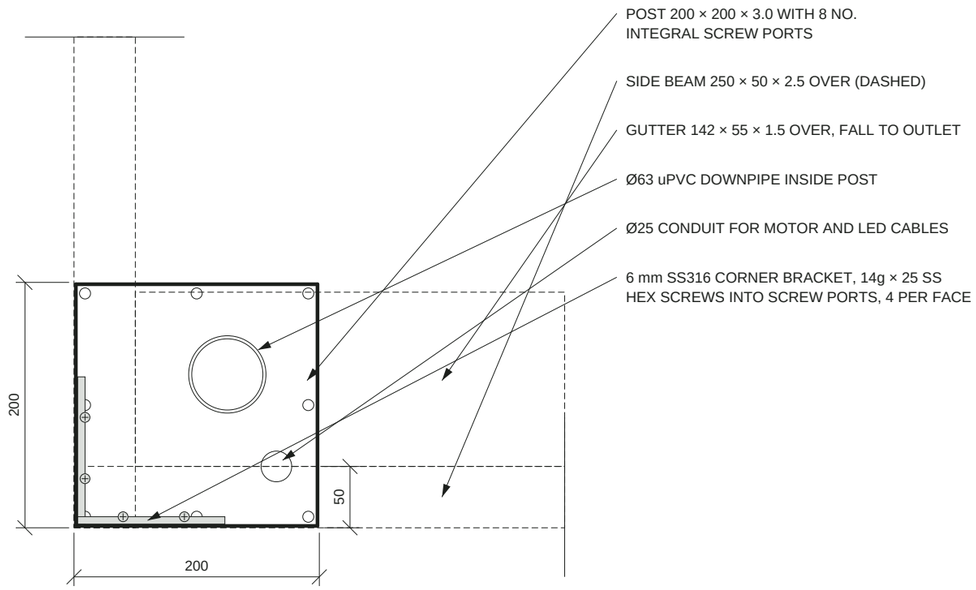
TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

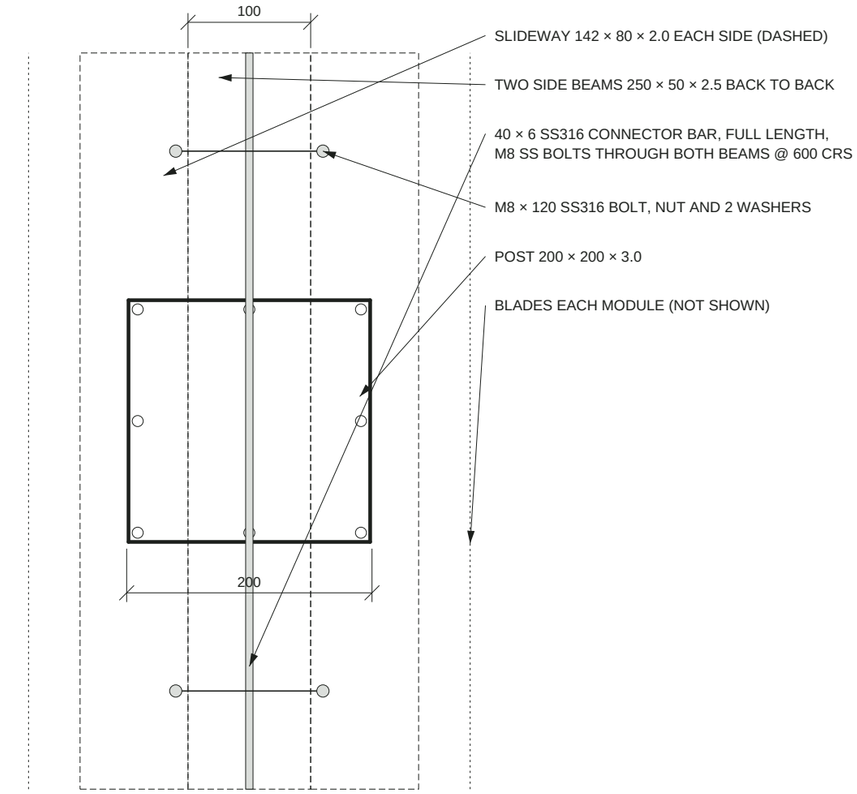
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SCALE	1:5 @ A3
DATE	13/11/2026

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1 **PLAN AT CORNER POST**
1:5



2 **PLAN AT MODULE JOINT POST**
1:5

FIXING SCHEDULE

REF	ITEM	SPECIFICATION (CONFIRM WITH PROJECT ENGINEER)	DWG
F1	Wall beam to timber	2 × M12 × 150 SS316 hex coach screws per stud @ 600 crs, 75 embed	TD-03
F2	Wall beam to concrete	M12 SS316 threaded rod, epoxy anchor, 110 embed @ 600 crs	TD-04
F3	Post to slab	4 × M12 × 120 SS316 chemical anchors, 90 embed, 100 edge	TD-05
F4	Post to new footing	4 × M16 SS316 cast-in bolts × 300, hooked ends	TD-06
F5	Base bracket to post	8 mm SS316 bracket, 14g × 25 SS hex screws, 4 per side	TD-05
F6	Beam to post	6 mm SS316 corner bracket, 14g × 25 SS hex screws, 4 per face	TD-07, 09
F7	Beam to beam (module joint)	40 × 6 SS316 bar, M8 × 120 SS316 bolts @ 600 crs	TD-09
F8	Slideway to beam	12g × 20 SS wafer-head screws @ 300 crs into T-slot	TD-03, 04
F9	Gutter joints and outlets	Neutral-cure silicone, 14g × 20 SS rivets @ 100 crs	TD-07
F10	Head flashing	0.9 mm powder-coated aluminium, 75 upstand, lapped 150	TD-03, 04

NOTES

1. All fixings stainless steel grade 316 within 500 m of the sea, grade 304 minimum elsewhere. Isolate dissimilar metals.
2. Fixing sizes are typical for wind zones up to Extra High. Site-specific design by a Chartered Professional Engineer governs.
3. Read with MH-TD-03 to MH-TD-08, MH-TD-10 and calculations MH-EN-01.

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POST PLAN DETAILS AND FIXING SCHEDULE

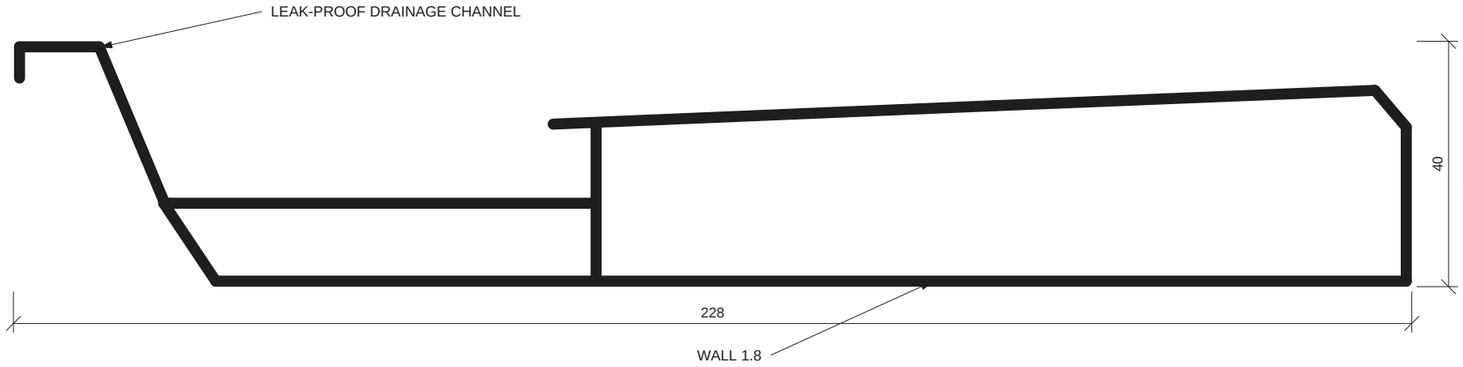
TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

