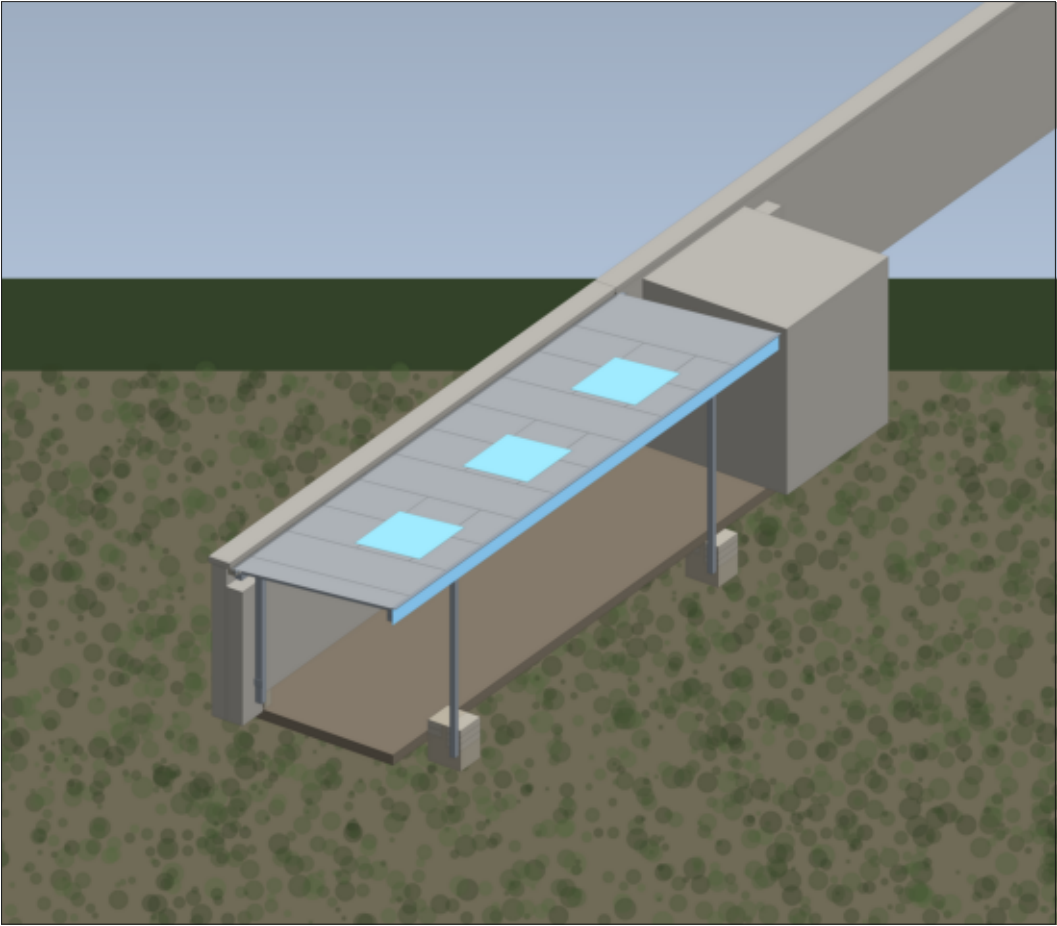




Viewed from the garden, south-east, elevation 30 degrees. Every polygon in the picture is a face of a solid in the model.

THE ROOF

Sheet underside 1.905 m at the wall face, 2.155 m at the eaves: 250 mm of fall across 2.600 m of plan, which is 9.62 per cent. On the slope that is 2.6120 m of sheet at 5.492 degrees. It is measured off the model, not off this note.

Covered area -- general arrangement and details			
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	The model in three dimensions	REV	E
SHEET	02 of 22	DRAWN	CWA-01 model
SCALE	NTS	SLOPE	9.62%
DATE	2026-09-30	LEAST CLEAR	1.788 m
Rendered from the same solids the sections and the take-off are cut from.			

WHAT THE RENDER SHOWS

The wall runs away to the left and the shed end is north of it. The roof is high at the wall and falls 9.6 per cent to the eaves, so the water goes to the gutter at the wall and down the pipe at the north end. The Clearlight band is the pale edge along the eaves: the offside is closed above 1905 mm and open below it.

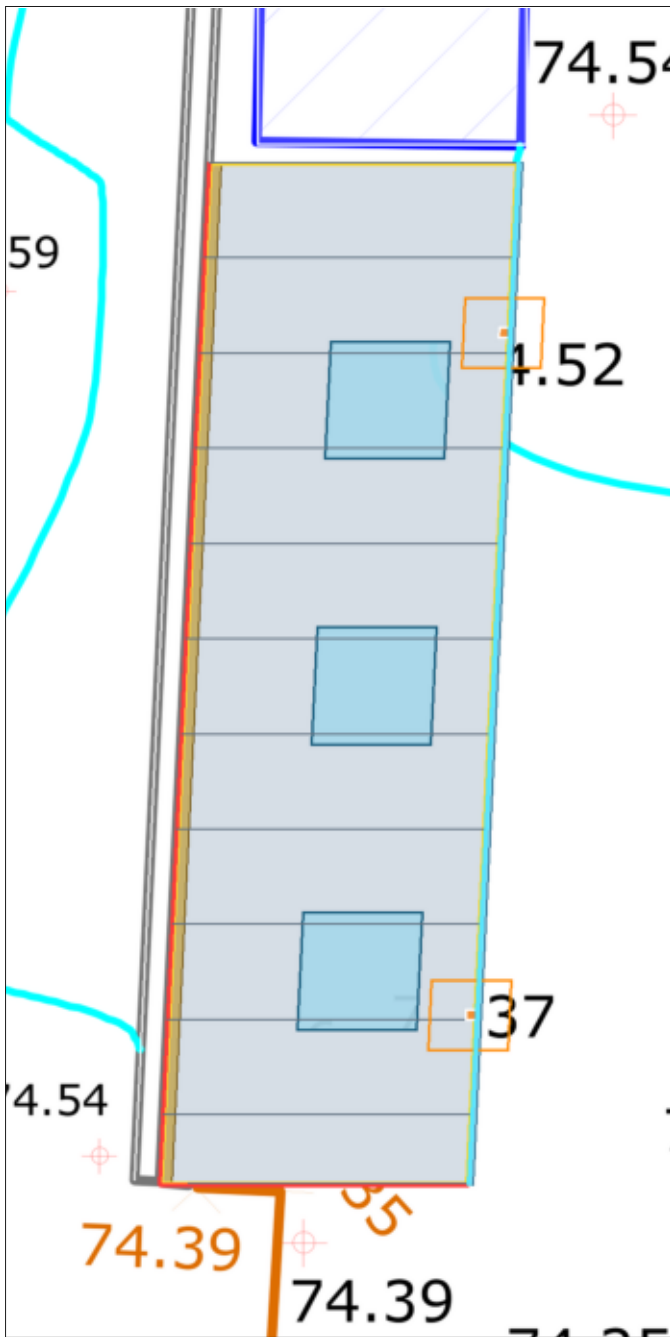
The two posts stand on the 2.550 m line, 1.433 m in from the shed end and 1.433 m in from the other, leaving 5.733 m clear between them. The floor is the 2.600 by 8.600 m covered area.

Nothing in this picture is drawn by hand. It is the same solids the sections are sliced from and the take-off is measured off.

AND THE ROOM UNDER IT

WHERE YOU ARE STANDING	CLEAR	GOVERNING MEMBER
0.00 to 0.27 m from the face	1.788	the two cast-in rail posts, one to each pier and BESIDE it; the rail does not bear on the piers and there is 163 mm of air between its soffit and the tier top
0.27 to 2.51 m	1.888	rafter soffit under a rafter line, 1.911 between them
2.51 to 2.60 m	1.955	the least room under the eaves beam
at 2.60 m, the offside	1.905	the Clearlight band's underside, a screen and not a soffit

Read that against a person. The least room anywhere under this roof is 1.788 m, in the first 265 mm at the wall, and it is fixed by the existing wall rather than by anything chosen here. Everywhere else the roof soffit is 1.888 m, and under all of it a 1.80 m adult stands upright.



The survey, cropped to the job, with the canopy drawn on it. North up.



THE DRONE FRAME, 1:1

The drone frame is 520 x 1518 px. It is shown whole at 1:1, 33 x 96 mm, and the canopy is drawn on the survey beside it, which is a vector drawing and renders at whatever size the sheet needs. A frame from the client of about 949 x 2771 px would let this panel be the photograph.

Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING The canopy in the garden
SHEET 03 of 22
SCALE NTS
DATE 2026-09-30
REV E
DRAWN CWA-01 model
SLOPE 9.62%
POSITION snapped to the survey

WHAT THIS IS, AND IS NOT

The roof drawn into the footprint is a plan of the model, placed with the same survey-derived map used on sheets 01 and 02. It is not a perspective render pretending to be a photograph: the drone frame is a low oblique, and a perspective view dropped into a low oblique would not sit on the ground.

The frame has no reliable scale, so the position is snapped between the two features both records carry: the shed's face and the block return. The 8.742 m between them is taken from the survey, not measured off the photograph.

What the drawing can carry and this photograph cannot: the 9.62 per cent fall, the 1.788 m clear height at the wall, and the 250 mm band along the eaves are all model figures. They are set out on sheets 09, 07, 17 and 06 -- the transverse section, the rafter and lap detail, the wall rail, and the plan.

North is up on both panels and has not been assumed: it is taken from the survey's own arrow and from the two matched features.

Sheet 01 shows the whole surveyed site with the same footprint on it, where it can be checked against the wall, the piers and the shed.

04 SHOULD THIS BE BUILT, OR SHOULD SOMETHING BE BOUGHT?

22.36 m2 of cover, deliverable to Ireland, each one priced as it is sold. Only the first is firm. The rest are captured list prices and are marked as such.

This job's figure is materials and nothing else, and it is the only figure on this sheet that is. Every product below is a delivered article, most are delivered and erected, and every one of them carries its own base, so this job's number is understated by its erection. No figure is put there for that, because nobody has quoted it and an invented number would be worse than a missing one. A base is priced into every other line, because a free-standing article on this ground needs one and a figure without it is not a price anybody can act on.

What is priced on every line. SIP Kits Ireland, published 6 inch (150 mm) concrete slab rate, from EUR 210.00/m2 ex VAT, assuming no site levelling required. That page prices groundworks on request, so levelling, excavation and access to this garden are in no figure on this sheet. It is a structural slab rate and a steel shed does not need one that thick; it is used because it is the only euro slab rate published by an Irish supplier.

WHAT IT IS	m2	PRODUCT	BASE	TOTAL	PER m2	WHERE THE PRICE CAME FROM
A BESPOKE STEEL CANOPY, as this drawing set	22.4	EUR 3929	included	EUR 3929	EUR 176	This drawing set. Priced line by line on sheet 19 and checked to Eurocode. The figure is taken from the bill on this set, not typed here.
B TIMBER CARPORT KIT, 4.05 x 5.09 m, pent roof	20.6	EUR 6800	EUR 738	EUR 7538	EUR 366	Summerhouse24.ie, Garden Ireland Ltd, product G0404, captured 2026. Delivery quoted at 6 to 10 weeks; assembly priced separately by the same Irish supplier.
C CHEAPER STEEL GARDEN SHED -- CANNOT BE DELIVERED TO THIS ADDRESS	18.0	EUR 4195	EUR 4649	EUR 8844	EUR 491	The Shed Company, theshedcompany.ie, price list captured 2026. All prices stated to include VAT, delivery and professional assembly.
D NEW 20 ft SHIPPING CONTAINER, DELIVERED AND FITTED OUT	13.5	EUR 3499	EUR 3489	EUR 6988	EUR 517	Irish marketplace listing, Limerick, delivery included, captured 2026. Container specification from TITAN Containers Ireland, titancontainers.ie, who run a Cork depot and state Ireland-wide delivery: TITAN publish specification and 'get a quote' and no price.
E PRE-FAB STEEL GARAGE, 5.0 x 4.0 m, non-drip	20.0	EUR 5950	EUR 5166	EUR 11116	EUR 556	Steeltech Sheds Ltd, Tuam, Co. Galway -- steeltechsheds.ie, 2026 price list, showrooms in Dublin, Limerick, Bray, Athlone and Galway. Prices stated valid to 31 August 2026.

WHAT THE NUMBERS COVER

- A** VAT: This bill is priced EX VAT throughout, as the whole set is. VAT at 23 per cent is added here so the line compares with the others on this sheet. BASE: Included in the materials figure: four pad block collars, four rail post footings, hard-core and the inspection chamber. The foundations are not added to this job's number because they are already in it
- B** PRODUCT: Published EUR 4,220 kit + EUR 2,270 assembly + EUR 310 guttering. Roofing felt is an optional extra from EUR 560 and is not in this figure VAT: as published, in euro, by an Irish company BASE: Post foundations only, not a slab: six pads for a carport frame, priced from this job's own footing rate rather than quoted
- C** PRODUCT: Published range EUR 1,890 to 6,500 including VAT, delivery and professional assembly. Midpoint taken for an 18 m2 unit VAT: including VAT, delivery and assembly, as the supplier states BASE: Still needs a base: 18 m2 at the slab rate including VAT. This supplier offers a base laying service separately and does not price it on their list
- D** PRODUCT: Published EUR 3,499 with delivery included. A new unit: the earlier version of this sheet used a second-hand container and it has gone, because a used container's interior condition and its floor and door seals are not something that can be priced from a photograph, and a lined, insulated room is the whole use here VAT: Irish consumer price, taken as VAT inclusive. TITAN should be asked to quote a genuinely new unit from the Cork depot, which is the nearer supply. BASE: A 2,150 kg box needs a slab or engineered bearers, not grass. 13.51 m2 at the slab rate including VAT
- E** PRODUCT: Published EUR 5,950. The supplier states the price already carries their discount; it does not state whether VAT is included, so it is shown as VAT inclusive and flagged VAT: Not stated by the supplier; treated as VAT inclusive and flagged on the row BASE: Required and not supplied. The supplier's own words: a concrete base is required for most of their sheds, and they do not deliver or install through houses -- you must have clear external access to the concrete base outside your home. 20 m2 at the slab rate including VAT

AGAINST BUILDING THIS, ONE LINE EACH

- A** The only option with a firm, itemised price, and the only one whose foundations are already inside the number. It is also the only one that uses the two piers you already have, hangs off the wall, gives an open soffit, a gutter and a band of light, and leaves the ground clear. It is understated here by its erection, and that is the honest state of it.
- B** A real, available, euro-priced Irish kit and the nearest thing to this job on money. Against it: a 1:10 felt roof on boards rather than a canopy with a gutter and a fall, 2.47 m high against a 2.3 m wall, a 6 to 10 week lead, and the felt is an extra. It is a garden shelter, not a wall-hung canopy.
- C** Listed because it is the cheapest published shed in Ireland and because it cannot be had here. Their own delivery page states that steel sheds are available across most of Ireland but that they are currently unable to deliver to Donegal, Kerry, Mayo, West Cork and Sligo. Banteer is in West Cork. Every euro on this row is academic.
- D** Delivery is in this figure and it still costs more than the canopy's steel. It is 13.51 m2 against 22.36, which is 60 per cent of the area and 8.85 m2 short, and it needs a base for 2.15 tonnes. One thing has to be confirmed: the listing does not state the unit's condition, and this row has been rebuilt on the basis that a new unit is wanted.
- E** The most expensive option on this sheet, and its base alone costs more than the entire steel frame of this job. Its supplier will not lay the base and will not install through the house. It is also a box in the middle of the garden rather than a canopy on the wall.

What the sheet says. Pricing the bases changes the answer, and so does dropping the used container. PRE-FAB STEEL GARAGE, 5.0 x 4.0 m, non-drip is the biggest line on this sheet at EUR 11116 including its base, and its base alone at EUR 5166 costs more than the entire steel frame of this job, while its own supplier will not lay the base and will not install it through the house. The cheapest steel shed published in Ireland cannot be delivered to Banteer. The real choice is this canopy or a timber carport kit, and this job's figure is understated by its erection while every product here includes its own. Deliberately missing, because nobody has quoted them: an erection figure for this job, a euro price for a confirmed-new 20 ft delivered, and any site levelling.

Where every figure came from. All figures on this sheet include VAT at 23 per cent. Every source is an Irish supplier quoting in euro; nothing here is converted from Sterling, and anything that only existed in pounds was removed, because a price that only exists in pounds is a price for something that is not really sold in this country. These are published list and marketplace prices, not quotations. Where a supplier does not state whether its published figure carries VAT, that is said on the row rather than guessed. Not on the list: A 40 ft SHIPPING CONTAINER, ON FIT. It is 12.19 m long and this run is 8.74 m, so it does not go along the wall; and at 2.44 m wide against a 2.60 m deep garden it would fill the whole strip with no room to walk round it. It could lie lengthwise in the 15.7 m stretch north of the shed, but that is a different part of the garden from the one this canopy serves, so it is not an answer to this question. Anything quoted only in Sterling. Two timber kits priced in pounds were on the first version of this sheet and have been taken off it. A conservatory, glazed extension or sunroom: same area, and a different project with different consents. Tiled, slated or thatched: pitched roofs, and this wall takes a 1:8.7 fall.

