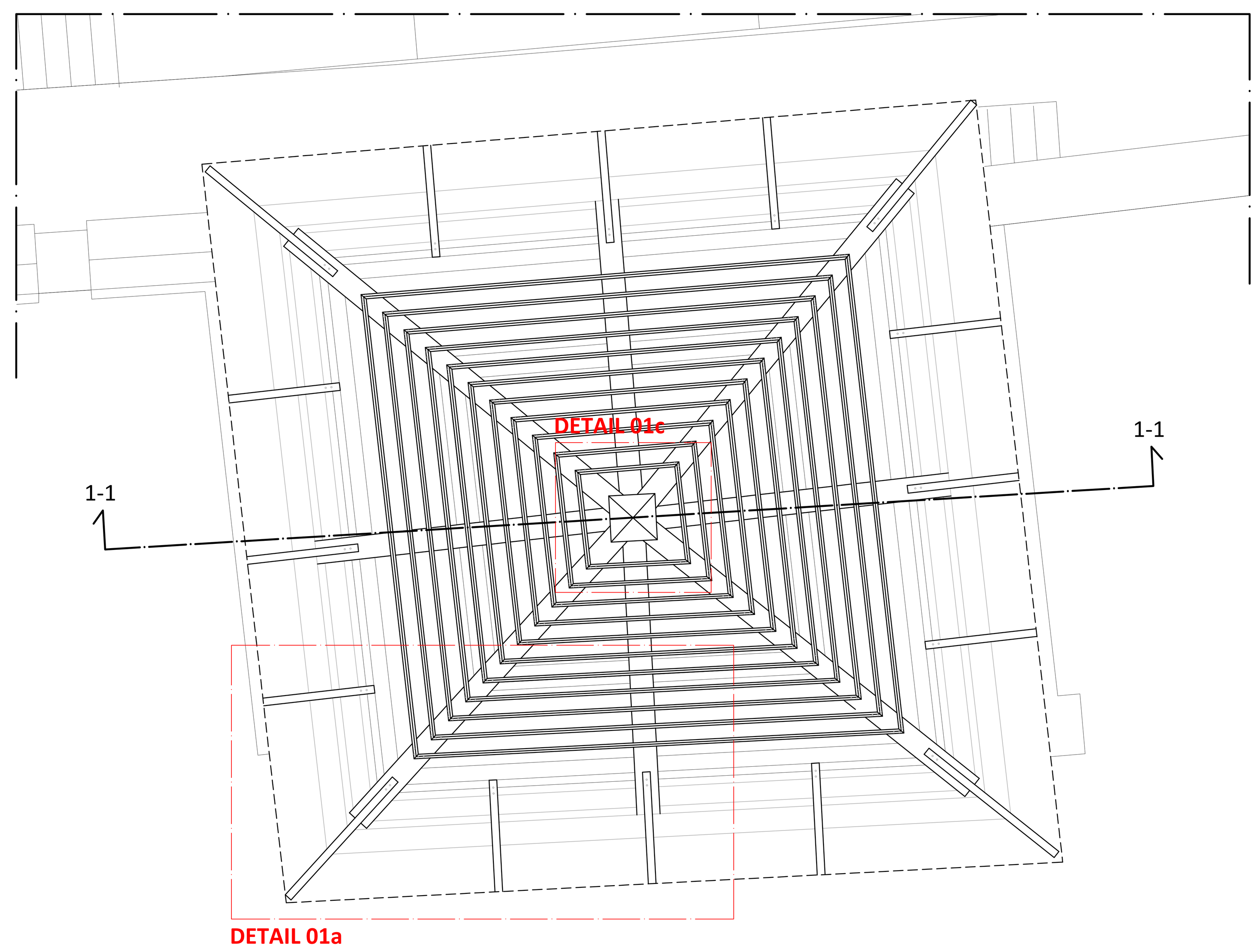
