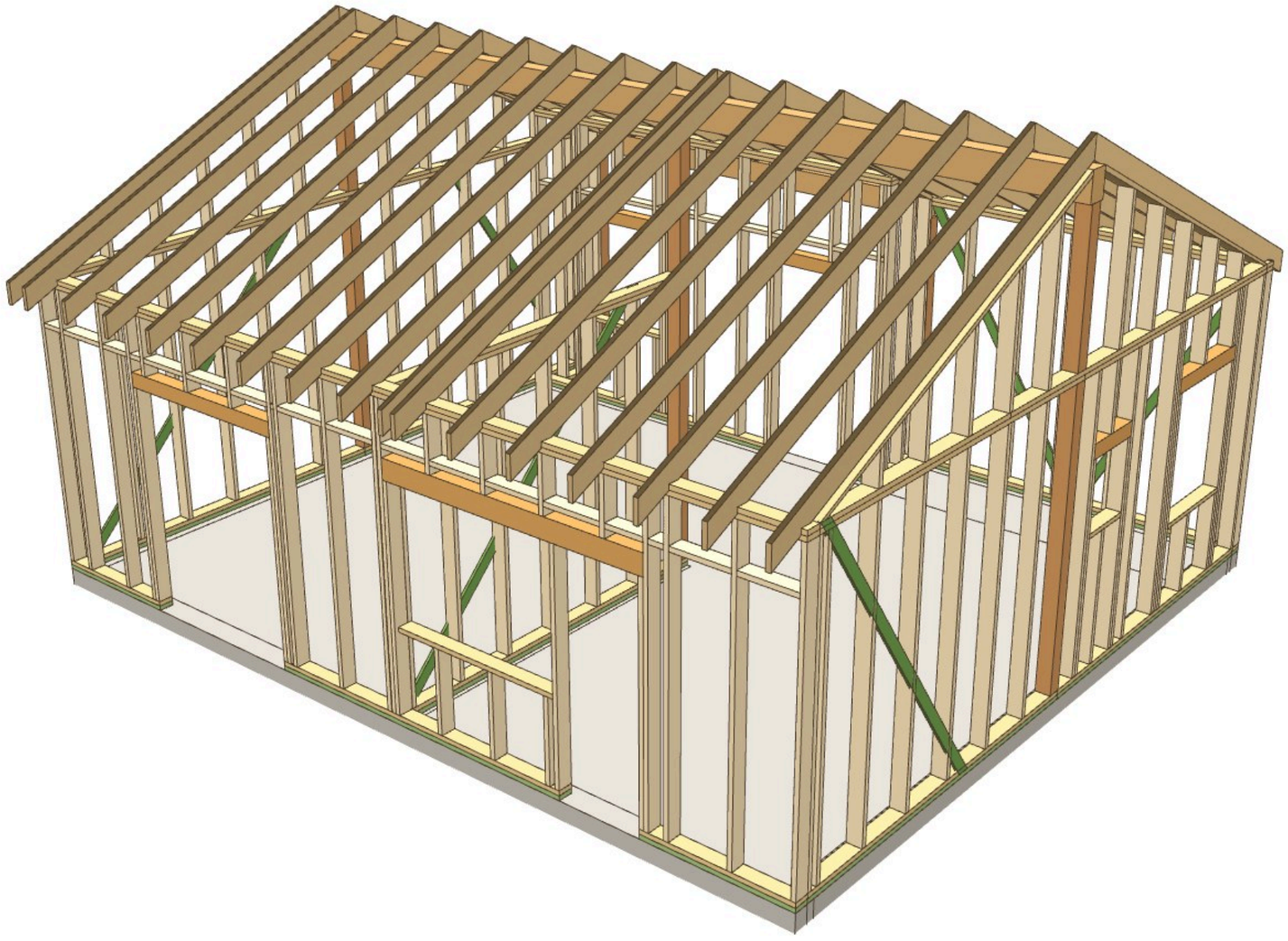
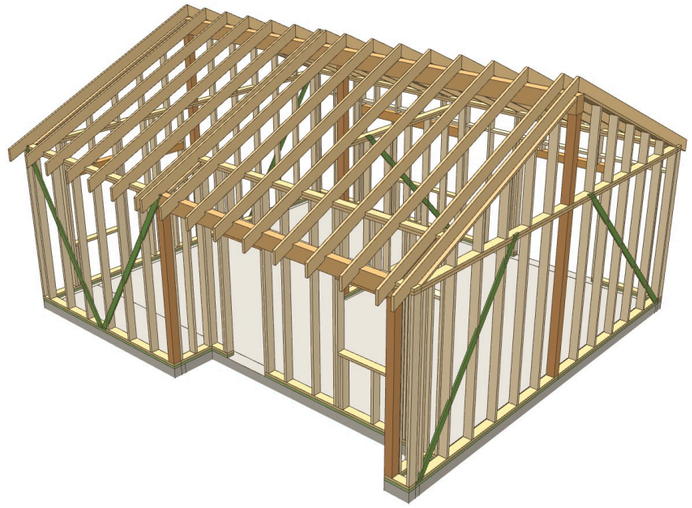




Timber frame house 50 m² – design and assembly instructions

Timber frame house 8.72 × 7.62 m (outside of frame), 25° pitched roof, entrance recess 4.48 × 0.82 m.

Walls: load-bearing studs C24 45×145 at 600, sole plate + double top plate, height 3000 (top +3.025).

Roof: rafters C24 45×195 at 600, ridge beam GL24h 200×280 on 3 supports (gables B, D and internal wall V1).

Foundations: concrete ground beam insulated with Finnfoam; treated sole plate 45×145 with M12 anchors.

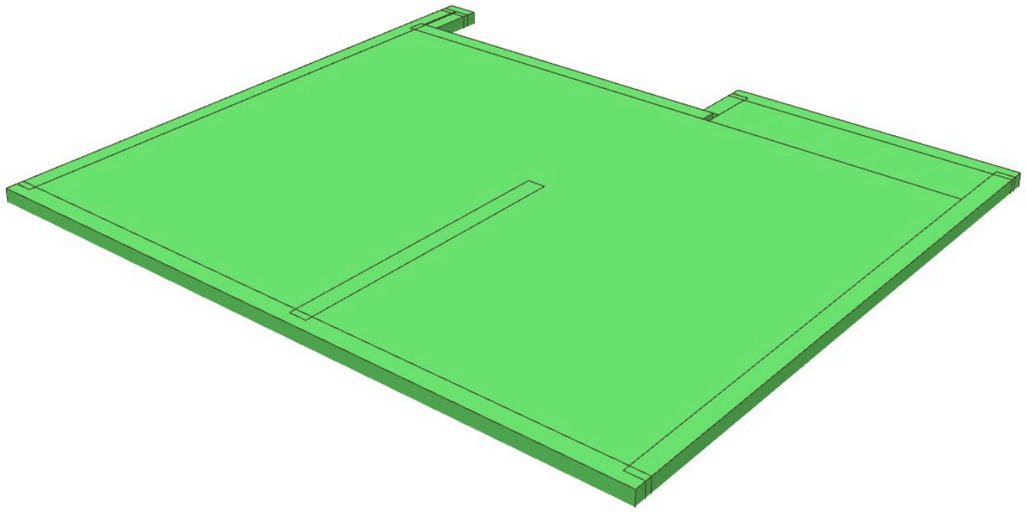
Build-ups, foundation and eaves details – in separate section and detail drawings.

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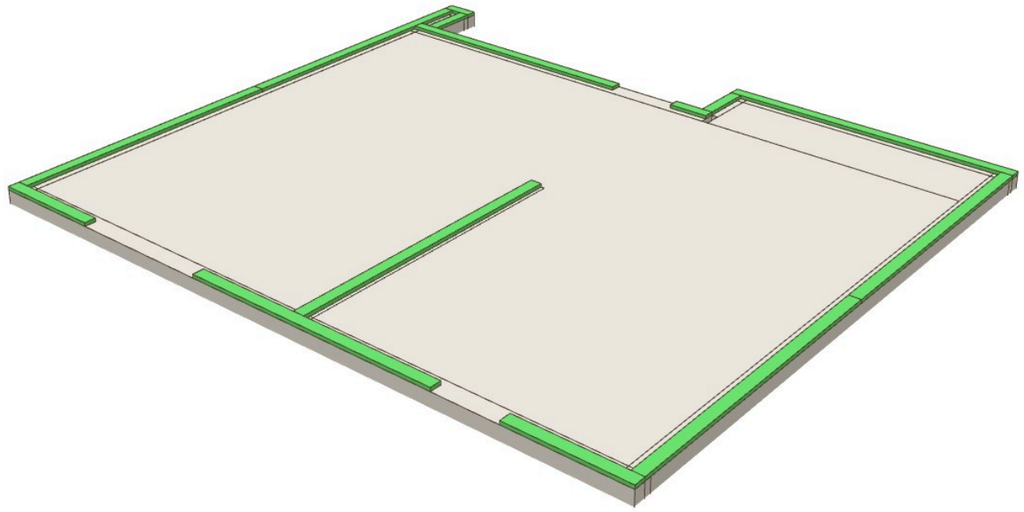
ASSEMBLY INSTRUCTIONS

1 Foundations



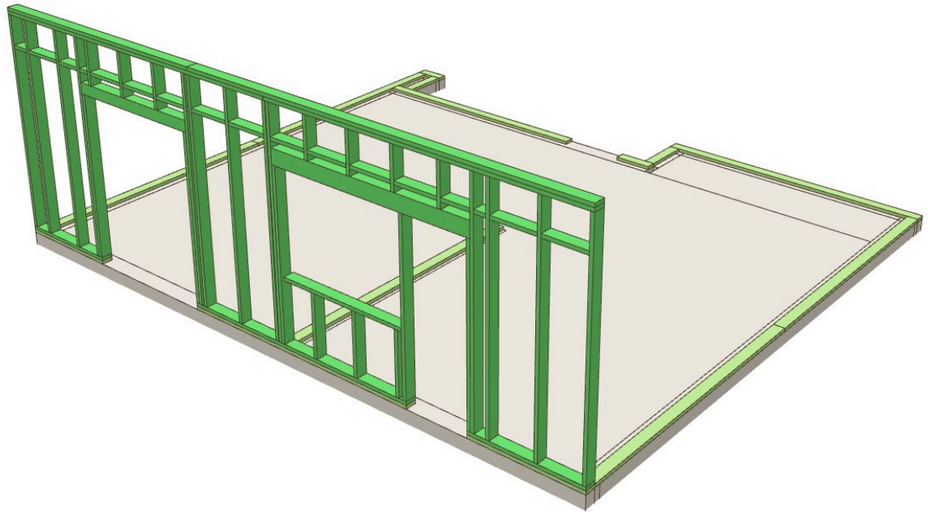
Ground beam on bored piles, insulated with Finnfoam, and floor (EPS100 250 + concrete 80 with underfloor heating) – cast BEFORE the frame. Check: 8720 × 7620, diagonals 11 580 mm (±5), top level ±5 mm. Mark the outside lines of the walls (outside of frame = outside of ground beam).

2 Treated sole plates



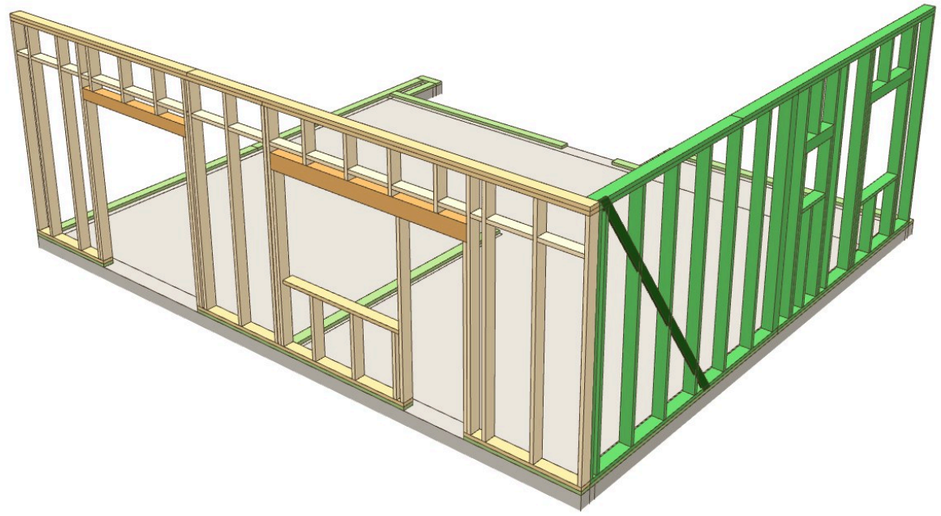
On the ground beam – damp-proof strip, on it the treated sole plates IT-1…IT-11 (sheet K-05). Fix with M12 anchors at ≤ 1200 (250 from the ends). No plates in door openings (D-1, D-2, D-3). Level, check the diagonals again.

3 Wall A



Assemble lying on the floor: sole plate, studs per layout (K-07, axes from the left end), lintels (3 boards glued), sill plate, 1st top plate, noggins +2500. Check the diagonals. Lift, screw to the treated sole plate (T3), plumb, temporary diagonal props – until OSB.

4 Wall B (lower part)



Wall B – between A and C1. Assemble without the gable triangle (K-08); under the ridge beam support – pack B-19. On the floor, after checking the diagonals, let in diagonal brace B-IS1 (K-13, T21). Lift, join the corner to A with 6×140 timber screws at 400 (T7), props.

ASSEMBLY INSTRUCTIONS

5 Walls C1, N1, C2, N2, C3



C1 and C3 with recess beam supports (C1-4, C3-4, 3×45×145); C2 – taller (to +3.406), with D-3 and L-4.
N1 and N2 – with a sloping top (under the rafter). Join to each other and to B (T7).
C1 – let in diagonals C1-IS1, C1-IS2 before lifting; C2 – noggins +2500 under the OSB joint.

6 Wall D (lower part)



Wall D – between A and C3 (K-09), diagonals D-IS1, D-IS2; under the ridge beam support – pack D-8.
Fit the 2nd top plate on all walls, joints offset ≥ 1200 (T5);
at corners the 2nd plate overlaps the 1st plate of the adjoining wall.

7 Internal load-bearing wall V1



V1 (K-12) – on its own treated plate, from wall A to the ridge axis; at the end – support pack V1-4.
Diagonal V1-IS1 (K-13). Check all walls for plumb and diagonals;
temporary props stay until the rafters are fitted.

8 Gables and ridge beam supports



On B, D and V1 – ridge beam supports 3×45×145 (B-20, D-9, V1-5, h = 1400), fixed with angle brackets (T12).
Sloping plates (B-30, D-19) and gable studs per layouts – pitch 25°.
Top of supports +4.425 – check with a level.