What this sheet is. Indicative, captured from Irish suppliers' own published prices and marketplace listings, not quoted. Only option A is firm. All figures include VAT at 23 per cent. Three things are left as holes rather than filled with a guess, because nobody has quoted them: an erection figure for this job, a euro price for a confirmed-new 20 ft delivered, and any site levelling. Before this decides anything, ask Steeltech for a VAT-inclusive delivered-and-erected figure with a base quote, and ask TITAN at Cork for a new 20 ft delivered.

Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING	What else could this be	DRAWN	CWA-01 model
SHEET	04 of 22	AREA	22.36 m2
SCALE	N/A	THIS JOB, MATERIALS	EUR 3928.77 inc VAT
DATE	2026-09-30	LARGEST ALTERNATIVE	EUR 11116 inc VAT
REV	E	ALL PRICES	base INCL and EXCL

All figures include VAT at 23 per cent. Only this job is firm. Source: suppliers/whole_build_alternatives.json

05 EXISTING CONDITIONS, AS SURVEYED

Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING Existing conditions and survey reconciliation
SHEET 05 of 22
SCALE 1:125
DATE 2026-09-30
REV E
DRAWN CWA-01 model
SURVEY JM Surveys 23-05-1048, May 2023

Set-out datum +0.000 = FFL 74.40 OD. Cap Cap top +1.980 = 76.380. Y = 0 at the shed's south face, increasing southward.

Every figure on this sheet is read out of the survey's vector content, not off the raster. The content stream sits under a single base CTM of 0.12 and its own y axis points up, so the mapping is device_x = user_x x 0.12 and device_y = 1191 - user_y x 0.12, and 1 m = 94.49 drawing units, checked on the shed, the Porto cabin and the container.

The compass rose on the survey points up the sheet, and the content stream's y axis points up with it, so INCREASING survey y is NORTH. The shed (y 2762-2976) is therefore the northmost thing on this stretch of wall, pier B (2448-2491) is south of it and pier A (1936-1979) is the southernmost: the canopy run is at the SOUTH end of the wall, the brief's bottom left of the survey, with the shed at its north end. Y here is measured from the shed's south face and increases SOUTHWARD, so on this plan, north up, Y increases DOWNWARDS the page.

BRIEF AGAINST SURVEY

ITEM	SURVEY	BRIEF	GOVERNS
Available run, southern pier face to the shed	8.7417 m	brief 8.890 m	SURVEY
Support tier width along the wall	455 mm (both)	brief 480 mm and 440 mm	SURVEY
Support tier projection from the wall face	247 to 255 mm	brief 440 mm	SURVEY
Tier top below the cap LIP	220 mm	brief 220 mm	SURVEY
Wall top level at the two ends of the run	76.38 OD at the north end	-	SURVEY

WHAT THIS CHANGES

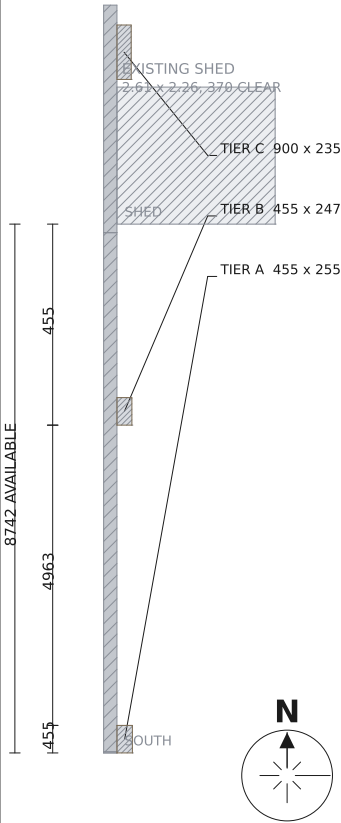
The run. The brief's 0.480 + 5.000 + 0.440 + 2.970 = 8.890 m. The survey gives 0.455 + 4.963 + 0.455 + 2.868 = 8.7417 m. The 148 mm is all in the brief's recollection. The 8.600 m run is the client's instruction and is unchanged; the slack at the shed end is 141.7 mm, not 290 mm, and it is taken there because the canopy is set hard to the outer face of the southern tier so the roof edge lines up with the masonry.

The tiers. 440 mm of projection in the brief is 255 and 247 mm on this wall, measured off its leaning east face. The 440 mm figure is real 40 m further north, on the wall's north return and on piers G and H, so the brief has carried a number from the wrong part of the wall. The rail projects 243 mm and is carried by 2 cast-in posts beside them, one to each; it does not bear on the piers at all, which is why their top level governs nothing and there is no hold item on it.

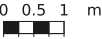
The levels. WH 76.38 OD is on this wall at Y -2.19, just north of the shed. WH 75.31 is 16.87 m further north again and it is the LOWER of the two. The canopy is set out at 76.38 because the HIGHER wall top is the worse case: it puts the cap soffit lowest over a fixed floor level. Going further north on the second level would be extrapolating 19 m past the shed for no benefit.

The cap soffit. Two wall-top levels 16.87 m apart fall at 6.34 per cent. Extrapolated 10.9 m south along the run, the cap soffit rises up to 0.69 m above the design soffit at the south end. The run itself carries no level at all. That is hold item H2, and the reason is the roof's height: the trough was moved out to clear the ductwork and that took 108 mm off the headroom, so the cap soffit on site has to be surveyed and the sheet's turn-down has to be cut to what is found.

VIEW A 1:125



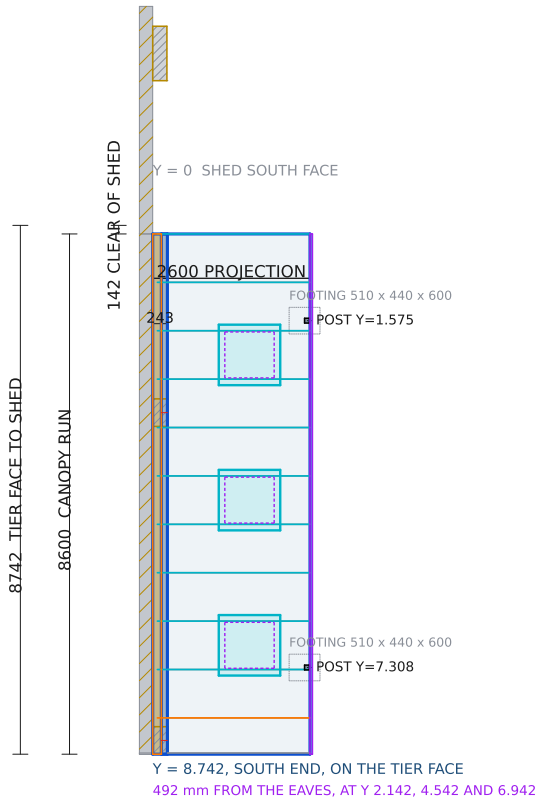
SCALE 1:125 (ON THIS SHEET)



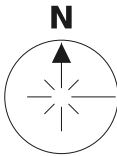
06 GENERAL ARRANGEMENT PLAN

North is up. Y increases downwards the page, southward from the shed. Wall face at x = 0.

VIEW A 1:125



SCALE 1:125 (ON THIS SHEET)



Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING General arrangement plan
SHEET 06 of 22
SCALE 1:125
DATE 2026-09-30
REV E
DRAWN CWA-01 model

Plan 1:0. North up. Y from the shed, southward. All dimensions in mm unless noted.

KEY TO THE PLAN

- Canopy outline, the HEAVIEST line on the plan; wall rail SHS 100 x 100 x 5, 243 mm projection
- Rail posts SHS 100 x 100 x 5, 2032 mm, 2 no., ONE BESIDE each pier, on their own pads; the piers carry nothing
- Rafters SHS 40 x 40 x 3 at 800 centres, 11 no. -- GREY, and the only grey that runs ACROSS the canopy
- Eaves beam, 2 no. SHS 80 x 80 x 4 stacked, 160 deep; gutter 4 in bevel, 7 brackets at 1.400 m
- Roof sheet, Colourclad 0.6 mm, 1000 wide, lapped in CYAN
- Clearlight 250 mm band, VIOLET, and the rooflight opening: the only violet on the plan
- Rooflight panels, DASHED CYAN, Clearlight box 1016 x 1000, 3 no. at 2.4 m centres, lapped 120 mm
- Existing 220 mm cavity block, pressed cap, solid 13 N/mm2 tiers -- the only GOLD, and the only thing hatched
- Posts SHS 80 x 80 x 4, cast in, at the sixth points -- BLACK, and the only vertical structural line on the plan

PLAN SCHEDULE

MEMBERS every length cut and put in the job, with its own length

MARK	ITEM	SECTION / MATERIAL	LENGTH	QTY
A1	Wall rail, two lengths spliced	SHS 100 x 100 x 5, galvanised	8.600 m	2 no.
A2	Eaves beam, 2 no. stacked on the posts	SHS 80 x 80 x 4, galvanised	6.067 m	2 no.
A3	Post, cast in beside the eaves beam	SHS 80 x 80 x 4, galvanised	2.665 m	2 no.
A4	Footing, unreinforced, cast in with the post	510 x 440 x 600 C25/30	n/a	2 no.
A5	Collar block, 3 courses, to the post	440 x 215 x 100 solid block	100 mm	12 no.
A6	Rafter, on the slope, one to every lap	SHS 40 x 40 x 3, galvanised	2.370 m	11 no.
A7	Eaves beam, 2 no. stacked on the posts	SHS 80 x 80 x 4, galvanised	6.067 m	2 no.
A8	Roof sheet, laid up the slope	Colourclad 0.6 mm box, 1000 wide	2.535 m	11 no.
A9	Clearlight band, cut to its own width	Polycarbonate 1.3 mm, same box as the sheet	8.600 m	3 no.
A10	Gutter, flat back to the rail	4 in bevel	8.600 m	2 no.
A11	Gutter bracket, bolted to the rail	40 x 40 x 3 angle, 300 long	2.100 m	7 no.
A12	Gutter outlet and downpipe	3 in port, 110 mm galvanised	n/a	1 no.
A13	Rail post, cast in, beside the pier	SHS 100 x 100 x 5, galvanised	2.035 m	2 no.
A14	Rail post footing, cast in, unreinforced	200 x 250 x 300 C25/30	n/a	2 no.
A15	Rooflight panel, lapped onto the steel	Clearlight box 1016 x 1000 x 1.3	1.021 m	3 no.
A16	Rooflight opening, cut in the steel	the clear bay, 760 wide between rafters	0.820 m	3 no.

Lengths for the sheet, the panels and the opening are on the slope.

STOCK

what is actually ordered, and what each length yields

MARK	STOCK, AS ORDERED	CUT FROM IT	YIELD	QTY
S1	SHS 100 x 100 x 5, 7.5 m	1 x rail length; 2 x rail post; 1 x rail splice	12.700	2 no.
S2	SHS 80 x 80 x 4, 7.5 m	2 x eaves beam; 2 x front post	17.540	3 no.
S3	SHS 40 x 40 x 3, 7.5 m	11 x rafter; 7 x Gutter bracket angle, flange-mounted	28.147	4 no.

SIXTH POINTS

Posts at Y 1.5750 and 7.3083, which are the sixth points of the 8.600 m run measured from the north end: $8.600 / 6 = 1.43333$, and $5 \times 1.43333 = 7.16667$ added to Y 0.1417. Span 5.7333, cantilever 1.4333 each end, which is the optimum for two posts. Two is the client's number and the sixth points are the optimum for that number.

Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING
SHEET
SCALE
DATE

Roof plan, sheet and lap setting-out
07 of 22
1:100
2026-09-30

REV
DRAWN
SHEETS
LAPS

E
CWA-01 model
Colourclad 0.6 mm box, 1000 wide
200 side, 11 no.

11 no. at 2600 mm on the pitch, 28.21 m bought. The last is trimmed to 600 mm across the run but is bought a full length -- a 600 mm box is not something the merchant roll-forms.

07 ROOF PLAN AND LAP SETTING-OUT

The sheets run down the pitch and lap side by side across the run: ten 800 mm covers plus a 600 mm end bay over 8.600 m gives 11 sheets. It is the LAPS that set the rafter spacing -- the cover is 800 mm, so one rafter lands on every lap -- and that is the widest spacing that does. The rafter then FAILS on deflection at 14.0 mm against L/200, a documented departure at R1.3. The sheeting fixes the pitch, not the other way round.

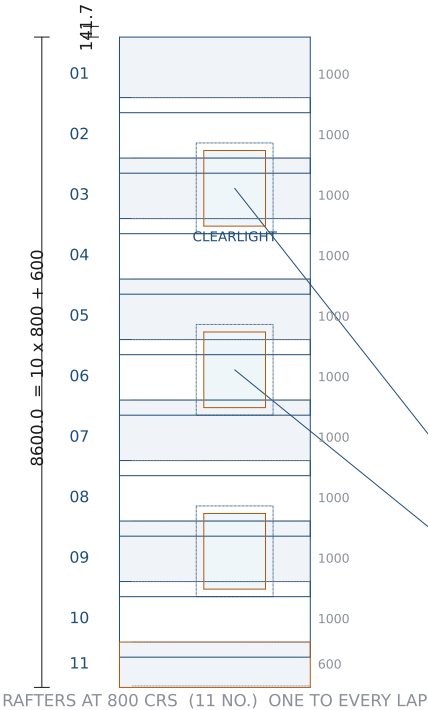
SHEET SCHEDULE

NO.	LEFT Y	WIDTH	FULL	LENGTH ON PITCH
01	0.142	1000	YES	2.565
02	0.942	1000	YES	2.565
03	1.742	1000	YES	2.565
04	2.542	1000	YES	2.565
05	3.342	1000	YES	2.565
06	4.142	1000	YES	2.565
07	4.942	1000	YES	2.565
08	5.742	1000	YES	2.565
09	6.542	1000	YES	2.565
10	7.342	1000	YES	2.565
11	8.142	600	TRIM	2.565
			TOTAL	28.21 m

LAP AND RAFTER INTERFACE

Laps at Y 0.942 to 8.142, every 0.800. Rafters at every 0.800, the first a full bay in from Y 0.142 so the sheeting covers it whole, and one more held clear of the south end. The rafter pitch IS the lap pitch, so there is one rafter under every lap and no lap in the roof with nothing bearing it, which is the condition that lets a 200 mm lap open. 11 rafters, 2.357 m of plan length each, 2368 mm on the slope.

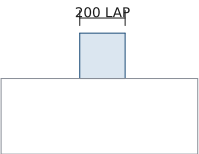
VIEW A 1:100



RAFTERS AT 800 CRS (11 NO.) ONE TO EVERY LAP

760 x 816 OPENING, ONE TO EVERY THIRD RAFTER, 3 NO.

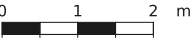
PANEL LAPS 100 mm UNDER THE STEEL ALL ROUND; WEST LAP WEATHER



DETAIL A -- 200 MM SIDE LAP

Sheet 1000 wide, 200 lap, 800 cover, five ribs at 200 pitch, 178 flat pan, 29 deep, 0.6 mm Colourclad, polyester on a galvanised substrate to BS EN 10346. Two rows of GALVANISED EPDM screws at every lap: one through both sheets, one through the lower sheet alone. The gauge went to 0.6 mm with the coating: 0.5 mm is a wall-cladding gauge and this is a roof, and the rib check is 1.17 times stiffer for it. R1.4.