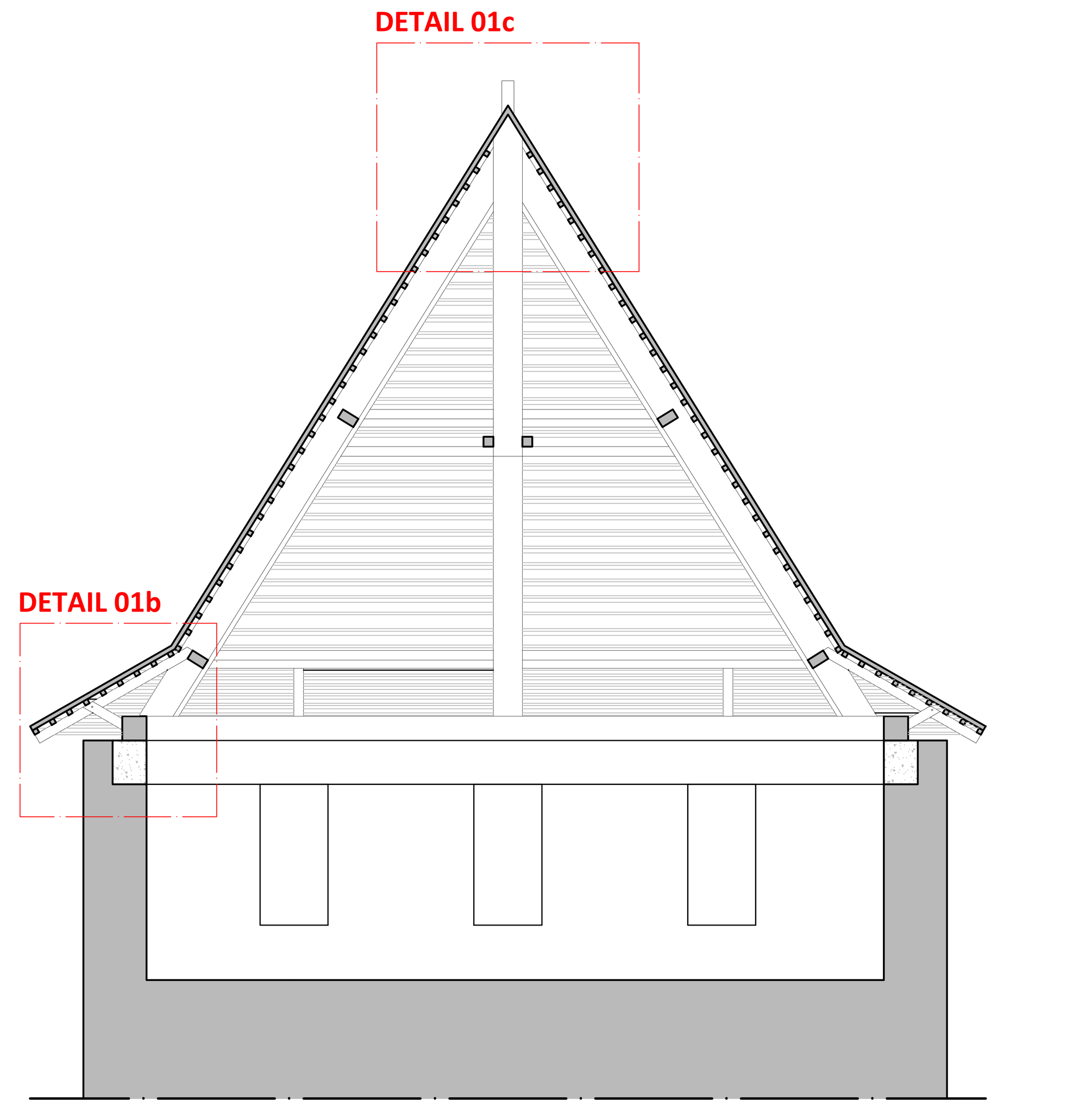