ASSEMBLY INSTRUCTIONS

9 Ridge and recess beams



KS – GL24h 200×280, L = 8720 – lift with a hoist / crane onto 3 supports; centre (beam axis 3810 from outside of A).

NS – GL24h 140×240, L = 4675 – on supports C1-4 and C3-4 (100 mm each). Fix with angle brackets (T12).

10 Rafters



First – the edge rafters on the gables (x 72.5 and 8647.5); stretch a line between them for the eaves.

Then R1 / R2 at 600 per the rafter plan (K-14): birdsmouth on the top plate, end on the ridge beam.

Fix with angle brackets (T8, T9), pairs at the ridge – with plates (T10).

NEXT (build-ups – per section and details)

11. Roof (K-16): fascia board, gutter brackets, drip edge, breather membrane, battens 25×45 on rafters, counter-battens 25×100 at 200, "Classic" sheeting – the house is protected from rain.

12. Sheathing gypsum board (K-17) – after the roof, so it stays dry: boards 1200×3000 vertical, edges on studs; joints and openings – facade tape.

13. Windows and doors (K-18): frame = opening − 10 mm, foam, expanding tape outside, airtight tape inside.

14. Facade frame (K-19, K-20): vertical battens on studs, horizontal at 600, perimeter around openings; plinth profile and plinth sill (detail A).

15. Cladding boards 20×120 tongue and groove (K-21, K-22), trims and sills.

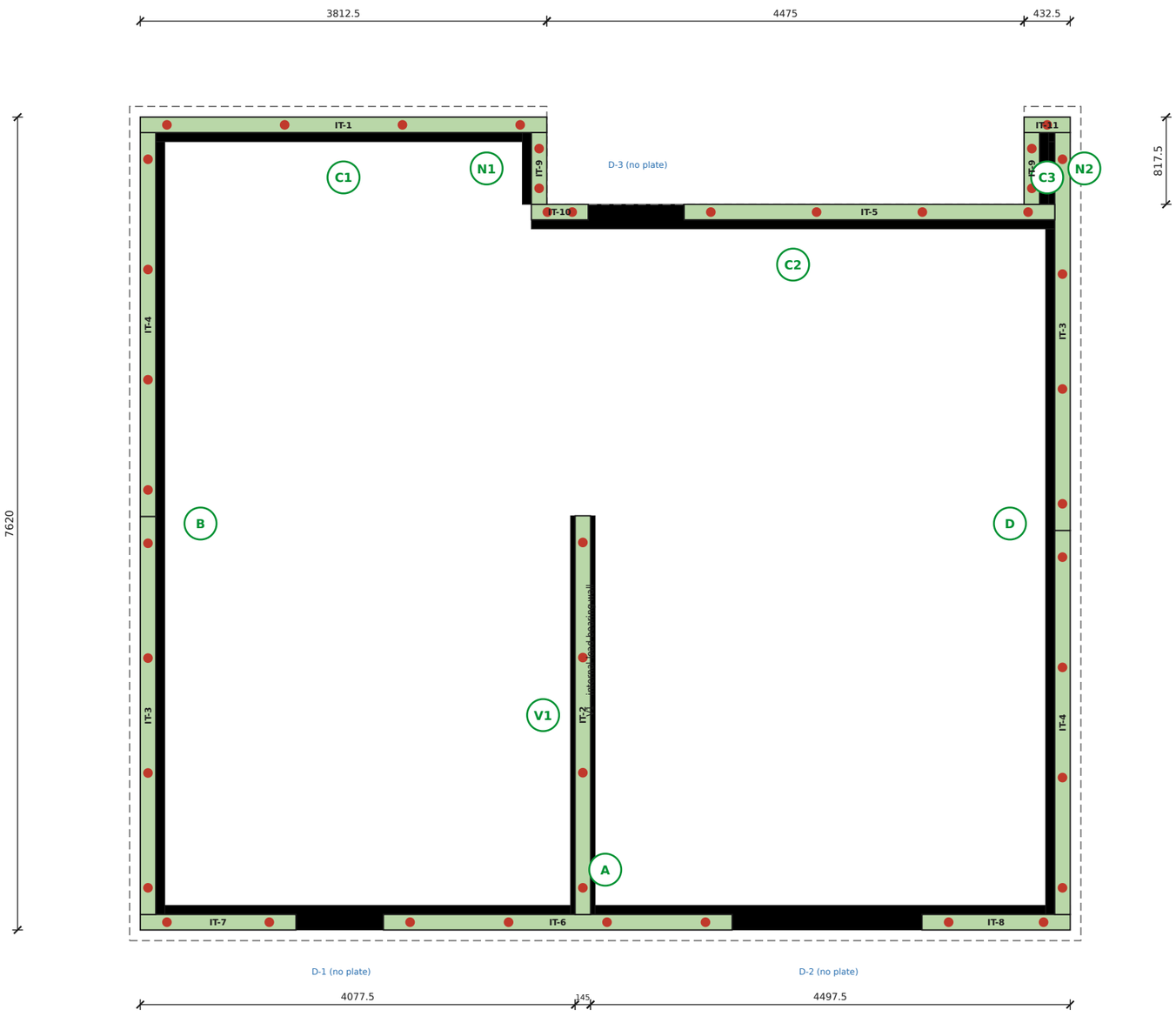
16. Soffit: frame 45×45, boards, L-shaped flashing (laps ~20 mm onto the soffit) – detail C.

17. Inside: stone wool 145 in walls, 195 between rafters; walls A and C2 – OSB-3 12 mm (K-13, T22), only then remove the temporary props;

vapour membrane in walls (taped to PIR); PIR 100 in the ceiling; internal battens 28×45; plasterboard.

FOUNDATION PLAN

Foundation (ground beam) and treated sole plate plan, 1:50



LEGEND

- Concrete ground beam 230 mm (insulated with Finnfoam)
- Treated sole plate 45×145 (IT-…) on damp-proofing
- Anchor M12 (43 pcs in total)
- Outside of Finnfoam formwork (100 mm)

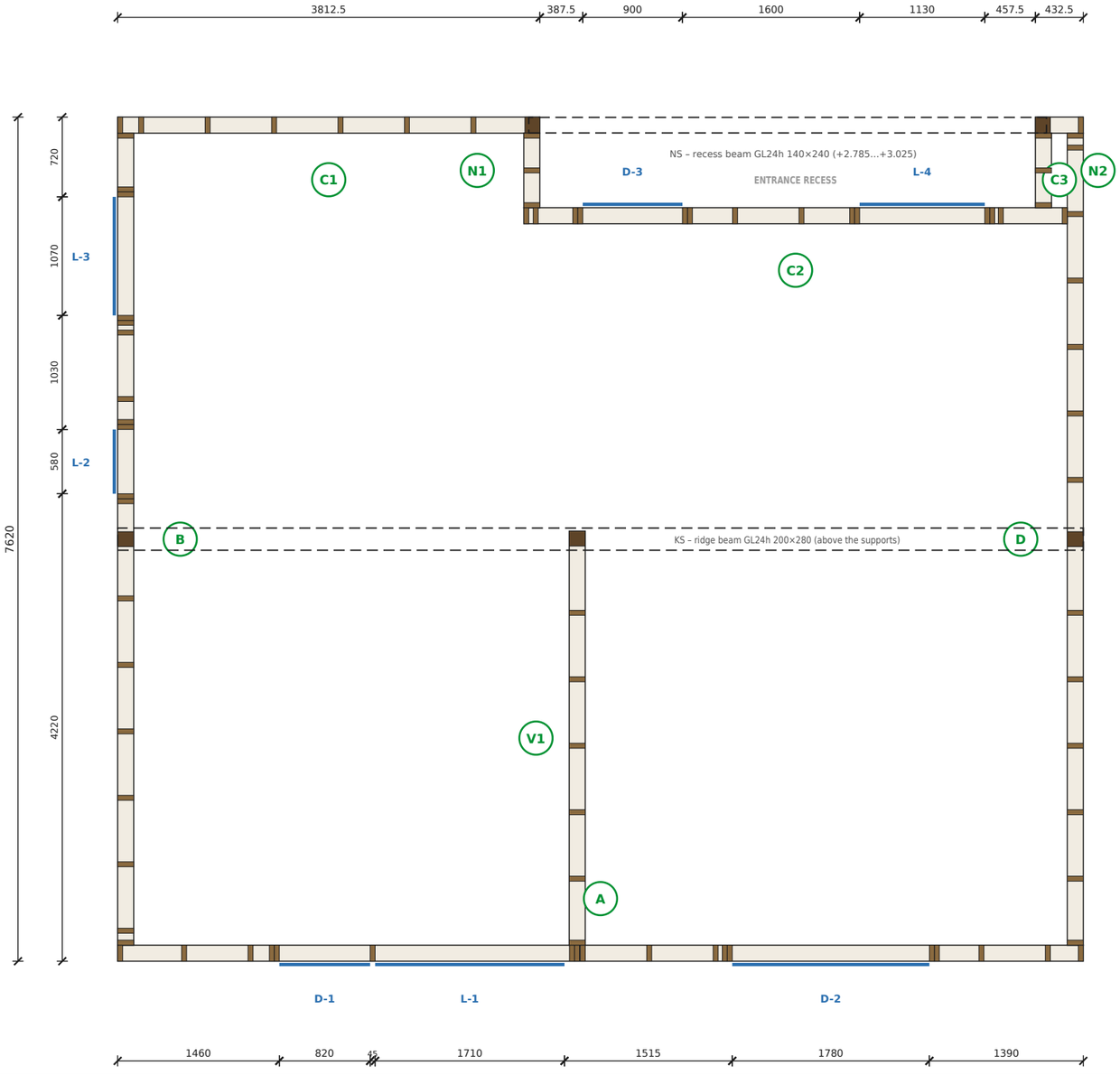
TREATED SOLE PLATES 45×145

Pos.	Section	Length	Pcs	Walls
IT-1	45×145	3812	1	C1
IT-2	45×145	3738	1	V1
IT-3	45×145	3730	2	B, D
IT-4	45×145	3600	2	B, D
IT-5	45×145	3475	1	C2
IT-6	45×145	3270	1	A
IT-7	45×145	1460	1	A
IT-8	45×145	1390	1	A
IT-9	45×145	672	2	N1, N2
IT-10	45×145	532	1	C2
IT-11	45×145	432	1	C3

Treated plate total: 34.1 m; damp-proof strip: 35.8 m.
Plates are laid on a damp-proof strip on the ground beam / concrete level (the floor is cast first).
Outside of plate – flush with outside of ground beam (outside of frame).
M12 anchors at ≤ 1200 mm, 250 mm from plate ends (short plates – 150 mm), at least 2 per plate.
No plate in door openings (D-1, D-2, D-3).
Pile positions and ground beam reinforcement – per the foundation design.

FRAME PLAN

Frame (wall) plan – stud layout, 1:50



WALLS

Wall	Name	Length	Height	Studs
A	elevation A (terrace side)	8720	3000	28
B	gable B (left)	7330	3000 + gable	34
C1	elevation C (left part)	3812.5	3000	7
D	gable D (right)	7330	3000 + gable	23
C3	elevation C (right corner)	432.5	3000	1
C2	entrance recess wall	4907.5	3381	20
N1	recess side (left)	672.5	3331	3
N2	recess side (right)	672.5	3331	3
V1	internal load-bearing (under ridge beam)	3737.5	3000	6

Wall frame: C24 45×145, studs at 600 mm (centres),
sole plate + double top plate.
Wall height 3000 (top +3.025); C2 – up to rafters (+3.406).
Gables B and D – triangle on the double plate, sloping plate
under the end rafter; ridge beam supports 3×45×145.
V1 – internal load-bearing wall, ridge beam support at its end.
Wall joints: external walls A and C1/C3 – continuous,
gables B and D – between them.
Blue – openings (see the "Windows and doors" sheet).

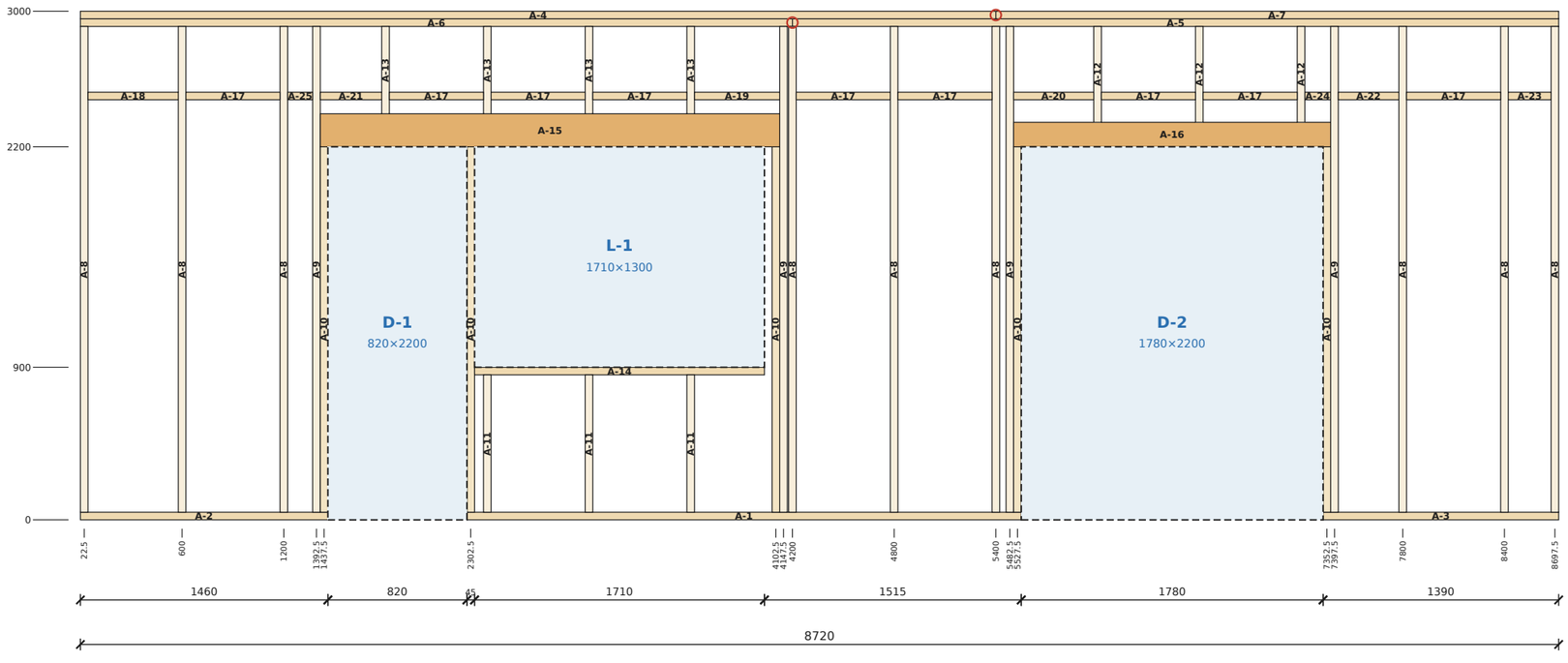
WALL A

WALL A, 1:35

Heights – from the bottom of the sole plate (+0.025 from floor ±0.00). Figures below the wall – stud axes from the left end. Red circle – plate joint (on a stud).