SCALE 1:100 (ON THIS SHEET)

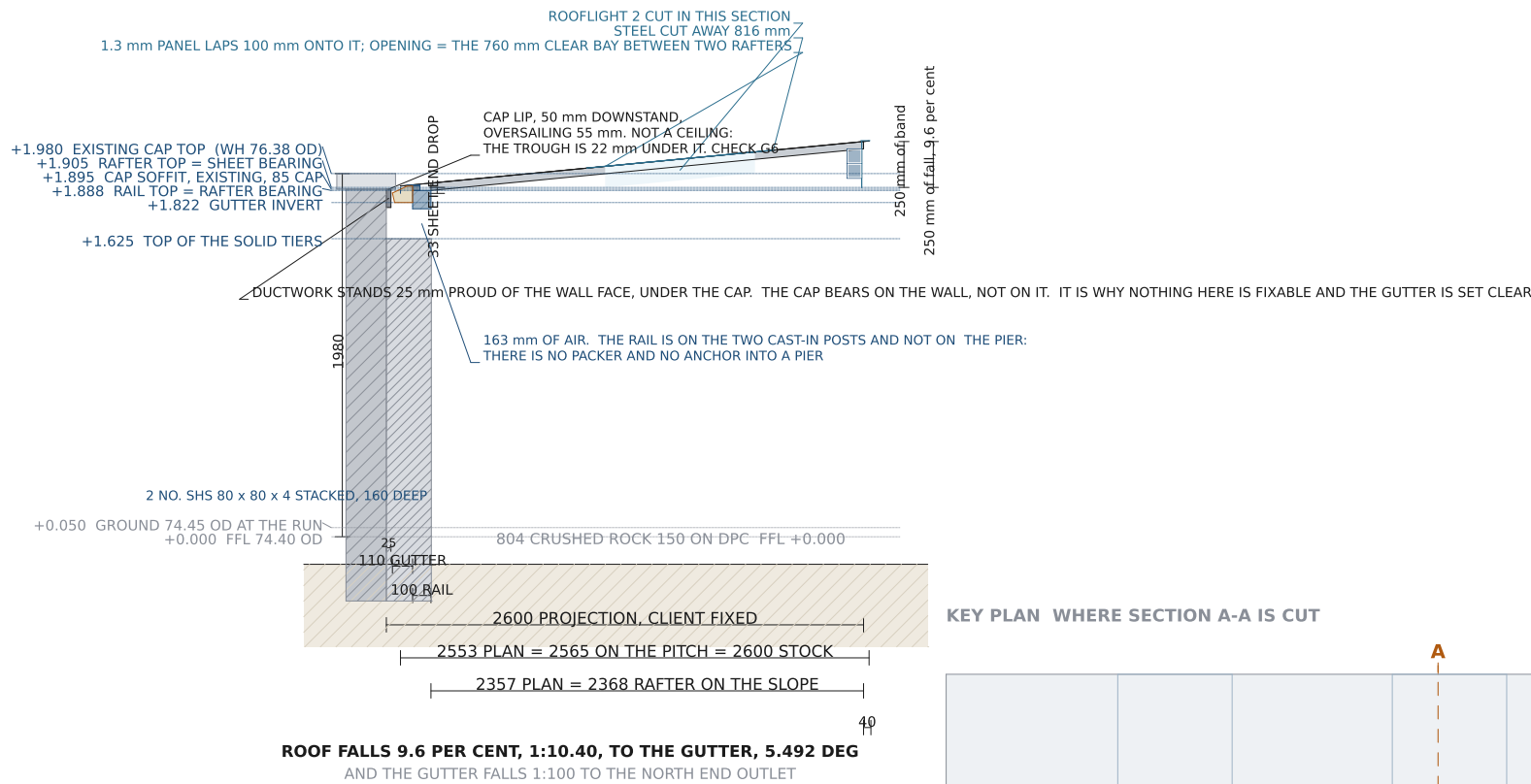


Covered area -- general arrangement and details			
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	Long section on the wall	REV	E
SHEET	08 of 22	DRAWN	CWA-01 model
SCALE	1:40	SECTION	A-A, cut off the sheet at Y 4.44
DATE	2026-09-30	LOOKING	North; Y increases to the left
The Clearlight band's top edge is the sheet underside at the eaves and its bottom edge is the sheet underside at the wall, so the band and the roof step are the same 250 mm.			

08 LONG SECTION, LOOKING NORTH

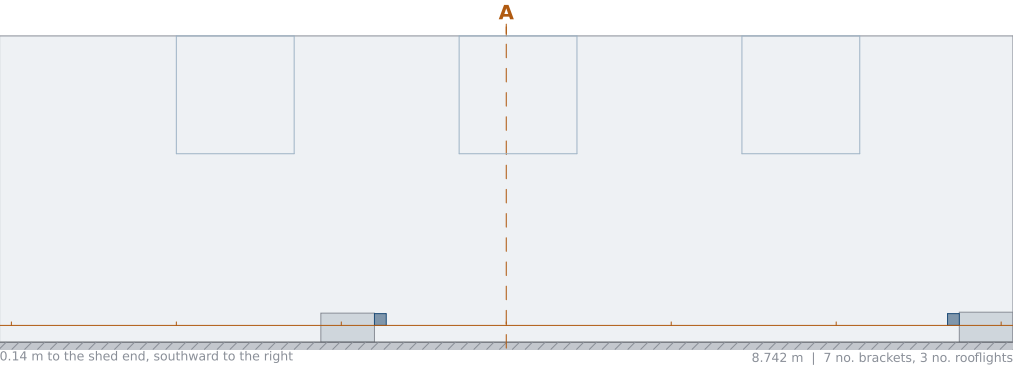
Section through the wall on the line Y = 4.44, cut off the sheet so the rafter, the rail and the gutter are all shown cut, and the Clearlight band is shown beyond, hanging off its top edge and screwed to the beam at mid-height. The roof falls 9.6 per cent to the gutter at the wall, and the gutter falls 1:100 to the outlet at the north end, which is off this sheet to the left.

VIEW A 1:40

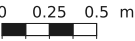


KEY PLAN WHERE SECTION A-A IS CUT

SECTION A-A ON THIS LINE



SCALE 1:40 (ON THIS SHEET)



DRAWING	Transverse section, and why the fall is what it is
SHEET	09 of 22
SCALE	1:40
DATE	2026-09-30
REV	E
DRAWN	CWA-01 model
SECTION	B-B, on the south sixth point Y 7.308
Post set at -0.710, 40 mm above the hole bottom, so the concrete comes under and around it. Pad 510 x 440 x 600, unreinforced. Headroom 1955 clear under the beam soffit.	

09 TRANSVERSE SECTION, LOOKING NORTH

Cut on the south sixth point, Y 7.308, through a post and a rafter. The post is shown cut and the rest is beyond. Looking north, so the wall is on the left and the eaves on the right.

WHY THE BAND IS 250 AND THE FALL FOLLOWS IT

The roof is high at the wall and the slope is off it. The trough sits 33 mm off the wall, which is 8 mm clear of the ductwork's face, and 22 mm under the cap's own edge. That last one is the cost of the offset: the trough's top is still 67 mm ABOVE the lip's bottom face, so the roof never passes under the lip and the lip is still not a ceiling, but in PLAN the trough and the lip are in the same place over that 22 mm and the cap's downstand has to be trimmed along the run. Check G6, and it is not a passing number. THE ROOF'S CEILING IS 20 mm ABOVE THE CAP SOFFIT, the trough's top is 3 mm under that ceiling and 17 mm above the soffit. Above the soffit is pressed concrete and then the wall.

The roof rises 250 mm from the wall to the eaves, which is 9.6 per cent of 2600, or 5.49 degrees. The band is 250 mm tall and hangs from the sheet's eaves edge, top at +2.155, bottom at +1.905. The roof at the wall is +1.905, which is 108 mm higher than it was, and that is the headroom under the canopy everywhere.

THE BAND IS 250 BECAUSE THE SHEET IS 1000 WIDE. The client's condition was that the design must consume an exact multiple of Clearlight sheets and waste none, so the band has to divide 1000 or every sheet leaves a strip down its side. The divisors are 100, 125, 200, 250, 500 and 1000. 500 and 1000 want a fall of 19.2 and 38.5 per cent and a band hung 500 off the sheet's edge, which C4a caps at 125. 200 and below take light away from the one face that sees sky. So 250: four strips to a sheet, three strips for the 8.600 m run, one whole sheet, nothing left over.

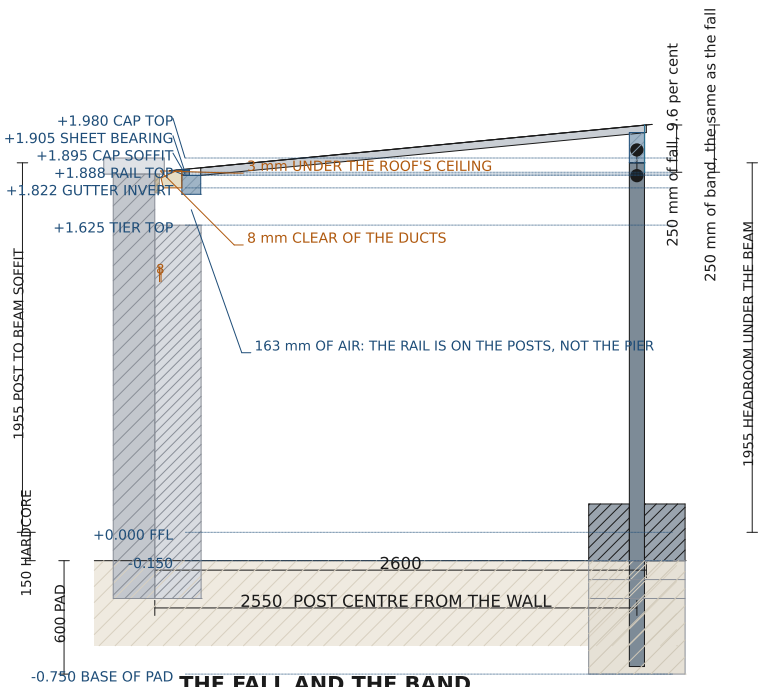
The fall is not a free choice: it is the band height over the projection, which is the whole trick. The sheet underside at the wall is fixed at +1.905 by the existing wall and the cap above it, so with the fall tied to the band the offside soffit is +1.905 whatever else is done, and it is below the 2.000 an adult needs to walk upright. Buying that headroom means falling MORE steeply than the band is deep, which gives up the straight cut: the fall would go to 13.3 per cent, 95 mm more over the projection, and both are drawn and costed. What neither fixes is +1.625 at the wall, which is the solid tiers.

With that fall the offside closes on a straight cut between two identical box profiles, with no upstand, no flashing and no closure angle, and everything below the band stays completely open. Access is unobstructed from the floor to +1.905 at the offside, and the roof soffit is above +2.000 from 0.99 m out to the eaves.

The band is fixed along its top edge to the sheet's eaves edge and, at mid height, into the eaves beam's outboard end web at +2.030. Nothing fixes its bottom edge and the bottom 125 mm hangs free. Fixing is at 100 mm, not the 800 mm of the rafter spacing. C4, C4b.

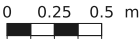
What hangs below the fixing line is 125 mm, and on the 40 mm rib that is 0.45 mm of movement and 7.7 MPa, 64 per cent of the 12 MPa allowed. C4a. The condition on it is the screwing: the band stands ON the beam rather than leaning on it, so under suction those screws are in tension. They hold the 125 mm that hangs locally; the band's global load leaves with the sheet to the rail and the two solid tiers, which is what keeps the posts gravity-only. Unscrewed, the same idea reads 31 MPa and fails. C4c.

VIEW B 1:40



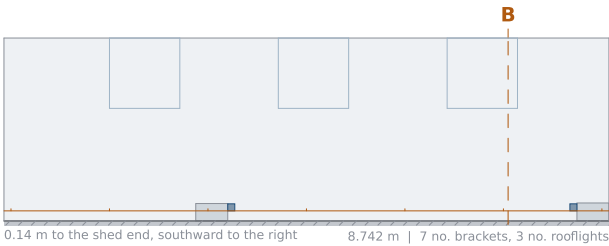
THE FALL AND THE BAND

SCALE 1:40 (ON THIS SHEET)

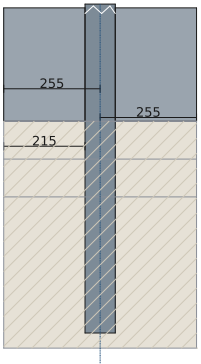


KEY PLAN WHERE SECTION B-B IS CUT

SECTION B-B ON THIS LINE



VIEW C 1:20



The post is centred in the pad: 255 of pad each side of the post's centre line, and 215 of block collar each side of its face. 510 = post + 2 x 215 collar, and the post is the real 80, centred and not off to one edge.

Covered area -- general arrangement and details			
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	Long elevation	REV	E
SHEET	10 of 22	DRAWN	CWA-01 model
SCALE	1:50	ELEVATION	North, from the garden
DATE	2026-09-30	SHEETS	Clearlight, lapped at 200 CRS
Wall cap 330 over a 220 wall, so it oversails 55 each side. The cap is 85 thick and the ductway stands 25 proud of the face under it, which is the whole thickness; the roof passes under the CAP, not under the ductway.			

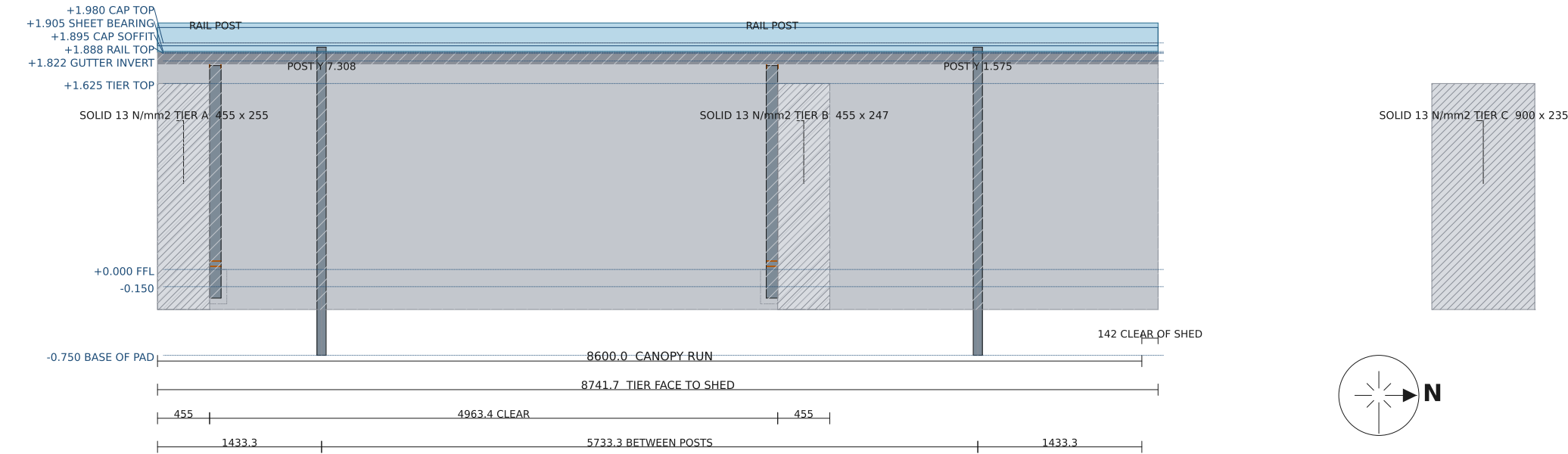
10 LONG ELEVATION, LOOKING NORTH AT THE WALL

Read left to right, south to north. The shed is off the right end. North is on the right, which is where it is when you stand in the garden and look back at the wall.

VIEW A 1:50

WHY THE POSTS ARE ON THE FACES LOOKING INTO THE RUN

Both posts are on the face looking into the middle of the run: tier B's south face at Y 3.3231, tier A's north face at Y 8.1866. Three things settle it, and only one of them is strength. FIRST, THE SOUTH POST HAS NO CHOICE: tier A is flush with the south end of the run, so its south face IS the end of the canopy and a 200 x 250 footing there is outside the roof altogether. SECOND, SYMMETRY: with both on the inward faces they are a matched pair on the same side of their own piers and both footings lie inside the 8.600 m run. THIRD, SPACING: 4.863 m centre to centre on the inward faces against 5.974 m on the outward faces, 1110 mm less, and that is the length over which the pair works together against the along-wall drift in W2. WHAT DOES NOT DECIDE IT IS THE TIE: the bolt line is 83 mm from the pier's nose on whichever face it is, so both give the 6d an M12 wants, and the footing is set clear on the outboard side of the chosen face either way. Check W4b.



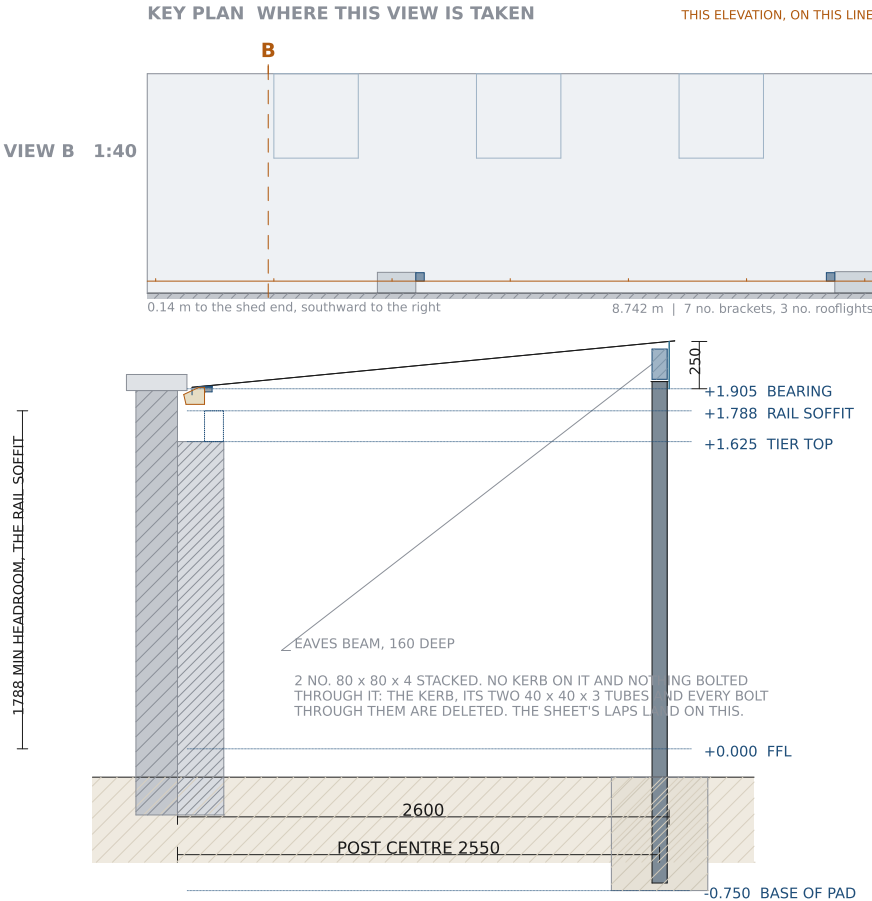
8.600 / 6 = 1.43333. THE TWO POSTS ARE AT THE SIXTH POINTS, WHICH IS THE OPTIMUM FOR TWO. SPAN 5.7333, CANTILEVER 1.4333 EACH END.
EAVES BEAM 2 NO. SHS 80 x 80 x 4 STACKED, 160 DEEP. Clearlight 250 mm, RUNNING THE FULL 8.600 m ALONG THE OFFSIDE.