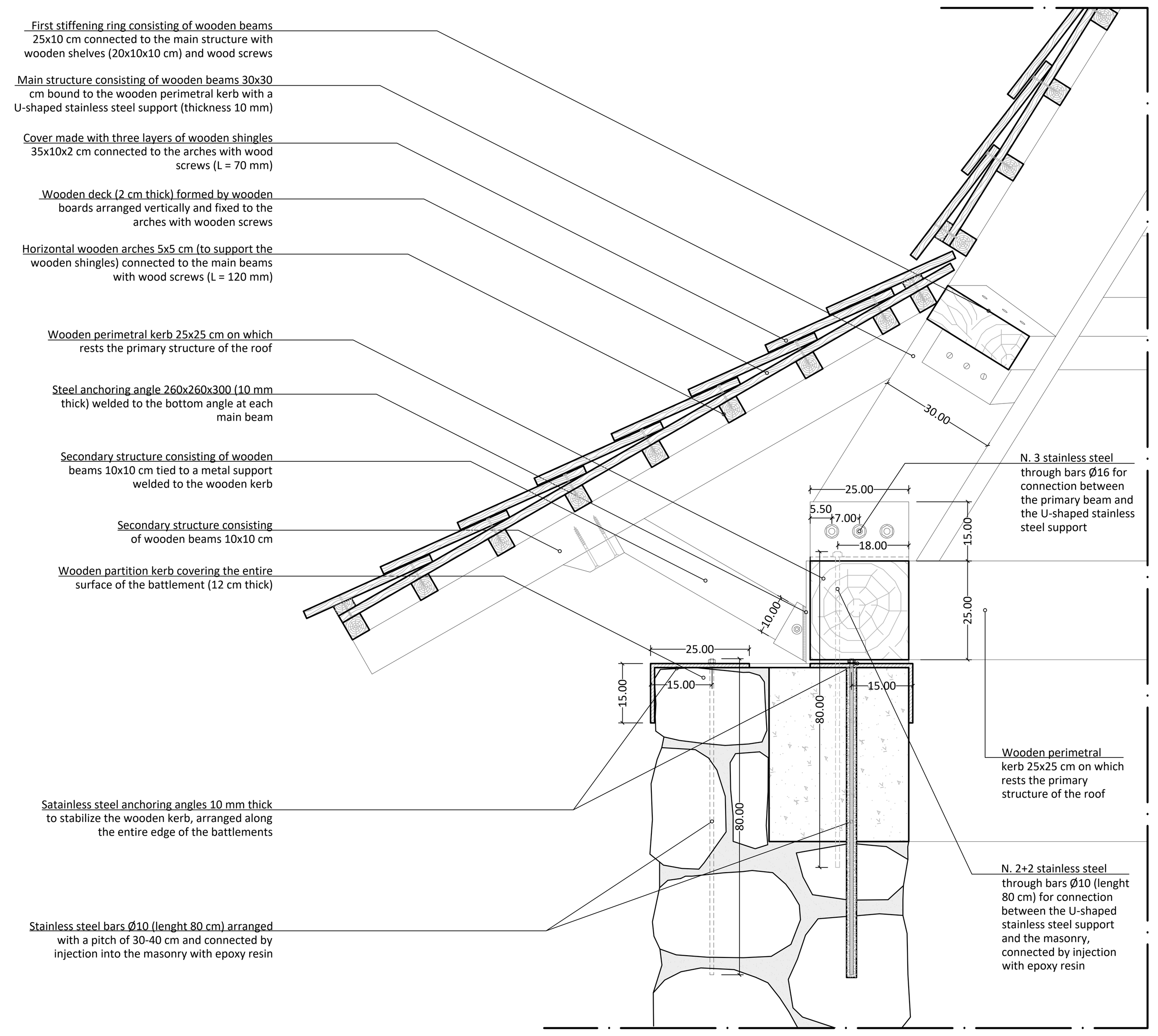