A

view from outside



PART LIST

Pos.	Name	Section	Length	Pcs	Ends
A-1	Sole plate	45×145	3270	1	90°
A-2	Sole plate	45×145	1460	1	90°
A-3	Sole plate	45×145	1390	1	90°
A-4	Top plate	45×145	5400	1	90°
A-5	Top plate	45×145	4520	1	90°
A-6	Top plate	45×145	4200	1	90°
A-7	Top plate	45×145	3320	1	90°
A-8	Stud	45×145	2865	9	90°
A-9	Stud at opening (full height)	45×145	2865	4	90°
A-10	Stud under lintel	45×145	2155	5	90°
A-11	Short stud	45×145	810	3	90°
A-12	Short stud	45×145	565	3	90°
A-13	Short stud	45×145	515	4	90°
A-14	Sill plate	45×145	1710	1	90°
A-15	Lintel (3 boards, glued and screwed)	3×45×195	2710	1	90°
A-16	Lintel (3 boards, glued and screwed)	3×45×145	1870	1	90°
A-17	Noggin under OSB joint (+2500)	45×145	555	9	90°
A-18	Noggin under OSB joint (+2500)	45×145	532	1	90°
A-19	Noggin under OSB joint (+2500)	45×145	502	1	90°
A-20	Noggin under OSB joint (+2500)	45×145	472	1	90°
A-21	Noggin under OSB joint (+2500)	45×145	362	1	90°
A-22	Noggin under OSB joint (+2500)	45×145	358	1	90°
A-23	Noggin under OSB joint (+2500)	45×145	252	1	90°
A-24	Noggin under OSB joint (+2500)	45×145	152	1	90°
A-25	Noggin under OSB joint (+2500)	45×145	148	1	90°

Lintels: 3 C24 boards glued with PU adhesive and screwed with 6×120 timber screws at 300 mm from both sides (staggered).

Long plate joints – only on a stud; joints in the layers of the double top plate offset ≥ 1200 mm.

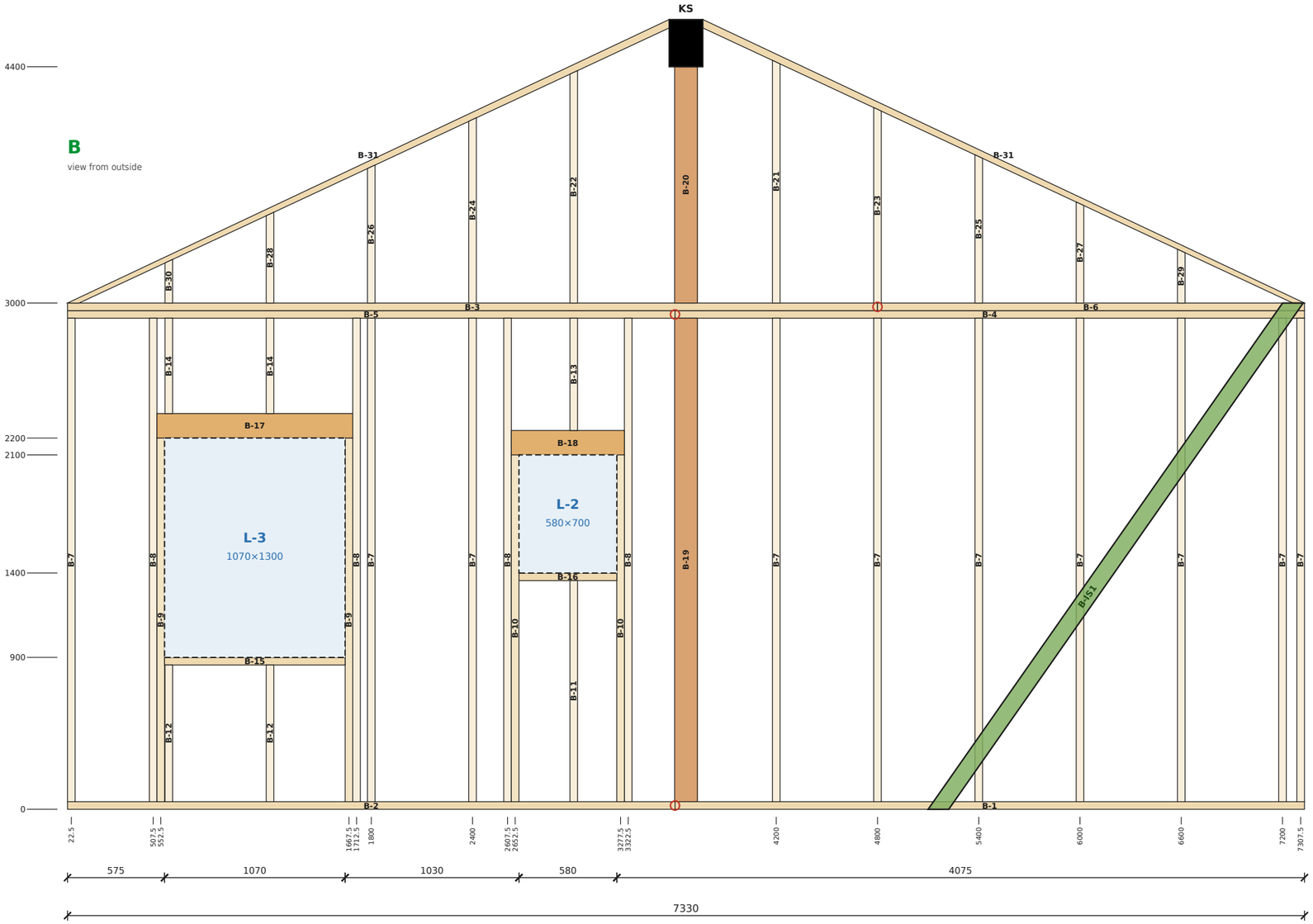
Wall bracing – OSB-3 12 mm on the inside (sheet K-13): boards on studs, horizontal joint +2500 on noggins; vapour control layer over the OSB.

WALL B (GABLE)

WALL B (GABLE), 1:30

Heights – from the bottom of the sole plate (+0.025 from floor ±0.00). Figures below the wall – stud axes from the left end. Red circle – plate joint (on a stud).

B
view from outside



PART LIST

Pos.	Name	Section	Length	Pcs	Ends
B-1	Sole plate	45×145	3730	1	90°
B-2	Sole plate	45×145	3600	1	90°
B-3	Top plate	45×145	4800	1	90°
B-4	Top plate	45×145	3730	1	90°
B-5	Top plate	45×145	3600	1	90°
B-6	Top plate	45×145	2530	1	90°
B-7	Stud	45×145	2865	10	90°
B-8	Stud at opening (full height)	45×145	2865	4	90°
B-9	Stud under lintel	45×145	2155	2	90°
B-10	Stud under lintel	45×145	2055	2	90°
B-11	Short stud	45×145	1310	1	90°
B-12	Short stud	45×145	810	2	90°
B-13	Short stud	45×145	665	1	90°
B-14	Short stud	45×145	565	2	90°
B-15	Sill plate	45×145	1070	1	90°
B-16	Sill plate	45×145	580	1	90°
B-17	Lintel (3 boards, glued and screwed)	3×45×145	1160	1	90°
B-18	Lintel (3 boards, glued and screwed)	3×45×145	670	1	90°
B-19	Support (3 plates, glued and screwed)	3×45×145	2865	1	90°
B-20	Support (3 plates, glued and screwed)	3×45×145	1400	1	90°
B-21	Gable stud	45×145	1438/1417	1	25° / 90°
B-22	Gable stud	45×145	1377/1356	1	25° / 90°
B-23	Gable stud	45×145	1158/1137	1	25° / 90°
B-24	Gable stud	45×145	1098/1077	1	25° / 90°
B-25	Gable stud	45×145	878/857	1	25° / 90°
B-26	Gable stud	45×145	818/797	1	25° / 90°
B-27	Gable stud	45×145	599/578	1	25° / 90°
B-28	Gable stud	45×145	538/517	1	25° / 90°
B-29	Gable stud	45×145	319/298	1	25° / 90°
B-30	Gable stud	45×145	258/237	1	25° / 90°
B-31	Sloping plate (under rafter)	45×145	3941	2	25° both ends
B-IS1	Diagonal brace, let in (notches 25)	25×100	3735	1	∠55° (horiz.)

Lintels: 3 C24 boards glued with PU adhesive and screwed with 6×120 timber screws at 300 mm from both sides (staggered).

Long plate joints – only on a stud; joints in the layers of the double top plate offset ≥ 1200 mm.

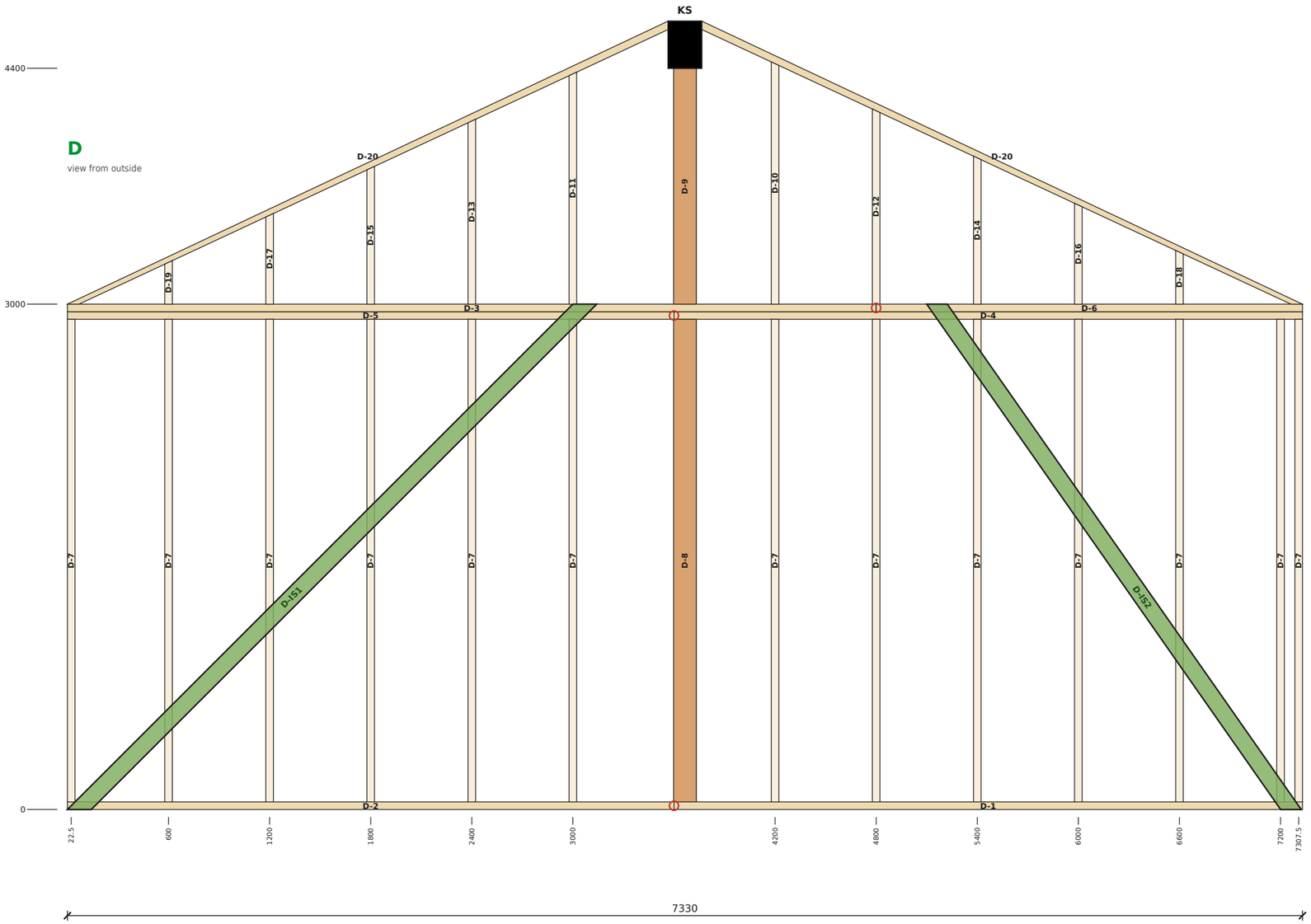
Length "2865/2844" – long / short side (sloping 25° cut).

Green – diagonal 25×100, let into the outside of studs and plates with 25 mm notches (sheet K-13); 2 timber screws 5×70 at each crossing.

WALL D (GABLE)

WALL D (GABLE), 1:30

Heights – from the bottom of the sole plate (+0.025 from floor ±0.00). Figures below the wall – stud axes from the left end. Red circle – plate joint (on a stud).



PART LIST

Pos.	Name	Section	Length	Pcs	Ends
D-1	Sole plate	45×145	3730	1	90°
D-2	Sole plate	45×145	3600	1	90°
D-3	Top plate	45×145	4800	1	90°
D-4	Top plate	45×145	3730	1	90°
D-5	Top plate	45×145	3600	1	90°
D-6	Top plate	45×145	2530	1	90°
D-7	Stud	45×145	2865	13	90°
D-8	Support (3 plates, glued and screwed)	3×45×145	2865	1	90°
D-9	Support (3 plates, glued and screwed)	3×45×145	1400	1	90°
D-10	Gable stud	45×145	1438/1417	1	25° / 90°
D-11	Gable stud	45×145	1377/1356	1	25° / 90°
D-12	Gable stud	45×145	1158/1137	1	25° / 90°
D-13	Gable stud	45×145	1098/1077	1	25° / 90°
D-14	Gable stud	45×145	878/857	1	25° / 90°
D-15	Gable stud	45×145	818/797	1	25° / 90°
D-16	Gable stud	45×145	599/578	1	25° / 90°
D-17	Gable stud	45×145	538/517	1	25° / 90°
D-18	Gable stud	45×145	319/298	1	25° / 90°
D-19	Gable stud	45×145	258/237	1	25° / 90°
D-20	Sloping plate (under rafter)	45×145	3941	2	25° both ends
D-IS1	Diagonal brace, let in (notches 25)	25×100	4345	1	∠45° (horiz.)
D-IS2	Diagonal brace, let in (notches 25)	25×100	3735	1	∠55° (horiz.)

