Guide

Project Submission Requirements

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eco cocon

Project Submission Requirements

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Design Data Checklist

GENERAL INFORMATION

The following Design Data Checklist defines all information that must be provided to EcoCocon. The Client's Nominated Person (project manager, designer, or structural engineer) must present this document to their structural engineer and designer, collect all required information, and submit it to EcoCocon in a clear and simple form. **EcoCocon's design process begins only after all required information has been received.**

STRUCTURAL AND DESIGN DOCUMENTATION	LOCATION (DRAWING OR PAGE REFERENCE)
☐ Floor plans and external wall elevations are provided (see page 7 for further details).	
☐ Cross-sections clearly indicate where EcoCocon panels start and end (outlines of external EcoCocon walls are recommended to be provided).	
☐ Foundation-to-EcoCocon wall connection details are included.	
☐ Roof-to-EcoCocon wall connection details are included.	
☐ Intermediate floor-to-EcoCocon wall connection details are included.	
☐ Intersections of other structures (beams, columns,etc.) with EcoCocon walls are clearly defined.	
☐ Structural and architectural designs are fully coordinated.	
☐ FFL (finish floor level) or SFL (structural floor level) properly indicated in the drawings.	

VERTICAL AND HORIZONTAL LOAD SPECIFICATIONS	LOCATION (DRAWING OR PAGE REFERENCE)
☐ Loads are provided according to EcoCocon requirements.	
☐ Dead load is provided.	
☐ Live load is provided.	
☐ Snow load is provided.	
☐ Horizontal and vertical wind load is provided.	
☐ A seismic load is provided (if applicable).	
☐ Roof spread horizontal loads (if applicable).	

STRUCTURAL STABILITY INFORMATION	LOCATION (DRAWING OR PAGE REFERENCE)
☐ Internal shear walls are marked on a plan.	
☐ Information about other structures that could possibly contribute to EcoCocon panel stability is provided (if applicable, include details in notes).	

NOTES	LOCATION OF NOTES
☐ Write additional notes and comments if needed.	

OBJECTIVE

The objective of this document is to provide guidance for client's structural engineers on how to prepare a load plan for EcoCocon engineers. The document includes a working example with best practice showing how to prepare load information in a simple way.

RECOMMENDED SOFTWARE

We recommend using the free PDF reader Foxit PDF Reader, which can be downloaded from https://www.foxit.com/downloads. With this tool, you can easily draw on architectural drawings, annotate them, copy tables, and more. However, this application is not necessary, and it is possible to detail the loads by hand or using any drawing software.

LOADS

All loads which may affect EcoCocon wall design must be provided:

- Dead Load (EN 1991-1-1).
- Live Load (EN 1991-1-1).
- Snow Load (EN 1991-1-3).
- Wind Load (EN 1991-1-4).
- Seismic Load (EN 1998-1).
- Horizontal roof spreading loads.

Please note:

- Loads must be calculated considering country-National Annexes (NA) for Eurocode.
- All given loads must be unfactored (characteristic values).
- Only the self-weight of the EcoCocon wall is not necessary to provide.

MULTI-STOREY BUILDING

The load plan may follow the same principles as for a single-storey building, however, if necessary, each floor may have a separate floor plan with the loads indicated.

ROOF AND FLOOR STRUCTURE

Structural roof and floor layouts in DWG, PDF, or IFC format must be provided to EcoCocon engineers, including details of how the roof and floor joists are supported on EcoCocon panels. Where floor structure is a CLT slab or any composite slab, it must be specified whether lintels are required above the openings. If lintels are required, the loads on the lintel from the slab must be specified.

SHEAR WALLS

Lateral stability to the building is provided by shear walls that stack one on top of another from the ground floor level to the roof level.

The Client's Structural Engineer should:

- Ensure that the shear walls are distributed evenly throughout the building in both orthogonal directions and in proportion to the floor and roof diaphragms that distribute the wind load into the braced walls. **The shear walls must be installed at intervals of no more than 6 metres.**
- Prepare a building stability analysis with a steel/timber or concrete structure, which could take part of the shear loads, if it is not possible to install shear walls at intervals of every 6 meters. These structures must be designed by the client's structural engineer.
- If braced load-bearing walls drop out at lower levels, then the client's Engineer must ensure that the shear force at that level can be distributed elsewhere or is resisted by the steel/timber transfer structure that is provided.
- Indicate shear walls or other structures (e.g., portal frames) clearly on the load plan.
- Design all internal shear walls (partitions, party & corridor walls).

