

**Architectural Project
Typical Kindergarten for
Two Groups
5, Akhlagzardobis street, Kareli**

Structural Part of the Project

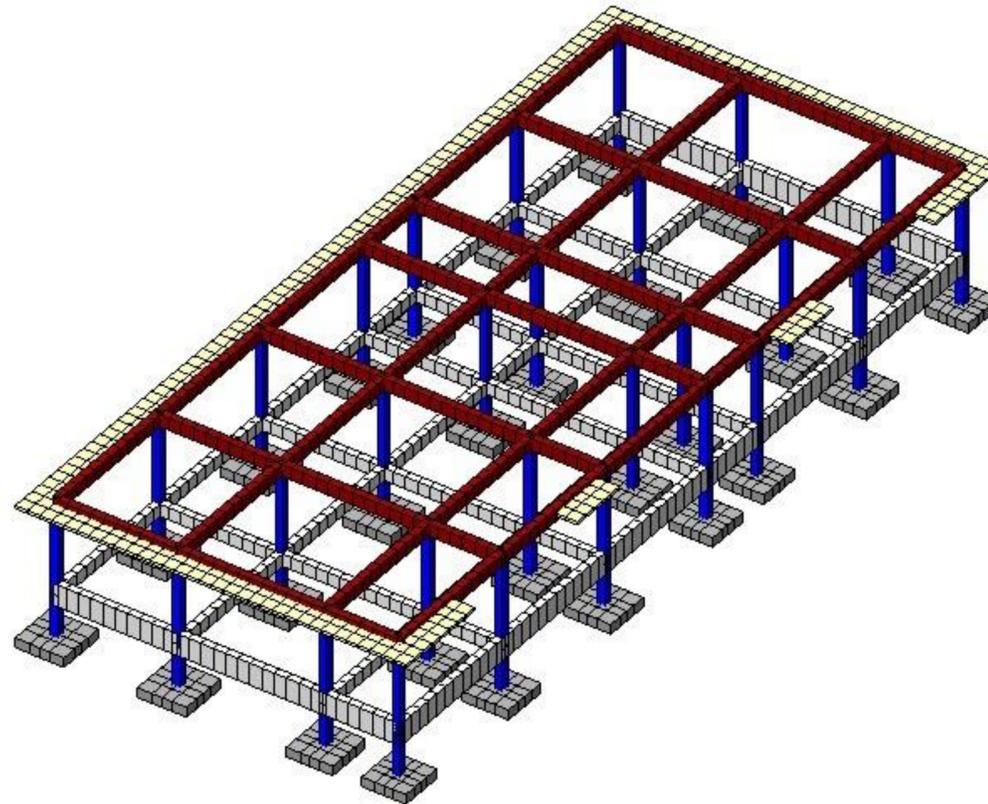


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Explanatory Letter

General Information

The construction site (cadastral code of the land plot 68.10.49.512) is located in the town of Kareli, according to the norms - "Construction Climatology" the climatic characteristics of the construction site are:

- Average annual temperature + 10.7 ° C
- Absolute maximum temperature + 40 ° C
- Absolute minimum temperature - 26 ° C
- Annual precipitation -630 mm
- Weight of snow cover - 0.5 kPa
- Normal height of seasonal ground freezing - 0 m
- Normal wind pressure 0.3 kPa
- The prevailing wind direction is - East
- According to the map of seismic zones, Kareli belongs to - 8 magnitude seismic zone. From the engineering geological point of view, the area allocated for construction is in a satisfactory condition, no physical-geological events (landslides, collapses, etc.) are observed.

Based on the geological research (attached to the project), the second engineering-geological element is taken as the foundation with the following technical indicators:

Engineering-geologic element I - Grey Clay

E-G Element II	Characteristics of physical-mechanical properties	Index	UoM	Numeric value
1	Density	ρ	g/cm3	1.82
2	Frame density	ρd	""	1.255
3	Solid particle density	ρs	""	2.72
4	Porosity	n	%	43.1
5	Porosity coefficient	e	particle	0.756
6	Humidity	W	%	17.5
7	Moisture at the edge of fluctuation	WL	particle	38.4
8	Moisture at the edge of plasticity	Wp	""	21.1
9	The number of plasticity	Ip		17.3
10	Quality of moisture	S		0.63
11	Index of liquidity			-0.21
12	Angle of friction inside	φ	Degree	17
13	Specific traction	C	kPa	32
14	Deformation module	E0	mPa	21
15	Reporting impedance	R0	kPa	370
16	Poisson's coefficient	μ		0.42

The report of the building structural scheme is performed in the program "LIRA".