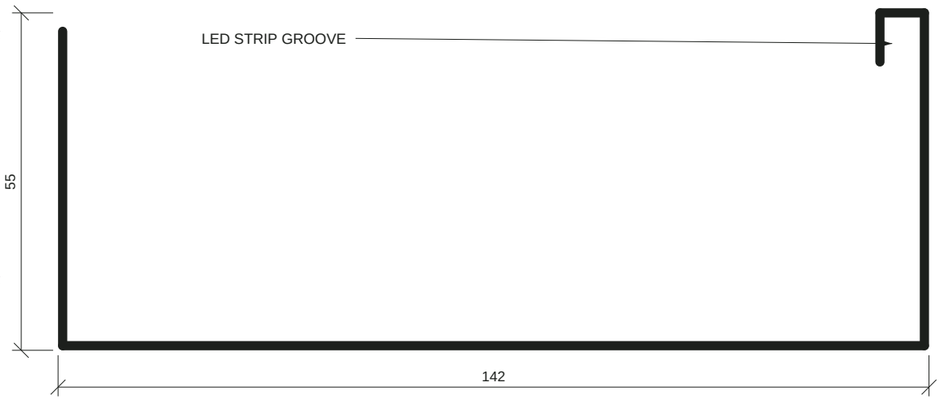
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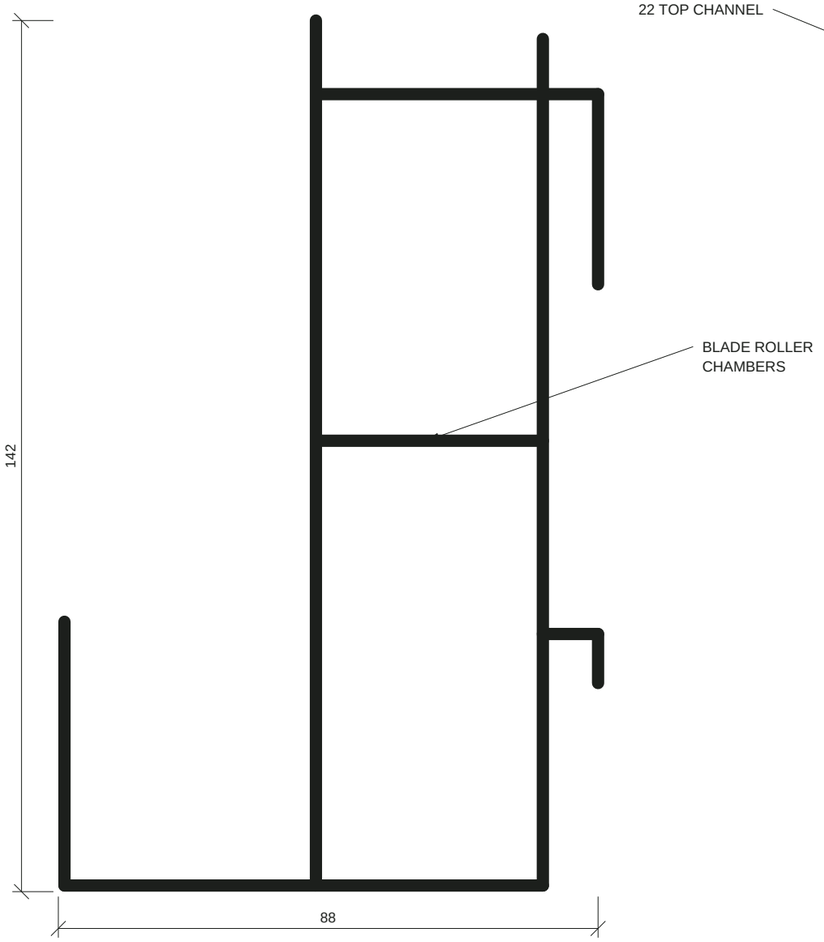


A LOUVRE BLADE 228 × 40 × 1.8, T6 1:1

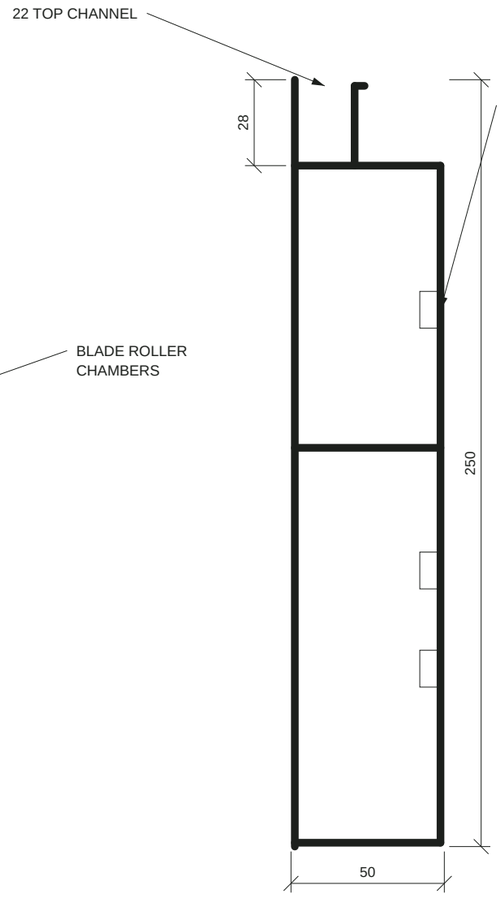


B GUTTER 142 × 55 × 1.5 1:1

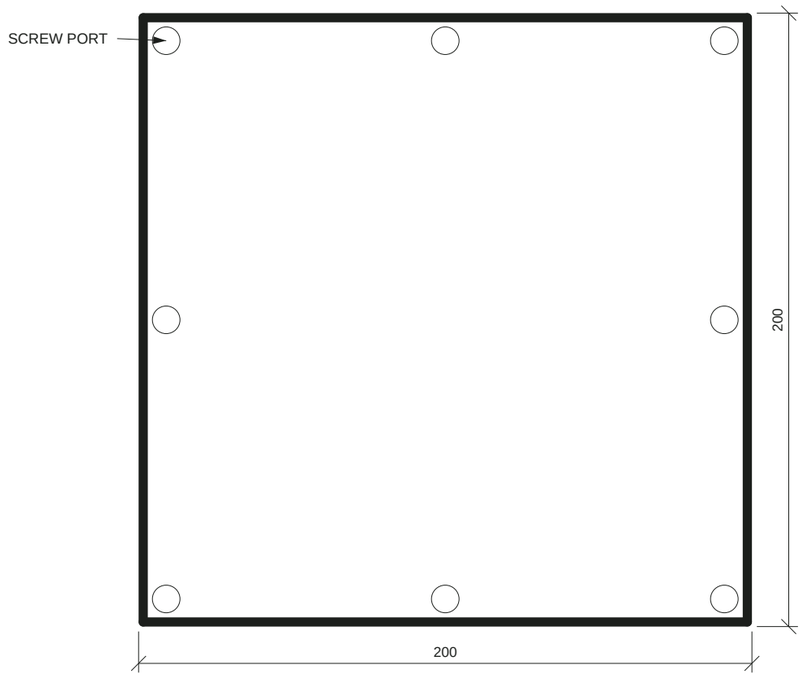
C SLIDEWAY 142 × 80 × 2.0 1:1



D SIDE BEAM 250 × 50 × 2.5 1:2



E POST 200 × 200 × 3.0 1:2



SECTION PROPERTIES (GROSS)

PROFILE	A mm²	kg/m	Ixx 10⁶	Iyy 10⁶
Louvre blade	932	2.52	0.156	4.155
Side beam	1606	4.34	9.445	0.730
Gutter	392	1.06	0.136	1.215
Slideway	1062	2.87	2.302	0.707
Post	2364	6.38	15.292	15.292

NOTES

1. Profiles traced from the supplier shop drawing MH228 (9 Dec 2025). Dimensions in mm.
2. Section properties calculated from wall centre-lines. Effective properties for design are in MH-EN-01.
3. Alloy 6063-T6 assumed. Confirm with mill certificate.
4. Finish: polyester powder coat, standard RAL 7024.

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PROFILE SCHEDULE: MH228 RETRACTABLE

TYPICAL DETAIL. NOT FOR CONSTRUCTION WITHOUT SITE-SPECIFIC ENGINEERING.

Fixings, footings and wind design to be confirmed by a Chartered Professional Engineer for each project.

DWG NO	**MH-TD-10**
SCALE	AS SHOWN @ A3
DATE	13/11/2026
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Project:	MH228 retractable louvre roof, all NZ wind zones	Doc no: MH-EN-01	Rev A
Client:	MOTE Home Ltd	Date: 13/11/2026	Sheet: 1

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Preliminary design calculations

MH228 retractable louvre roof: roof blade and side beam spans for NZS 3604 wind zones Low to Extra High.

Status

These calculations are prepared by MOTE Home as a design aid. They are not a producer statement and must not be relied on for a building consent until reviewed, completed and signed by a Chartered Professional Engineer (CPEng).

