

STRUCTURAL DRAWINGS INDEX

Partner: **MINISTRY OF HEALTH
ETHIOPIA**

Implemented By: **UNOPS - ETMCO**

WORLD BANK

Project Name: **PROCUREMENT AND INSTALLATION OF
OXYGEN PLANT**

Date: 26 / 11 / 2024

DRAWING INDEX

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ST 03/06		GROUND FLOOR SLAB REINFORCEMENT , BEAM AND COLUMN LAYOUT	
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DRAWINGS INDEX

Designed by		Discipline:	Dr. No:	Tot. No:	Rev No:
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Structural Notes:

- i)

Building shall be founded on isolated footings having a minimum depth of 2000mm from the floor finish level with bottom of excavation compacted prior to laying the foundation.
- ii)

Foundation shall be placed on the natural normal soil and achieve a minimum bearing capacity as specified below. The top 300 mm soil shall be removed and replaced with well graded gravel material and compacted to the approval of the site supervisor.

• For allowable bearing capacity between 150Kpa and 250Kpa
F1= 2300mm X 2300mm x 450mm and Ø12 C/C 120 mm reinforcement.

• For allowable bearing capacity between 250Kpa and 350Kpa;
F2= 1800mm X 1800mm x 400mm and Ø12 C/C 130 mm reinforcement.

• For allowable bearing capacity greater than or equal to (>=) 350Kpa;
F3=1400mm X 1400mm x 400mm and Ø12 C/C 130 mm reinforcement.

iii)

Foundation trench excavation to be approved by the Engineer prior to the construction of the foundation.

iv)

Material Specification

a)

Grade of Structural Concrete

• C20/25 for columns, floor slab and beams;

fck (MPa) = 20 (Cylinder characteristics strength);

fck, cube (MPa) = 25 (Cubic characteristics strength);

b)

Concrete reinforcement bar

All steel reinforcement bars shall comply with the requirements of ES EN 1992:2015 Class B.

• Characteristics yield strength of fyk = 460 MPa

• Minimum value of "k = f(t /fy)k" > 1.08)

• Characteristics Tensile strength of ftk > 500 MPa

• Characteristics strain at maximum force > 5%

v)

Durability Requirements

❖ Concrete Cover to Reinforcement

- Floor slabs :25mm;

- Beams: 38mm

- Columns; 38mm

- All substructure (below ground level): 50mm

Vi)

Protection of soil from collapsing :

▪ The contractor shall secure side walls from collapse during excavation of depth exceeding of 1.0m. It shall provide steel struts and/or steel panels properly secured and well anchored in the firm soil to provide lateral stability . the techniques and methodology to be provided to the site supervisor's approval.

Vii)

Construction joint for concrete :

▪ Whenever concrete casting is discontinued, a wrinkled concrete joint, moistened just before the next concrete, which will have to be provided to ensure continuity.

▪ Construction joints shall get prior approval by the site supervisor.

Viii)

Stiffeners & Lintel Details for HCB Masonry wall:

-VERTICAL & HORIZONTAL RC STIFFENERS FOR ALL HCB WALLS SHALL BE PROVIDED IN ACCORDANCE WITH THE DETAILS GIVEN BELOW :

SCHEDULE OF LINTELS

LOCATION	MAIN R/F	STIRRUPS	SECTION (mm)
OPENINGS UPTO 1m FOR 200mm WALLS	2Ø12	--	
OPENINGS 1.0m TO 1.8m FOR 200mm WALLS	4Ø12	R6-150 C/C	
OPENINGS 1.8m TO 3m FOR 200mm WALLS	4Ø12	R6-150 C/C	

X)

Backfill Compaction

Backfill under hardcore and around foundations shall be compacted to a minimum of 95% standard maximum density (ASTM 698) at the optimum moisture content to the approval of the UNOPS site Engineer.