Long plate joints – only on a stud; joints in the layers of the double top plate offset ≥ 1200 mm.

Length "2865/2844" – long / short side (sloping 25° cut).

Green – diagonal 25×100, let into the outside of studs and plates with 25 mm notches (sheet K-13); 2 timber screws 5×70 at each crossing.

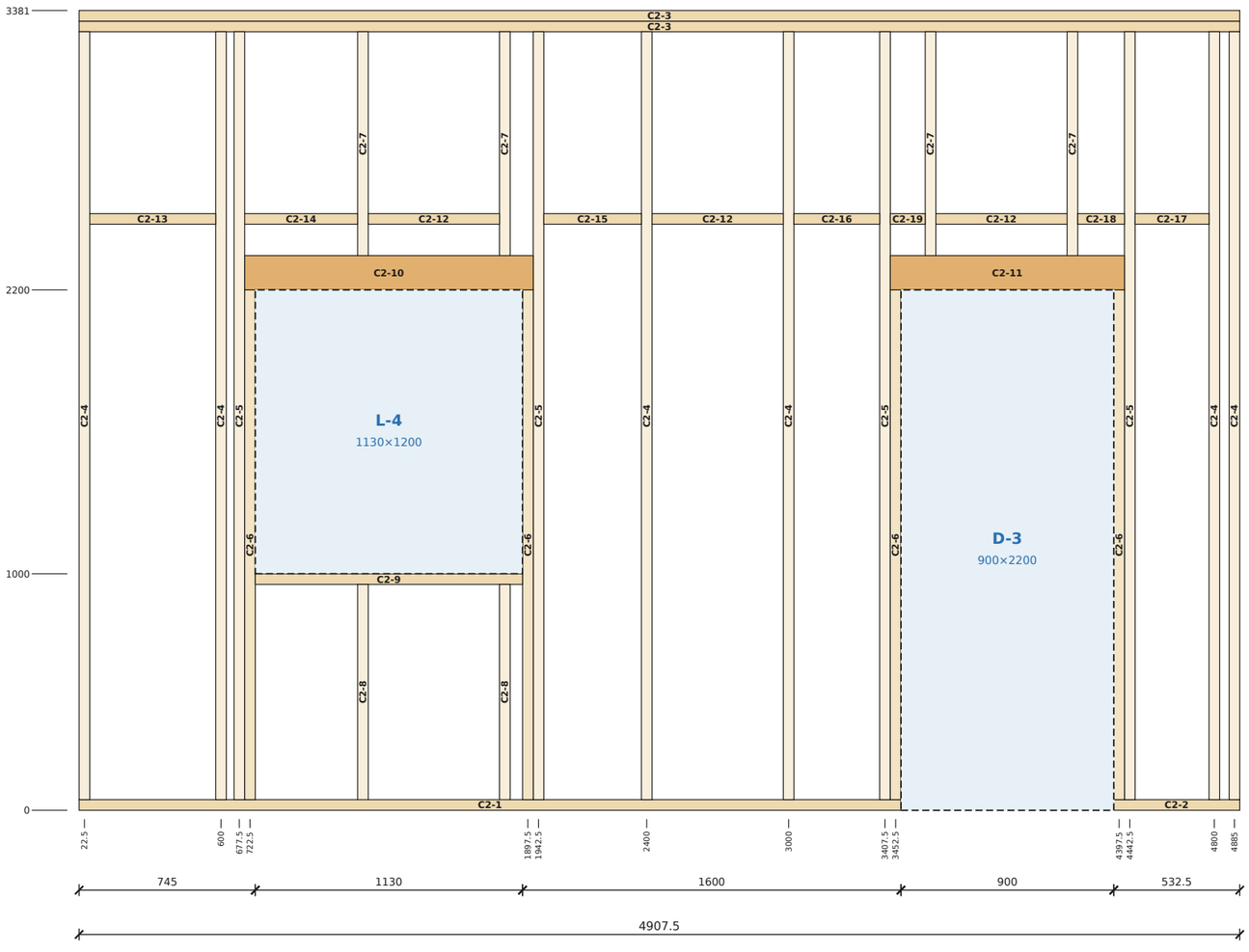
WALL C2 (RECESS WALL)

WALL C2 (RECESS WALL), 1:25

Heights – from the bottom of the sole plate (+0.025 from floor ±0.00). Figures below the wall – stud axes from the left end. Red circle – plate joint (on a stud).

C2

view from the recess (outside)



PART LIST

Pos.	Name	Section	Length	Pcs	Ends
C2-1	Sole plate	45×145	3475	1	90°
C2-2	Sole plate	45×145	532	1	90°
C2-3	Top plate	45×145	4908	2	90°
C2-4	Stud	45×145	3246	6	90°
C2-5	Stud at opening (full height)	45×145	3246	4	90°
C2-6	Stud under lintel	45×145	2155	4	90°
C2-7	Short stud	45×145	946	4	90°
C2-8	Short stud	45×145	910	2	90°
C2-9	Sill plate	45×145	1130	1	90°
C2-10	Lintel (3 boards, glued and screwed)	3×45×145	1220	1	90°
C2-11	Lintel (3 boards, glued and screwed)	3×45×145	990	1	90°
C2-12	Noggin under OSB joint (+2500)	45×145	555	3	90°
C2-13	Noggin under OSB joint (+2500)	45×145	532	1	90°
C2-14	Noggin under OSB joint (+2500)	45×145	478	1	90°
C2-15	Noggin under OSB joint (+2500)	45×145	412	1	90°
C2-16	Noggin under OSB joint (+2500)	45×145	362	1	90°
C2-17	Noggin under OSB joint (+2500)	45×145	312	1	90°
C2-18	Noggin under OSB joint (+2500)	45×145	198	1	90°
C2-19	Noggin under OSB joint (+2500)	45×145	148	1	90°

Lintels: 3 C24 boards glued with PU adhesive and screwed with 6×120 timber screws at 300 mm from both sides (staggered).

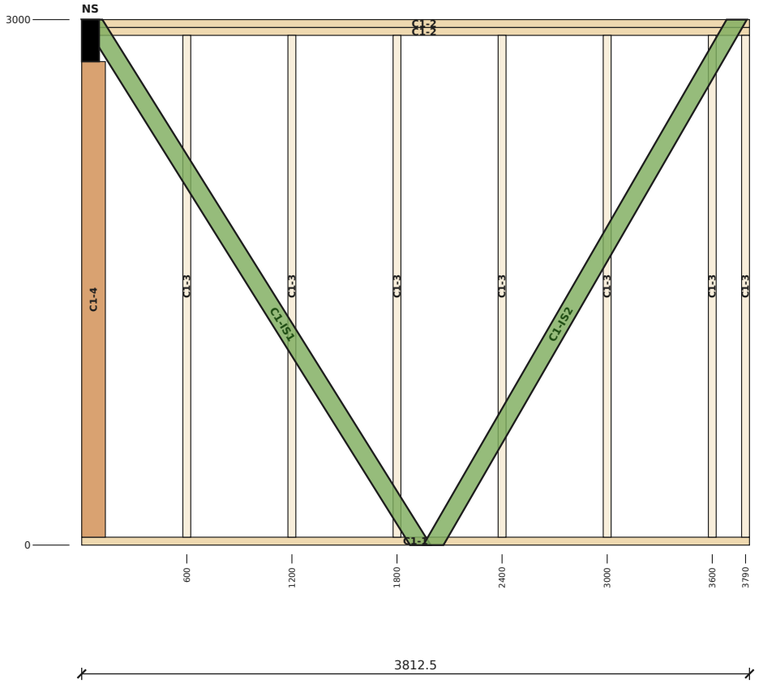
Wall bracing – OSB-3 12 mm on the inside (sheet K-13): boards on studs, horizontal joint +2500 on noggins; vapour control layer over the OSB.

WALLS C1, N1, C3, N2

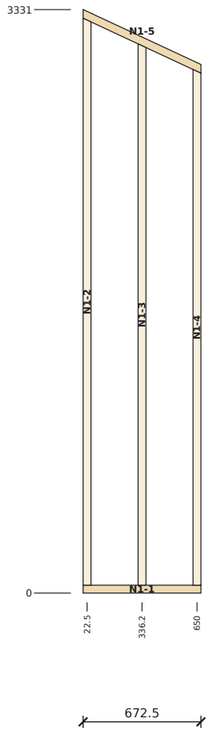
WALLS C1, N1, C3, N2, 1:35

Heights – from the bottom of the sole plate (+0.025 from floor ±0.00). Figures below the wall – stud axes from the left end. Red circle – plate joint (on a stud).

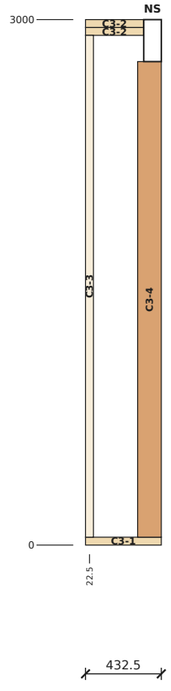
C1
view from outside



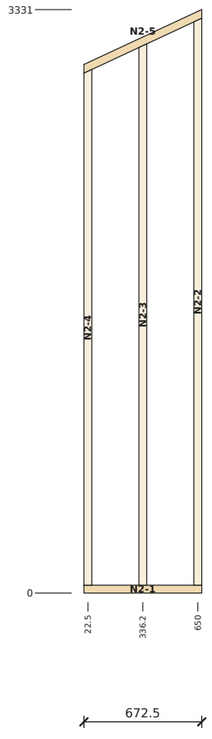
N1
view from the recess



C3
view from outside



N2
view from the recess



PART LIST

Pos.	Name	Section	Length	Pcs	Ends
C1-1	Sole plate	45×145	3812	1	90°
C1-2	Top plate	45×145	3712	2	90°
C1-3	Stud	45×145	2865	7	90°
C1-4	Support (3 plates, glued and screwed)	3×45×145	2715	1	90°
C1-IS1	Diagonal brace, let in (notches 25)	25×100	3605	1	∠58° (horiz.)
C1-IS2	Diagonal brace, let in (notches 25)	25×100	3525	1	∠60° (horiz.)
N1-1	Sole plate	45×145	672	1	90°
N1-2	Stud	45×145	3237/3216	1	25° / 90°
N1-3	Stud	45×145	3090/3069	1	25° / 90°
N1-4	Stud	45×145	2944/2923	1	25° / 90°
N1-5	Sloping plate (under rafter)	45×145	764	1	25° both ends
C3-1	Sole plate	45×145	432	1	90°
C3-2	Top plate	45×145	332	2	90°
C3-3	Stud	45×145	2865	1	90°
C3-4	Support (3 plates, glued and screwed)	3×45×145	2715	1	90°
N2-1	Sole plate	45×145	672	1	90°
N2-2	Stud	45×145	3237/3216	1	25° / 90°
N2-3	Stud	45×145	3090/3069	1	25° / 90°
N2-4	Stud	45×145	2944/2923	1	25° / 90°
N2-5	Sloping plate (under rafter)	45×145	764	1	25° both ends

Length "2865/2844" – long / short side (sloping 25° cut).

Green – diagonal 25×100, let into the outside of studs and plates with 25 mm notches (sheet K-13); 2 timber screws 5×70 at each crossing.

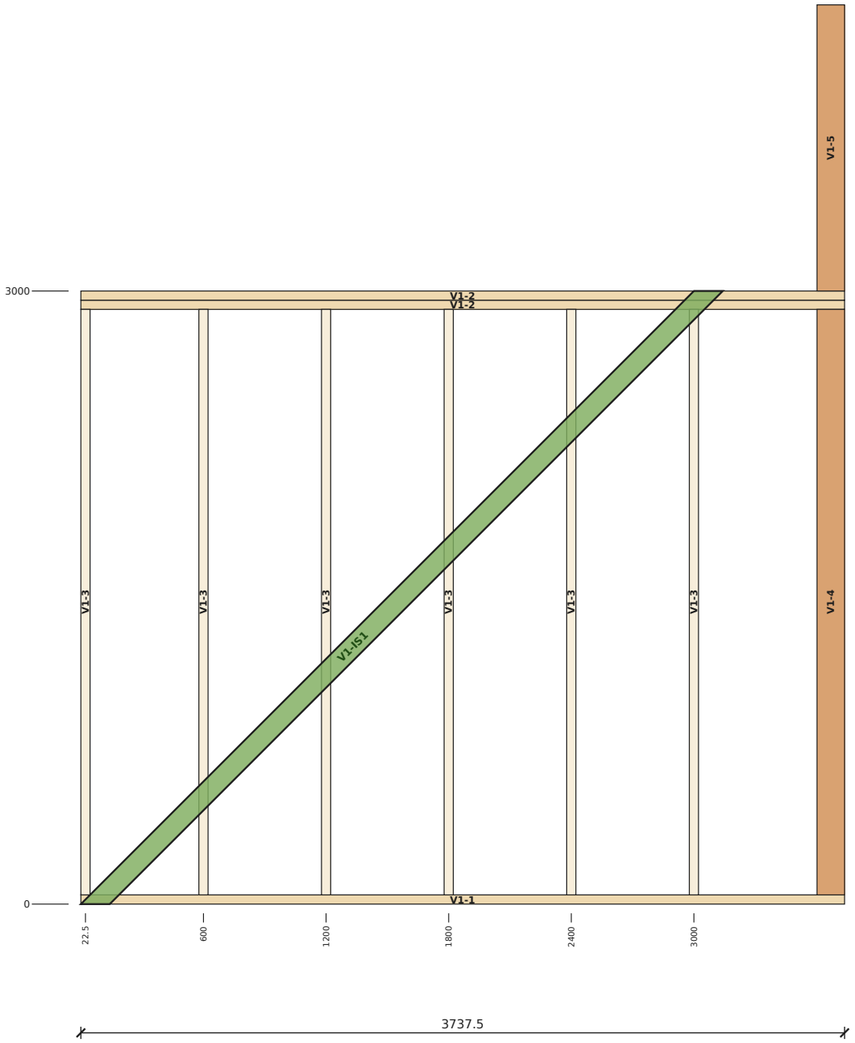
WALL V1 (LOAD-BEARING)

WALL V1 (LOAD-BEARING), 1:30

Heights – from the bottom of the sole plate (+0.025 from floor ±0.00). Figures below the wall – stud axes from the left end. Red circle – plate joint (on a stud).