SCALE 1:50 (ON THIS SHEET)



11 TRANSVERSE ELEVATION, LOOKING NORTH FROM THE EAVES

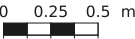
Seen from the garden, square on to the wall. The posts are square to the run, so only the northern post is in section.



WHAT YOU SEE FROM THE GARDEN

The cap sits behind the gutter, the roof rises away to the eaves, and the 250 mm screen closes the top of the offside on a straight cut. Below it is 163 mm of clear air: the pier stops at +1.625 and the rail's soffit is at +1.788, and nothing bridges that gap but a post beside the pier, not on it.

SCALE 1:40 (ON THIS SHEET)



ELEVATION DIMENSIONS

	HEIGHT ABOVE FFL
Cap top, existing, set out	+1.980
Cap soffit, existing	+1.895
Top of the solid tiers	+1.625
Wall rail top	+1.888
Rafter top = sheet bearing	+1.905
Sheet underside at the wall	+1.905
Sheet underside at the eaves	+2.155
Sheet crest at the eaves	+2.184
Gutter invert	+1.822
Clearlight top	+2.155
Clearlight bottom	+1.905
Eaves beam soffit	+1.955
Finished floor level	+0.000
Existing ground	+0.050
Top of hardcore	-0.150
Base of footing	-0.750

The cap top is the only level taken off the survey that the design depends on, and it is set at +1.980 = WH 76.38 OD with the FFL at +0.000 = 74.40 OD. It is the LOWEST levelled point on or adjacent to the run, so it is the worst case. Everything else on this table comes off it by subtraction.

Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING Transverse elevation
SHEET 11 of 22
SCALE 1:40
DATE 2026-09-30
REV E
DRAWN CWA-01 model
ELEVATION Square on, from the garden

1955 clear headroom under the eaves beam soffit at +1.955, on an 804 floor at +0.000.

ONE SHEET, THREE STRIPS

ITEM	mm
Sheet	3048 x 1000 x 1.3
Strip width	250
Strips per sheet	4, with 0 offcut
Strips needed	3
Sheets	1
Gross	9144
Laps, 2 at 200	-400
Net	8744
Run required	8600
Spare	144

FIXING

Top edge: EPDM self-drilling screws through the sheet's eaves edge into the top of the band, at 100 mm centres. Mid height, at +2.030: the same into the eaves beam's outboard end web, and THIS LINE CARRIES THE BAND. The band stands on the beam rather than leaning on it, so the screws work in tension under suction and the load goes into the beam. 86 each, 172 in all, all with oversized holes and never tightened hard, because polycarbonate moves about five times as much as steel. IRF's record puts the movement at about 4.9 mm over a 3048 mm sheet for a 30 K swing. Nothing fixes the bottom edge: the 125 mm below the fixing line hangs free. C4a.

WHY 100 mm AND NOT 400

A 250 x 1.3 mm strip is a deep thin plate, and deep thin plates are very flexible. On 400 mm fixing centres, which is the sheet's own pitch, it bows 30.8 mm, L/13, and clamped rather than slipped it would read 31 MPa. At 100 mm the bow is 0.12 mm. Checks C4 and C4b.

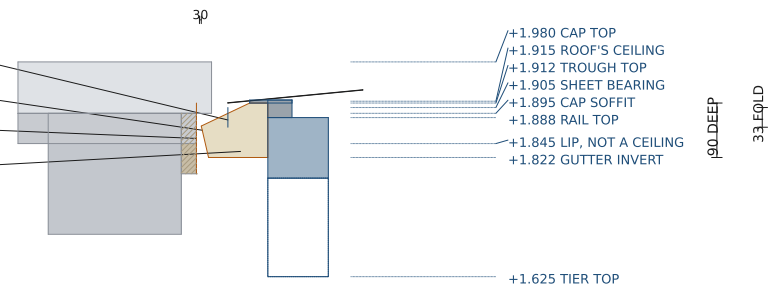
WHAT THE BAND IS FIXED TO

The eaves beam's outboard end web, at mid-height. That line is what carries the band, and C4a works the 125 mm hanging below it as 0.45 mm and 7.7 MPa, 64 per cent of 12. C4c is the case where the screws are left out. C4, C4b.

4 IN BEVEL, SET 33 OFF THE WALL SO ITS BACK STANDS 8 mm CLEAR OF THE DUCTWORK, FALLING 1:100 TO THE OUTLET AT THE NORTH END. THE SHEET'S TURN-DOWN IS THE CLOSURE.

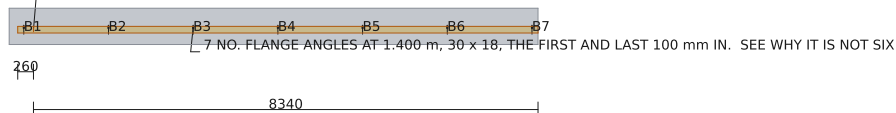
40 x 40 x 40 FLANGE ANGLE BOLTED TO THE RAIL'S TOP FLANGE, 30 x 18,
RETURN LIPPING OVER THE TROUGH'S BACK. THERE IS NO BOUGHT HOOK:
THERE IS NO WALL FACE TO HANG ONE ON

4 IN BEVEL, 110 x 90, FRONT TAPERED TO THE INVERT



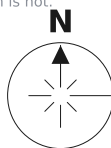
VIEW A 1:12.5

OUTLET, 4 IN WITH A 3 IN PORT, Y 0.402



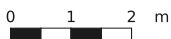
1:100 FALL TO THE NORTH END: 83 mm over the 8.340 m run to the outlet. Bracket spacing 1.4000 m, 7 no.

The wall rail drops 22.1 mm at the north tip under gravity, so the local fall over the last 2.954 m is steeper, not flatter. Check G2. Bracket count: six would pass every check on this sheet and the trough only deflects 0.29 mm at 1.720 m span. Seven is here because a 4 in level trough is normally bracketed at no more than 1.5 m and 1.400 m is not. Check G5.



VIEW B 1:125

SCALE 1:125 (ON THIS SHEET)



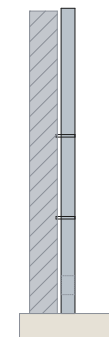
Covered area -- general arrangement and details

COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING	Gutter, fall, outlet and downpipe	REV	E
SHEET	12 of 22	DRAWN	CWA-01 model
SCALE	A 1:12.5 B 1:125 C 1:60	GUTTER	4 in bevel, 2 x 5 m for 8.600 m
DATE	2026-09-30	BRACKETS	7 no. at 1.4000 m, flange angle

Trough's back 8 mm clear of the ductwork's face, not tangent to it, and its top is 3 mm under the roof's ceiling. No back flashing: the sheet's own turn-down is the closure. Outlet capacity 1.2 l/s against 0.5 l/s of design storm.

VIEW C 1:60



DOWNPIPE 110 mm GALV, 3 m, NORTH
END. 2 BRACKETS, 450 mm CHAMBER
RISER TO THE EXISTING GULLY BESIDE
THE SHED.

13 FOOTINGS, CAST-IN POSTS, AND THE CLIENT'S METHOD

Two independent pads, 510 x 440 x 600 below finished ground level. Unreinforced, gravity only. Nothing is fixed into the existing footing or the wall.

Covered area -- general arrangement and details			
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	Posts, footings and the sequence	REV	E
SHEET	13 of 22	DRAWN	CWA-01 model
SCALE	1:30	FOOTING	510 x 440 x 600, unreinforced C25/30
DATE	2026-09-30	BLOCKS	12 no. 440 x 215 x 100 solid
Depth 750 is cover and the base lever arm, not bearing: 18.4 kN/m2 against 150 allowed. It is also what keeps the frame in three 7.5 m lengths.			

THE CLIENT'S METHOD, FOLLOWED EXACTLY

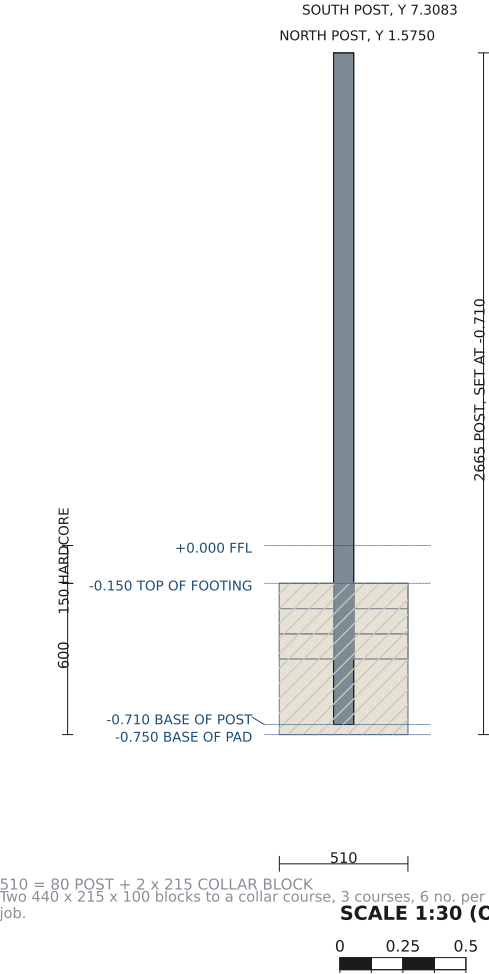
- 1 DIG
- Two holes 510 x 440 x 600 below finished ground level, at 2550 out from the wall on the sixth points. Spoil out.
- 2 ERECT THE POST
- SHS 80 x 80 x 4, 2.665 long, stood in the hole on 40 mm of concrete so the pour comes under it.
- 3 COLLAR IT
- TWO 440 x 215 x 100 solid blocks to a course, 3 courses, one either side of the post with the block face on the post and on the excavation face.
- 4 POUR
- C25/30 over and around, to 150 below the finished floor. 0.262 m3 net of the posts is needed; 1 m3 is the minimum order.
- 5 ALLOW TO CURE
- Before the beam's end plates are bolted on. The post carries the beam through the cured top at -150, the 150 of hardcore and the floor slab.

WHY THE PADS ARE UNREINFORCED

The credible loss case is the single braced bay beside a post being removed, which leaves that post carrying its own share of vertical load and no restraint from the frame. Base moment is nil because the only horizontal load in the job is the Clearlight band's widthwise wind, and that is taken by the sheet, through the rafters, into the wall rail and the two cast-in posts. 3.550 kNm, and no uplift. So the resultant stays inside the middle third, the pad is unreinforced, and there is nothing to tie down. Check F4.

LOADS ON THE PAD

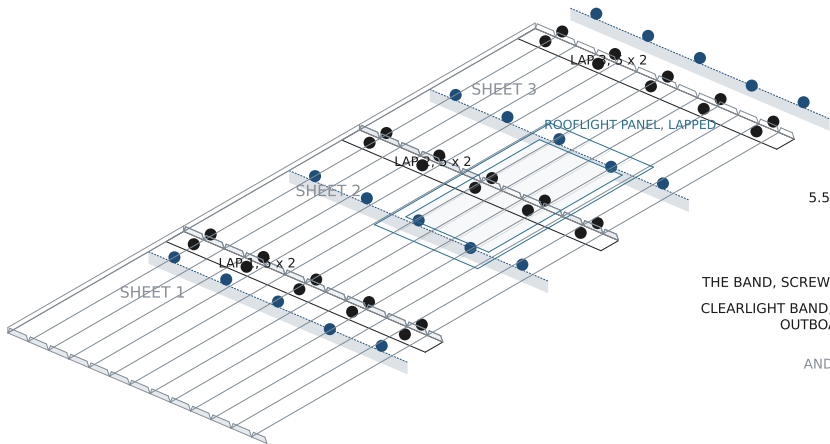
ITEM	VALUE
Eaves beam reaction into the post, gross	6.00 kN
Pad area 510 x 440	0.2244 m2
Bearing pressure, net of post and beam	18.4 kN/m2
Allowable, provisional	150 kN/m2
Bearing utilisation	12%
Bearing stress in the concrete	0.0184 N/mm2
One-way shear v_{Ed} at the pad face	0.0171 N/mm2
Shear resistance $v_{Rd,c}$	2.88 N/mm2
Concrete ordered	1 m3 minimum
Concrete calculated, net	0.262 m3



14 THE SHEETS, THEIR BOX SECTION, AND EVERY FIXING IN THEM

View A is an oblique from the offside, below the eaves edge and looking back up the slope: the direction the sheets go on, and the only one in which the top surface, the cut edge's box profile, the lap and the screw heads are all visible at once. It is not a projection to measure off. View B is the true section and every dimension is on it.

VIEW A, WORM'S-EYE OBLIQUE, NTS



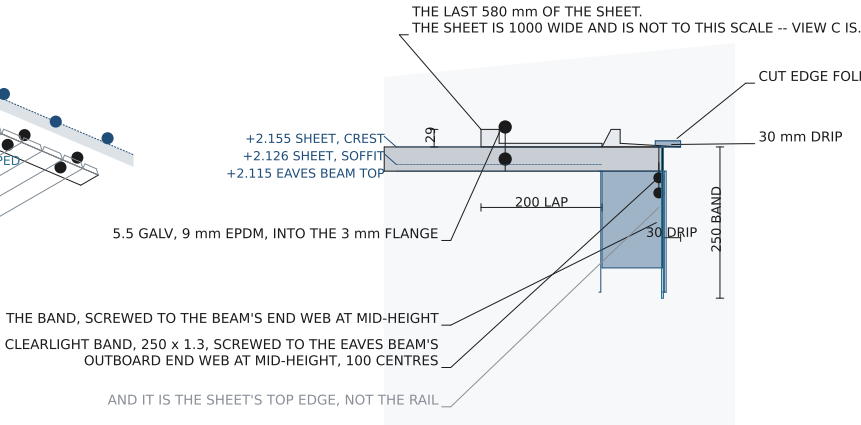
THE KEY TO VIEW A

The sheet is a box profile and it is drawn folded, not flat: 5 cells to the metre, 30 mm deep on a 200 pitch, and each cell is drawn as a web up, a crest across, a web down and a pan along, so the sheet zigzags up the slope the way a box sheet does. The blue dots sit on the crests, where a screw goes. The dashed blue lines are the rafters, which are under the sheet, not on it.

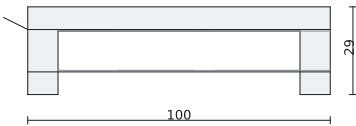
Blue dots on the crests, 5 no. 5.5 galvanised self-drillers per rafter per sheet, through the sheet's 0.6 mm top skin and its 0.3 mm galv, into the 3 mm rafter flange. Black dots in the white strips, the side laps: 5 x 2 screws at every lap, through both sheets' skins, at 200 cover.

The lap is where the sheets stop and start, so it is drawn as a strip. Nothing is fixed through the sheet from underneath. The blue rectangle is one of the 3 no. 1000 x 1016 mm Clearlight box panels, lapped 120 mm onto the steel each side and 100 mm each end, spanning the 760 mm clear bay between two rafters, and cut 11 x 3 off one 3048 sheet exactly. The west lap is the weather lap: the roof sheds toward the wall. This view shows three of the 1016 sheets, so 1 of the 3 panels is in it.

VIEW B 1:12.5 THE EAVES, TRUE SECTION



VIEW C 1:2.5 THE PROFILE



1000 x 29 x 0.6 BOX, COLOURCLAD. ONE CELL, DRAWN LARGE SO IT CAN BE SEEN; THE REAL PITCH IS 200, SO 5 CELLS TO THE METRE. THE 0.6 mm SKIN AND THE 0.3 mm GALV ARE THE SAME LINE AT THIS SCALE, SO THE SECTION IS DRAWN AS ONE.