The building presented in the project is a one-storey stone building, the floor level of which is raised by an average of 1.0 meters above the ground.

The ground floor mark 0.00 corresponds to the absolute mark 650.40.

The height of the floor of the building from floor to ceiling is 3.4 meters.

Natural sand-gravel mixture (0.5-70 mm fraction) should be used for backfilling and arrangement of the construction site. It is necessary to compact it in layers every 20 cm in height with a vibrating machine.

The pad foundations are designed, under which a gravel layer is arranged.

The bearing structure of the building is a complex reinforced concrete frame, in particular, a spatial frame structure consisting of monolithic reinforced concrete columns, rafters, and railings.

The filling of the outer walls is done with a reinforced masonry of small wall pumice blocks with a thickness of 30 cm. The partitions are made of reinforced small wall pumice block with a thickness of 10 cm.

The mark of small wall pumice blocks is not less than M70 (volume weight 800 kg / m3), therefore the mark of cement mortar used for the masonry should be not less than M70.

Floors in bathrooms are tiled, and in the rooms with wooden planks (deck). Floor warming is done with XPS tiles, while ceiling warming is done with glass wool.

astic, while the rooms in the rooms are made of gypsum board. The bearing structure of the roof is made of wood, while the roof is made of painted metal tile.

The wooden constructions of the roof and ceiling are made of second grade dried coniferous wood material.

The windows are made of PVC with double glazing.

Entrance doors are made of steel and iso-aluminum, metal in the sanitary units, and wood in the rooms (so-called MDF).

Outdoor stairs and platforms are paved with basalt tiles.

Concrete walkways are arranged around the building.

Concrete of B25 mark is used in the monolithic constructions of the frame.

Before the ground is backfilled the outer surfaces of the foundation walls, columns, and foundation slab shall be treated with bitumen/rubber insulating compound up to the ground level and the linochrome waterproofing should be arranged in two layers.

Dimensions in the drawings are given in millimeters and meters, markers in meters. All sheets of the structural part are considered as one whole and when considering any sheet, data from other sheets as well as architectural drawings should be considered.

Bending of structural reinforcement elements must be done in a cold mechanical manner.

After the excavation of the pit, the condition of the soil must be additionally assessed so that the foundation structure can be adjusted.

All changes made to the project during construction must be agreed with the project authors.

პროექტის დროს გამოყენებული ლიტერატურა:
 - *CHhT. 2.03.01-84** - "ბეტონის და რკინაბეტონის კონსტრუქციები"
 - *CHhT. II-7-81** - "შენიშვნები სეისმურ რაიონებში"
 - *CHhT. 2.01.07-85** - "დაცვითი და ზემოქმედება"
 - *CHhT 2.02.01-83** - "შენიშვნების და ნაგებობების ფუნქციონირების"
 - *ГОСТ 14098-91* - "არმატურის და ლითონის ნახაზბრუნული ელემენტების შედუღება რკინაბეტონის კონსტრუქციებში"
 უსაფრთხოება: მშენებლობის პროცესში საჭიროა ვიხელმძღვანელოთ სამშენებლო ნორმების: *CHhT. III-4-80**-ის მოთხოვნების შესაბამისად და შეაჯამოთ დადგინდეთ უსაფრთხოების წესები.

Typical Kindergarten for Two Groups 5, Akhlagzrdobis street, Kareli

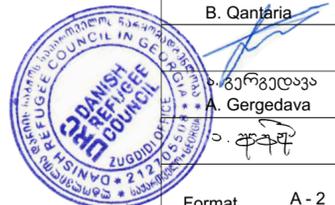
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Stage: Architectural project