Standards

AS/NZS 1170.0:2002	Structural design actions, general principles
AS/NZS 1170.1:2002	Permanent, imposed and other actions
AS/NZS 1170.2:2021	Wind actions
NZS 3604:2011	Timber-framed buildings (wind zones, engineering basis)
AS/NZS 1664.1:1997	Aluminium structures, limit state design

Building information

Importance level / design life	IL2, 50 years (AS/NZS 1170.0)
Wind zone	Low to Extra High (NZS 3604)
Roof	Louvre blades at 0° pitch, lightweight
Imposed roof load Q	0.25 kPa (non-trafficable roof)
Blade tributary width	0.228 m (blade pitch)
Material	Aluminium alloy 6063-T6, Fty = 170 MPa, E = 70000 MPa (alloy to be confirmed by mill certificate)
Capacity reduction factor	φ = 0.85
Profiles	Supplier shop drawing MH228, 9 Dec 2025

Contents

1	Scope, basis and loads
2	Wind loads
3	Section properties
4–8	Roof blade design, one sheet per wind zone
9	Side beam design
10	Summary span tables

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1–2. Scope and wind loads

Specific design of the MH228 roof blade and side beam for the NZS 3604 wind zones. Posts, connections, fixings to the house and footings are outside this calculation and need site-specific design.

Design wind pressure

Design wind pressures from the engineering basis of NZS 3604. Net pressure coefficients for a free-standing or attached canopy roof at 0° (AS/NZS 1170.2): worst case uplift Cp,n = −1.2, downward Cp,n = +0.4. SLS wind taken as 0.75 × ULS.

Wind zone	V des (m/s)	q des (kPa)	W up (kPa)	W down (kPa)
Low	32	0.62	-0.74	0.25
Medium	37	0.82	-0.98	0.33
High	44	1.16	-1.39	0.46
Very High	50	1.50	-1.80	0.60
Extra High	55	1.82	-2.18	0.73

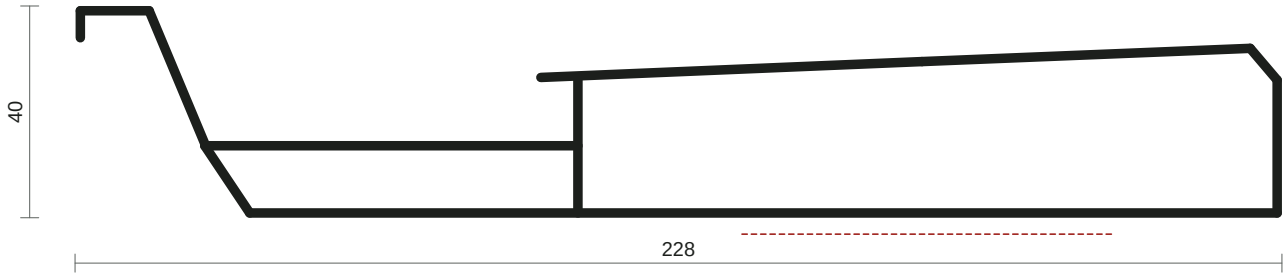
Load combinations (AS/NZS 1170.0)

ULS: 1.2G + 1.5Q; 0.9G + W(up); 1.2G + W(down). SLS: G + W(up)s.

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3. Section properties

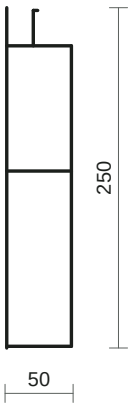
Profiles traced from the supplier shop drawing and modelled as thin-walled centre-line sections. Effective widths of slender compression skins by the Winter method (plate supported on both edges, k = 4).



Louvre blade 228 × 40 × 1.8, scale 1:1.4. Red dashed: ineffective part of the bottom skin under uplift.

Blade	Gross	Effective (uplift)	Effective (down)
Area A (mm²)	932	806	808
Neutral axis from base (mm)	14.5	16.6	12.2
Ixx (×10³ mm⁴)	156.4	129.4	124.4
Z (mm³)		7784	6285
Mass (kg/m)	2.52		

Bottom skin b = 132 mm, t = 1.8 mm: σcr = 48.0 MPa, λ = 1.88, ρ = 0.47. Top skin b = 127 mm: ρ = 0.49.



Side beam 250 × 50 × 2.5, scale 1:5.5

Side beam (major axis)	Value
Area A (mm²)	1606
Ixx (×10⁶ mm⁴)	9.45
Z (mm³)	76250
Top flange b/t = 19: ρ	1.00 (fully effective)
Web in bending σcr (MPa)	1140 > Fty, fully effective

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4. Roof blade design: Low wind zone

q des = 0.62 kPa (V des = 32 m/s). Simply supported blade, tributary width 0.228 m.

Blade self-weight G	0.025 kN/m (0.11 kPa)
Imposed Q	0.25 kPa
W up / W down	-0.74 / 0.25 kPa

Ultimate limit state

1.2G + 1.5Q	0.116 kN/m
0.9G + W up	-0.147 kN/m governs uplift
1.2G + W down	0.087 kN/m
φMs uplift = φ Fty Z	0.85 × 170 × 7784 = 1.125 kNm
φMs downward	0.908 kNm
Max span for bending, uplift	L = √(8 φMs / w) = 7.82 m
Max span for bending, downward	7.92 m

Serviceability

G + W up,s	-0.102 kN/m
Limit	L/100
Max span for deflection	L = (384 E I / (5 × 100 × w))^⅓ = 4.35 m

Maximum blade span, Low wind zone: 4.3 m (governed by deflection l/100)

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4. Roof blade design: Medium wind zone

q des = 0.82 kPa (V des = 37 m/s). Simply supported blade, tributary width 0.228 m.

Blade self-weight G	0.025 kN/m (0.11 kPa)
Imposed Q	0.25 kPa
W up / W down	-0.98 / 0.33 kPa

Ultimate limit state

1.2G + 1.5Q	0.116 kN/m
0.9G + W up	-0.202 kN/m governs uplift
1.2G + W down	0.105 kN/m
φMs uplift = φ Fty Z	0.85 × 170 × 7784 = 1.125 kNm
φMs downward	0.908 kNm
Max span for bending, uplift	L = √(8 φMs / w) = 6.68 m
Max span for bending, downward	7.92 m

Serviceability

G + W up,s	-0.143 kN/m
Limit	L/100
Max span for deflection	L = (384 E I / (5 × 100 × w))^⅓ = 3.89 m

Maximum blade span, Medium wind zone: 3.8 m (governed by deflection l/100)

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4. Roof blade design: High wind zone

q des = 1.16 kPa (V des = 44 m/s). Simply supported blade, tributary width 0.228 m.

Blade self-weight G	0.025 kN/m (0.11 kPa)
Imposed Q	0.25 kPa
W up / W down	-1.39 / 0.46 kPa

Ultimate limit state

1.2G + 1.5Q	0.116 kN/m
0.9G + W up	-0.295 kN/m governs uplift
1.2G + W down	0.136 kN/m
φMs uplift = φ Fty Z	0.85 × 170 × 7784 = 1.125 kNm
φMs downward	0.908 kNm
Max span for bending, uplift	L = √(8 φMs / w) = 5.53 m
Max span for bending, downward	7.31 m

Serviceability

G + W up,s	-0.213 kN/m
Limit	L/100
Max span for deflection	L = (384 E I / (5 × 100 × w))^⅓ = 3.41 m

Maximum blade span, High wind zone: 3.4 m (governed by deflection l/100)

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4. Roof blade design: Very High wind zone

q des = 1.50 kPa (V des = 50 m/s). Simply supported blade, tributary width 0.228 m.

Blade self-weight G	0.025 kN/m (0.11 kPa)
Imposed Q	0.25 kPa
W up / W down	-1.80 / 0.60 kPa

Ultimate limit state

1.2G + 1.5Q	0.116 kN/m
0.9G + W up	-0.388 kN/m governs uplift
1.2G + W down	0.167 kN/m
φMs uplift = φ Fty Z	0.85 × 170 × 7784 = 1.125 kNm
φMs downward	0.908 kNm
Max span for bending, uplift	L = √(8 φMs / w) = 4.82 m
Max span for bending, downward	6.60 m

Serviceability

G + W up,s	-0.283 kN/m
Limit	L/100
Max span for deflection	L = (384 E I / (5 × 100 × w))^⅓ = 3.10 m

Maximum blade span, Very High wind zone: 3.0 m (governed by deflection l/100)

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4. Roof blade design: Extra High wind zone

q des = 1.82 kPa (V des = 55 m/s). Simply supported blade, tributary width 0.228 m.

Blade self-weight G	0.025 kN/m (0.11 kPa)
Imposed Q	0.25 kPa
W up / W down	-2.18 / 0.73 kPa

Ultimate limit state

1.2G + 1.5Q	0.116 kN/m
0.9G + W up	-0.475 kN/m governs uplift
1.2G + W down	0.196 kN/m
φMs uplift = φ Fty Z	0.85 × 170 × 7784 = 1.125 kNm
φMs downward	0.908 kNm
Max span for bending, uplift	L = √(8 φMs / w) = 4.35 m
Max span for bending, downward	6.09 m

Serviceability

G + W up,s	-0.348 kN/m
Limit	L/100
Max span for deflection	L = (384 E I / (5 × 100 × w))^⅓ = 2.89 m

Maximum blade span, Extra High wind zone: 2.8 m (governed by deflection l/100)

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9. Side beam design

Side beam spanning between posts, simply supported, carrying half the adjacent module (blade ends), its own weight, gutter and slideway. Where a side beam is fixed to the house along its length it is continuously supported and this check does not apply.