Xi) Structural & Non -Structural Members

a) Load Bearing and Primary Seismic Members:

• Reinforced Concrete Columns;

• Reinforced Concrete ground and roof floor Beams;

b) Load Bearing and Non Seismic Members

• Stone Masonry Walls below Grade;

c) Non Load Bearing Members

• Internal and External Hollow Block Walls

d) Structural Bracings

• Vertical and Horizontal stiffeners;

• Lintels on door and window openings.

Xii) Building Codes and Standard (new Building structures)

• ES EN 1990:2015 - Basis of Structural Design

• ES EN 1991:2015 –Actions on structures

• ES EN 1992:2015 –Design of Concrete Structures;

• ES EN 1993:2015 –Design of Steel Structures;

• ES EN 1997:2015 - Geotechnical design

• ES EN 1998:2015 –Design of Structures for Earthquake Resistance.

Xiii) Confinement Details for Beams

Lcr–Critical Length = Depth of Beam = 550mm, 450mm

S = Hoop spacing Arrangement= 100mm for beam depth of 550mm & 75mm for beams depth of 450mm

LS = Support Length = $\frac{1}{4} L$ - Lcr

S = detailed on drawing for the respective beam

Lm = Mid span Length = $\frac{1}{2} L$

S = detailed on drawing to the respective beam

GENERAL NOTES:

KEY PLAN

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Funded By: Partner:

WORLD BANK MINISTRY OF HEALTH ETHIOPIA

Program: Implemented By:

PROCUREMENT AND INSTALLATION OF OXYGEN PLANT UNOPS - ETMCO

Project Name: Design:

PROCUREMENT AND INSTALLATION OF OXYGEN PLANT UNOPS-ETMCO

Drawing Title:

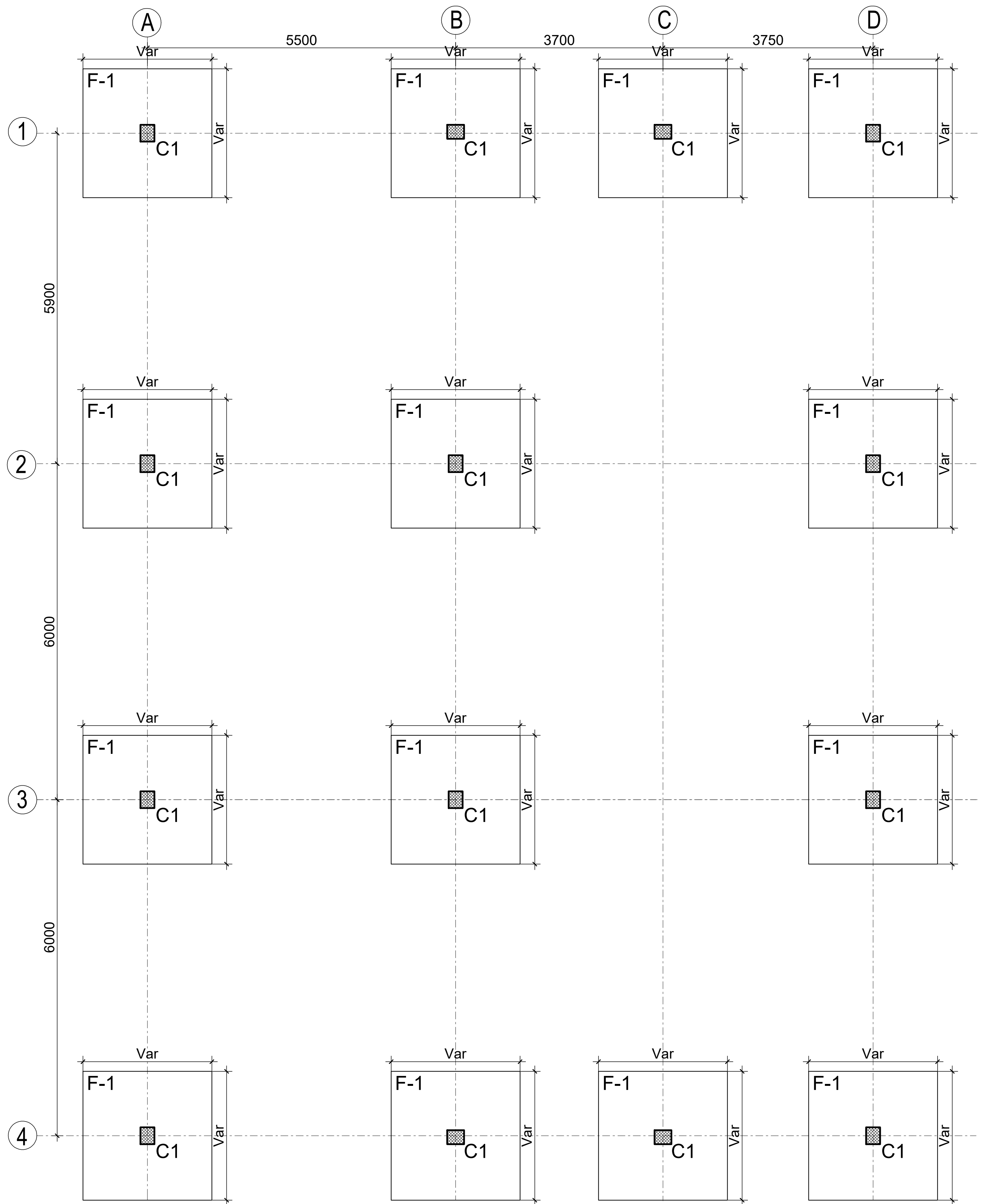
Structural Notes

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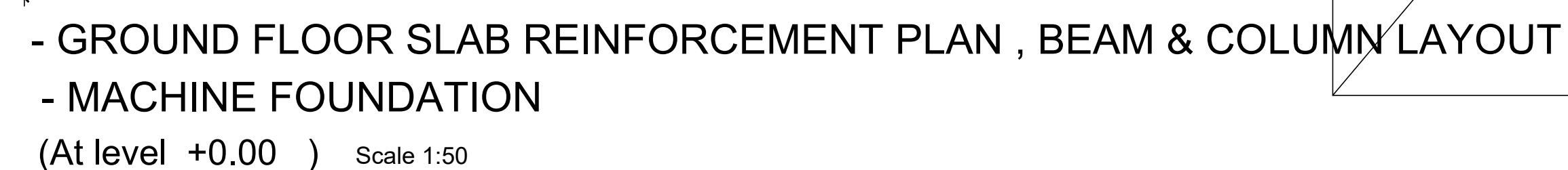
FOOTING & COLUMN LAYOUT Scale 1:50
At level -2.00 below final floor finish level (FFL)

GENERAL NOTES:

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KEY PLAN	
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FOOTING AND COLUMN LAY OUT				
Designed by	Discipline:	Dr. No:	Tot. No:	Rev No:
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Drawing Title:											
GROUND FLOOR SLAB REINFORCEMENT , BEAM AND COLUMN LAYOUT											
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Architectural drawing showing a plan view and a cross-section (SECTION A-A) of a rectangular room.

Plan View Dimensions:

- Overall width: 2300
- Overall depth: 2300
- Width segments: 1000, 300, 1000
- Depth segments: 950, 400, 950