V1

view from elevation D side



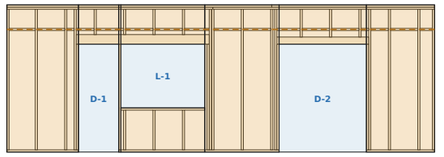
PART LIST

Pos.	Name	Section	Length	Pcs	Ends
V1-1	Sole plate	45×145	3738	1	90°
V1-2	Top plate	45×145	3738	2	90°
V1-3	Stud	45×145	2865	6	90°
V1-4	Support (3 plates, glued and screwed)	3×45×145	2865	1	90°
V1-5	Support (3 plates, glued and screwed)	3×45×145	1400	1	90°
V1-IS1	Diagonal brace, let in (notches 25)	25×100	4345	1	∠45° (horiz.)

Green – diagonal 25×100, let into the outside of studs and plates
with 25 mm notches (sheet K-13); 2 timber screws 5×70 at each crossing.

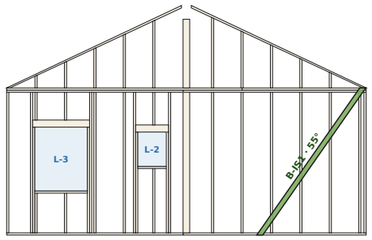
WALL BRACING

Wall bracing: let-in diagonals 25×100 and OSB-3 12 mm (wall layouts 1:100, view from outside)



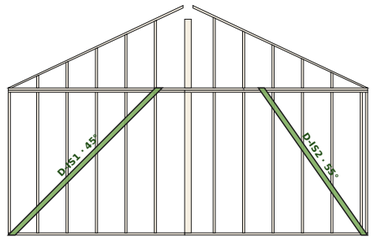
A – OSB-3 12 mm on the inside

8720



B – 1 diagonal

7330



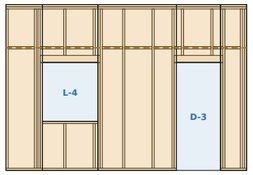
D – 2 diagonals

7330



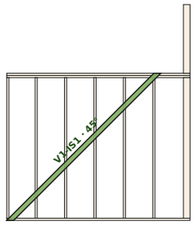
C1 – 2 diagonals

3812.5



C2 – OSB-3 12 mm on the inside

4907.5



V1 – 1 diagonal

3737.5

C3, N1, N2 (432–673 mm) – no diagonals: braced by connections to C1, C2 and recess beam NS.

REQUIREMENTS FOR DIAGONALS

1. C24 board 25×100, continuous, no joints; angle to horizontal 45…60°.
2. Runs from the bottom of the sole plate to the top of the double top plate, crossing at least 3 stud bays.
3. Must not cross openings, lintels or 3×45×145 support packs.
4. In each wall – in pairs in opposite directions (/ and \ ), as close to the wall ends as possible; spacing between adjacent ≤ 6 m.
5. Let into every stud and plate with notches – flush with the outside of the frame (the sheathing board stays flat).
6. Notch depth 25 mm (≤ 1/4 of stud width 145 = 36 mm), height in stud = 100 / cos α (table).
7. Fixing: 2 timber screws 5×70 at each crossing (T21).
8. Let in after assembling the wall on the floor and checking the diagonals – the brace locks the right angles; only then is the wall lifted.

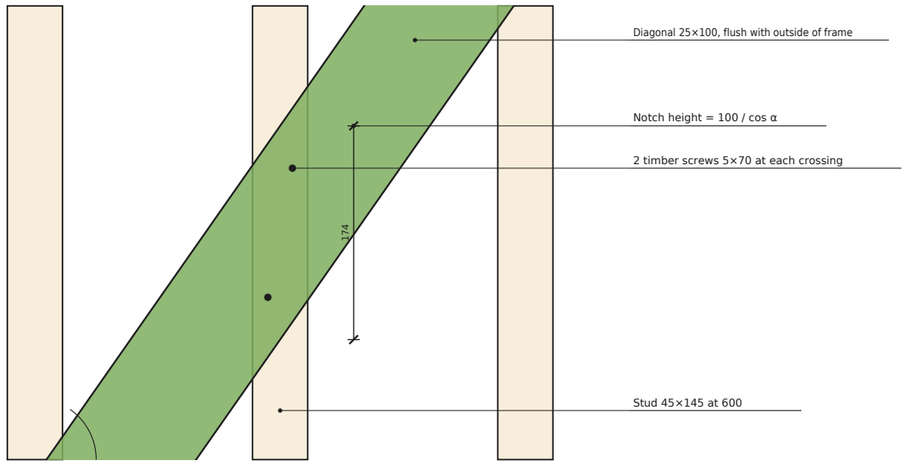
DIAGONALS 25×100

Code	Wall		α	Length	Notch stud	Notch plates	Notch height
B-IS1	B	/	55°	3735	4	3	174
C1-IS1	C1	\	58°	3605	3	3	189
C1-IS2	C1	/	60°	3525	3	3	200
D-IS1	D	/	45°	4345	5	3	141
D-IS2	D	\	55°	3735	5	3	174
V1-IS1	V1	/	45°	4345	5	3	141

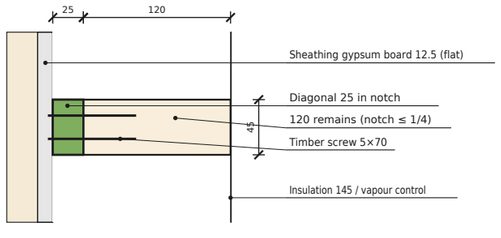
OSB-3 12 mm (WALLS A AND C2)

In walls A and C2 the piers between openings are too narrow for diagonals – bracing is provided by OSB-3 12 mm on the inside over the whole wall (except openings).
Area ~31.5 m²; 1250×2500 boards cut to 1200 – vertical edges on studs (at 600).
Horizontal joint +2500 – on noggins 45×145 (A-, C2- "Noggin").
Fixing: screws 4.2×45 at 150 at edges, 300 in the field (T22).
Fitted after the insulation; until then A and C2 have temporary diagonal props.
Over the OSB – vapour control layer, internal battens 28×45, plasterboard.

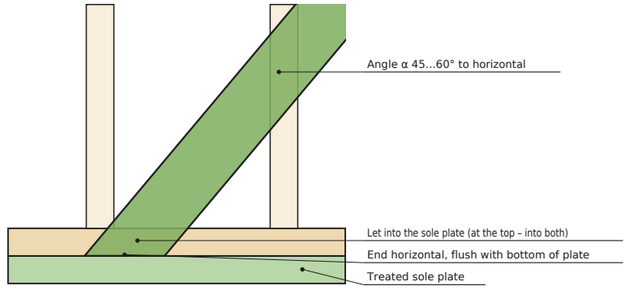
1 NOTCH IN STUD 1:5 (view from outside, α = 55°)



2 SECTION THROUGH NOTCH 1:5

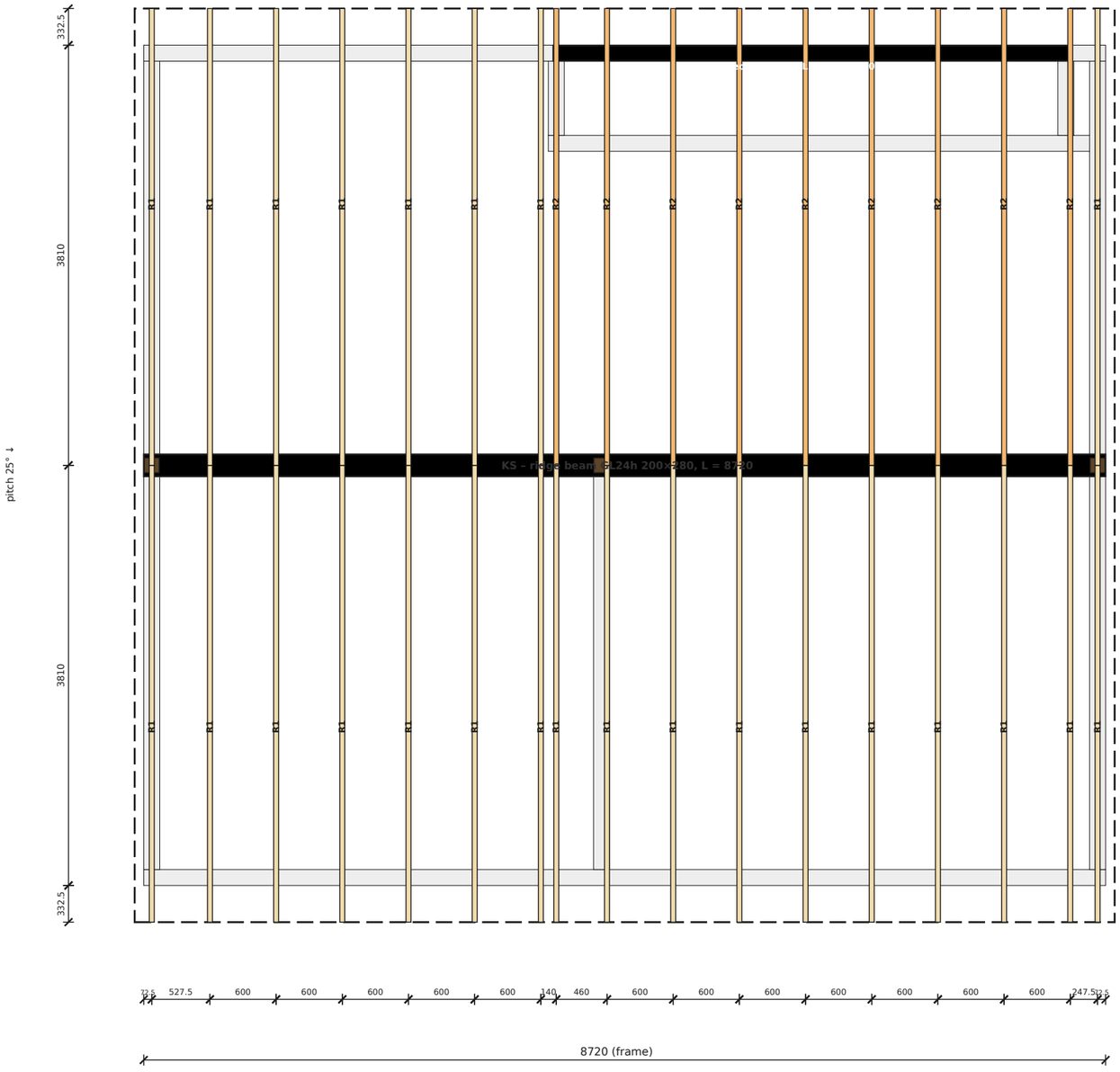


3 DIAGONAL BOTTOM END 1:10



RAFTER PLAN

Roof rafter plan (view from above), 1:50



ROOF STRUCTURE

Pos.	Name	Section	Length	Pcs
R1	Rafter, 1 birdsmouth	45×195	4571	25
R2	Rafter over recess, 2 birdsmouths	45×195	4571	9
KS	Ridge beam GL24h	200×280	8720	1
NS	Recess beam GL24h	140×240	4675	1
AT	Ridge beam supports (3×45×145)	135×145	1400	3

Rafters C24 45×195 at 600 mm (centres), extra rafter at 3740 (above recess wall N1). Length – along the edge, ends plumb. Each rafter bears on the wall top plate (50 mm birdsmouth) and on the ridge beam; R2 – also on recess wall C2. The edge rafters (x = 72.5 and 8647.5) sit on the gable sloping plates over their full length.

Eaves overhang – 332.5 mm from the frame (250 mm from the facade). No overhang at the gables – the roof ends at the facade, the edge is covered with a barge board and flashing.

Rafter cutting – sheet "Rafter cutting".

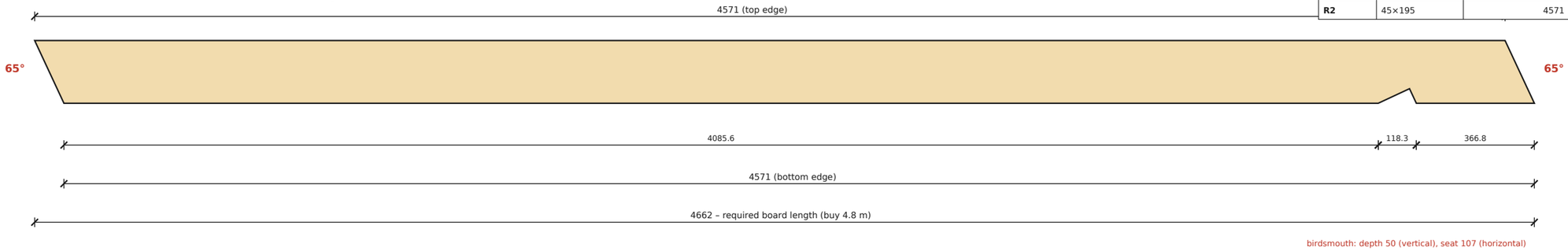
RAFTER CUTTING

Rafter cutting, 1:15 (rafter shown lying down, ridge end on the left)

RAFTERS

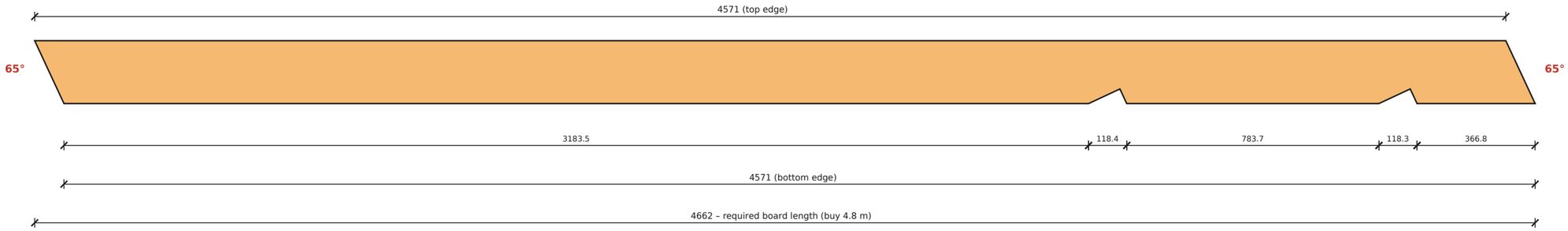
Pos.	Section	Length along edge	Min. board length	Pcs
R1	45×195	4571	4662	25
R2	45×195	4571	4662	9

R1 – rafter with 1 birdsmouth · 45×195 C24 · 25 pcs



birdsmouth: depth 50 (vertical), seat 107 (horizontal)

R2 – rafter over recess with 2 birdsmouths (C2 and recess beam) · 45×195 C24 · 9 pcs



birdsmouth: depth 50 (vertical), seat 107 (horizontal)

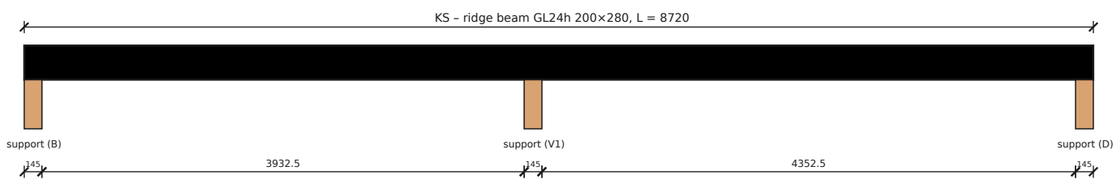
Ends: ridge and eaves cuts – PLUMB when installed; cut angle at the board edge 65° (pitch 25°).