Trib. (m)	Wind zone	w* (kN/m)	φMs (kNm)	L bending	L defl. L/150	Max span (m)
1.41	Low	0.83	11.02	10.28	8.51	8.5
1.41	Medium	1.17	11.02	8.67	7.50	7.5
1.41	High	1.75	11.02	7.10	6.50	6.4
1.41	Very High	2.32	11.02	6.16	5.88	5.8
1.41	Extra High	2.86	11.02	5.55	5.47	5.4
2.10	Low	1.28	11.02	8.30	7.34	7.3
2.10	Medium	1.78	11.02	7.03	6.50	6.4
2.10	High	2.64	11.02	5.78	5.65	5.6
2.10	Very High	3.50	11.02	5.02	5.12	5.0
2.10	Extra High	4.30	11.02	4.53	4.77	4.5

Tributary 1.41 m = half of a 2.815 m module. 2.10 m = half of a 4.2 m module. Two side beams back to back between modules each carry their own half module.

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10. Summary span tables

Wind zone	V des (m/s)	q des (kPa)	Max blade span (module width)	Max beam span, 2.8 m module	Max beam span, 4.2 m module
Low	32	0.62	4.3 m	8.5 m	7.3 m
Medium	37	0.82	3.8 m	7.5 m	6.4 m
High	44	1.16	3.4 m	6.4 m	5.6 m
Very High	50	1.50	3.0 m	5.8 m	5.0 m
Extra High	55	1.82	2.8 m	5.4 m	4.5 m

- Blade span = module width (blade length between side beams).
- Beam span = distance between posts on an open edge.
- Valid for 0° roof, roof height to width ratio not greater than 1.5, blades closed. Open or retracted blades carry less wind load.
- Posts, connections, wall fixings and footings require site-specific design.
- Alloy grade and temper to be confirmed by the supplier's mill certificate.

Project:	MH228 retractable louvre roof, all NZ wind zones	Doc no: MH-EN-02	Rev A
Client:	MOTE Home Ltd	Date: 13/11/2026	Sheet: 1

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Roof blade design table

MH228 retractable louvre roof, blade 228 × 40 × 1.8, for wind zones as per NZS 3604.

Wind zone	Wind speed (V des)	Design wind pressure (kPa)	Blade span	Post spacing, open edge (2.8 m module)
Low	Up to 32 m/s	0.62	4.3 m	8.5 m
Medium	Up to 37 m/s	0.82	3.8 m	7.5 m
High	Up to 44 m/s	1.16	3.4 m	6.4 m
Very High	Up to 50 m/s	1.50	3.0 m	5.8 m
Extra High	Up to 55 m/s	1.82	2.8 m	5.4 m

Disclaimer: limits assume a 0° roof with height-to-width ratio not greater than 1.5. Values are preliminary, from calculation MH-EN-01, and must be confirmed by a Chartered Professional Engineer before use in a building consent.

Retractable louvre roof

System MH228. Motorised aluminium louvre roof with blades that slide back and stack, opening the roof fully to the sky. Designed, consented where required, supplied and installed by MOTE Home.

Specification

Operation	Blades retract and stack at one end, or at both ends of each module. Closed, the roof is watertight.
Drive	Electric motor and drive concealed in the side beam. Remote and phone app control.
Blade	228 × 40 × 1.8 mm, T6 temper, with leak-proof drainage channel. Up to 26 blades per module.
Side beam	250 × 50 × 2.5 mm, with 22 mm top flange and fixing slots
Between modules	Two side beams back to back
Slideway (blade track)	142 × 80 × 2.0 mm, each side of each module
Post	200 × 200 × 3.0 mm with internal screw ports. Downpipe, motor and LED cables run inside.
Gutter	142 × 55 × 1.5 mm with integrated LED strip groove, draining through the posts
Alloy and finish	Extruded aluminium alloy (grade per supplier certificate), polyester powder coat. Standard colours: charcoal (RAL 7024), mid grey, white. Black available at extra cost.
Fixings	Stainless steel. Grade 316 within 500 m of the sea, 304 minimum elsewhere.
Sensors	Rain sensor included, closes the roof automatically. Wind sensor optional.
Lighting	Dimmable LED strip around the frame, included.
Options	Motorised drop-down blinds between posts, radiant heaters, privacy screens.

Design limits

Blade span	4.2 m maximum between beams (module width). Wider roofs are split into equal modules.
Retract length	Up to 6 m per module. Blades stack at the motor end.
Overall size	Up to 12 × 12 m.
Posts	Any open edge with more than 6 m between supports gets an intermediate post. The house wall counts as a support.
Intermediate beams	Freestanding roofs: over 6 m. Attached to the house: over 8 m, or wherever the blade span needs one.
Height	2.4 m, 2.7 m or 3.0 m to the underside of the frame as standard.
Wind	Posts, fixings and footings are designed for each site's wind zone (NZS 3604 / AS/NZS 1170.2) by a Chartered Professional Engineer.

Building Code and consent

Building consent	Required over 30 m². An attached roof of 20–30 m² at ground level may be exempt under Schedule 1, exemption 17A, where a Licensed Building Practitioner designs or supervises the work. Confirm with your council.
B1 Structure	Specific engineering design for each project, covering wind, snow and earthquake loads.
B2 Durability	Aluminium and stainless steel components selected for the exposure zone. Durability period to be confirmed in the project specification.
E1 Surface water	Roof water collected in the integrated gutter and discharged through the posts to an approved outfall.
E2 External moisture	Head flashing over the wall beam, lapped behind the cladding and building wrap (MH-TD-03, MH-TD-04).

Care and maintenance

- Wash the frame and blades with fresh water and a soft brush every 3 months, or monthly within 500 m of the sea.
- Clear the gutters and post outlets every 6 months, more often under trees.
- Run the roof through a full cycle every month to keep the drive free.
- Do not operate the roof in high wind, or with snow or ice on the blades.

Warranty

[To be confirmed]

Typical details

MH-TD-01	General arrangement
MH-TD-03	Wall fixing: timber-framed wall
MH-TD-04	Wall fixing: concrete or block wall
MH-TD-05	Post fixing: existing concrete slab
MH-TD-06	Post on new concrete footing
MH-TD-07	Beam to post connection and drainage
MH-TD-08	Drop-down blind: cassette and guide rail
MH-TD-09	Post plan details and fixing schedule
MH-TD-10	Profile schedule MH228
MH-EN-01	Preliminary design calculations (for CPEng review)
MH-EN-02	Roof blade span table

Profile data from the supplier's MH228 shop drawing (9 Dec 2025) and installation instructions (2024).
This data sheet supports a building consent application. Project-specific drawings, engineering and specification are provided by MOTE Home for each job. Information is correct at the date shown and may change without notice.

Opening louvre roof

System MH210. Motorised aluminium louvre roof with blades that tilt from closed to open for shade, light and ventilation. Designed, consented where required, supplied and installed by MOTE Home.

Specification

Operation	Blades rotate from closed to open. Closed, the roof is watertight.
Drive	Linear actuator motor concealed in the side beam. Remote and phone app control.
Blade	200 × 50 × 1.8 mm extruded aluminium
Side beam	200 × 68 × 2.3 mm extruded aluminium
Between modules	170 × 68 × 2.3 mm intermediate beam
Blade pivots	Blades rotate on pivots in the side beams
Post	150 × 150 × 3.0 mm extruded aluminium, with downpipe inside
Gutter	Integrated 89 × 58 × 1.5 mm gutter in the perimeter frame, draining through the posts
Alloy and finish	Extruded aluminium alloy (grade per supplier certificate), polyester powder coat. Standard colours: charcoal (RAL 7024), mid grey, white. Black available at extra cost.
Fixings	Stainless steel. Grade 316 within 500 m of the sea, 304 minimum elsewhere.
Sensors	Rain sensor included, closes the roof automatically. Wind sensor optional.
Lighting	Dimmable LED strip around the frame, included.
Options	Motorised drop-down blinds between posts, radiant heaters, privacy screens.