The EcoCocon Structural Engineer:

- Designs the external shear EcoCocon panels only.

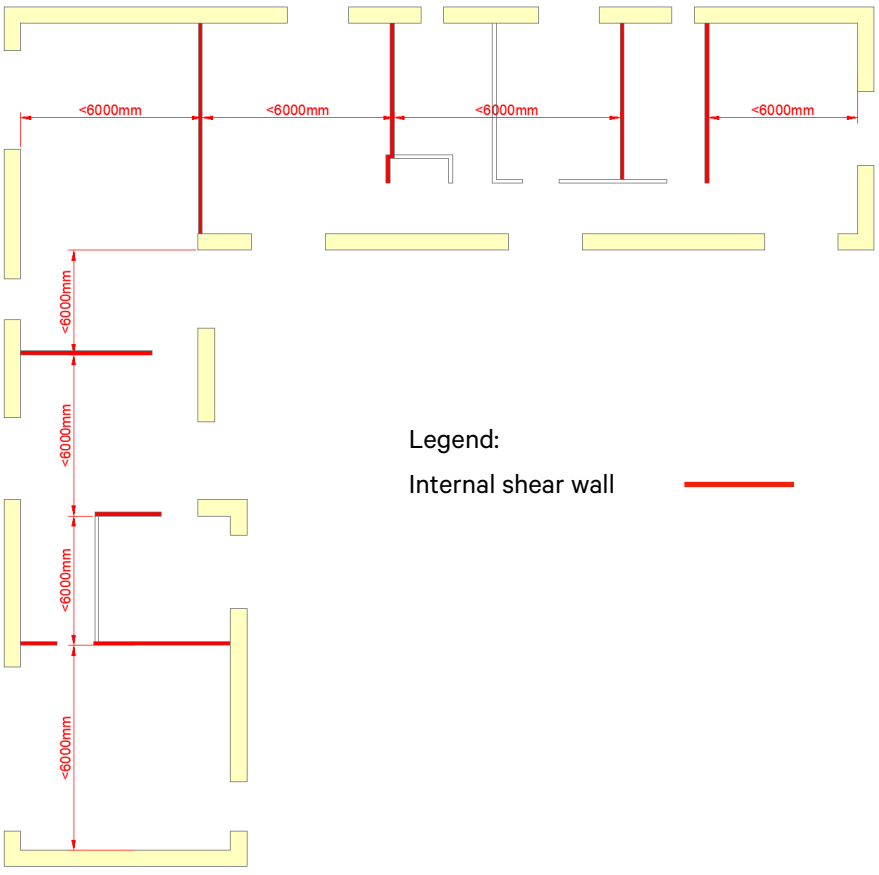


Figure 1:
Plan with shear walls indicated.

LOAD MARKUP PLAN (WORKING EXAMPLE)