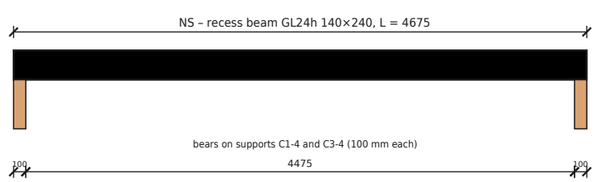
Birdsmouth: vertical cut 50 mm deep at the outside of the wall frame, horizontal seat 107 mm (on the top plate).

Distance from the ridge cut (bottom edge) to the vertical birdsmouth cut – 4204 mm; to the eaves cut – 4571 mm.

R2 extra birdsmouth at recess wall C2: 3302 mm from the ridge cut (same size 50 / 107).

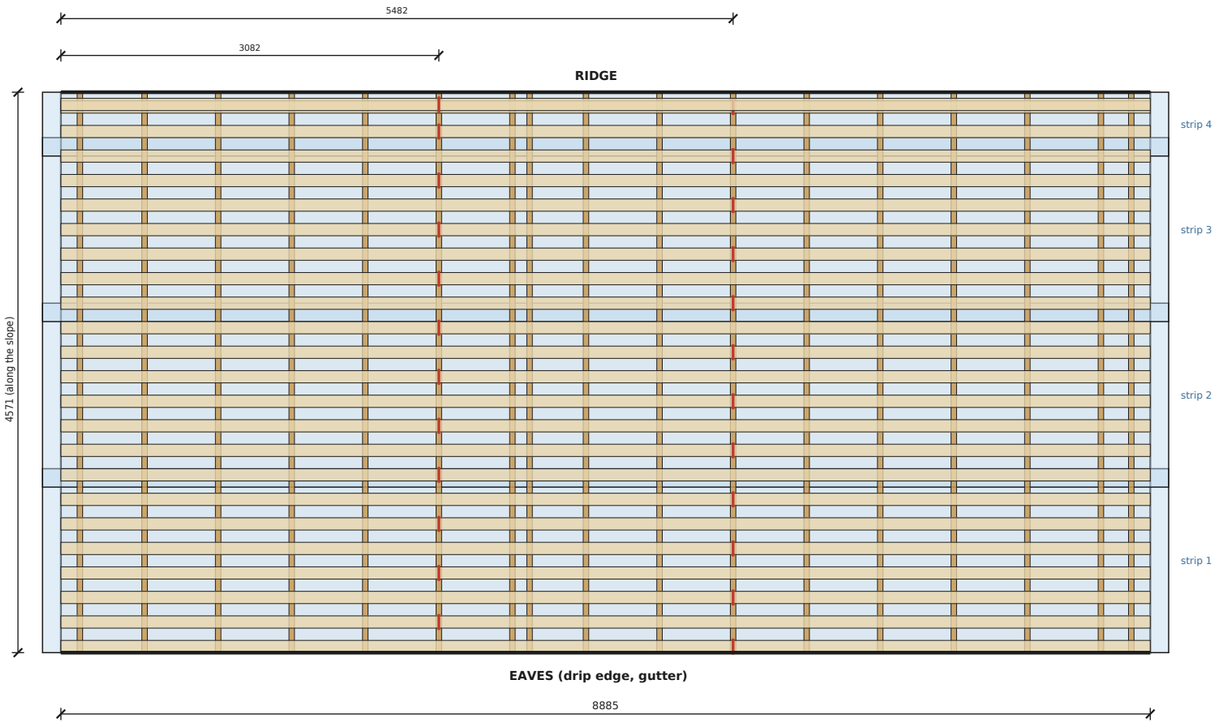
Cut and fit the first rafter on site (template), then cut the others from it.





ROOF BUILD-UP

Roof: breather membrane → battens 25×45 along the rafters → counter-battens 25×100 at 200 → "Classic" (front slope, view from above), 1:50



INSTALLATION SEQUENCE

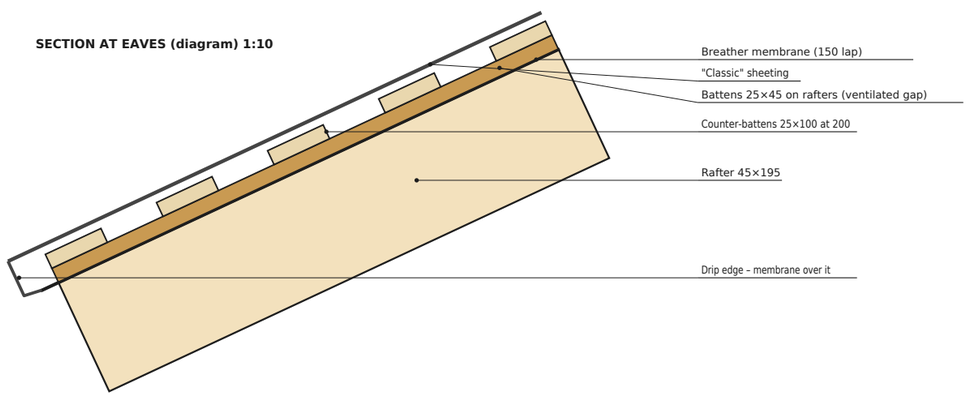
1. On the rafter ends – fascia board and membrane drip edge.
2. Breather membrane – in strips parallel to the eaves, from the bottom upwards; the upper strip laps over the lower one ≥ 150 (print facing up). At the ends – 150 lap onto the barge boards. At the ridge the membrane laps over the ridge by 150 on both sides. Temporarily – with staples, finally held down by the battens.
3. Battens 25×45 on every rafter, full length from eaves to ridge (one layer); timber screws 4×70 at 300 (T17).
4. Counter-battens 25×100: first – at the eaves, then at 200 (centres), last – 50 from the ridge; at the ridge – an extra batten for the ridge flashing. At each crossing – 2 timber screws 4.5×60 (T18).
5. Counter-batten joints – only on a batten; rows alternate: joint at rafter x = 5400 (6.0 + 3.6 m) and x = 3000 (3.6 + 6.0 m).
6. Check diagonals and flatness (±5 mm / 2 m) – then the covering.
7. Gutter brackets – on the fascia board before the drip edge.

QUANTITIES (both slopes)

Material	Qty	Buy
Breather membrane 1.5 × 50 m	81.2 m²	2 rolls (110 m² incl. laps)
Battens 25×45 (on rafters)	34 × 4.57 m	34 pcs × 4.8 m
Counter-battens 25×100	50 rows × 8.88 m	50 × 6.0 m + 50 × 3.6 m
Timber screws 4×70 (battens)		~519 pcs
Timber screws 4.5×60 (counter-battens)		~1700 pcs
Membrane staples		~1 box

Red dashes – counter-batten joints (on battens).
Counter-batten rows per slope: 24 + 1 at the ridge.
Rear slope – mirrored, the same.

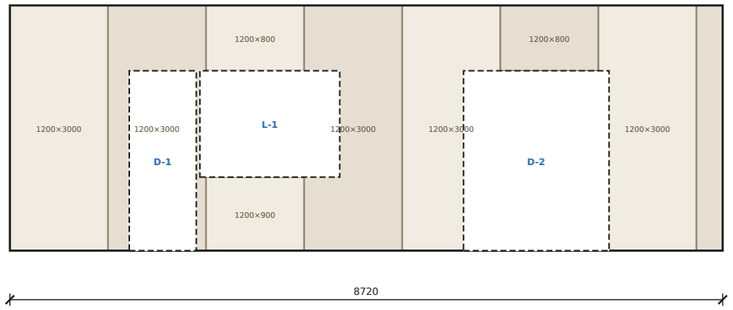
SECTION AT EAVES (diagram) 1:10



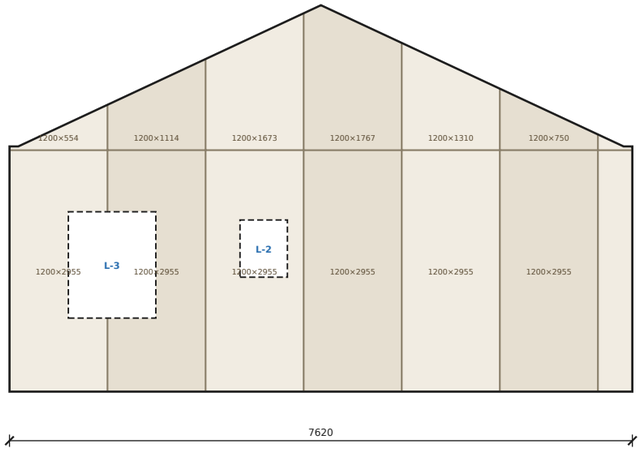
SHEATHING GYPSUM BOARD

Sheathing gypsum board 12.5 mm – layout of 1200×3000 boards (view from outside, outside of frame), 1:75

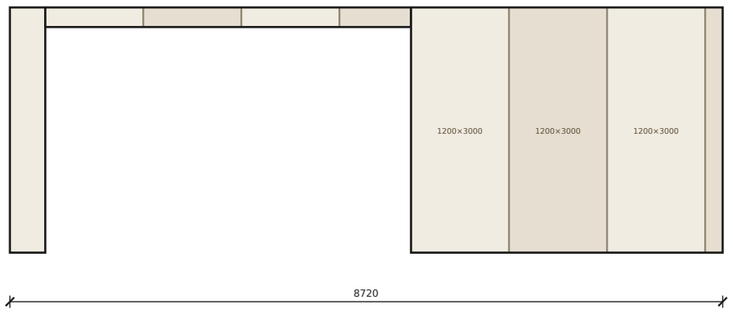
Elevation A



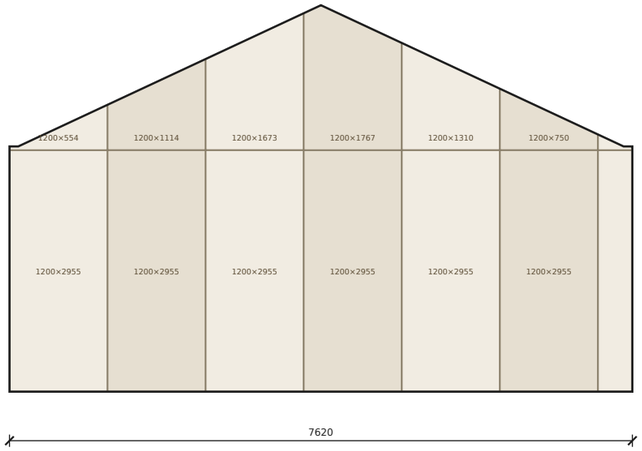
Elevation B (gable)



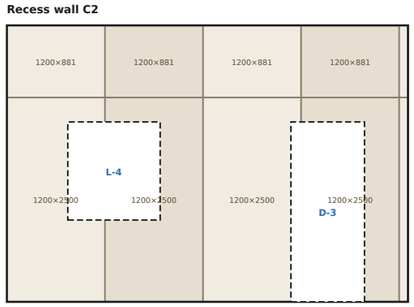
Elevation C (C3, recess beam NS, C1)



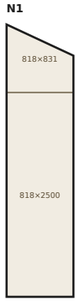
Elevation D (gable)



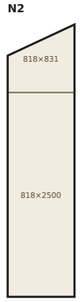
Recess wall C2



N1



N2



INSTALLATION

1. Boards 1200×3000×12.5 – VERTICAL; long edges – on studs (at 600: one board covers 2 bays). Start at a wall corner.
2. On elevations A and C the boards stop at the ends of the A / C frames; gable B, D boards lap over the ends of walls A and C – the corner is closed with no gap.
3. Bottom – at the bottom of the sole plate (+0.025); no contact with concrete.
4. On the gables, horizontal joint +2.980 (on the top plate joint); upper parts cut at 25° along the sloping plate.
5. C2, N1, N2 – joint +2.525 on noggins; NS beam – a 240-high strip.
6. At openings – cut exactly to the opening; board edge on a stud.
7. Fixing (T13): galvanised screws 3.9×35 at 200 at edges, at 300 in the field, ≥ 10 mm from the edge; head flush with the surface.
8. Boards butted tightly; joints, corners and opening perimeters taped with facade (windproof) tape.
9. Straight after the boards – the facade frame (K-20); do not leave the boards exposed to rain for long.
10. The diagonals (K-13) are already let in – the boards go flat over them.

QUANTITIES

Surface	Pieces	Area, m²
A	9	14.0
B	14	29.4
C	9	13.8
Recess (C2, N1, N2)	14	18.7
D	14	31.2

1200×3000 boards: 38 pcs (per cutting, incl. offcuts).

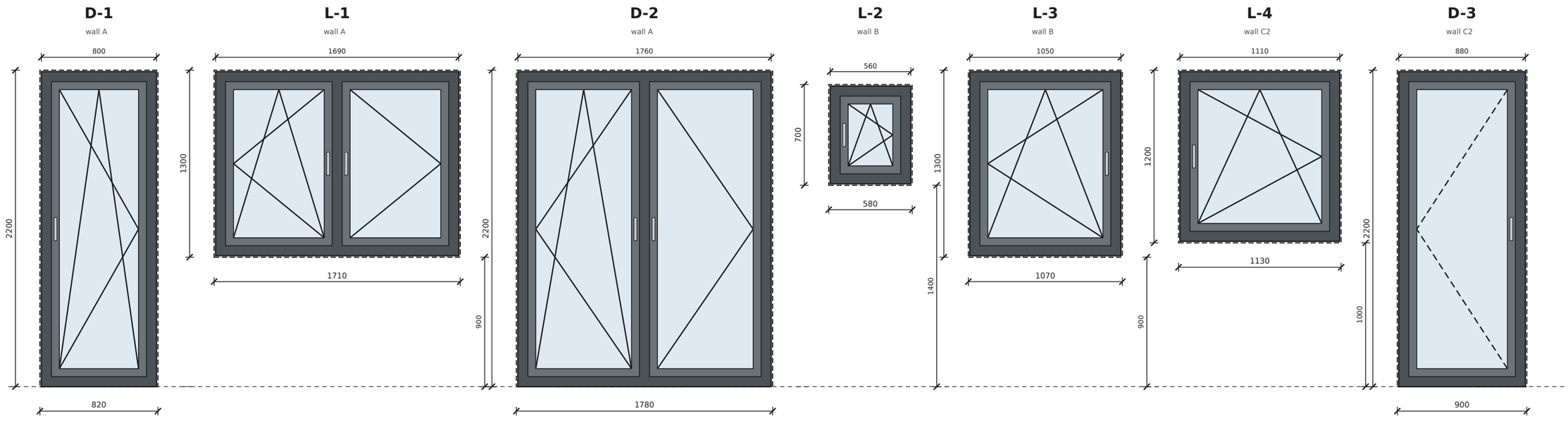
Area excl. openings: 107.1 m²

Screws 3.9×35: ~2736 pcs; facade tape: ~96 m.