Design limits

Blade span	4.2 m maximum between beams (module width). Wider roofs are split into equal modules.
Blade rotation	0 to 150° (to be confirmed with supplier).
Overall size	Up to 12 × 12 m.
Posts	Any open edge with more than 6 m between supports gets an intermediate post. The house wall counts as a support.
Intermediate beams	Freestanding roofs: over 6 m. Attached to the house: over 8 m, or wherever the blade span needs one.
Height	2.4 m, 2.7 m or 3.0 m to the underside of the frame as standard.
Wind	Posts, fixings and footings are designed for each site's wind zone (NZS 3604 / AS/NZS 1170.2) by a Chartered Professional Engineer.

Building Code and consent

Building consent	Required over 30 m². An attached roof of 20–30 m² at ground level may be exempt under Schedule 1, exemption 17A, where a Licensed Building Practitioner designs or supervises the work. Confirm with your council.

B1 Structure	Specific engineering design for each project, covering wind, snow and earthquake loads.
B2 Durability	Aluminium and stainless steel components selected for the exposure zone. Durability period to be confirmed in the project specification.
E1 Surface water	Roof water collected in the integrated gutter and discharged through the posts to an approved outfall.
E2 External moisture	Head flashing over the wall beam, lapped behind the cladding and building wrap (MH-TD-03, MH-TD-04).

Care and maintenance

- Wash the frame and blades with fresh water and a soft brush every 3 months, or monthly within 500 m of the sea.
- Clear the gutters and post outlets every 6 months, more often under trees.
- Run the roof through a full cycle every month to keep the drive free.
- Do not operate the roof in high wind, or with snow or ice on the blades.

Warranty

[To be confirmed]

Typical details

MH-TD-02	General arrangement
MH-TD-03	Wall fixing: timber-framed wall
MH-TD-04	Wall fixing: concrete or block wall
MH-TD-05	Post fixing: existing concrete slab
MH-TD-06	Post on new concrete footing
MH-TD-07	Beam to post connection and drainage
MH-TD-08	Drop-down blind: cassette and guide rail
MH-TD-09	Post plan details and fixing schedule

This data sheet supports a building consent application. Project-specific drawings, engineering and specification are provided by MOTE Home for each job. Information is correct at the date shown and may change without notice.

MOTE HOME

Louvre roofs, designed and installed

Installation guide

MH228 retractable louvre roof



MH-IG-01 Rev A 13/11/2026

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Before you start

This guide sets out how a MOTE Home crew installs the MH228 retractable louvre roof. Follow the steps in order. It is based on the manufacturer's installation instructions (2024) and adds our own fixing, sealing and commissioning requirements.

Read it with

Project documents	Consented drawings, the engineer's design and any producer statements for this job. These take priority over this guide.
MOTE typical details	MH-TD-01 general arrangement, MH-TD-03 to MH-TD-08 fixing and drainage details, MH-TD-09 fixing schedule, MH-TD-10 profile schedule.
Motor instructions	The motor supplier's wiring and limit-setting instructions supplied in the box.

Safety

- Wear a hard hat, gloves and safety glasses. Use ladders and platforms that suit work at height, and follow WorkSafe guidance.
- Lift beams and frames with at least two people. Do not work in strong wind or rain.
- Electrical connection to the mains is done by a registered electrician only.
- An incorrectly installed roof can fall and cause serious injury. Do not skip steps or leave out fixings.

Check the delivery

- Unpack and check the type and quantity of every component against the packing list.
- Inspect each part for damage before you start. Photograph any damage and report it to the office the same day.
- Do not install a damaged part. A damaged part can fail and fall.

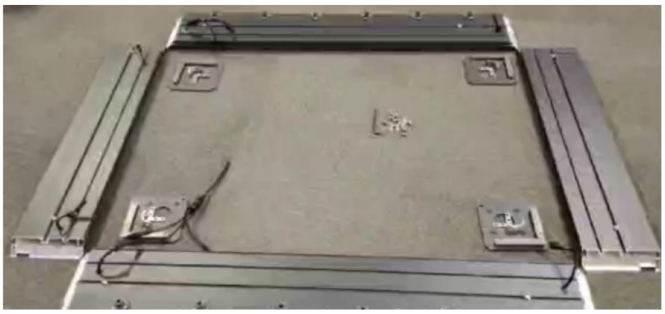
Tools

From the manufacturer	Also needed on MOTE jobs
Gloves, hard hat	Laser level and string line
Hammer, tape measure	Impact driver and SDS drill with masonry bits
Level and spirit level	Chemical anchor gun, brush and blow-out pump
Drill, ladder	Neutral-cure silicone and sealant gun, packers, touch-up paint

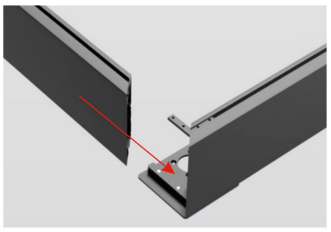
Crew of two to three. Typical install time for a 6 × 6 m two-module roof is one to two days once footings are in.

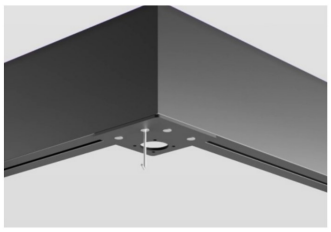
Stage 1 Assemble the side beams

1 Lay out the side beams, louvre blades and brackets. Check every part against the packing list.



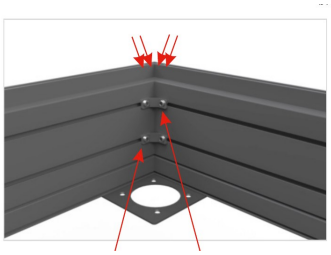
2 Fit the L-shaped bracket. Push the left and right side beams together so there is no gap between them, then lock the screws. Slide the beams into the bottom plate.

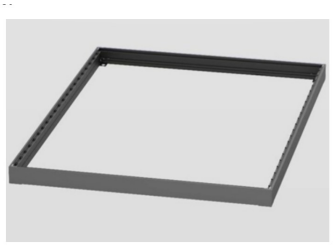




3 Fit the bow-shaped corner bracket at each corner. When all four corners are done the side beam frame is complete.

Check the frame is square: the two diagonals must match within 5 mm.

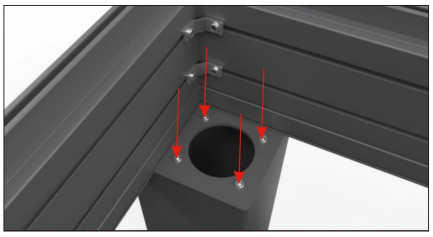


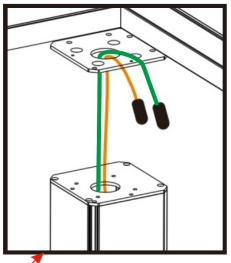


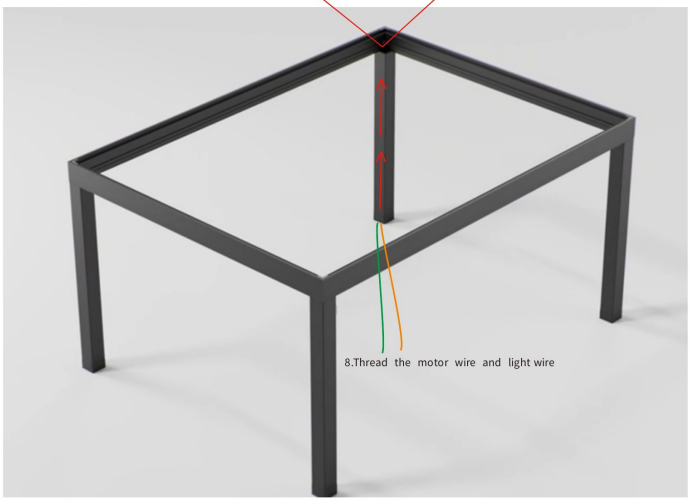
Stage 2 Fit the posts and run the cables

4 Fit the posts to the frame at the corner brackets. Thread the motor cable and the LED cable down through the post that will carry the power, and out at the base.

Cables run inside the post to a junction box at the base (MH-TD-07). Agree the cable route with the electrician before standing the frame.





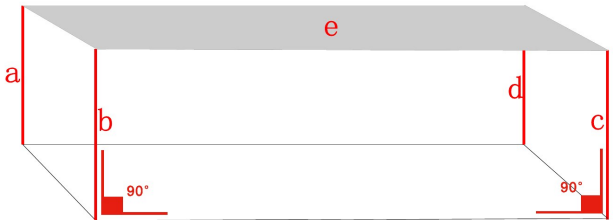


Stage 3 Check the site

Do this before fixing anything. Most problems with blades not closing, motor faults and noise come from a frame that is out of level.