PLAN OF THE HIGHEST LEVEL OF TOWER A3 WITH INDICATION OF THE NEW ROOF STRUCTURE - 1:50



VERTICAL TYPOLOGICAL SECTION 1-1 OF THE NEW DOUBLE-SLOPE PYRAMID ROOF FOR TOWER A3 - 1:50



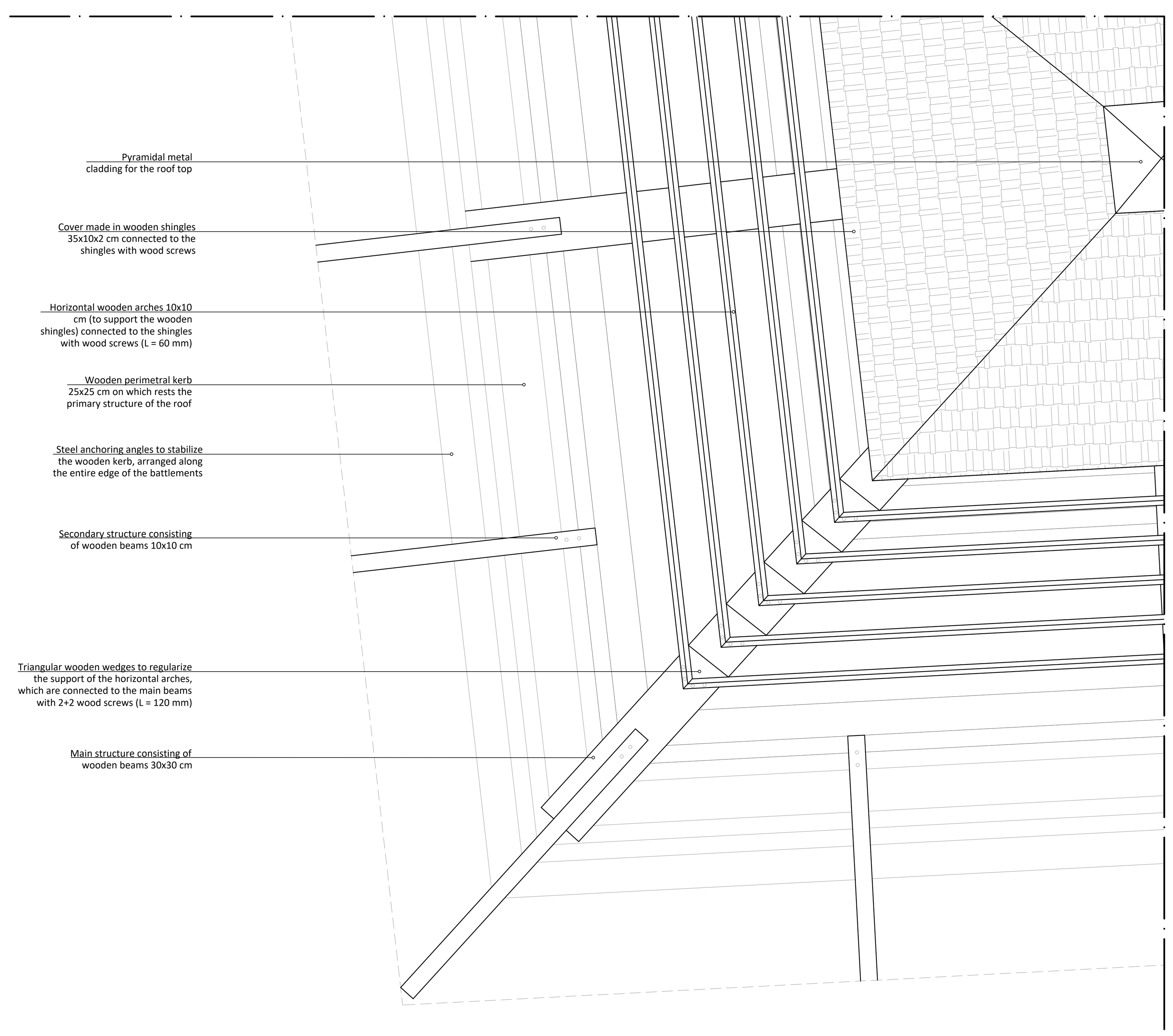
DETAIL 01b_SECTION 1-1: CONNECTION OF THE PRIMARY BEAMS OF THE ROOF TOP - 1:10

MATERIALS TECHNICAL REQUIREMENTS:

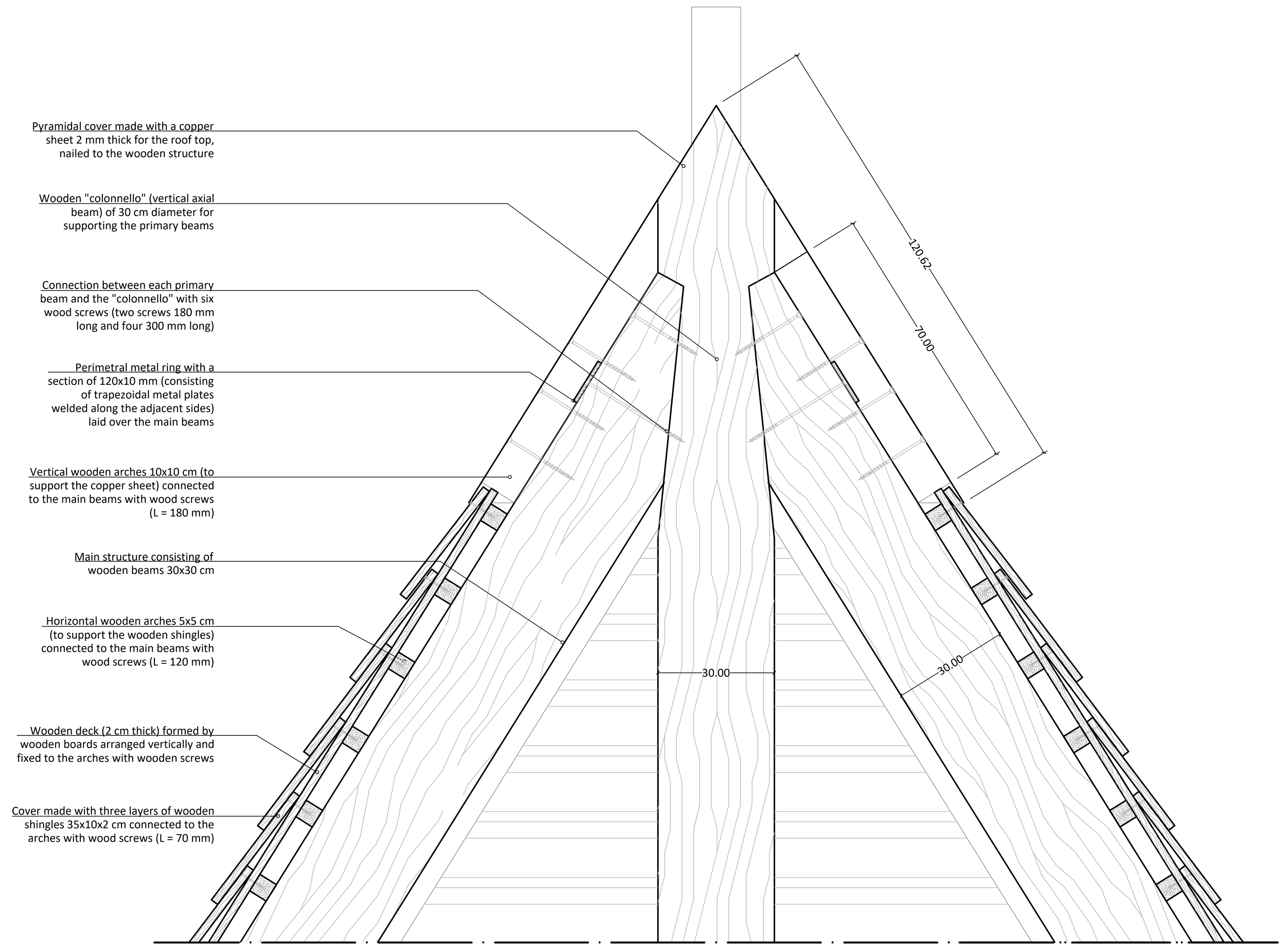
- CARPENTRY STEEL (bars, metal plates and strands): carpentry steel shall comply with the requirements set out in GOST 27772-88 standard and shall be classified in the category C285. Threaded bars and bolt shall be classified in the category 6.8 (f_{tbk} = 600 MPa) according to ГОСТ 1759.4-87. standard. Any metal element inserted in the masonry or in contact with it shall be made of stainless steel. CORTEN steel shall have chemical and mechanical characteristics similar to that of category S235JOW provided by EN 10025-5 standard.
- SOLID TIMBER WOOD: all wooden structural components shall be made with solid timber of fir tree and comply with the requirements set out NCM F.05.01-2007 standard, with wood quality II. Wood screws shall have resistance values and dimensions in accordance with EN 1995-1-1:2014 standard.
- MORTARS: three main types of mortars are provided for structural interventions.
  - M1, premixed mortar for masonries composed of natural hydraulic lime and Eco-Pozzolana, natural sands, special additives and microfibers (type Mape-Antique Allettamento by MAPEI S.p.A. or another type with same technical characteristics and performances).
  - M2, for micro-cracks nucleus consolidation: superfluous grout composed of lime and Eco-Pozzolana, ultrafine natural sands and special additives (e.g. Mape-Antique I of MAPEI S.p.A. or another type with same technical characteristics and performances). Injections must be executed until refusal, from bottom to top, with mechanical or electronic pumps.
  - M3, for nucleus void filling: pourable mortar for masonries, composed of natural hydraulic lime and Eco-Pozzolana, fine natural sands, special additives and microfibers, with very low emission of volatile organic substances (EMICODE EC1 R Plus) (e.g. Mape-Antique Colabile type of MAPEI S.p.A. or another type with same technical characteristics and performances). For thickness over 4 cm, the mortar must be added with aggregates from 30 to 50% on the weight of the product, of appropriate grain size (e.g. limestone gravel 3-5 or 6-10).
  - M4, premixed mortar for masonries, based on natural hydraulic lime (NHL 3,5 and NHL 5) and inorganic reactive compounds, natural sands and special additives with very low volatile organic emissions (EMICODE EC1 R Plus) (e.g. type Mapewall Muratura Grosso of Mapei S.p.A. or another type with same technical characteristics and performances).
- EPOXY RESIN: high performance bi-component epoxy resin (e.g. Kimitech EPOXY CTR ST3-0719 type by KIMIA S.p.A. or another type with same technical characteristics and performances).