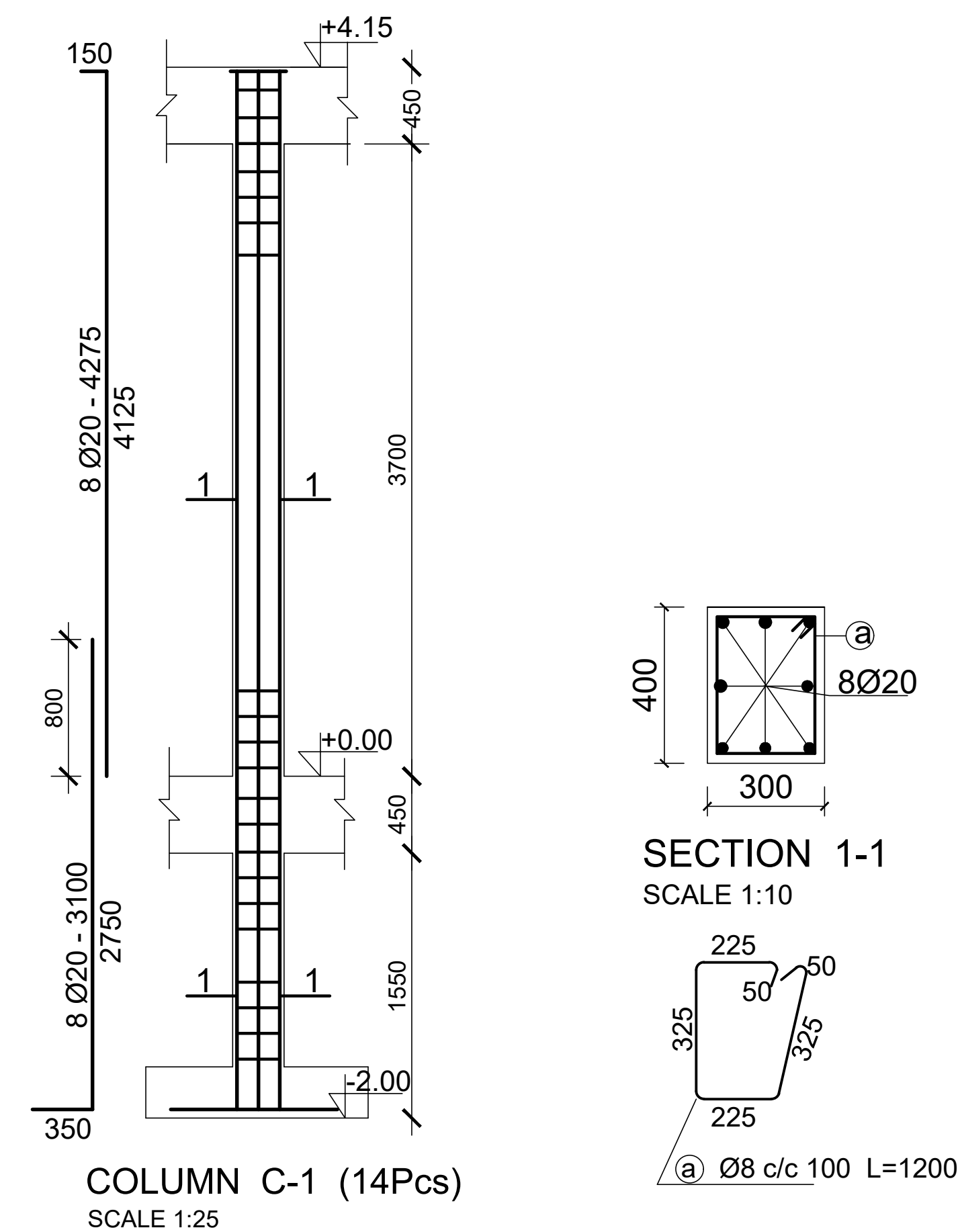
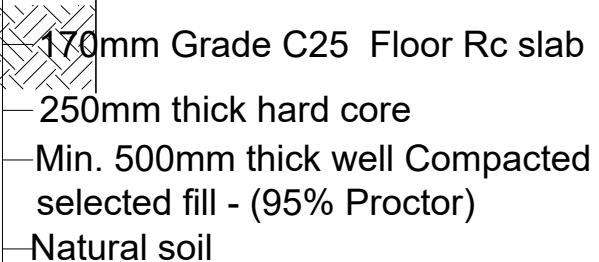
Cross-Section A-A Details:

- Room width: 2200
- Room depth: 350
- Floor construction: 200 (concrete)
- Reinforcement: 12 Ø12 c/c120 - 2900
- Section label: SECTION A-A
- Scale: 1:10



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- GRILL COVERED CONCRETE DITCH DETAIL
- Sc.1:10

RAMP DETAIL
SCALE 1:10





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