THE GALVANISED FIXING GOES THROUGH THE 0.6 mm TOP SKIN AND THE 0.3 mm GALV, INTO THE 3 mm RAFTER FLANGE. NOT THROUGH THE SHEET FROM UNDERNEATH, AND NOT THROUGH THE CELL ABOVE IT.

Offside, open. Everything below the band is clear from the floor to +1.905, and nothing is fixed to the underside of the sheet. The screws all go down, from above, through the top skin.

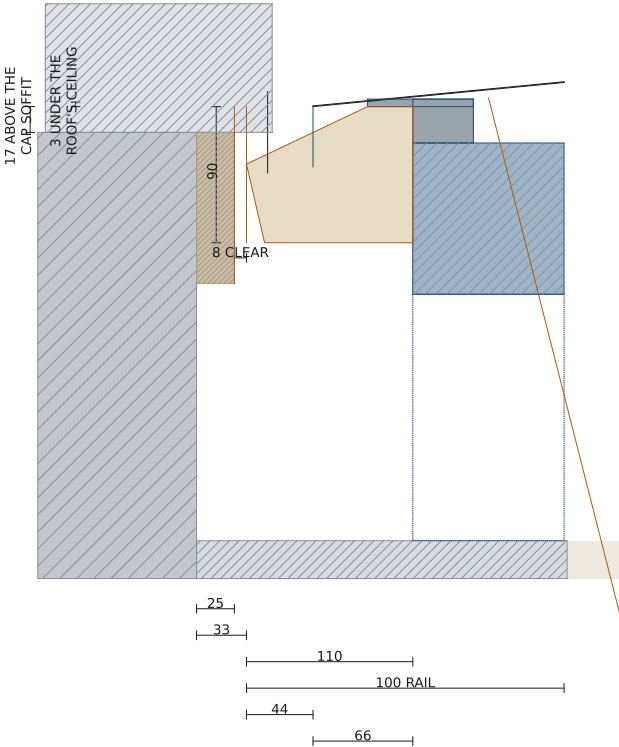
WHAT THE OBLIQUE IS FOR. A PLAN can say how many fixings there are and where; it cannot show the sheet's own section, the lap's overlap or the washer, and at 1:75 it drew the laps and the rafters as the same line. A SECTION can show the section; it cannot show the pattern. This view can show both, which is why the sheet is drawn on it. It is drawn from the model's own profile, so the ribs on VIEW A and on VIEW B are the same ribs.

Covered area -- general arrangement and details			
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	The sheets, their box section and every fixing	DRAWN	CWA-01 model
SHEET	14 of 22	SHEET	1000 x 200 x 0.6 box, Colourclad
SCALE	VIEW A NTS, VIEW B 1:12.5	LAPS	200 side, 2 rows of screws
DATE	2026-09-30	FIXINGS	5 + 5 per sheet
REV	E		
The fixings go through the sheet's top skin into the rafter or the sheet below. Nothing goes through the sheet from underneath.			

15 THE WALL SIDE: THE DUCTWORK, THE TROUGH AND THE BRACKET

The trough stands 33 mm off the wall, 8 mm clear of the ductwork's face and 22 mm under the cap's own edge. The lip is not a ceiling. The roof's ceiling is the cap soffit plus 20 mm, the trough's top is 17 mm above the soffit and 3 mm under that ceiling, and that is 20 mm of roof back on the whole canopy. There the sheet's own 44 mm turn-down is the closure.

A THE WALL ZONE, TRUE SECTION



CAP +1.980 SOFFIT +1.895 LIP +1.845 TROUGH +1.912 SHEET +1.905 RAIL +1.888 RAIL SOFFIT +1.788 INVERT +1.822 TIER +1.625

THE ROOF'S CEILING IS 20 mm OVER THE SOFFIT, NOT THE LIP. RAIL SOFFIT IS THE POST'S HEAD. TIER TOP IS ASSUMED, NOT MEASURED.

40 mm LEG ON A 100 mm FLANGE, FROM THE TROUGH'S BACK

Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING	The wall side: ductwork, trough and bracket	DRAWN	CWA-01 model
SHEET	15 of 22	TROUGH	4 in bevel, 33 off the wall
SCALE	1:5	CLEARANCE	3 under the soffit
DATE	2026-09-30	ROOFLIGHTS	3 no. 1000 x 1016 lapped
REV	E		
The trough clears the ductwork by 8 mm and stands 22 mm under the cap's lip, which is check G6, so the soffit is the ceiling. The sheet's turn-down is the closure. Checks G1, G2, G5, C1a, C6.			

WHY THE ROOF IS AT THE CEILING

The cap oversails 55 mm either side of the 220 mm wall and carries a 50 mm lip, so the cap soffit is +1.895 and the lip's underside is +1.845. THE ROOF'S CEILING IS THE SOFFIT, NOT THE LIP, and that is the whole of this sheet. The trough used to be TANGENT to the ductwork's face, which put 118 mm of it UNDER the lip -- and the trough alone was what held the roof 50 mm too low. It now stands 33 mm off the wall, which is 8 mm clear of the ductwork's face and 22 mm under the cap's own edge, on the client's instruction of 2026-09-29, so 20 mm of roof came back when the lip stopped governing anything. The sheet was never under the lip and never had to be: its edge is 22 mm outboard of the cap's edge and passes BESIDE it. The trough's top is 17 mm ABOVE that soffit, and its 3 mm gap is under the roof's CEILING, 20 mm higher than the soffit -- which is what that gap is now. IT IS HOWEVER 22 mm UNDER THE CAP'S OWN EDGE, ON THE CLIENT'S INSTRUCTION OF 2026-09-29, AND THAT IS A CLASH ON THE GROUND AND NOT A LEVEL: CHECK G6.

The roof is now as high as the pressed cap allows. ITS CEILING IS +1.915, 20 MM OVER THE CAP SOFFIT AT +1.895 AND NOT THE LIP'S UNDERSIDE AT +1.845, because the trough's top is 67 mm above the lip's bottom face. The rail below it stands on cast-in posts, so nothing sets its height but the roof. The fall is unchanged, and it is not a free parameter: 250 mm of band over a 2600 mm projection is 9.62 per cent, so lifting the wall end lifts the whole roof, band and all. If the fall itself has to come down, the lever is the band, and that is the offside opening, not the gutter. The trough now stands 8 mm clear of the ductwork.

and how it is closed

The closure is a set-out, not a strip: the sheet stops 44 mm into the trough, 52 mm clear of the ductwork, with nothing between them and nothing fixed. Water runs off the sheet's turn-down into the trough, and the mouth that is left open over that 44 mm is the part of a gutter that silts, so it is the part that has to be visible. The rail alongside moves 30 mm at the outlet, which is why nothing is fixed across that gap.

and the bearing

The trough and the rail do not clash, and they do not touch in plan either: the rail's inner face is at x 143, which is the trough's own back, so the two stand face to face with nothing between them. The trough is CARRIED, not seated. It hangs off the rail's top flange on its angle brackets, the leg standing outboard of the back at x 143 to 183 with a 30 mm return lapping the flat back, and the back itself bears on the rail's inner web over its full 90 mm depth. 2 no. M10 through the flange. This paragraph used to say the back laps 0 mm of the flange and bears on it, which is how 65962 mm of trough ended up inside the rail.

and the bracket

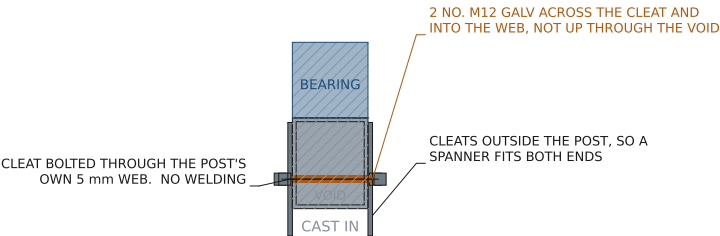
A 30 x 18 40 x 40 x 3 flange angle, bolted through the rail's top flange with 2 no. M10 and nuts inside the section, its return lapping over the trough's flat back. THE BOUGHT HOOK, AND NO SUBSTITUTE FOR ONE: a hook is a face-hanging fitting and there is no face. The ductwork stands 25 mm proud of the wall for the whole 90 mm of the trough and the trough now stands 8 mm clear of it, so there is no wall behind it and no face to hang a hook on. 7 NO. AT 1,400 m. WHY NOT SIX: CHECK G5.

16 THE FOUR JOINTS, CLOSE UP

Four joints, all bolted, and every bolt passes through steel. A: the rail sits on a hollow cast-in post and is not bolted through it. A 150 x 6 cleat stands against the OUTER face of each post web and the M12s go across it into the web; the post's head is 6 mm low for the cleat. B: the sheet bears directly on the rafter, so the rafter is bolted to the rail through a cleat rather than through a bolt through the sheet. C: the eaves beam is two SHS 80 x 80 x 4 stacked, centred on the posts, held by one M16 through-bolt each side of the void. D: the Clearlight band is screwed to the beam's outboard end web at mid-height. Nothing is welded and no bolt ends in a void.

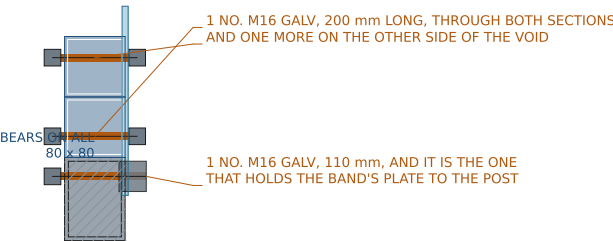
A THE WALL RAIL ON ITS POST

The rail bears on the post's top rim, 100 x 100 of it, in compression. It is not bolted to the post, because the post is hollow and there is nothing under the flange to bolt into. It is carried on a cleat: a 150 x 6 flat bar, one each side, standing against the OUTER face of the post's web with its head under the rail's bottom flange. The cleat is bolted to the post through the post's own 5 mm web, which is steel, and the bolts go ACROSS the cleat and into that web rather than up through the void. The cleats are on the outside so that a spanner reaches the nuts, which is the whole reason the cleat is there.



Demand. The rail post's share of the roof's uplift is 4.41 kN and the cleat's bolts carry it in tension; an M12 is a bolt that is never probed. Check W1 and W4.

C THE EAVES BEAM ON A FRONT POST

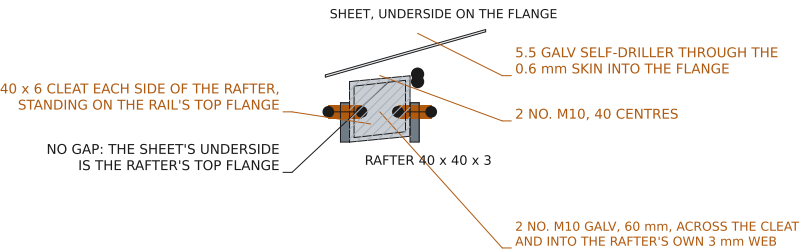


The beam and the posts are both SHS 80 x 80 x 4. The beam is 2 no. stacked, 160 mm deep against the 80 of a single section, and 80 mm wide, centred on the post, so it bears on all 80 x 80 of the post head with no eccentricity. The post is the same section, so this is one order and one detail. Two M16 through-bolts, one each side of the post's void, go through the post's near web, the beam's near web, the beam's far web and out through the post's far web, 160 mm of section in all, and both of them pass through the Clearlight band's plate on the way out. They go through the webs and not down the middle of the hole, and the section between the bolts is left white. BOTH OF THOSE ARE INSIDE THE BEAM. A third M16 is 25 mm below the beam's soffit, and it is the one that does the job the other two cannot: the band's plate and this post are in the SAME PLANE, x = 2.590, and the plate is 250 mm deep against a post that stops at the soffit, so the bottom 50 mm of the plate hangs in front of the top 50 mm of the post with nothing between them. The band's screws are at its mid-height, +2.0296, which is up inside the beam, so they do nothing here. That third bolt goes through the post and out through the plate, and it is 110 long against the 200 of the other two because there is no beam under it to cross. The plate is not a structural member and the bolt does not pretend it is: it stops the plate and the post working apart. The band's offside load still leaves with the sheet to the wall rail and the two solid tiers.

Covered area -- general arrangement and details			
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	The four joints, close up	JOINTS	4, all bolted
SHEET	16 of 22	WELDING	none on this job
SCALE	NTS	RAIL TO POST	cleat, 150 x 6
DATE	2026-09-30	BEAM TO POST	2 no. M16 x 200 per post
REV	E	POST TO BAND	1 no. M16 x 110 per post
DRAWN	CWA-01 model	RAFTER TIE	2 no. M10 galvanised per end
Nothing is welded and no bolt goes into a void. The rail hangs off a cleat, the beam hangs off a through-bolt, the band is screwed to the beam's end web and is bolted to the post below the soffit.			

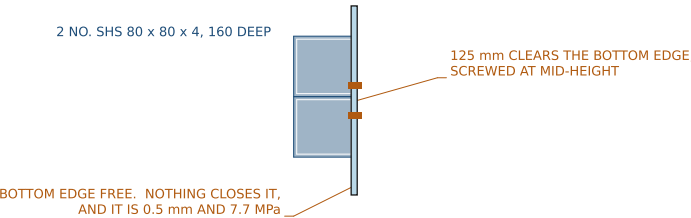
B THE RAFTER ON THE RAIL

The rafter is bolted to the rail through two cleats, one each side of it, standing on the rail's top flange, and the 2 no. M10 galvanised at 40 mm centres go ACROSS each cleat into the rafter's own 3 mm web. There is no bolt through the rafter's top flange because there is no room for one: the sheet's underside is that flange. The frame is bolted up first and sheeted afterwards, and the 30 mm above the flange is the sheet's own profile depth.



A bolt through a 0.6 mm skin that moves 4.9 mm in a 30 degree swing is a hole, not a fixing. The sheet is fixed afterwards with the self-drillers on sheet 14, and the frame has to stand up independently to be checked and levelled before it is covered. The check on what the sheet spans is R1.4.

D THE BAND ON THE BEAM

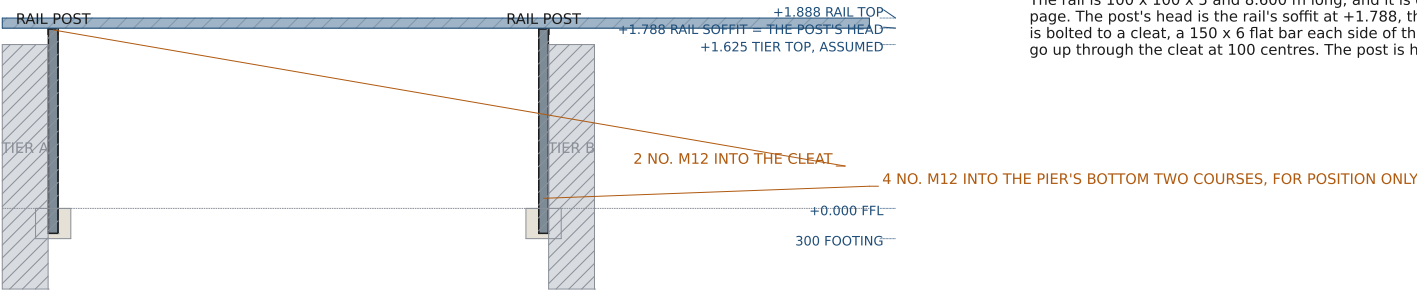


The band stands on the beam rather than leaning on it, so under suction those screws are in tension and the beam's end web carries 125 mm of cantilevered strip. C4a works it at 0.45 mm and 7.7 MPa, 64 per cent of 12 allowed; C4e works the screws. Unscrewed the same idea reads 7 mm and 31 MPa and fails, which is C4c. The band's global offside load leaves with the sheet to the wall rail and the two solid tiers, so the posts stay gravity-only. The beam is two SHS 80 x 80 x 4 stacked, 6.24e6 mm4, and the cantilever tip is 4.72 mm of 7.96, 59 per cent.

17 THE RAIL, THE POSTS THAT CARRY IT, AND WHAT THE PIERS ARE FOR

The rail does not bear on the piers. It is carried by two cast-in posts standing in the ground beside them and tied into the piers' bottom courses.

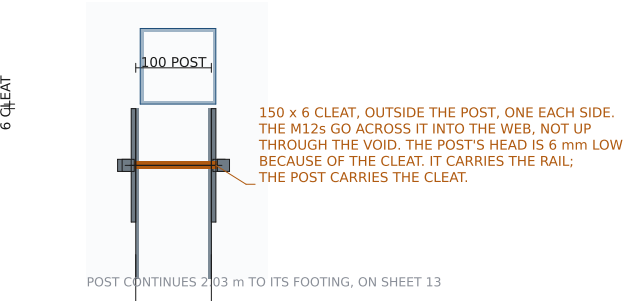
A THE RUN, ELEVATION



The post's head is the rail's soffit, not its top, and the post does not run up into the section it carries. The post's height is set by the rail and not by the pier top. Checks W1 to W6, and W4b for which face of the tier each post is on.