IMPORTANT REQUIREMENTS FOR WORK:

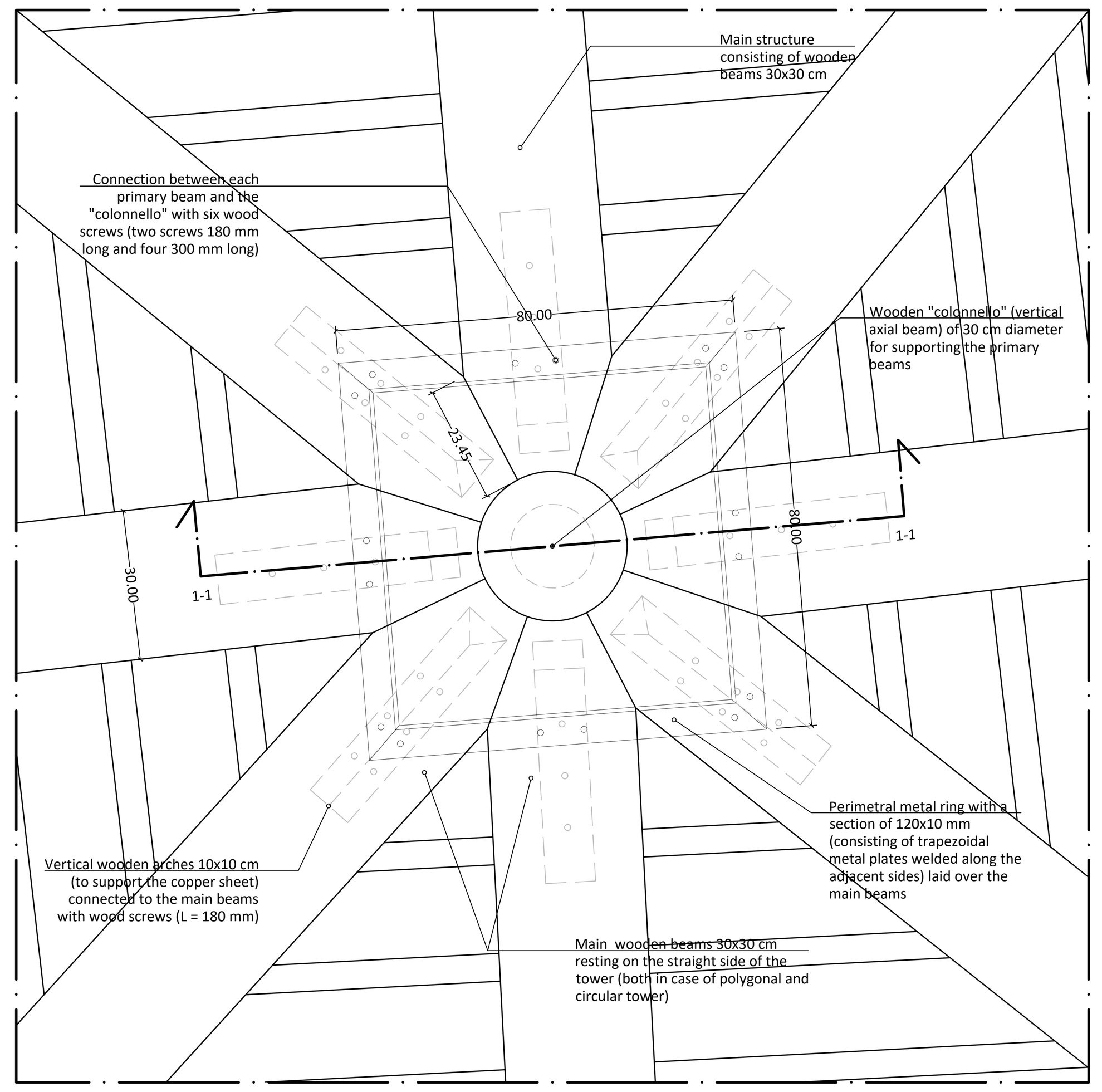
- all the measures shall be controlled on the construction site by the executing company, as the fortress is an existing building with variable measures.