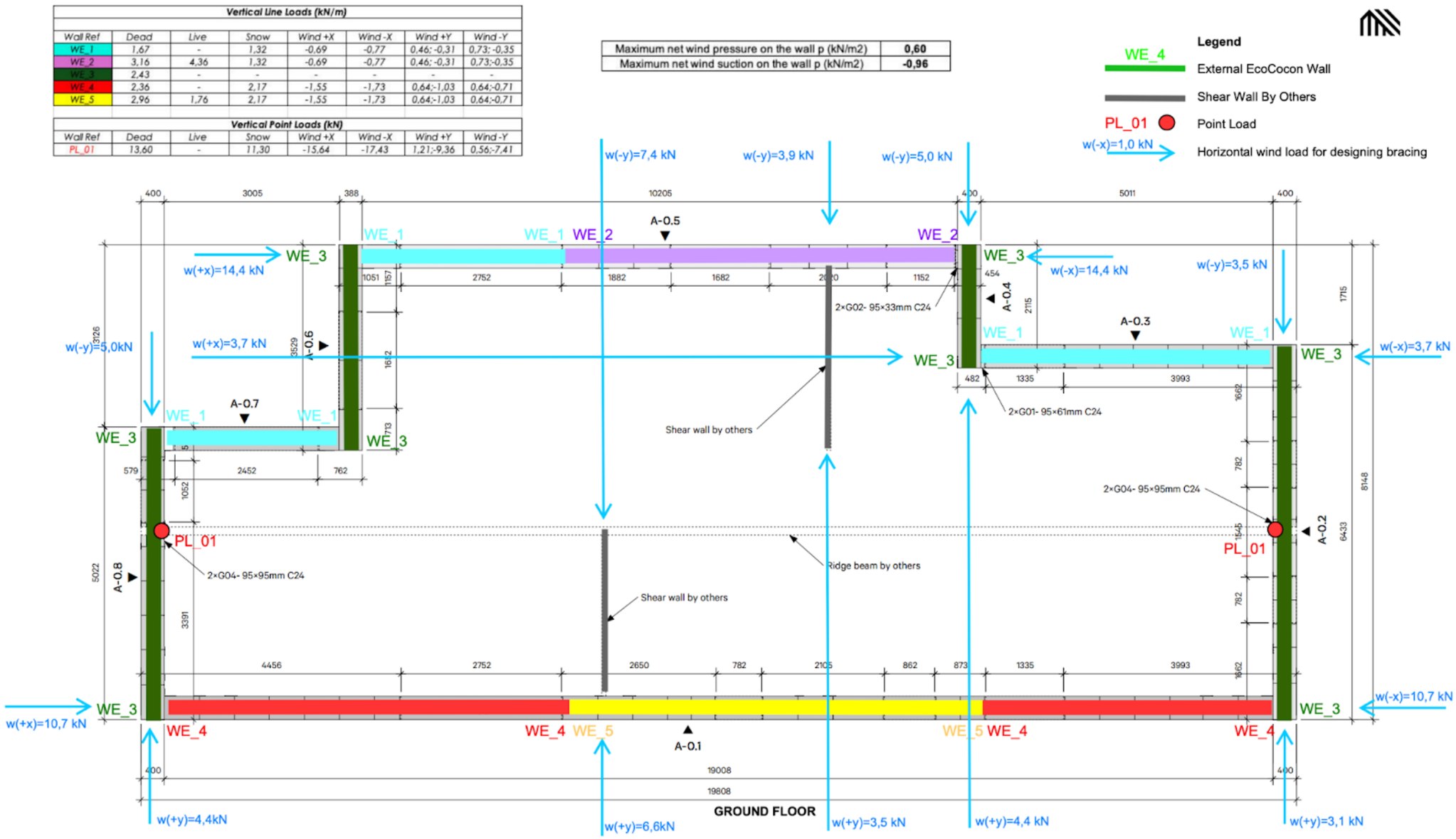
Vertical Line Loads (kN/m)

Wall Ref	Dead	Live	Snow	Wind +X	Wind -X	Wind +Y	Wind -Y
WE_1	1,67	-	1,32	-0,69	-0,77	0,46; -0,31	0,73; -0,35
WE_2	3,16	4,36	1,32	-0,69	-0,77	0,46; -0,31	0,73;-0,35
WE_3	2,43	-	-	-	-	-	-
WE_4	2,36	-	2,17	-1,55	-1,73	0,64;-1,03	0,64;-0,71
WE_5	2,96	1,76	2,17	-1,55	-1,73	0,64;-1,03	0,64;-0,71

Vertical Point Loads (kN)

Wall Ref	Dead	Live	Snow	Wind +X	Wind -X	Wind +Y	Wind -Y
PL_01	13,60	-	11,30	-15,64	-17,43	1,21;-9,36	0,56;-7,41

Maximum net wind pressure on the wall p (kN/m2)	**0,60**
Maximum net wind suction on the wall p (kN/m2)	**-0,96**



Notes:
Self weight of the EcoCocon Wall has not been taken into account
All loads are unfactored (characteristic value)
No live load reduction has been taken
Negative values in the table represent wind uplift (wind suction)
There is no seismic loading in the project

GLOBAL AXIS

WORKING_EXAMPLE_SK_O1_F0_MARKUP_REV0

Revision:	Date	Description	Engineer	Checker
0	05/06/2024	Preliminary	M.L.	V.N.