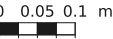
The rail is 100 x 100 x 5 and 8.600 m long, and it is drawn here as what it is: a member that goes off both edges of the page. The post's head is the rail's soffit at +1.788, the post is cast in 250 mm, and the rail is not bolted to the post at all. It is bolted to a cleat, a 150 x 6 flat bar each side of the post passing under the rail's bottom flange, and 2 no. M12 galvanised go up through the cleat at 100 centres. The post is hollow, so nothing goes down into it. View A on sheet 16.

B SECTION ON THE RAIL POST AND THE CLEAT, ACROSS THE RUN



Why the pier is still tied to it. The post and its own footing weigh 0.390 kN and the uplift on one post is 4.41 kN, so the concrete the post is cast into is not on its own what holds it down: the pier is masonry bonded into a 220 mm wall, it is tied to the post through 4 no. M12 whose capacity is 26.7 kN, and the pair's weight is available to the pair. What the tie does not do is carry the rail. The rail is on the posts; the piers carry nothing from this job.

SCALE 1:10 (ON THIS SHEET)



Covered area -- general arrangement and details			
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	The rail, the posts that carry it, and the piers	DRAWN	CWA-01 model
SHEET	17 of 22	RAIL	100 x 100 x 5, 8600 mm
SCALE	A 1:75, B 1:10	POSTS	2 no. SHS 100 x 100 x 5, cast in
DATE	2026-09-30	HOLD-DOWN	cleat, 2 no. M12 galvanised per post
REV	E		
The post's head is the rail's soffit, and the rail is bolted to a cleat and not to the post: it is hollow. The piers are tied for position and carry nothing.			

18 THE FOUR CHECKS THAT DECIDE THE DESIGN

R1 is the steel rafter and R1.6 the timber one refused. R2 is the wall rail and why it is not stiffened. R3 is the eaves beam and why it is.

R1 RAFTERS, SHS 40 x 40 x 3

W = 5099 mm3, l = 101 972 mm4. The 800 spacing is the sheet lap pitch; R1.4 has the sheet's own arithmetic.

ID	CHECK	DEMAND	CAPACITY	UTIL
R1.1	Rafter bending, 40 x 40 x 3 at 0.800 m	0.50 kNm	1.81	28%
R1.2	Rafter shear	0.85 kN	45.50	2%
R1.3	Rafter deflection, criterion L/200	13.51 mm	11.79	115%
R1.4	Roof sheet, rib bending, 0.6 mm Colourclad box over 0.800 m	6.97 MPa	50.00	14%
R1.5	Roof sheet end lap angle, with the roof	5.00	5.49	91%
R1.6	REJECTED: 44 x 100 treated softwood at 0.800 m	0.74 kNm	0.09	778%

R1.1 Rafter bending, 40 x 40 x 3 at 0.800 m
M = wL2/8 with w = 0.900 x 0.800 = 0.7200 kN/m over L = 2.357 m. W = 5099 mm3.

R1.2 Rafter shear
V = wL/2 = 0.849 kN. A_v = 2 x 3 x 37 = 222 mm2.

R1.3 Rafter deflection, criterion L/200
l = 101972 mm4, span 2.357 m. At 0.800 m centres this rafter deflects 13.51 mm, L/174, against 11.79 mm allowed, at the characteristic combination G + Q. This is a DEPARTURE and it is not a passed check. Halving the pitch to the 400 mm cover halves the load this rafter carries -- it does not change its span -- so the deflection goes to 6.8 mm and the check would pass comfortably, bought with a second, redundant rafter on every one of the ten laps and a roof twice as heavy. The roof falls 9.6 per cent and the soffit is at +1.931 with nothing beneath it, so the deflection reads on the underside. Widening to SHS 50 x 50 x 3 returns it to 6.6 mm, 56 per cent, and closes this without reopening the spacing -- but the merchant does not hold it, so it is a supplier enquiry, hold H6. Owner: the engineer, to accept the departure or order the wider section.

R1.4 Roof sheet, rib bending, 0.6 mm Colourclad box over 0.800 m
Each of the 5 ribs per sheet spans 0.800 m between sheet fixings -- the rafters are at 800 mm and the sheet is screwed to every one of them and bears on them throughout -- under 0.3900 kN/m2 normal (net uplift with a factor for the 1.5 robustness of a sheet fixing, plus dead). Rib taken off the published section as a 0.6 mm trapezoid, crest 22, pan 178, deep 29: W = 1792 mm3 to the crest, M = 12480.0 N.mm over the 200 mm pitch, 50 MPa allowable, 14 per cent. The 0.5 mm rib was 16 per cent. W is near-linear in t, 1.17 not 1.44. AT 0.7 MM, PRICED AS AN OPTION, NOT OMITTED: 12.3 per cent, the rib 1.14 times stiffer, and R1.3 from 114.7 to 115.9 on 0.0096 kN/m2 more dead load. WORSE.

R1.5 Roof sheet end lap angle, with the roof
The laps run down the pitch, so the lap angle is the roof angle, 5.49 deg at a fall of 9.6 per cent. The published profile gives a 15 deg side lap. It clears the 5 deg a box profile wants. The roof this replaced was 7.67 deg, which cleared 5 deg as well -- so the fall was NOT taken out of the profile to get here. It came out of the headroom, and the sheet was lapped harder to suit, which is R1.4.

R1.6 REJECTED: 44 x 100 treated softwood at 0.800 m
Needs W = 570674 mm3; 44 x 100 has 73333 mm3, giving 0.09 kNm at C18 service class 3. Priced as an option, not omitted: the timber rafters are refused on moment, not on price.

Chadwicks, Treated Timber Lengths, captured 2026-09-22, 4.8 m lengths, the deepest being 44 x 225 at EUR 29.86 and 75 x 150 at EUR 33.89. Two softwood cases clear on moment and both are refused on the take-off. 44 x 225 at 0.400 needs 0.369 kNm and has 0.480, and costs 11 lengths at EUR 29.86 = EUR 328.46 against 4 lengths of 40 x 40 x 3 at EUR 73.00 = EUR 292.00. 75 x 150 at 0.200 needs 0.184 kNm and has 0.363, 51 per cent, and costs 22 lengths at EUR 33.89 = EUR 745.58 for 43 rafters: 101.8 m of timber against 52.1 m at 0.400. The rafter is the one member whose fixings are renewed with the sheet, so a timber one comes down with it and is replaced twice in a 40-year roof life. Both cases are priced and recorded rather than argued away.

THE OPTION THAT WAS REFUSED

SOFTWOOD OPTION	W mm3	M_Rd kNm	DEMAND kNm	UTIL	VERDICT
44 x 100 @ 0.800	73333	0.095	0.737	778%	FAIL
44 x 225 @ 0.800	371250	0.480	0.737	154%	FAIL
75 x 150 @ 0.800	281250	0.363	0.737	203%	FAIL
44 x 100 @ 0.400	73333	0.095	0.369	389%	FAIL
44 x 225 @ 0.400	371250	0.480	0.369	77%	PASS
75 x 150 @ 0.400	281250	0.363	0.369	101%	FAIL

R2 WALL RAIL, SHS 100 x 100 x 5

W = 57317 mm3, l = 2865833 mm4. Over the 2.726 m cantilever to the pier the tip DROPS 22.1 mm, which is 187 per cent of the L/250 this check allows and a declared departure. It does not pond: a droop steepens the gutter's own 1:100 fall towards the outlet, and the midspan LIFTS 5.3 mm. The band's mid-height fixing and the sheet's turn-down take the movement up.

ID	CHECK	DEMAND	CAPACITY	UTIL
R2.1	Wall rail bending at the north tier	6.38 kNm	20.35	31%
R2.2	Wall rail bending at midspan	2.16 kNm	20.35	11%
R2.3	Wall rail cantilever tip movement, L/250, DEPARTURE	22.07 mm	11.82	187%
R2.4	Wall rail midspan, criterion span L/250	5.27 mm	21.67	24%
R2.5	Wall rail, tension case and its vertical range	0.00 mm	1000000.00	0%
R2.6	Rail bearing on the piers: NONE, by design	0.00 MPa	13.00	0%
R2.7	Cap soffit along the run, unsurveyed	0.69	0.69	100%
R2.8	Cap soffit along the run, and the pier faces	247.00 mm	247.00	100%

R2.1 Wall rail bending at the north tier

M = -wa2/2 = 6.38 kNm over the 2.954 m cantilever to the tier centroid. The midspan is in SAGGING at 2.16 kNm -- the sign is the opposite of the cantilever's, and 3.850 m of the span does sag. w = 1.328 roof + 0.135 gutter + brackets, the gutter factored = 1.463 kN/m.

R2.2 Wall rail bending at midspan

M = 2.16 kNm sagging at midspan, over the 5.419 m between the tier centres.

R2.3 Wall rail cantilever tip movement, L/250, DEPARTURE

The tip DROPS 22.1 mm, which is 187 per cent of the 11.8 mm a 2.954 m cantilever is allowed by EN 1993-1-1 Table 7.2 class 1. The overhang's own bending is 15.8 mm of that and the rotation of the span is the rest. It is a departure, and the one that matters practically is the gutter: the gutter hangs on this rail, and a droop steepens the fall towards the outlet rather than reversing it, so no water is ponded. What it does do is settle the outlet end 22.1 mm, which the sheet's turn-down takes up for free, and it is visible on the underside. Closing it means a bigger rail, and that is a supplier enquiry -- hold item H9. Worked at the characteristic combination, 1.000 kN/m.

R2.4 Wall rail midspan, criterion span L/250

5.3 mm over the 5.419 m between the tier centroids, and the sign is the one this check exists to police: the midspan SAGS by this much, as does 3.85 m either side of it, and the tips drop. It used to be called hogging: it is not. The gutter's own 1:100 fall over the same length is 54.2 mm, so the net gradient stays downhill everywhere.

R2.5 Wall rail, tension case and its vertical range

Under net uplift the whole rail goes into tension and the tip LIFTS 7.94 mm; under gravity it DROPS 22.07 mm. So the gutter's north end has 30.0 mm of vertical travel over the life of the job, which the sheet's turn-down takes up on its own. See R2.3 and G4. The tension itself is carried off the rail into the two tiers by the M12 ties at W1 and W4 (65 and 65 per cent), and the rail is in bending either way at R2.1, so nothing new is being asked of the section.

R2.6 Rail bearing on the piers: NONE, by design

The rail does not touch either pier and the north reaction of 9.45 kN is not applied to the masonry at all. 2 cast-in posts carry it, each one 172 mm inboard of the pier it serves and 75 mm from its nose, and the air gap between the rail soffit and the tier top is 163 mm. The piers are tied to the posts for position, through the four M12 ties at W4, and carry nothing but their own weight.

R2.7 Cap soffit along the run, unsurveyed

The two levelled wall tops either side of the run fall at 6.34%. Extrapolated 10.9 m south, the cap soffit sits up to 0.69 m above the design soffit. The run itself carries no level at all. HOLD: level the cap soffit over the full 8.600 m and set the 1.788 rail soffit to suit before anything is cut.

R2.8 Cap soffit along the run, and the pier faces

HALF OF THIS IS GONE AND HALF IS NOT. The piers are EXISTING and the survey carries no level for their tops, and that is the one level on this job nobody has measured: the roof's height was taken up in a 161 mm packer CUT ON SITE against a pier top nobody had measured, with a pier measured high the failure mode. THE RAIL IS CARRIED BY THE POSTS, NOT BY THE PIERS. 2 posts stand in the ground beside them, 2032 mm long, and the rail lands at +1.888 because that is where the roof has to land. So the pier top level is not a level anything in this job depends on: the rail's height is set by the length of the cast-in posts, which are cut on site. WHAT REMAINS IS THE CAP. The brief says the piers stop 220 mm below the cast concrete cap, confirmed as to the BOTTOM OF THE LIP, and the two levelled wall tops either side of the run fall at 6.34 per cent, which extrapolated puts the soffit up to 0.69 m above this drawing's level at the south end. The roof is at its ceiling: the trough's top rib is 3 mm under it, and that ceiling is 20 mm over the cap soffit. The cap's LEVEL is still an existing condition and still governs whether the roof fits under it, and it is hold item H2. The pier FACES -- 255 and 247 mm of projection, off the survey -- carry no load: the posts stand clear of them and the M12 ties into the pier's end face are for position only.

Covered area -- general arrangement and details

COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING	Checks R1, R2, R3	DRAWN	CWA-01 model
SHEET	18 of 22	STEEL	S355 assumed, gamma_M 1.0, hold H1
SCALE	NTS	LOAD FACTORS	U_G 1.35, U_Q 1.50, P_ULTS 1.328 kN/m
DATE	2026-09-30	TIMBER	C18, class 3, k_mod 0.6, gamma_M 1.3
REV	E		
45 checks pass, 5 are hold items, 13 are documented rejected options shown so they can be argued with. R1.3 and R2.3 are live and over limit and are declared as such.			

R3 EAVES BEAM, 2 NO. SHS 80 x 80 x 4 STACKED

The 5.733 m span between the only two posts the brief allows leaves a 4.72 mm dip at each 1.433 m cantilever tip, which is 59 per cent of L/180, on the sheet's eaves edge and the top of the Clearlight band. The member is 160 mm deep against the 100 of a single section, and the midspan is 7.14 mm of 22.93. Depth is the only thing that moves a cantilever tip; R3.7 tabulates every single section on the list and none of them reaches it.

ID	CHECK	DEMAND	CAPACITY	UTIL
R3.1	Eaves beam bending at midspan, built up	4.30 kNm	27.69	16%
R3.2	Eaves beam bending over each post, built up	1.43 kNm	27.69	5%
R3.3	Eaves beam cantilever tip deflection, built up, L/180	4.72 mm	7.96	59%
R3.4	Eaves beam midspan deflection, built up, L/250	7.14 mm	22.93	31%
R3.5	Eaves beam cantilever tip, REJECTED as 100 x 100 x 5	10.27 mm	7.96	129%
R3.7	Eaves beam, REJECTED as a single section	10.27 mm	7.96	129%
R3.6	Eaves beam reaction into each post	6.00 kN	1000000.00	0%

R3.1 Eaves beam bending at midspan, built up

M = wL2/8 - wa2/2 = 4.30 kNm, L = 5.733 m between the sixth points, a = 1.433 m overhang, w = 1.395 kN/m. W = 77986 mm3 over 80 mm.

R3.2 Eaves beam bending over each post, built up

M = -wa2/2 = 1.43 kNm.

R3.3 Eaves beam cantilever tip deflection, built up, L/180

4.72 mm, against 10.3 mm on the 100 x 100 x 5 this replaced, L/140. The dip is on the sheet's eaves edge and the Clearlight band's top capping, which is the line the eye follows from the house. The section is two SHS 80 x 80 x 4 stacked: 160 deep against 100, and 6.246e mm4 against the 2.876e the 100 x 100 x 5 reaches on its own.

R3.4 Eaves beam midspan deflection, built up, L/250

7.14 mm, against 15.5 mm on the 100 x 100 x 5. The soffit is at +1.955 with nothing beneath it.

R3.5 Eaves beam cantilever tip, REJECTED as 100 x 100 x 5

The section this replaced, kept so the change can be argued with. A single 100 x 100 x 5 gives 10.3 mm at the tip, L/140, 129 per cent of L/180. It is not that the section is weak -- R3.1 is at 16 per cent -- it is that 1.433 m of cantilever at the end of a roof is a serviceability case and only depth moves it.

R3.7 Eaves beam, REJECTED as a single section

No single section on Cashman's list reaches the tip. The tip deflection for each: 2 no. 80 x 80 x 4 stacked, 160 deep (BUILT) 4.7 mm (59%); 100 x 100 x 5, 100 deep 10.3 mm (129%); 80 x 80 x 4, 80 deep 25.1 mm (315%); 80 x 80 x 5, 80 deep 20.8 mm (262%); 60 x 60 x 4, 60 deep 62.5 mm (785%); 50 x 50 x 3, 50 deep 141.2 mm (1773%). The best of them is the 100 x 100 x 5, 100 deep at EUR 315, and it gives 10.3 mm, 129 per cent, which is still a fail. Two of them stacked is the answer, and that is the whole argument for the built-up member: 160 mm of depth bought for EUR 420 rather than a section that does not exist on any list.

R3.6 Eaves beam reaction into each post

R = w(L/2 + a) = 6.00 kN gross, carried by the post, its head plate and its footing. The rafter tie-downs at the beam take 3.73 kN of that back UP under net uplift (1.87 kN per post), so the net the footing actually sees is 4.13 kN -- see R4.4 and F1. The horizontal case is R4.2.