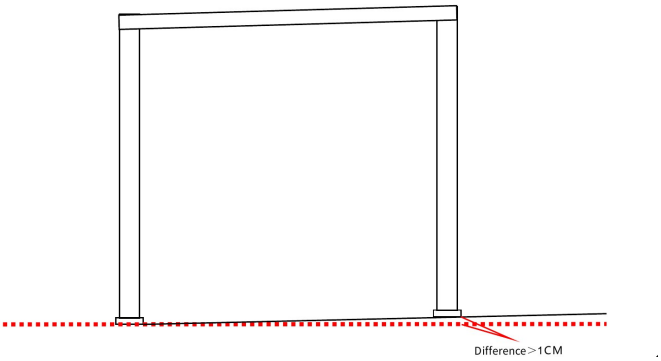
5 Check the ground with a level. Where the ground falls, set the post heights so the top of the roof is level, not the posts.

Measure the height at the four corners a, b, c and d. They must be the same, so the top plane e is level.



6 Stand the posts plumb. If the four corners differ by more than 10 mm the roof will tilt. Blades may not close tightly, the motor may fault and the roof will be noisy.

MOTE tolerance: corners within 5 mm, posts plumb within 3 mm over their height.



Stage 4 Fix the posts

7 Mark out the post positions with a chalk line. Check the diagonals.



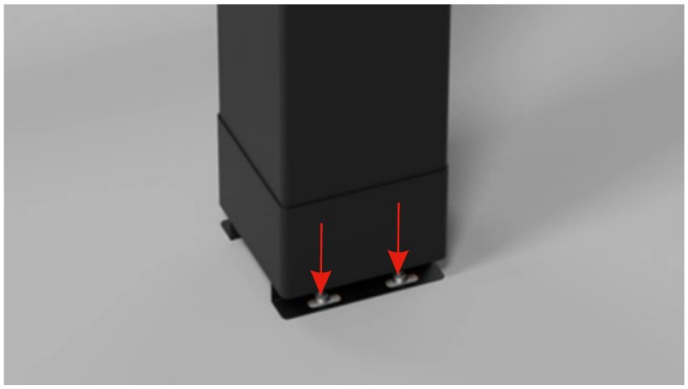
8 Drill the anchor holes at the marked positions.

Existing slab: 4 × M12 × 120 SS316 chemical anchors, 90 mm embedment, 100 mm minimum edge distance (MH-TD-05). New footing: cast-in M16 bolts (MH-TD-06). Clean the holes before injecting.



9 Fix the base to the ground.

Pack under the base bracket with 3 mm HDPE packers to level. Seal around the base.



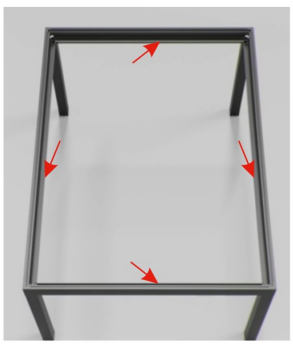
10 Post installation is complete. Recheck level and plumb before moving on.



Stage 5 Fit the gutters and track mounting brackets

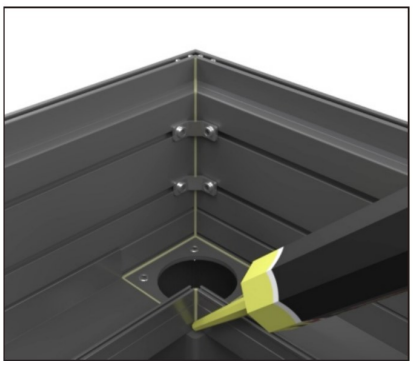
11 Fit the gutters into the side beams.





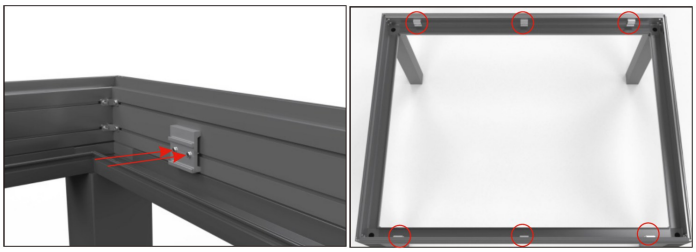
12 Fix the gutters, then run sealant along the marked line at every joint and around each outlet.

Use neutral-cure silicone. Check each outlet lines up with the downpipe in the post.



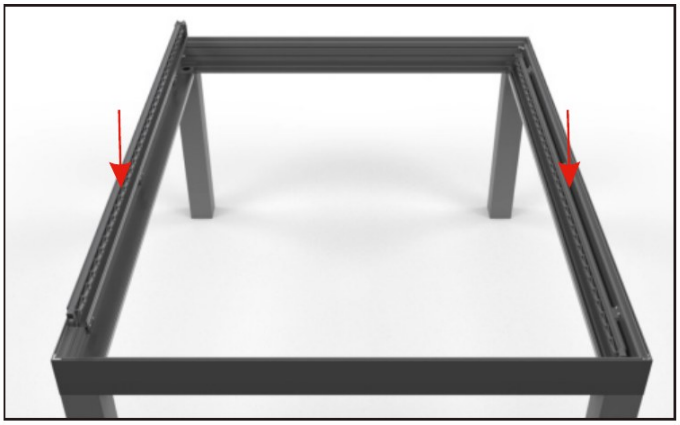


13 Fix all the track mounting brackets to the beams, matching the labels on each bracket.



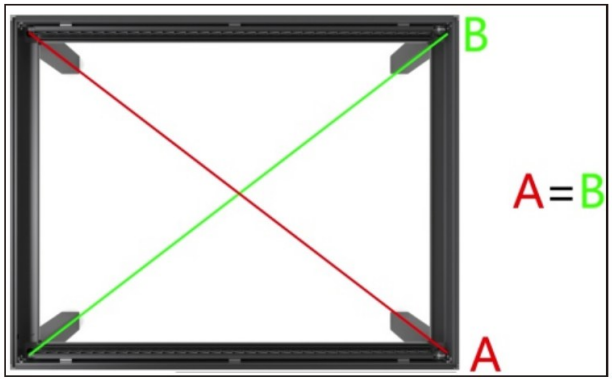
Stage 6 Fit the tracks

14 Fit the two tracks, one on each side.

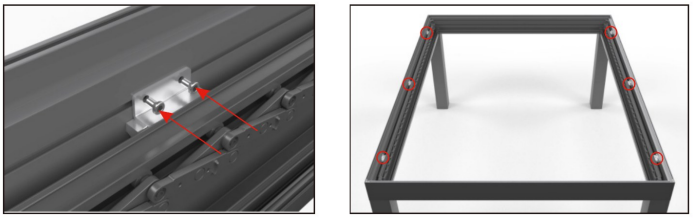


15 Measure the diagonals between the tracks and adjust until they match (A = B). The tracks must be parallel.

Within 2 mm. Out-of-parallel tracks make the blades bind.

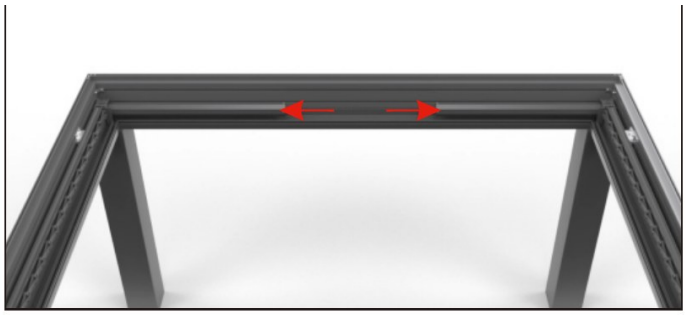


16 Fit the track fasteners at every track mounting bracket.

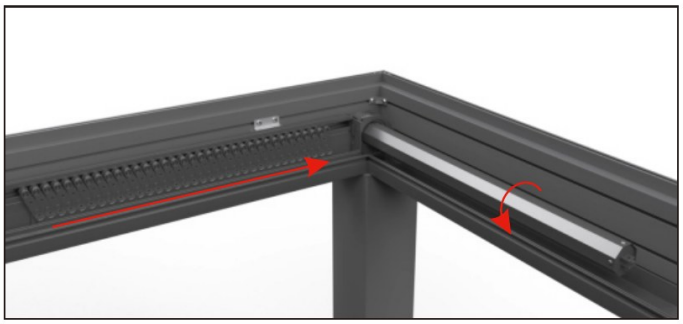


Stage 7 Fit the motor and wiring

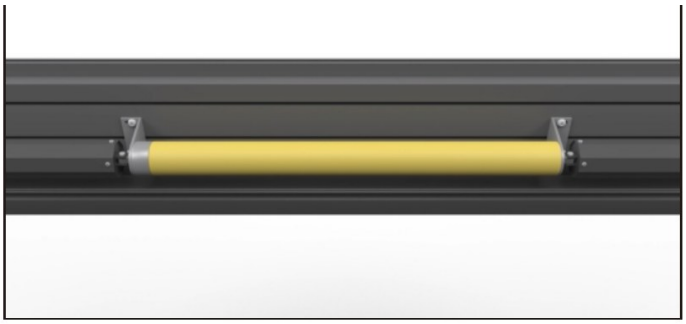
17 Fit both octagonal drive tubes.