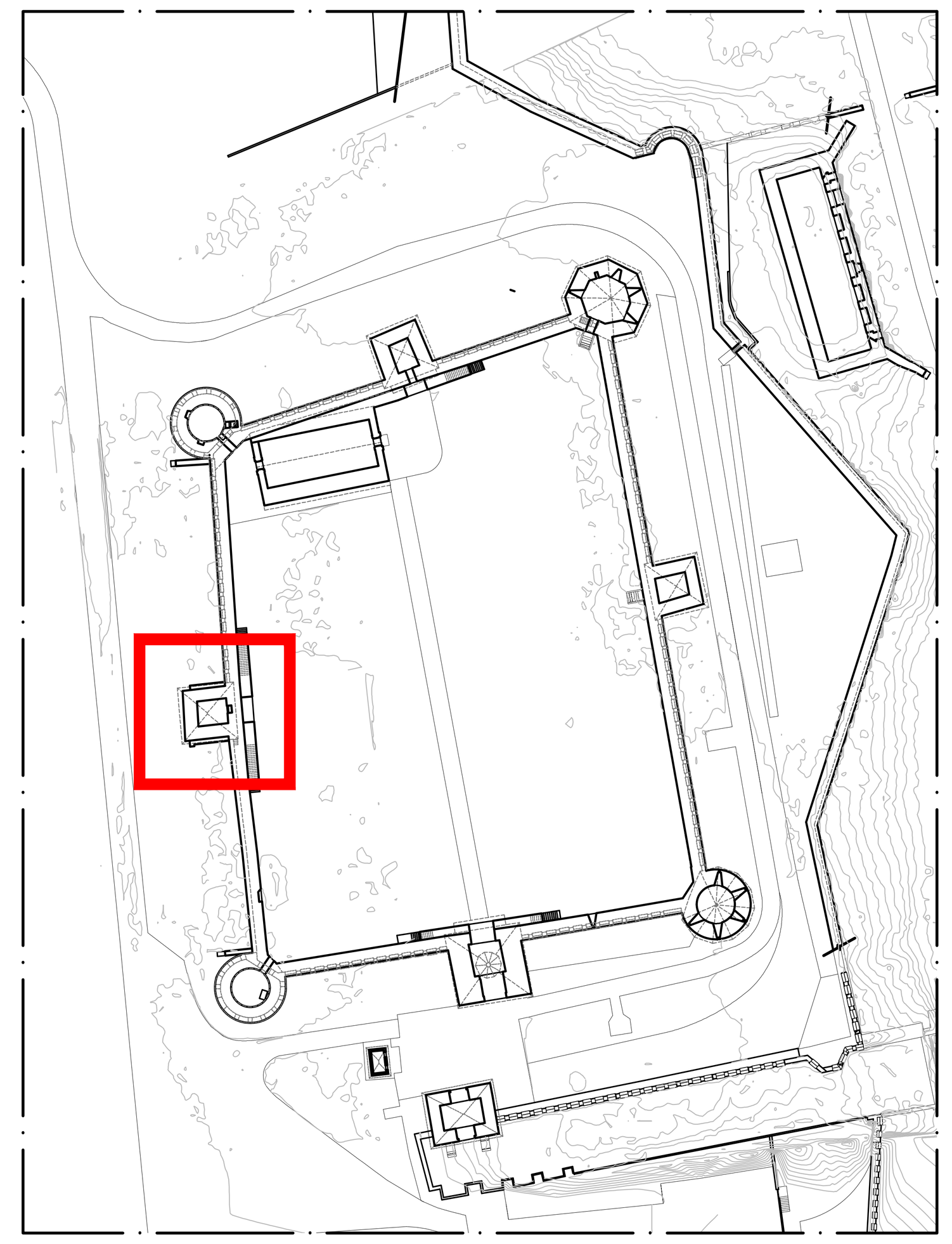
ROOF STRATIFICATION OF THE TOWER - 1:20

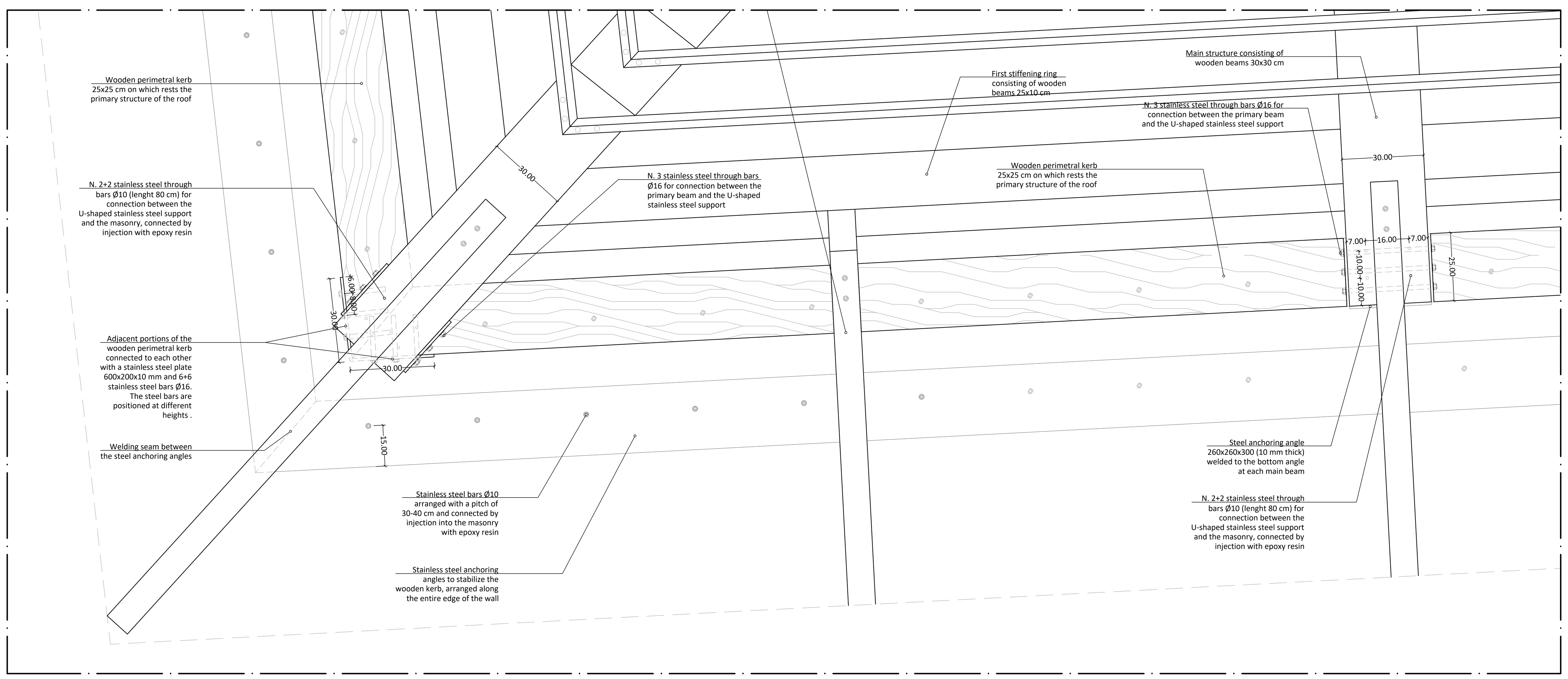


DETAIL 01c_SECTION 1-1: CONNECTION OF THE PRIMARY BEAMS OF THE ROOF TOP - 1:10



DETAIL 01c_SECTION 1-1: CONNECTION OF THE PRIMARY BEAMS OF THE ROOF TOP - 1:10





DETAIL 01a_ROOF STRATIFICATION OF TOWER - 1:10

This project is funded by the European Union

European Union Confidence Building Measures Programme
Programul Uniunii Europene "Măsuri de Promovare a Încrederii"
Программа Европейского Союза "Меры по укреплению доверия"

CLIENT: European Union Delegation to Moldova through its operational contractor UNDP

Technical Expertise and develop Detailed Technical Design for
CONSERVATION AND RESTORATION WORKS OF BENDER FORTRESS (Phase I)

DETAILED TECHNICAL DESIGN

TEAM LEADER

Studio Berlucchi srl
Arch. Eng. Nicola Berlucchi - Eng. Nicola Fumagalli
With the collaboration of
Arch. Flavia Mainardi, Eng. Alessandro Trevisi
www.studioberlucchi.it

INTERNATIONAL EXPERTS

Prof. Donatella Fiorani — *Conservation expert*