ACTIONS AND CRITERIA

ACTION	VALUE	WHERE IT COMES FROM
Dead, gk	0.150 kN/m2	given
Imposed, qk	0.750 kN/m2	EN 1991-1-1 4.2, not accessible
ULS 1.35g + 1.5q	1.328 kN/m2	governs the rafters
Design wind pressure	0.600 kN/m2	client instruction
q(b) = 0.613 vb^2, EN 1991-1-4 at 24 m/s	0.353 kN/m2	0.565 on this exposure
Turbulence factor	1.3	trees 4-6 m, far side
cpe, offside	-0.60	given
Serviceability, rafters	L/200	see below
Serviceability, wall rail	L/250	gutter fall, not finish
Serviceability, eaves beam	L/200 midspan, L/180 tip	see R3

DRAWING	Options tested and what each one costs you
SHEET	19 of 22
SCALE	NTS
DATE	2026-09-30
REV	E
DRAWN	CWA-01 model
A saving that costs a member twenty years of life is not a saving.	

19 EVERY OPTION TESTED, AND WHAT IT COSTS

Each row is an option that was priced. Saving is EUR ex VAT on the bill. Taken or not taken is the decision.

OPTION	SAVES EUR	TAKEN	WHAT IT COSTS YOU
Eaves beam as ONE SHS 100 x 100 x 5, no built-up member	420.00	NO	A 10.3 mm dip, L/140, at each 1.433 m cantilever tip, on the sheet's eaves edge and the top of the Clearlight band. It is the line the eye follows from the house. The section is 100 deep against the 160 of the built-up member, and depth is the only thing that moves a cantilever tip: no single section on Cashman's list reaches L/180.
Eaves beam as 2 x 40 x 40 x 5 angle back to back, 80 x 40	418.60	NO	Moment capacity 4.78 kNm against 4.25 needed, 89 per cent, and I = 269 000 mm4 against the 6238891 mm4 of the built-up member, so the tip deflects 238 mm, not 4.7. It is also an open section under the governing uplift case, and bolting two galvanised angles back to back leaves a crevice that cannot be galvanised after assembly without paying a fabricator. The price comparison is the only thing in its favour and it is the wrong comparison.
Posts in SHS 80 x 80 x 4 (Cashman, EUR 210.00)	0.00	TAKEN	TAKEN, and already in the bill, so it is not counted again in the total below. EUR 105.00 is the whole saving and it is not the reason. The reason is the cut plan: 4.100 m of rail posts in the 100 x 100 x 5 section go on the SECOND bar with the splice piece, which is what the 100 x 100 x 5 is now -- two lengths of 7.500 m, not three and not four. In their own length the 80 x 80 x 4 is three, and the posts are 2.4 per cent of the buckling resistance instead of 1.2. 4.0 mm nominal also sits clear of the 3 mm coating boundary, which the 50 x 50 x 3 below does not. Cashman state 200 or more of every section on this list, so the section has one length in hand rather than none.
Posts in SHS 50 x 50 x 3 (Cashman, EUR 94.00)	116.00	NO	EUR 116.00 cheaper again, and it passes: 11 per cent of the buckling resistance against 6.00 kN, on an unbraced member with no endfixity taken, so the real factor is better than that. It is not taken on the wall thickness, which is the one thing the money cannot buy back. A nominal 3.0 mm wall can be 2.7 mm under the EN 10219-2 tolerance, which drops it out of the > 3 to <= 6 mm coating band and into the 1.5 to 3 mm band at 45 um local / 55 um mean -- Cashman's own record says so -- and it is the section their record calls a 'light post only' and warns against for 'any primary duty'. This post is cast into concrete and stands in the splash zone at 1.955 m. The 4.0 mm of the 80 x 80 x 4 sits clear of that boundary, which is the whole difference between this row and the one above it.
Wall rail and eaves beam in SHS 80 x 80 x 4 (Cashman)	0.00	NO	The 100 x 100 x 5 and the 80 x 80 x 4 now bill the SAME money, EUR 630 each, so the obvious question is why the beam is not a single 80 x 80 x 4, which is a third of the price again. It is not one: a single 80 x 80 x 4 gives the beam's cantilever tip 25.1 mm against the 8.0 mm of L/180 it has to live inside, 315 per cent. The RAIL is the same question the other way and the same answer: R2.3 is already a documented departure at 187 per cent, and 80 x 80 x 4 would make it 53.9 mm instead of 22.1. Neither is a price question. The rail is 100 x 100 x 5 because that is what it needs to be, and the beam is TWO 80 x 80 x 4 because 160 of depth is what it needs to be -- and R3.7 tabulates every single section in the captured record against the tip so the second of those is checkable rather than asserted.
Hardcore at 100 mm instead of 150 mm	0.00	NO	NOTHING, and this is what re-pricing the stone did: the 804 is bought by the 20 tonne delivered load, so thinning it from 150 mm to 100 mm does not remove a single load and does not move the bill. It used to read as saving two 1 t bags, which is a saving that only existed while the stone was being bought in 1 t bags at EUR 321.96. Thinning it would save 1.123 m3 of stone going on the floor and cost the job nothing, and 100 mm pumps and ruts under a wheelbarrow on a bank-side garden. The 150 mm is 3.369 m3 and 5.05 t.
Footings at 600 x 600 x 600	0.00	NO	0.432 m3 against 0.262, still inside the 1 m3 minimum, so it would save nothing. It is nowhere near crossing 1 m3 either and no size close to this one would: at 750 x 750 it is 0.675 m3, at 900 x 900 0.972, and it takes about 915 mm square to reach 1 m3. Growing a pad to pay for a second bag of ready-mix is the wrong end of the trade. 510 is set by the 440 x 215 collar blocks, not by the load, and 600 by cover and by the base lever arm.
Rafters in 44 x 225 treated softwood at 0.400 m	0.00	NO	It is one of only two softwood options that clears its moment: 0.369 kNm against 0.480, 76 per cent. It needs 11 lengths at EUR 29.86 = EUR 328.46 against 4 lengths of 40 x 40 x 3 at EUR 73.00 = EUR 292.00 for a section four times stiffer, a quarter of the depth and galvanised. And the rafter is the one member whose fixings come down with the sheet, so a timber one would be replaced twice in a 40-year roof life. The steel is more expensive on the take-off and cheaper over the life.
Rafters in 75 x 150 treated softwood at 0.200 m	0.00	NO	Of the two softwood cases that clear, this is the one on a section anybody would recognise: halving the centres halves the moment, 0.184 kNm against 0.363, 51 per cent, where the other needs a 225 mm deep timber. It is priced honestly and it is the most expensive line on this sheet: 43 rafters is 22 lengths of 4.8 m at EUR 33.89 = EUR 745.58, against 4 lengths of 40 x 40 x 3 at EUR 73.00 = EUR 292.00 for a section half as stiff, a third of the depth and galvanised. 101.8 m of timber against 52.1, and the rafter is the one member whose fixings come down with the sheet, so a timber one is replaced twice in a 40-year roof life.
Roof left down on the piers as they are	0.00	NO	THE REVERSE OF THE CLIENT'S INSTRUCTION, recorded so the decision is visible rather than assumed. Putting the rail straight down on the piers is 163 mm lower: the sheet's top rib 23 mm under the cap instead of 3, the headroom 1.742 instead of 1.905, and the rail top 1.788 -- UNDER the ductway stiff at 1.795, so hold item H10 falls away. It also costs nothing and needs no site cutting, and it needs no posts. It is the right answer only if the client would rather not have the rail in front of the ductway, or would rather not cut two posts and cast them in.
Gutter brackets at 8 no. / 1.200 m, as briefed	9.00	NO	Nothing. The 6 mm bevel bracket is far stronger than the job needs; spacing is set by the gutter's own span, and 7 no. at 1.4000 m is what that needs. The eighth bracket was habit. Saves EUR 9.00.
Colourclad 0.6 mm IN PLACE OF PVC Leathergrain 0.5 mm	0.00	TAKEN	TAKEN, on the client's instruction, and it is already in the bill below, so it is not counted twice in the total. EUR 169.28 saved on the sheets over 28.21 m, and the geometry is untouched: IRF roll-form both products to the same section, so it is the same 11 sheets, the same 11 rafters, the same lap and the same set-out. WHAT IS GIVEN UP, and it is real and it is the price of the money: the guarantee. PVC Leathergrain is 'up to 25 years INCLUDING CUT EDGES'. Colourclad is '10 year plus' and does not cover them, and on a canopy it is the cut edge that governs -- this sheet is trimmed at the eaves on every one of the 11 lengths, the first folds 40 mm into the gutter and the last is trimmed to 600 mm. Published polyester life is 8 to 12 years before maintenance and 20+ in total, and the underside of a canopy is visible, so take the low end. WHAT IS GAINED: the gauge goes with it. 0.6 mm is the Irish standard ROOFING gauge -- the trade literature calls 0.5 mm a wall-cladding gauge -- on a 5.5 deg roof holding leaf litter, and it is a 1.17 times stiffer rib and 20 per cent more material under every washer. R1.4 improves from 16 to 14 per cent. So the sheet that gave up the cut-edge guarantee is a gauge the rib check actually likes, which was not true of the 0.5 mm sheet it replaces. S0 and S4 carry the arithmetic, and R1.4 is where 0.7 mm is worked and not taken.
Galvanised fixings IN PLACE OF A2 stainless throughout	28.34	TAKEN	TAKEN, on the client's instruction, and it is already in the bill below, so it is not counted twice in the total. THE MONEY IS EUR 28.34, and it is worth being honest about a result that does not go the way the reader expects. THE BARS ARE DEARER, not cheaper: M12 galvanised high tensile threaded bar at EUR 9.50 per metre from Fast&Direct against A2 stainless at EUR 8.75 from Miko. THE NUTS AND WASHERS are where the saving is, the M12 nut and washer box at EUR 17.00 against A2's EUR 34.50, because a hot dip nut is a mild steel nut and an A2 one is cut from 8000 kg/m3 bar. So the switch is EUR 28.34 on a EUR 3194 job and nobody should pretend otherwise. THE REASON TO DO IT IS NOT THE MONEY, and there are three. 1. IT REMOVES A GALVANIC COUPLE THAT WAS ALREADY THERE. The frame is hot dip galvanised structural steel to EN ISO 1461, and A2 stainless bolting into it in a wet zone makes the zinc anodic: the coating sacrifices at the bolt head and the washer instead of at the member. Putting the whole assembly in one metal removes the couple rather than managing it. 2. IT MATCHES THE FIXINGS TO THE SHEET. The sheet is now Colourclad. 10 year plus. Stainless fixings would have outlived the sheet holding them by a decade, and on a canopy you can only reach from a ladder the first thing replaced is what is UNDER the sheet. One system, one renewal cycle. 3. NO STRUCTURAL CHECK ON THIS JOB IS GOVERNED BY A BOLT. The rail-post anchors are concrete cone and masonry edge distance (W1, W4, W5): the sheet fixings are flange thickness and screw shear (S1, S2). A2-70 is f_y 450 against 800 for a hot dip 8.8, so the stainless bolt is the stronger one on paper, and it is not the answer to any question this job asks. WHAT IT COSTS, stated plainly: hot dip galvanising is a SPECIFICATION constraint and not a free switch. It is not electroplated, it is grade 8.8 and not 4.6, the nut is tapped oversize for its own bar and will not fit anything else, and the one line with no Irish price at all is the EPDM-washed self-drilling screw. Hold H17, H19 and H20 carry all three.

WHAT THE SAVINGS ADD UP TO

Tested options total EUR 991.94 of apparent savings, of which EUR 963.60 is not taken and EUR 28.34 is taken and already in the bill below. The two biggest untaken options are the two cheapest-looking ones: the eaves beam as ONE SHS 100 x 100 x 5, no built-up member saves EUR 420.00 and delivers a 10.3 mm cantilever tip against the 8.0 mm it has to live inside, and the eaves beam as 2 x 40 x 40 x 5 angle back to back, 80 x 40 saves EUR 418.60 and delivers a 238.2 mm cantilever tip against the 8.0 mm it has to live inside. The one untaken option that is real is the posts, at EUR 0.00, because the posts come out of the 80 x 80 x 4 already bought and there is no extra length to save. That is the whole point of doing a cutting plan: the biggest line on the bill is decided by what is left over, not by what is bought. The two that are taken are not savings to chase. The roof sheet is now Colourclad 0.6 mm and every fixing is galvanised, on the client's instruction, and the galvanised switch is worth only EUR 28.34. The reasons for both are the cut-edge guarantee and the galvanic couple, not the money.

20 BILL OF QUANTITIES AND COST, EX VAT

Every line carries its source file and what is left over after the job is cut out of it. THE STEEL IS ONE SUPPLIER: all 4 of the structural sections are Cashman of Mallow, who deliver free to Banteer. The other 24 lines are not, and this used to say they were. 18 of the 28 live lines carry an assumed price to be confirmed on the order rather than a captured one; those are the red rows. Red in the EUR column, and only red, means the price is taken from the site rather than from a captured record.

ITEM	DESCRIPTION	QTY	UNIT	EUR	UNUSED MATERIAL	SOURCE
	Galvanised SHS 100 x 100 x 5, 7.5 m length	2	length	630.00	2.29 m spare on the second length; the other 1 is cut to length	cashman steel galvanised sections prices
	Galvanised SHS 80 x 80 x 4, 7.5 m length	3	length	630.00	4.96 m spare, on 3 of the 3 lengths; the rest are cut to length	cashman steel galvanised sections prices
	Clause 804 hardcore, 1 tonne bulk bag	6	bag	363.00	0.95 t on the top bag, whole 1 t bags over 5.05 t needed	chadwicks timber prices
	Colourclad 0.6 mm box, 1000 mm wide, per metre	28.21	m	338.52	400 mm x 2.565 m of trim, the last sheet only	irish rollforming roof sheets
	Galvanised SHS 40 x 40 x 3, 7.5 m length	4	length	292.00	1.80 m spare, on 4 of the 4 lengths; the rest are cut to length	cashman steel galvanised sections prices
	Galvanised self-drilling sheet screw 5.5 x 50 mm, bonded 9 mm EPDM washer, pack of 100	4	pack	224.00	31 no. to the end of the last pack	general building supplies prices
	C25/30 ready-mix concrete, 1 m3 minimum	1	m3	105.00	0.708 m3, the order less 0.292 m3 used	general building supplies prices
	Gutter fittings lot: 1 outlet 3 in port, 2 stop ends, 1 sealed joint kit	1	lot	80.00	n/a	general building supplies prices
	4 in bevel gutter, 5 m length	2	length	68.00	1.400 m on the second 5 m length	irish rollforming roof sheets
	7.5N solid concrete block 440 x 215 x 100 mm	44	no.	58.08	32 blocks of a pallet of 44 over 12 wanted	chadwicks timber prices
	Clearlight box polycarbonate 3048 x 1000 mm, 1.3 mm	1	sheet	50.00	none: 4 x 250 divides 1000 exactly	irish rollforming roof sheets
	Clearlight box polycarbonate 3048 x 1000 mm, 1.3 mm -- 2nd sheet, cut 3 x 1016 for the rooflights	1	sheet	50.00	none: 3 x 1.016 = 3.048 m of a 3.048 m sheet, the offcut is 0 mm	irish rollforming roof sheets
	Neutral-cure silicone 310 ml cartridge	3	no.	43.20	n/a	general building supplies prices
	M12 galvanised threaded bar 8.8, hot dip, 1 m length	4	m	38.00	0.80 m of bar, 4 m lengths less 3.20 m used	fastfixdirect.ie
	Cold galvanising touch-up, 500 ml tin	2	no.	36.00	n/a	general building supplies prices
	M10 galvanised threaded bar 8.8, hot dip, 1 m length	4	m	32.00	0.04 m of bar	fastfixdirect.ie
	Inspection chamber riser 450 mm to existing gully	1	no.	26.72	n/a	general building supplies prices
	Galvanised downpipe 110 mm, 3 m	1	no.	22.26	n/a	general building supplies prices
	Delivery, Chadwicks, one load, crane offload included	1	load	20.33	none, one load is one load	chadwicks timber prices
	Galvanised plate 300 x 300 x 10 mm, cut to size	1	plate	19.51	one 100 x 200 mm corner, cut away, plus a third plate's worth	cashman steel galvanised sections prices
	DPC damp-proof membrane 900 mm x 25 m roll	2	roll	11.00	24.2 m on the second 25 m roll	general building supplies prices
	M16 galvanised threaded bar 8.8, hot dip, 1 m length, with nuts	1	m	11.00	0.200 m of bar	fastfixdirect.ie
	M16 galvanised threaded bar 8.8, hot dip, 1 m length, with nuts	1	m	11.00	0.780 m of bar	fastfixdirect.ie
	M12 galvanised flat washer, DIN 125A Form A, small box	1	box	9.00	a whole box, the balance unused	fastfixdirect.ie
	M12 galvanised hex full nut, DIN 934, small box	1	box	8.00	a whole box, the balance unused and kept for the life of the canopy	fastfixdirect.ie
	M10 galvanised hex full nut, DIN 934, small box	1	box	8.00	a whole box, the balance unused	fastfixdirect.ie
	M10 galvanised flat washer, DIN 125A Form A, small box	1	box	5.00	a whole box, the balance unused	fastfixdirect.ie
	Downpipe bracket 110 mm, pack of two	1	pack	4.50	n/a	general building supplies prices
--	GALVANISED flat bar, 150 x 6, per metre	3	m	0.00	640 mm cut from a 3 m bar; 2360 mm reusable offcut	no captured source
--	GALVANISED flat bar, 40 x 6, per metre	3	m	0.00	1760 mm cut from a 3 m bar; 1240 mm reusable offcut	no captured source
	TOTAL, MATERIALS, EX VAT			3194.12		
	VAT AT 23 PER CENT			734.65		
	TOTAL INC VAT			3928.77		

Covered area -- general arrangement and details
COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING	Cost summary and take-off	REV	E
SHEET	20 of 22	DRAWN	CWA-01 model
SCALE	NTS	TOTAL EX VAT	EUR 3194.12
DATE	2026-09-30	TOTAL INC VAT	EUR 3928.77

Materials only, delivered, excluding erection, labour, scaffolding, temporary works, plant and the galvanised structural steel grade certificate (hold H1).