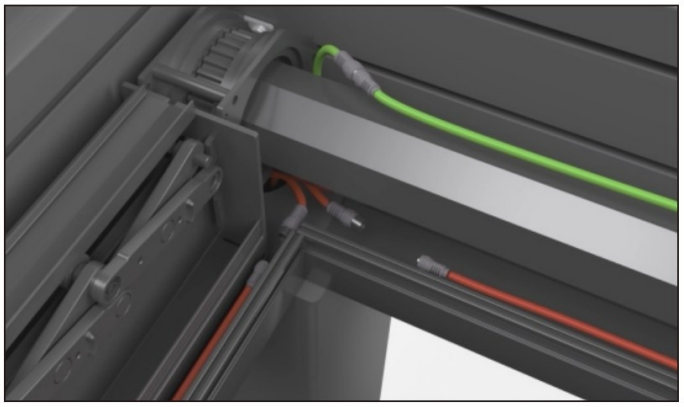
18 Turn the drive tube by hand and tighten the hinge chain to one side.



19 Connect the motor to the drive tubes on both sides, then fix the motor.

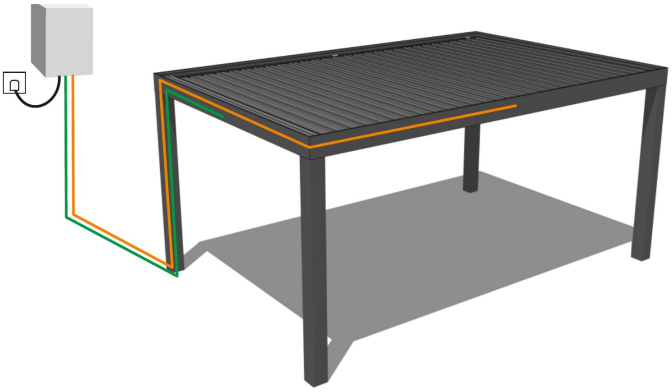


20 Connect the motor cable and the LED cable as shown in the wiring diagram.



21 Wiring diagram. Green is the motor cable. Orange is the LED lighting cable. Both run down the post to the junction box.

Mains connection, isolation switch and certificate of compliance by a registered electrician.

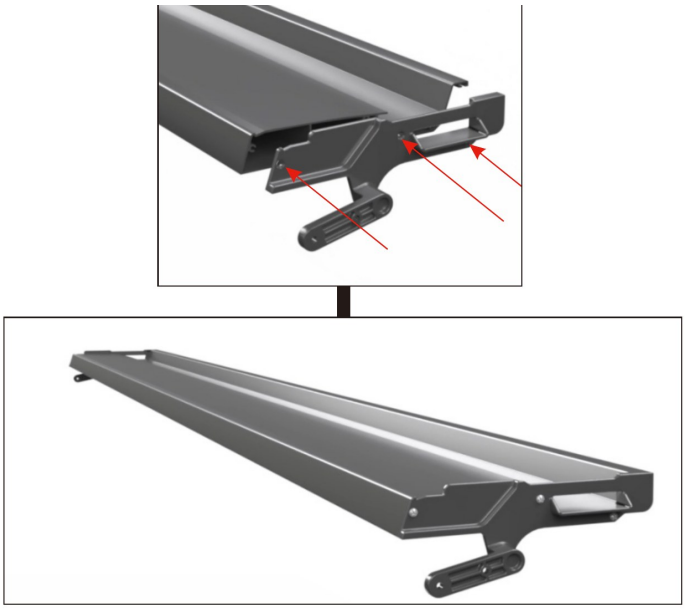


Stage 8 Set the motor travel and prepare the blades

22 With the hinge chain disconnected from the motor, set the motor travel limits. Follow the motor supplier's limit-setting instructions and video.

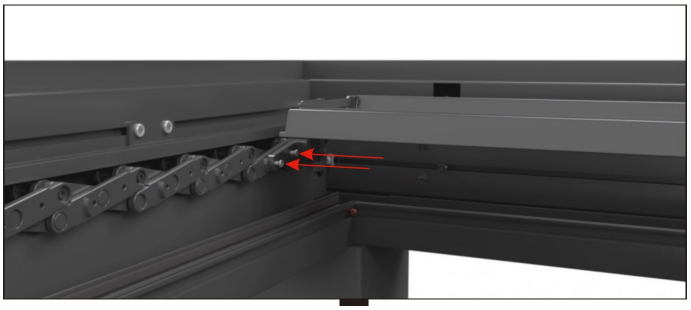


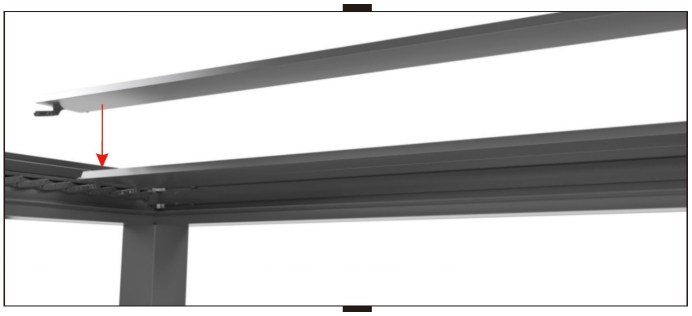
23 Fit the end fittings to each louvre blade.



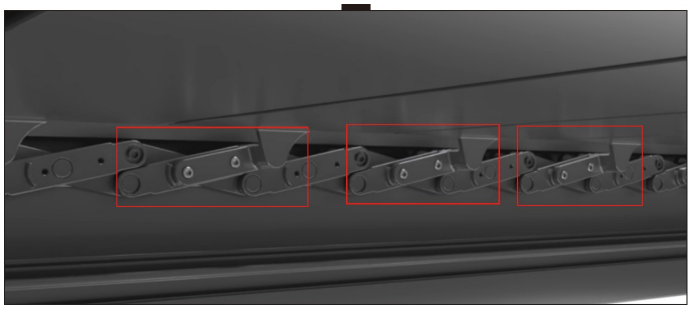
Stage 9 Fit the blades

24 Attach the blades to the hinge chain one at a time, working along the module.



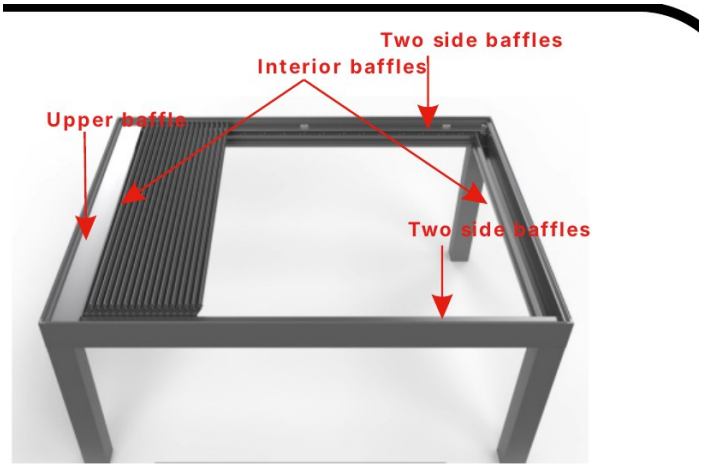


25 Check the blades are evenly spaced on the hinges before moving on.

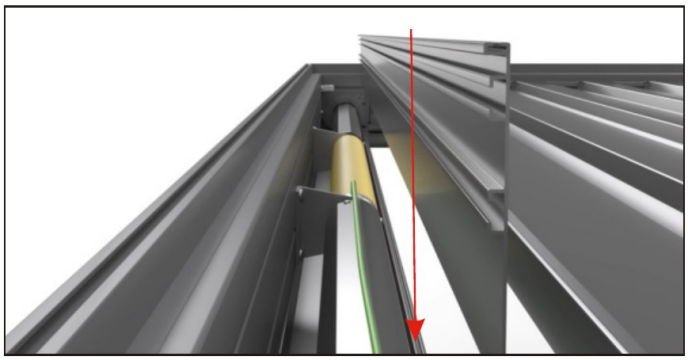


Stage 10 Fit the baffles

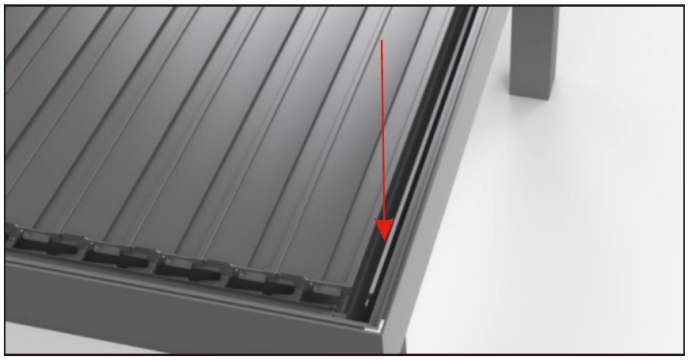
26 Fit the baffles at every position shown: the upper baffle, the interior baffles and the two side baffles.