Outlines

GENERAL INFORMATION

It is recommended to submit the contours of external EcoCocon walls in 3D (IFC, SKP) format or 2D (DWG) drawings. The following should be included in the outlines:

- **Openings:** All door and window openings must be shown as structural openings (rough openings)
- **Wall pockets:** Clearly show all wall pockets for floors, beams, and columns.
- **Structure:** Show foundation or other important structural elements. Also, indicate whether base and top wall plates are included in the wall contours.
- **Floor levels:** Show finish floor level or structural floor level.
- **Floor plans:** Plans showing EcoCocon wall outlines without any additional layers.

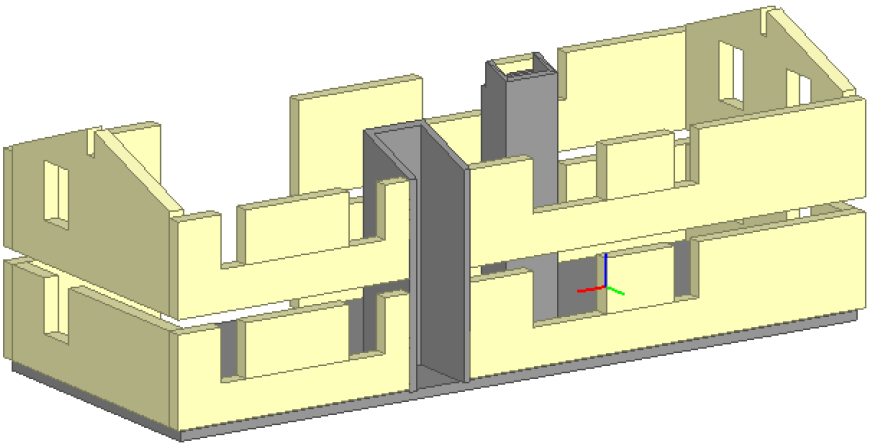


Figure 2:
Clear and detailed IFC model example showing EcoCocon wall outlines.