THE THREE BIGGEST LINES

Galvanised SHS 100 x 100 x 5, 7.5 m length
EUR 630.00, 19.7 PER CENT

12.700 m of member in 15.000 m lengths: the rail as one 7.5 m length spliced to a 1.100 m piece, and 2 cast-in rail posts at 2.050 m, which share the second bar with the splice piece. 2 lengths, and the post detail is why: the posts replaced the packers and four base plates, and moving them onto their own length is what took this section from three to 2. 2.300 m of bar is left over on the second.

Galvanised SHS 80 x 80 x 4, 7.5 m length
EUR 630.00, 19.7 PER CENT

17.540 m of member in 3 lengths of 7.5 m: 2 posts at 2700 mm, cast in, and 2 eaves beams at 6067 mm. The beams are 3 bars, not one -- 17.540 m of member will not go on one -- so this line is what took the fourth length of 100 x 100 x 5 off the sheet and is the reason the posts changed section rather than merely getting cheaper. Three Cashman lengths; 2 go with the fabricator with the rest.

Clause 804 hardcore, 1 tonne bulk bag
EUR 363.00, 11.4 PER CENT

3.369 m3 at 1.5 t/m3 = 5.05 t, including the 2 rail-post blinding, bought as 6 x 1 tonne bags of CLAUSE 804 at EUR 60.50, which is EUR 363.00. Clause 804 is the specified granular fill and the price is Chadwicks' own. THE SUPPLIER WILL NOT BREAK A LOAD, so the EUR 22.50 a tonne of a 20 tonne delivered load cannot be had at this quantity, and the bags are what there is: a load would be EUR 87.00 MORE for 14.95 t that is not wanted and would be left at the kerb. The bags are crane-offloaded by the supplier's own lorry, which is the delivery line.

21 ITEMS TO BE CUT ON SITE

Every piece of this job that is not ordered at a finished length. The rest of the steel comes from Cashman in 7.5 m lengths and is used whole or nearly so, and is on sheet 20. The cap soffit is not surveyed, so the two rail posts are measured on site and cut to suit; that is hold H2, and it is the only length on this sheet that cannot be written down before the steel is ordered.

ITEM	SECTION / SIZE	NO.	CUT LENGTH	CUT FROM, AND HOW MANY	WHY IT IS CUT
Rafter	SHS 40 x 40 x 3	11	2.368 m	SHS 40 x 40 x 3, 7.5 m -- 4 no. for BOTH this row and the brackets below, they are the same stock	between two set-out lines; 800 mm centres, which is the sheet's own lap pitch
Gutter bracket	40 x 40 x 3 equal angle	7	0.300 m	40 x 40 x 3 angle, 7.5 m -- the SAME 4 no. of 40 x 40 x 3 as the rafters above, not a length each	to length between the rail and the trough's back; the return is lapped over the trough
Wall rail, splice piece	SHS 100 x 100 x 5	1	1.100 m	SHS 100 x 100 x 5, 7.5 m -- 1 no. for the splice	the rail is 8.600 m and the stock length is 7.5 m, so one piece is cut and spliced
Rail post, cast in	SHS 100 x 100 x 5	2	2.032 m	SHS 100 x 100 x 5, 7.5 m -- the SAME 1 no. as the splice above, CUT TO LENGTH ON SITE	to suit the cap soffit as levelled on site. NOT YET FIXED: hold H2
Cleat, rail to post	150 x 6 flat bar	4	160 mm	flat bar, 150 x 6	one each side of each post, standing outside it; 30 mm of bar beyond each end of the post
Cleat, rafter to rail	40 x 6 flat bar	22	80 mm	flat bar, 40 x 6	one each side of each rafter, standing on the rail's top flange, because the sheet bears on the rafter and there is no room for a bolt through it
Rooflight panel	Clearlight box 1016 x 1000 mm	3	1.016 x 1.000 m	one 3048 x 1000 Clearlight sheet	3 cut off one sheet exactly (3 x 1016 = 3048), each lapping 120 mm onto the steel
Roof sheet	Colourclad 0.6 mm box, 1000 wide	11	2.600 m, less at the ends	3048 x 1000 box sheets	trimmed at the eaves; the first folds 44 mm into the gutter and the last is trimmed to 600 mm

WHAT IS NOT ON THIS SHEET

The roof sheet and the Clearlight panels are cut from sheet goods, not from lengths, and their sizes are on sheet 14. The bracket angles are cut from 7.5 m lengths and the rafters from 7.5 m lengths, both from the table above with what is left over afterwards. Nothing else on this job is cut on site.

Covered area -- general arrangement and details COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK			
DRAWING	Items to be cut on site	REV	E
SHEET	21 of 22	DRAWN	CWA-01 model
SCALE	NTS	SITE CUTS	8 items
DATE	2026-09-30	NOT YET FIXED	rail post length, hold H2
Measure the cap soffit over the full 8.600 m before the posts are cut: that is hold H2, and it is the only length on this sheet that is not a number.			

22 HOLD ITEMS AND QUOTATIONS REQUIRED

Every item below is closed before the steel is cut.

REF	ITEM	WHAT IS UNRESOLVED	WHAT CLOSSES IT
H1	Steel grade and coating class	No listing in the supplier record states a grade, a yield strength or a galvanising standard. S355 to EN 10025-2, E 210 GPa, gamma_M 1.0 is an authorised design assumption. Every number in the checks rests on it.	Mill certificate with the steel.
H2	Cap soffit along the run	The run carries no level. The two levelled wall tops either side of it fall at 6.34 per cent, which extrapolated puts the soffit up to 0.69 m above the design soffit at the south end.	Level the cap soffit over the full 8.600 m before the gutter is fabricated. The sheet's own turn-down is the closure, so a level tolerance is taken up in the turn-down length.
H3	Soil bearing	150 kN/m2 is a provisional assumption. Bearing is not close to it, at 18.4 kN/m2, but the pad depth, the settlement and thefill below are unverified.	Trial pit or a geotechnical note. Soft fill or a high water table changes the pad depth.
H4	The M12 tie plate into the 13 N/mm2 solid block	The only mechanical fixing into existing masonry on this job. No anchor goes into a pier top: at any embedment that reached the concrete the failure cone was wider than the 75 mm of concrete between the bolt and the pier's nose. What ties the post to the pier is 4 no. M12 galvanised into the pier's bottom two courses, carrying the 4.41 kN of uplift per post against 26.65 kN, with 75 mm of edge distance governing. The only anchor in the captured records is the Rawlplug R-LX M10, whose supplier record withholds approval for	Supplier confirmation of the M12 into the 13 N/mm2 solid block through the tie plate, or a mechanical anchor sized for it. No resin, and no fixing anywhere above the second course. THE WORD HERE WAS 'SADDLE', which it is not: a saddle is a bearing bracket, and this is a plate on the pier's end face with the M12 through it, which is what sheet 16 draws.
H5	Clearlight band, laps and the fall	The Clearlight and the roof sheet are the same 1000 mm box profile, which the client has confirmed by hand, and the band is the same sheet cut into STRIPS. The 250 mm band that the east-side headroom asked for divides the 1000 mm sheet into four strips EXACTLY, so there is no side offset and the 8.600 run takes three strips off ONE sheet. Nothing is wasted. The height came from the 250 mm width: 250 over the 2.600 set-out is 9.62 per cent, 5.49 degrees, and that is what the trough and the rail were then set out from. The 200 side lap sheds across its width, so the risk is water running backwards into it under wind.	IRF to confirm both laps and the lap angles. The band is 250 mm and vertical, the fall is 9.62 per cent, and the 4 in roof is either raised or its band is given a sharper edge that will not pond.
H6	Clearlight thickness	1.3 mm is inferred by the supplier record, not published. The band's bow and the 100 mm fixing pitch both depend on it.	IRF to confirm the gauge. 2 mm relaxes the fixing pitch to 200.
H7	Stock, and what this job takes out of it	SHS 100 x 100 x 5 was 4 in 7.5 m lengths at capture and SHS 40 x 40 x 3 was 1. This bill needs 2 and 4. The 40 x 40 x 3 is the binding one: 28.1 m of member out of a capture of one 7.5 m length, and all of it is rafter and bracket angles. The 80 x 80 x 4 count is the one the change moves: 1 at capture, 3 now, because the eaves beam is two 6.067 m lengths in that section and they share nothing with a 2.700 m post.	Reserve. The 100 x 100 x 5 count fits the captured stock; the 40 x 40 x 3 count does not, by a factor of four.
H8	Gutter profile and bracket gauge	The trough is drawn as a 110 x 90 4 in bevel with a 30 mm flat back, and the bending check is worked on that section. The IRF hook that used to stand 30 in the back is DELETED and the bracket is an angle bolted to the rail's top flange outboard of the trough, so nothing stands in the section at all. IRF do not publish the gauge or the maximum bracket spacing, so the profile is a reasonable 4 in bevel and not their section. Worked as a flat plate it read 14 times stronger than the section has.	IRF to confirm the profile, the gauge and the spacing. Seven brackets at 40.000 m is the pitch the 40 x 3 x 1 bracket needs on its own span, and it is under the assumed 1.500 m maximum.
H9	Galvanising of the cut ends	A cut face on a galvanised member has no coating. One splice -- in the wall rail only, the 2 eaves beam lengths having gone with the built-up beam -- the rail, the 2 rail posts and the 2 front posts.	Two 500 ml tins on the materials list.
H10	The brief's flush gutter cannot be built	The brief asks for a flush gutter against the wall. It cannot be, and the reason is the ductwork: it stands 25 mm proud of the wall face, so anything at the wall is in front of it. The trough is therefore set 33 mm off the wall, and the wall rail 143 to 243 mm, outboard of the gutter. The trough's back is 22 mm under the cap's own edge and the cap's downstand has to be trimmed along the run. That overlap is check G6, rejected, and it needs the client's agreement.	The client to accept a gutter 33 mm off the wall, or the ductway to be moved. Until one of those, the 22 mm of plan overlap between the trough and the cap lip is unresolved.
H16	Colourclad warranty in writing, and the cut edges	The roof sheet is now Colourclad 0.6 mm, and IRF's published word for it is '10 year plus', which does not cover cut edges. The sheet it replaces was PVC Leathergrain at 'up to 25 years including cut edges'. On a canopy the cut edge is what governs: this sheet is trimmed at the eaves on all 11 lengths, the first folds 40 mm into the gutter, and the last is trimmed to 600 mm. The published polyester life is 8 to 12 years to first maintenance and 20+ in total; take the low end, the underside is visible. The sheet is the clock for the whole canopy.	IRF's written warranty for Colourclad 0.6 mm, stating what it does and does not cover on a cut edge. Until it is in hand the client is accepting a 10 year plus coating inside the design life of everything else on the job. Mitigation is specified, not hoped for: every cut edge cold galvanised on the day it is cut, an EPDM washer under every screw head so no water stands on a cut edge, and a roof laid to fall and to be swept. Sheet relief as an option: PVC Leathergrain 0.5 mm, same profile, same 11 sheets, EUR 169.28 more.
H17	Fixing galvanising standard, and the finish on the frame	Every fixing on this job is now hot dip galvanised to EN ISO 10684, grade 8.8, not electroplated. The standard is written into the specification and the order, but no supplier has confirmed it in writing. The site's moisture is why it matters: a permanently damp boundary wall, rising damp, leaf litter, soil at the post bases and 1,200 to 1,600 mm of rain a year. A plated bolt to EN ISO 4042 carries 5 to 15 um and its own corrosion class 1 is one hour to first rust; EN ISO 10684 parts at least 45 um on the thread and in the root of it, which is the only coating that reaches into a rolled thread form. The galvanised frame also answers the galvanic couple that A2 stainless bolting would have created: in a wet zone the zinc would be anodic and sacrificing at the bolt head.	A certificate from the supplier that the fasteners are to EN ISO 10684, on the same galvaniser's certificate as the frame if it can be arranged. Confirm the corrosion class of the site rather than assuming it -- C2/C3 rural, about 50 km inland, NOT C4.
H19	Galvanised thread gauge: the nuts and the bar must come from one supplier	Hot dip galvanising is applied BEFORE the thread is cut, so the zinc builds up on the minor diameter and the nut has to be re-tapped OVERSIZE to suit. A galvanised nut will not spin onto a plated or stainless bolt, and a plated nut will not spin onto galvanised bar. It is invisible on the drawing and it stops the job. Two further gaps in the same place: the supplier does not publish how many nuts or washers are in a 'small box', and the price list as published lists the M10 nut at EUR 11.00 and the M12 at EUR 8.00, which cannot be right and which is why the M10 nut is carried at the M12 rate here.	One written answer from the supplier confirming the box counts for the M12 and M10 nuts and washers, that the bar is to EN ISO 10684, and that bar, nuts and washers come from one batch. Order the whole fixing schedule on one order so free delivery over EUR 100 applies and the sets cannot be mixed. On site, a BZF nut in a galvanised job is a hammer and a vice, not a spanner.
H20	One line on this job has no Irish published price at all	The sheet and rooflight screws: a galvanised 5.5 x 50 self-drilling roofing screw with a bonded 9 mm EPDM washer. Checked across Screwfix.ie, Chadwicks, Miko, FastfixDirect, Toolfast, RFS, The Bolt Store, Century Fasteners, Timco and Hossett's, and no Irish merchant publishes one. What is on sale is a Timco organic-coated socket screw to EN 14592 at EUR 7.11 per 100 with no washer at all, or Easydrive BZF flange screws at EUR 13.05 per 100 whose washer is not identified as EPDM. The line is carried at the existing indicative EUR 56.00 per 100, which is not a quotation. The washer is not a nicety: it is the whole of the cut-edge protection argument at S4, and it is what keeps water off a cut edge on a 10 year plus sheet.	A quotation for a galvanised 5.5 x 50 hex-washer-head self-drilling roofing screw WITH a bonded EPDM washer, from Toolfast (Munster rep 086 0213881) or RFS (01 4663822). If neither can supply it galvanised, say so and take the organic-coated Timco alternative WITH a separate EPDM washer -- it is a second line, not a substitution, and it has to be priced as one.

QUOTATIONS REQUIRED BEFORE ORDER

LINE	EUR ex VAT
General building supplies, 9 lines	552.68
General building supplies, 1 lines	363.00
FASTFIXDIRECT.IE, GALVANISED FIXING SET, ONE ORDER	122.00
M12 galvanised threaded bar 8.8, 4 m	38.00
M16 galvanised threaded bar 8.8, 1 m	11.00
M16 galvanised threaded bar 8.8, 1 m	11.00
M12 galvanised hex full nut, 1 box	8.00
M12 galvanised flat washer, 1 box	9.00
M10 galvanised threaded bar 8.8, 4 m	32.00
M10 galvanised hex full nut, 1 box	8.00
M10 galvanised flat washer, 1 box	5.00
TOTAL TO QUOTE, 18 lines	1037.68

The general building supplies line is 10 items, listed line by line on sheet 20 with each item's own source file. The FastfixDirect set is broken out because it must go on one order: separate orders lose the free delivery over EUR 100, and a galvanised nut ordered away from its own bar will not fit it. H19.

Covered area -- general arrangement and details COVERED AREA, 29-30 ARD NA SI, BANTEER, CO. CORK

DRAWING	Hold items and quotations required	REV	E
SHEET	22 of 22	DRAWN	CWA-01 model
SCALE	NTS	HOLDS	14 open
DATE	2026-09-30	QUOTATIONS	18 lines, 3 suppliers

Every item is closed before the steel is cut.

There is no resin on this job and nothing is bonded. No fixing into the cavity blockwork is drilled, and the block is contacted over its whole 8.600 m. The only fixings into the wall are 8 no. M12 galvanised into the two 13 N/mm2 solid piers' BOTTOM two courses, one pair to each of the 2 rail posts, and the piers are the only units in this wall that will take one. H4.