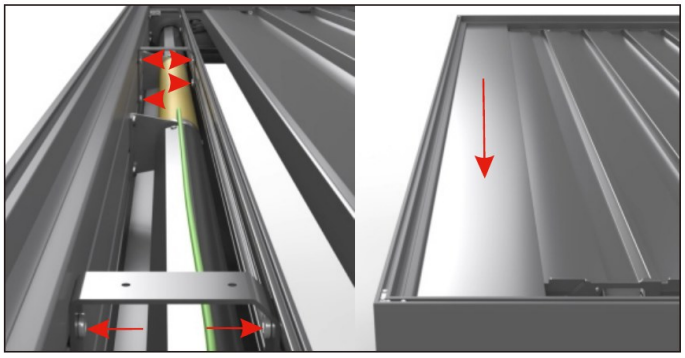
27 Fit the interior baffles.



28 Fit the interior baffles on the other sides.

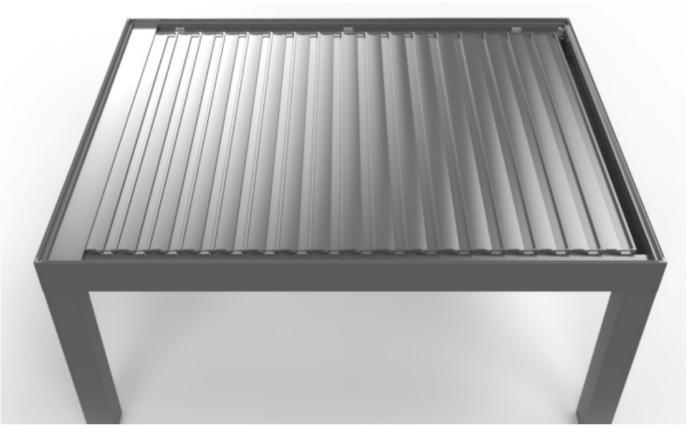


29 Fit the upper baffle bracket first, then the upper baffle.



Stage 11 Power on and commission

30 Installation is complete. Power on and run the roof through its full travel, closed to fully retracted.





Commissioning checklist

Complete on site, sign, and file with the job. Give the client a copy with the warranty and care guide (MH-WC-01).

- ☐ Frame level and square, posts plumb (within MOTE tolerance)
- ☐ All fixings fitted and tight, to the fixing schedule (MH-TD-09)
- ☐ Three full open and close cycles, smooth and quiet
- ☐ Blades close tightly with even gaps
- ☐ Hose test: no leaks, gutters drain to every outlet
- ☐ Rain sensor closes the roof
- ☐ Remotes paired and app set up for the client
- ☐ LED lights and dimmer working
- ☐ Blinds and heaters working (if fitted)
- ☐ Electrical certificate of compliance received
- ☐ Protective film removed, frame cleaned, scratches touched up
- ☐ Photos taken of the finished roof and each fixing type
- ☐ Client shown how to use and care for the roof
- ☐ Warranty and care guide handed over, install date recorded

Job number

Address

Installer (LBP no.)

Date

Signed

Images: manufacturer's installation instructions (2024). Steps reworded and supplemented by MOTE Home. Project documents take priority over this guide.

MOTE HOME

Louvre roofs, designed and installed

Warranty and care guide

MH228 retractable louvre roof



MH-WC-01 Rev A 13/11/2026

MOTE Home Ltd
171 Glover Road, Hāwera 4610
021 113 5983
hello@motehome.co.nz

Your new roof

Thank you for choosing MOTE Home. Your roof is built from extruded aluminium with a powder-coat finish and stainless steel fixings. Looked after, it will give you many years of use. This guide covers how to use it, how to care for it and what your warranty covers. Keep it with your house documents.

Your roof details

Owner	
Address	
MOTE job number	
Roof size and modules	
Colour	
Options fitted	LED lighting ☐ Blinds ☐ Heaters ☐ Wind sensor ☐
Installed by	
Install date	
Delivery date	

Using your roof

- Open and close the roof with the remote or the app. The blades slide back and stack at the motor end.
- The rain sensor closes the roof when it starts to rain. Leave it switched on.
- Keep people, furniture and plants clear of the blades while the roof is moving. Do not hold or block the blades.
- Do not run the roof in strong wind, or with snow, ice, leaves or other debris on the blades.
- In snow or a heavy frost, open the roof and clear the blades before you close it again.
- Do not hang anything from the frame or blades, and do not modify the roof or add anything to it.

Incorrect use can damage the roof or injure you or others.

Care and maintenance

Aluminium and powder coat last longest when salt, dust and leaves are washed off regularly. Within 500 m of the sea, or near geothermal areas or industry, clean more often.

Task	Standard	Coastal (within 500 m of the sea)
Wash the frame and blades with fresh water and a soft brush	Every 3 months	Monthly
Clear the gutters and check water runs out of every post outlet	Every 6 months	Every 3 months, or monthly under trees
Run the roof through a full open and close cycle	Monthly	Monthly
Check screws and fixings are tight	Every 12 months	Every 6 months
Test the rain sensor with a little water	Every 6 months	Every 6 months
Replace the remote battery	When the range drops	When the range drops
MOTE Home service check (optional)	Every 2 years	Every year

How to clean

- Rinse with fresh water first, then wash with a soft brush or sponge and a mild, pH-neutral detergent. Rinse off well.
- Do not use abrasive pads, solvents, acid or alkaline cleaners. They damage the powder coat.
- Do not point a water blaster at the seals, motor or electrical parts.
- Wipe dust off the LED strip with a damp cloth when the lights are off.

If something is not right

What you notice	What to do
The roof feels shaky	Check for loose screws and tighten them. If it is still shaky, call us.
Grinding or squeaking when it moves	Apply a little silicone spray lubricant to the moving parts at the noise. Do not use grease or oil on the blades.
The roof will not move	Check the power and the remote battery. If it is raining, the rain sensor will keep it closed.
Blades do not close tightly	Check for leaves or debris on the tracks and blades. Do not force the roof. Call us if it continues.
Water leaking at the edges	Clear the gutters and the post outlets. If it still leaks, call us.

Never open the motor housing or the electrical junction box. Electrical work must be done by a registered electrician.

Your warranty

DRAFT FOR REVIEW. Warranty periods below are proposed and must be confirmed by MOTE Home, and matched to the supplier's warranty, before this guide is issued.

MOTE Home warrants that your roof is free from defects in materials and workmanship for the periods below, from the date of installation, when it is used and cared for as set out in this guide.

What is covered	Period
Installation workmanship	2 years
Aluminium frame, posts, beams and blades: structural failure	10 years
Powder-coat finish: peeling, blistering or flaking	10 years
Motor, drive, controller and remotes	5 years
LED lighting, rain and wind sensors	2 years
Drop-down blinds and heaters (if fitted)	Per the manufacturer, minimum 2 years

Your rights under New Zealand law

This warranty is in addition to your rights under the Consumer Guarantees Act 1993 and the Building Act 2004. For residential building work the Building Act gives you a 12-month defect repair period from completion, and implied warranties that apply for 10 years. Nothing in this guide limits those rights.

Not covered

- Damage from not following the care schedule, including corrosion from salt or debris left on the roof.
- Damage from misuse, accidents, falling objects, snow or ice loads, or running the roof in strong wind.
- Modifications, attachments or repairs by anyone other than MOTE Home.
- Weather events beyond the design wind zone for your site, earthquakes, fire and flood.
- Normal weathering, minor colour change and fading of the powder coat over time.
- Ground movement or settlement of slabs and footings not built by MOTE Home.

How to make a claim

1. Stop using the roof if it is unsafe, and switch it off at the isolation switch.
2. Contact us on 021 113 5983 or hello@motehome.co.nz with your job number, a description and photos.
3. We will reply within 2 working days and arrange a visit if needed.
4. Keep your maintenance record up to date. We may ask to see it.

Maintenance record

Record each clean, check and service. Keep this page with the guide.

Date	Work done	By	Notes