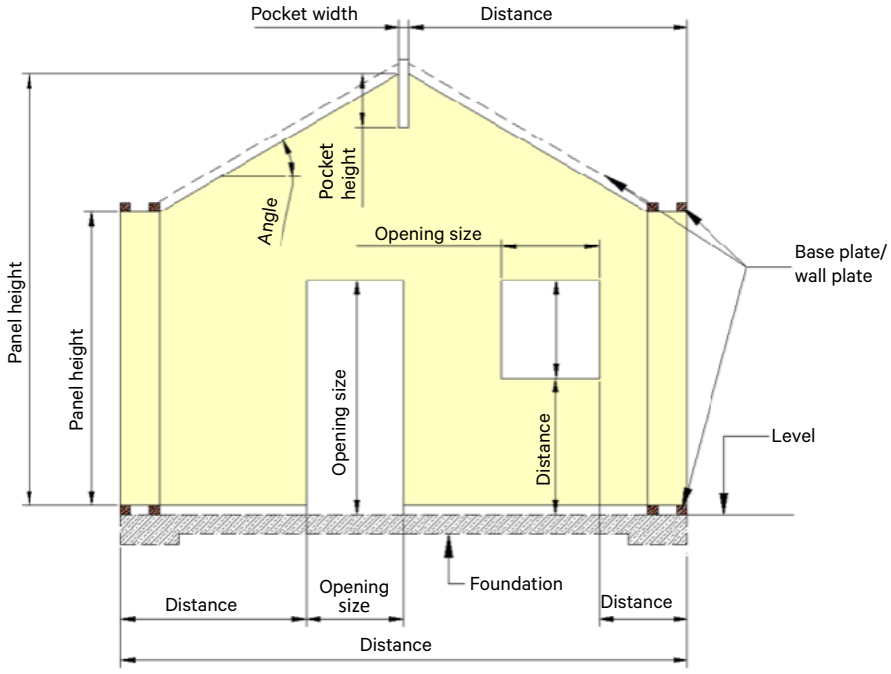


Figure 3:
Front elevation with clearly marked EcoCocon wall contours

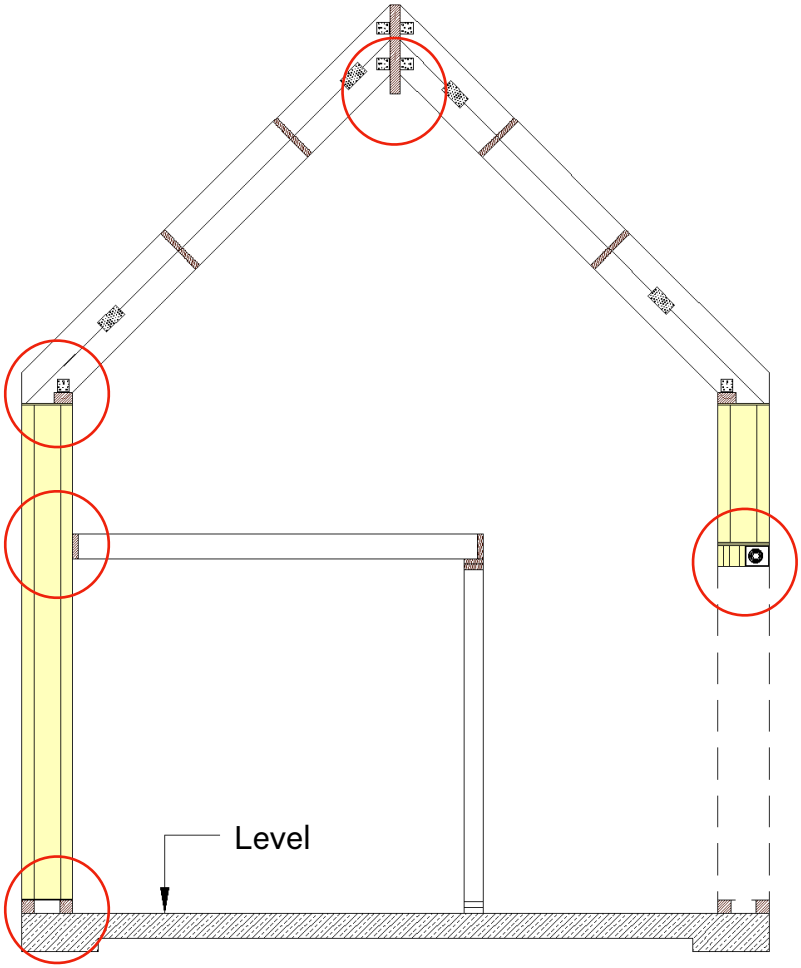
Details

The client's structural engineer must ensure that all main details (see Figure 4) are provided for EcoCocon engineers. These details are important for EcoCocon engineers when analysing the loads presented.

These structural details include:

- External EcoCocon wall to the foundation.
- External EcoCocon wall to intermediate floor structure.
- External EcoCocon wall to roof structure.
- Beam-to-EcoCocon wall and column-to-EcoCocon wall connections.
- Other structural details affecting the EcoCocon structure (exterior shutter detail, curtain wall detail, canopy detail, etc.)

Figure 4:
Main details and locations of the EcoCocon system.



It should be noted that the EcoCocon panel consists of a twin stud system, which can carry loads separately. It is necessary to ensure that both internal and external studs are properly supported (see Figure 5). It is recommended to support the floor & roof structure on the internal stud, and then the external stud carries its self-weight, half of the wind load/seismic load.

The design of base plate and fixings to foundations must be provided by the client's engineer. For single storey buildings, it is recommended that the plate is at least 45 × 95 mm. For two-storey and taller buildings, it should be at least 70 × 95 mm. Base plate details must be designed to withstand not only vertical compression forces but also lifting & shear forces. For lifting forces, please consult an EcoCocon engineer.

Figure 5:
EcoCocon wall panel foundation detail