Prof. Carlo Blasi — *Structure restoration expert*
www.geogra.it
GEOGRA' srl — *Architectonical Survey*
SOING srl — *Diagnostics and analysis*
Arch. Carlotta Cocco — *GBC HB Expert*

LOCAL EXPERTS

Arch. Serghei Garconiţa — *Certified local Architect*, *series 2017-P number 1608*
Eng. Stanislav Condratenco — *Certified local Engineer*, *series 2018-P number 0089*
Arch. Corina Fisticanu — *Assistant local Architect*
Eng. Evgheni Cutia — *Assistant local Engineer*
Dr. Sergiu Musteata — *Archaeologist*
Dr. Igor Nicoara — *Geologist*

	DATE	REVISION	FILE NAME
C			
B			
A	09-2020	first revision	C226_PEA_001-003_revA.dwg
-	07-2020	first emission	C226_PEA_001-003.dwg

TITLE:
ARCHITECTURAL INTERVENTIONS
Reconstruction of the roof - Tower A3

ASSIGN. CODE	PRATICA	PARTE	DISC. PROG.	NUMERO	REV.
C226	-	P	EA	002b	A

REPRESENTATION SCALE: 1:200 - 1:50 - 1:20 - 1:10

INTERNAL CODE: -

EXPERT STAMP AND SIGNATURE:

This project is funded by the European Union and implemented by the United Nations Development Programme

Empowered lives.
Resilient nations.