Figures on the boards – piece width × height (mm).

WINDOWS AND DOORS

Windows and doors – VIEW FROM INSIDE (as when ordering), openings, unit sizes and opening type, 1:30



WINDOW AND DOOR SCHEDULE

Mark	Wall	Frame opening W×H	Frame (for ordering)	Bottom from plate	Pcs	Type	Opening
D-1	A	820 × 2200	800 × 2190	0	1	PVC terrace door, triple glazing	tilt and turn, inwards
L-1	A	1710 × 1300	1690 × 1280	+900	1	PVC window, triple glazing	2 sashes: side-hung + tilt and turn
D-2	A	1780 × 2200	1760 × 2190	0	1	PVC terrace door, triple glazing	2 sashes: side-hung + tilt and turn
L-2	B	580 × 700	560 × 680	+1400	1	PVC window, triple glazing	tilt and turn
L-3	B	1070 × 1300	1050 × 1280	+900	1	PVC window, triple glazing	tilt and turn
L-4	C2	1130 × 1200	1110 × 1180	+1000	1	PVC window, triple glazing	tilt and turn
D-3	C2	900 × 2200	880 × 2190	0	1	Aluminium external door (entrance)	side-hung, outwards

Frame opening = gap between studs (sides) and from the bottom of the lintel to the top of the sill plate / sole plate (doors – from the bottom of the plate).

Frame (order) size = opening − 10 mm on each side and at the top (windows – also at the bottom); the gap is for fitting foam and sealing tapes.

D-1 and L-1 – in one opening with a shared lintel 3×45×195, with an intermediate stud 45×145 between them. Doors D-1, D-2 have a low threshold.

Heights – from the bottom of the sole plate (+0.025 from floor ±0.00). Measure the openings on site before ordering the units.

OPENING SYMBOLS (view from inside)



Apex – hinge side (side-hung)

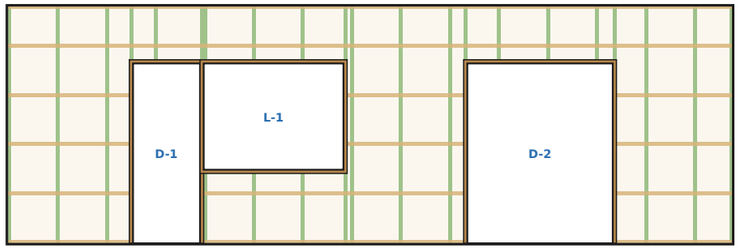
Apex at the top – bottom-hung (ventilation)

Solid – opens inwards, dashed – outwards

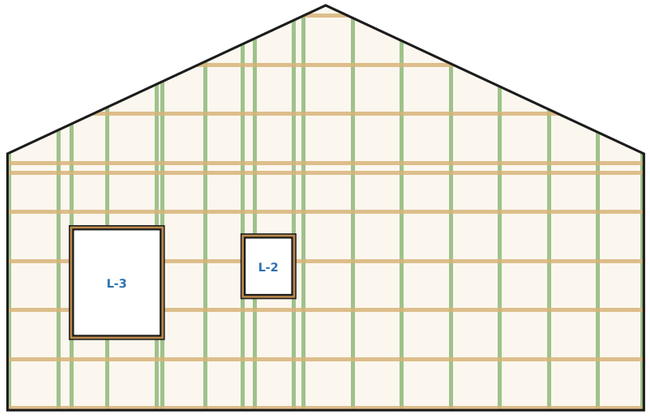
FACADE FRAME

Facade frame: vertical 25×45 at 600 (on studs) + horizontal 25×45 at 600, 1:75

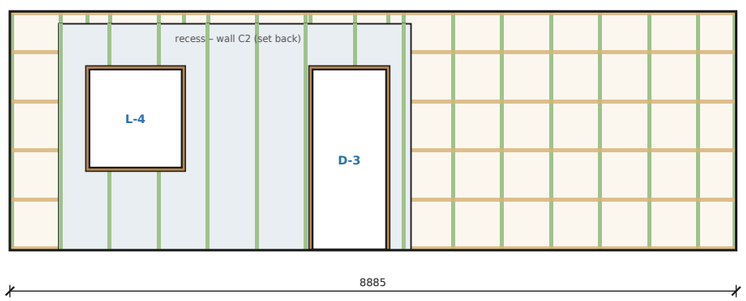
Elevation A (terrace side)



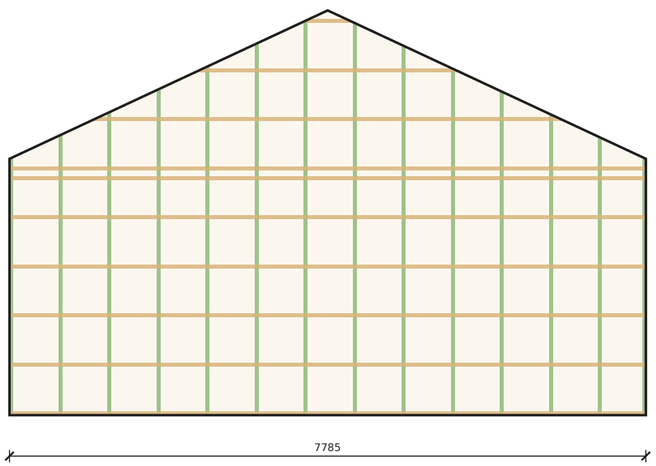
Elevation B (gable, left)



Elevation C (entrance side, with recess)



Elevation D (gable, right)



FACADE FRAME

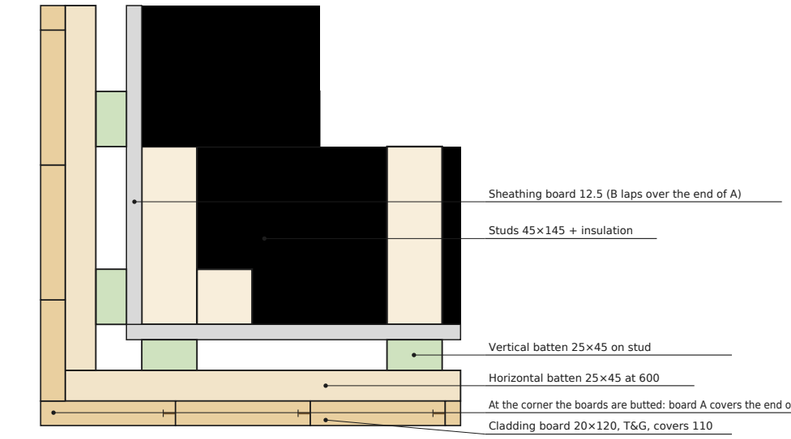
Elevation	Area excl. openings, m²	25×45, m (2 layers)
A	18.0	124
B	29.7	143
C	26.7	137
D	31.5	123

Total battens 25×45: ~527 m (both layers at 600 + perimeter at the bottom, top and around openings).
Installation: on the sheathing board, first layer – VERTICAL battens on every stud (at 600), fix with timber screws 4.5×70 at 400 into the studs; second layer – HORIZONTAL battens at 600 (timber screws 4.5×60 at each crossing).
Around openings – 25×45 perimeter (dark brown): top, bottom (windows) and sides – for cladding and trims.
At the bottom – ventilated plinth profile and plinth sill (see detail A); at the top – ventilation gap.
Light green – vertical, brown – horizontal battens.
Lengths and purchasing – sheet K-22 (quantities).

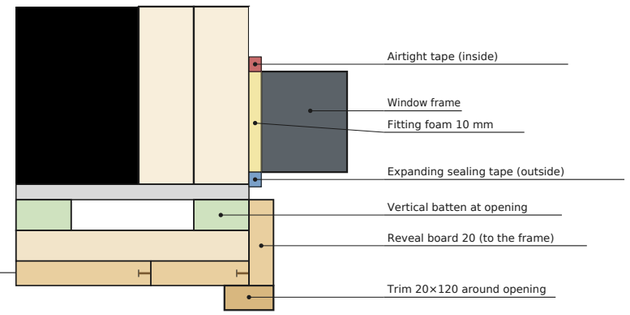
FACADE INSTALLATION

Facade installation: sheathing board → vertical battens 25×45 → horizontal battens 25×45 → tongue and groove boards 20×120

1 EXTERNAL CORNER (plan) 1:5



2 WINDOW JAMB (plan) 1:5



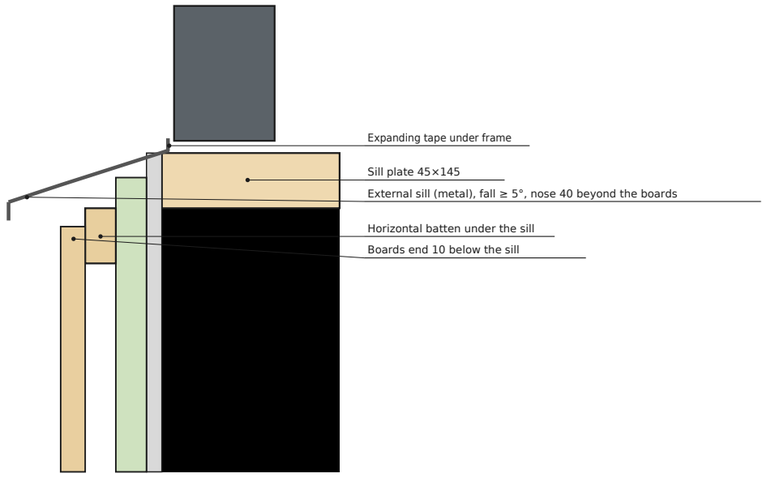
INSTALLATION SEQUENCE

1. After the roof – sheathing board (K-17), joints and openings – taped.
2. Windows and doors (K-18): foam, expanding tape outside, vapour tape inside.
3. Plinth sill (detail A) and ventilated plinth profile.
4. VERTICAL battens 25×45 – on every stud (at 600),
at corners and at opening sides; timber screws 4.5×70 at 400 (T14)
through the board into the studs. Bottom – 20 above the profile.
5. HORIZONTAL battens 25×45 at 600 (first – above the profile,
last – under the eaves); around every opening – a perimeter; 4.5×60 (T15)
at each crossing. Joints – only on a vertical batten.
6. External sills and head flashings (drips) above openings.
7. Boards 20×120 tongue and groove VERTICAL, tongue – in the direction
of installation; start at a corner, plumb the first board with a level.
At each crossing with a horizontal batten – 2 stainless
screws / nails 4×50 (T16), 20 mm from the edges. Boards – continuous
from bottom to top (lengths – K-22), top at the gable – 25°.
8. Board bottom – ~15 above the sill; at the top – 20 mm ventilation gap.
9. At corners the boards are butted (no trims); trims around openings.
10. Painting: ends and cuts – before installation; final coat –
after installation.

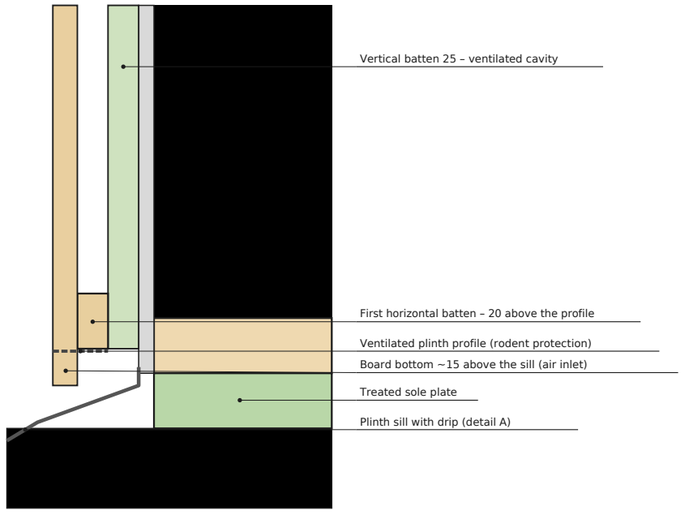
IMPORTANT

No breather membrane on the walls – the windproof layer is
the sheathing board. Ventilated cavity (vertical battens 25) – continuous
from bottom to top, keep it clear. Spacing of horizontal
battens ≤ 600 – boards are fixed at least every 600.

3 SILL (vertical section) 1:5



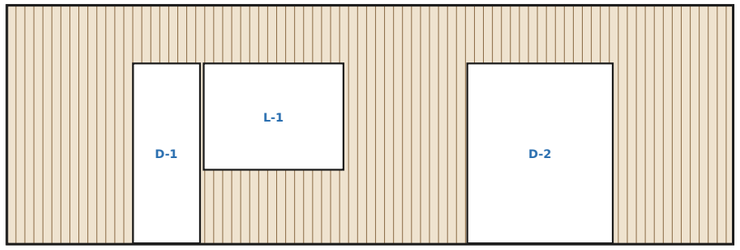
4 BOTTOM OF FACADE 1:5



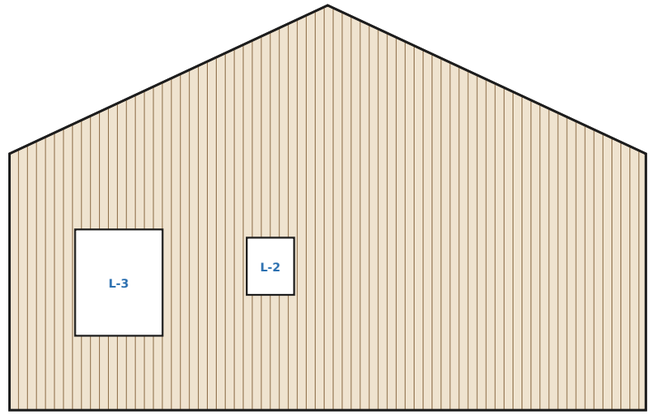
CLADDING BOARDS

Cladding boards (vertical), 1:75

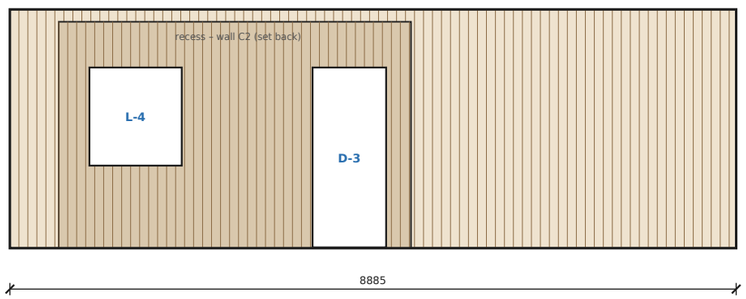
Elevation A (terrace side)



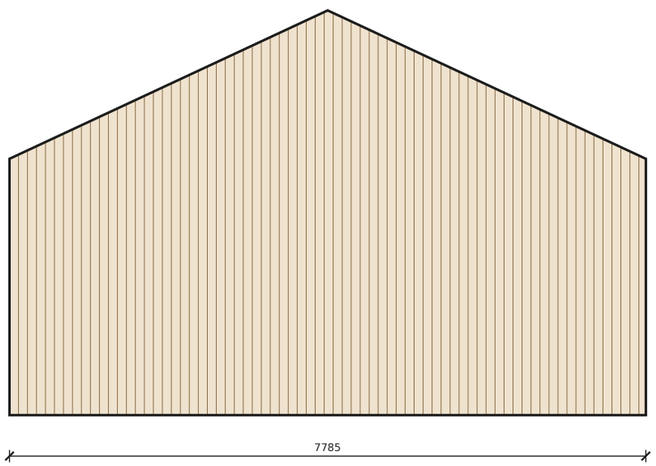
Elevation B (gable, left)



Elevation C (entrance side, with recess)



Elevation D (gable, right)



CLADDING BOARDS

Elevation	Area excl. openings, m²	Incl. offcuts (+15 %), m²
A	18.0	20.7
B	29.7	34.1
C	26.7	30.7
D	31.5	36.2

Total: 105.9 m² (excl. openings).

Boards – painted timber, tongue and groove, 20×120,
cover width 110 mm, installed VERTICALLY;
lines on the drawing at 110 mm.

Lengths and purchasing – sheet K-22; installation – K-20.

On the gables the boards are continuous (up to 5.4 m), no joints.

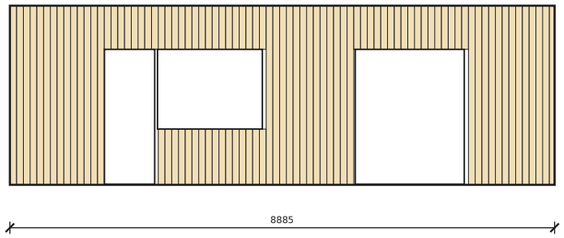
At corners the boards are butted; reveals – trims.

In the recess – the same boards on C2, N1, N2 and
the recess beam (NS) cladding.

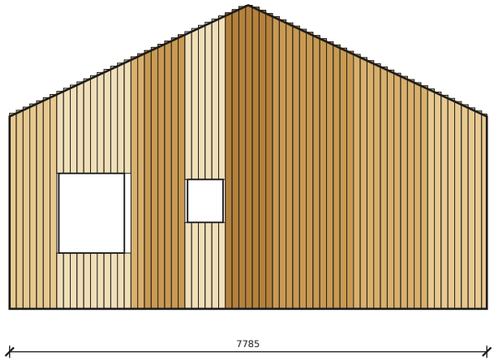
CLADDING AND FACADE FRAME

Cladding boards (20×120, T&G, cover 110) and facade frame 25×45 – lengths and quantities, 1:100

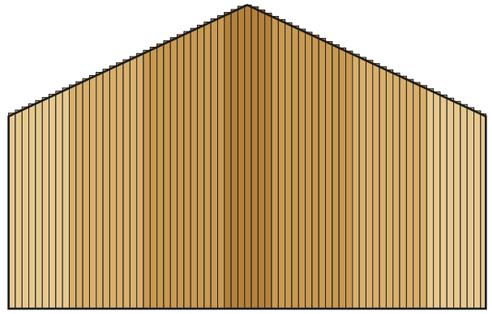
Elevation A (terrace side)



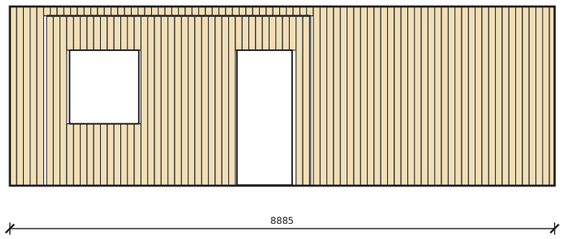
Elevation B (gable, left)



Elevation D (gable, right)



Elevation C (entrance side, with recess)



Colour – purchase length: 3.0 m · 3.6 m · 4.2 m · 4.8 m · 5.4 m · 6.0 m

FACADE FRAME 25×45

Surface	Vert., m	Horiz., m	Opening perim., m	Total, m
A	51.5	54.8	18.1	124.5
B	72.6	62.6	8.0	143.1
C	28.1	31.5	0.0	59.6
C (recess - C2)	29.2	20.4	10.5	60.1
C (recess - N1, N2)	11.1	6.1	0.0	17.2
D	59.0	63.5	0.0	122.5
TOTAL	251.5	238.9	36.7	527.1

Buy battens 25×45: 117 pcs × 4.2 m + 11 pcs × 6.0 m
(6.0 m – for gable verticals up to 4.96 m; cutting with a 3 mm kerf).
Timber screws 4.5×70 (vertical, at 400): ~629 pcs
Timber screws 4.5×60 (horizontal and perimeter): ~460 pcs
Around each opening – a perimeter of 25×45 battens (outer layer): top and bottom (windows) + sides; for cladding and trims.

CLADDING BOARDS

Pieces: 400; installed length 958 m (~105 m² of cover).
Buy: 285 boards 20×120 (1027 m, ~123 m² at 120 width).
Purchase length – the shortest one the piece can be cut from; short pieces are cut from offcuts of other boards (already included in the table).
Allow +5 % extra for defects.
Stainless screws / nails 4×50: ~4352 pcs (2 at each crossing).
Gable board tops – cut at 25° on site (piece length – long side).

CLADDING BOARDS – PURCHASE BY LENGTH (pcs)

Surface	Pieces	Length, m	Piece lengths, mm	3.0 m	3.6 m	4.2 m	4.8 m	5.4 m	6.0 m
A	97	161.3	720–2930	56					
B	88	270.6	910–4960	19	16	13	18	7	
C	81	126.5	160–2930	44					
C (recess - C2)	51	77.7	560–2770	29					
C (recess - N1, N2)	12	33.2	2770–2770	12					
D	71	289.1	3180–4960		18	22	24	7	
TOTAL	400	958.4		160	34	35	42	14	

FIXINGS

List of fixings, screws and brackets

FIXINGS

Nr.	Where	Item	Qty	Note
T1	Foundations – treated sole plate	Anchor M12×160 (chemical or drop-in) with washer	43	at ≤ 1200, 250 from the ends (foundation plan)
T2	Under the treated sole plate	Damp-proof strip 150 mm	36 m	continuous under all plates
T3	Sole plate → treated sole plate	Timber screw 6×120	78	at 600, staggered
T4	Studs → plates	Timber screw 5×90 (or nails 3.1×90)	500	2 pcs at each stud end
T5	Double top plate	Timber screw 6×120	91	at 400, joints offset ≥ 1200
T6	Lintels and supports (3 boards)	PU adhesive + timber screw 6×120	196	14 packs, at 300 from both sides
T7	Wall joints and corners	Timber screw 6×140	88	11 joints, at 400 up the height
T8	Rafter → wall plate (birdsmouth)	Angle 90×105×105 + ring-shank nails 4×40	43 + 516	R2 – 2 supports; 12 nails per angle
T9	Rafter → ridge beam	Angle 90×105×105 + ring-shank nails 4×40	34 + 408	for every rafter
T10	Rafter pair at the ridge	Perforated plate 100×200 + nails 4×40	34 + 340	on both sides
T11	Edge rafters → sloping plate	Timber screw 6×160	32	at 600
T12	Supports 3×45×145 → plates and beams	Angle 90×90×65 + nails 4×40	16 + 160	2 at each end; NS – 4
T13	Sheathing board → studs	Galvanised screw 3.9×35	2736	at 200 at edges, 300 in the field (K-17)
T14	Vertical facade battens → studs	Timber screw 4.5×70	629	at 400 through the board into the studs
T15	Horizontal facade battens	Timber screw 4.5×60	460	at each crossing
T16	Cladding boards	Stainless screw / nail 4×50	4352	2 at each crossing (K-20)
T17	Roof battens 25×45 → rafters	Timber screw 4×70	518	at 300
T18	Counter-battens 25×100 → battens	Timber screw 4.5×60	1700	2 at each crossing
T19	Fascia board, soffit frame	Timber screw 5×70	196	2 into the rafter end + brackets
T20	Noggins under OSB joint (A, C2)	Timber screw 5×90	108	2 pcs at each end (skewed)
T21	Diagonals 25×100 → studs, plates	Timber screw 5×70	86	6 diagonals, 2 pcs at each crossing
T22	OSB-3 12 mm → frame (A, C2)	Wood screw 4.2×45	787	at 150 at edges, 300 in the field

Quantities calculated from the drawings; add ~10 % when buying. All metal parts – galvanised (outside – stainless).

Angles and plates – fix through all holes with ring-shank nails 4×40 (or special screws 5×40). Timber screws – for C24 timber, self-drilling tip.

Ridge beam GL24h 200×280 ~220 kg – lift with a loader / crane; the beam must be secured on its supports before the rafters are fitted.

SPECIFICATION

Specification of timber and finishing materials (frame, facade, roof timber)

SPECIFICATION

Nr.	Name	Material / section	Qty	m³	Buy
1	Wall frame (plates, studs, sills, supports, noggins)	C24 45×145	479.3 m	3.13	82 pcs × 6.0 m
2	Lintels 3×45×195 (A-15)	C24 45×195	8.1 m	0.07	2 pcs × 6.0 m
3	Treated sole plates under walls (IT-1…IT-11)	treated 45×145	34.1 m	0.22	8 pcs × 6.0 m
4	Rafters R1, R2	C24 45×195	155.4 m	1.43	34 pcs × 4.8 m
5	Ridge beam KS	GL24h 200×280	8.72 m	0.49	1 pc × 8.72 m
6	Recess beam NS	GL24h 140×240	4.68 m	0.16	1 pc × 4.68 m
7	Facade frame (vertical + horizontal, K-22)	25×45	527 m	0.59	117 × 4.2 m + 11 × 6.0 m
8	Roof battens along the rafters (K-16)	25×45	155 m	0.17	34 pcs × 4.8 m
9	Roof counter-battens at 200 (24 rows × 2 slopes)	25×100	426 m	1.07	50 × 6.0 m + 50 × 3.6 m
10	Fascia boards + barge boards	25×200	36.1 m	0.18	painted / under flashing
11	Soffit frame (brackets + wall batten)	45×45	28 m	0.06	
12	Soffit – timber boards	as facade	4.9 m²		+10 %
13	Sheathing gypsum board 12.5 mm (K-17) + facade tape	1200×3000	107.1 m²		38 boards; tape ~96 m
14	Tongue and groove cladding boards, vertical (K-22)	20×120, painted	105 m²		285 pcs (1027 m)
15	Wall diagonals (let in, 6 pcs)	C24 25×100	23.3 m	0.06	6 pcs × 4.5 m
16	OSB-3 12 mm on the inside (walls A, C2)	1250×2500	31.5 m²		12 boards (+15 %)
17	Roof breather membrane (K-16)	1.5 × 50 m	81.2 m²		2 rolls

CUTTING PLAN – WALL TIMBER 45×145 (from 6.0 m)

27 × [2865 + 2865] (offcut 267)
4 × [3730 + 2155] (offcut 112)
3 × [3246 + 1400 + 1220] (offcut 128)
2 × [3941 + 2055] (offcut 1)
2 × [3600 + 1438 + 946] (offcut 10)
2 × [2865 + 2865 + 258] (offcut 6)
1 × [4908 + 1070] (offcut 19)
1 × [4520 + 1460] (offcut 17)
1 × [3941 + 1870 + 152] (offcut 31)
1 × [3812 + 2155] (offcut 30)
1 × [3600 + 1870 + 515] (offcut 9)
1 × [3320 + 2530] (offcut 147)
1 × [3246 + 2530 + 148] (offcut 70)
1 × [3237 + 1400 + 1160] (offcut 197)
1 × [2944 + 2944] (offcut 109)
1 × [2865 + 1400 + 1400 + 319] (offcut 7)
1 × [1130 + 1098 + 990 + 990 + 946 + 818] (offcut 13)
1 × [810 + 810 + 810 + 810 + 810 + 764 + 764 + 362] (offcut 39)
1 × [565 + 565 + 555 + 555 + 555 + 555 + 555 + 555 + 555 + 555 + 362] (offcut 38)
1 × [515 + 502 + 478 + 472 + 432 + 412 + 358 + 332 + 319 + 312] (offcut 1841)
5 × [3246 + 2715] (offcut 36)
3 × [3738 + 2155] (offcut 104)
2 × [4800 + 1160] (offcut 37)
2 × [3712 + 2155] (offcut 130)
2 × [3090 + 2865] (offcut 42)
1 × [5400 + 580] (offcut 17)
1 × [4908 + 990] (offcut 99)
1 × [4200 + 1710] (offcut 87)
1 × [3941 + 1870 + 148] (offcut 35)
1 × [3600 + 2155 + 198] (offcut 41)
1 × [3475 + 1400 + 1098] (offcut 21)
1 × [3270 + 2715] (offcut 12)
1 × [3246 + 1400 + 1310] (offcut 38)
1 × [3237 + 1400 + 1158] (offcut 199)
1 × [2865 + 2865 + 252] (offcut 12)
1 × [1390 + 1377 + 1377 + 1158 + 672] (offcut 14)
1 × [946 + 910 + 910 + 878 + 878 + 818 + 599] (offcut 43)
1 × [672 + 670 + 670 + 670 + 665 + 599 + 565 + 565 + 565 + 332] (offcut 0)
1 × [555 + 555 + 555 + 555 + 538 + 538 + 532 + 532 + 532 + 515 + 515] (offcut 48)

Timber: C24, moisture ≤ 18 %, planed, regularised; under walls – treated (UC3/UC4). Glulam beams – GL24h.

Purchase quantities – per the cutting plan (3 mm kerf); allow +5 % for defects. Rafters are cut from 4.8 m boards.