Explanatory note

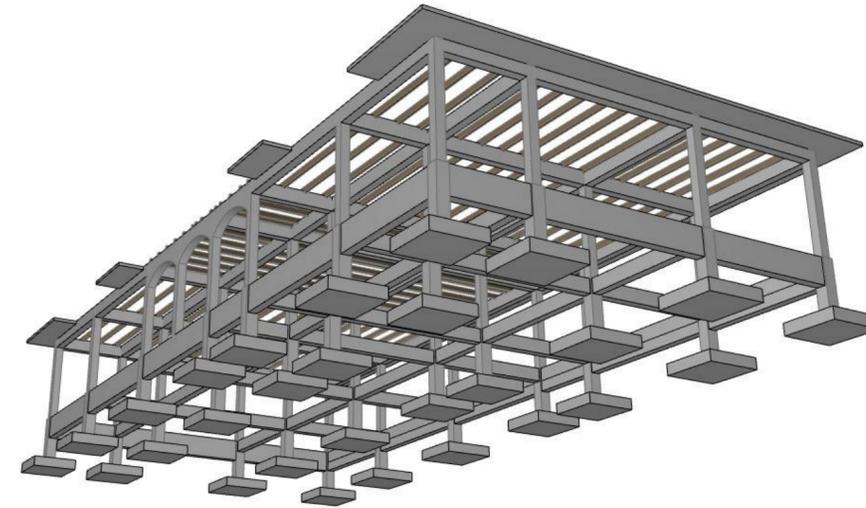
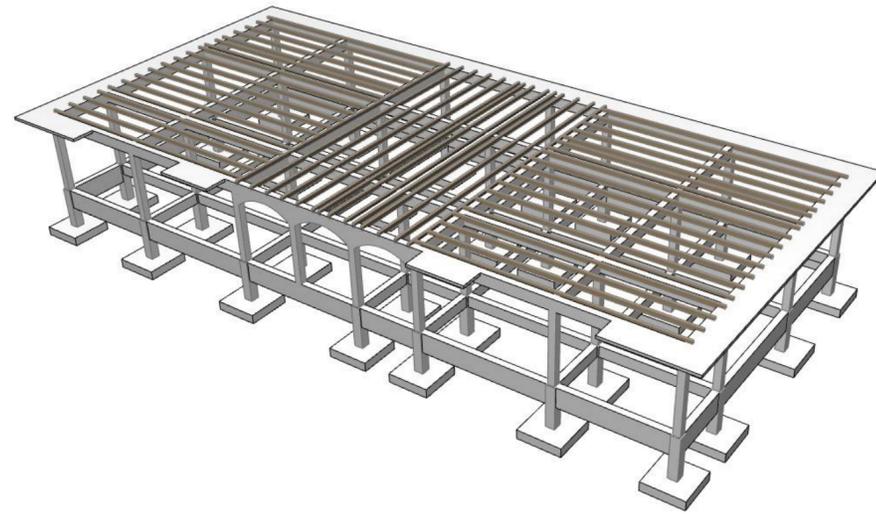
ბ. ჯანთარია B. Qantaria

ა. გერგედავა A. Gergedava



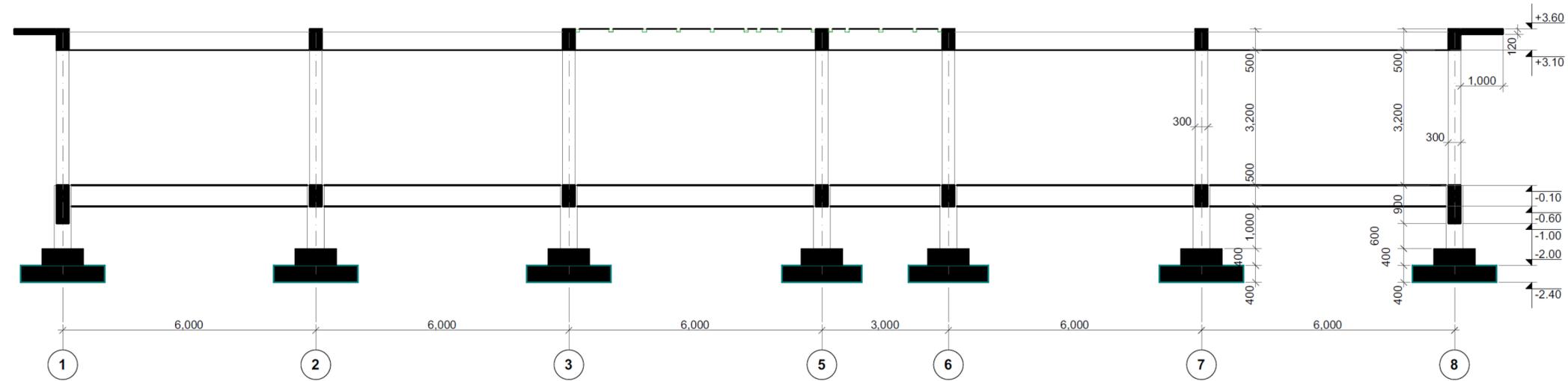
Format A - 2

Render of the Mass Concrete



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მასსიათებელი ჭრილი კონსტრუქციაზე
Section on the Structure



Project address:
Georgia,
Kareli

Stage:
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Render of the ;
Mass
Concrete;
Section on the
Structure

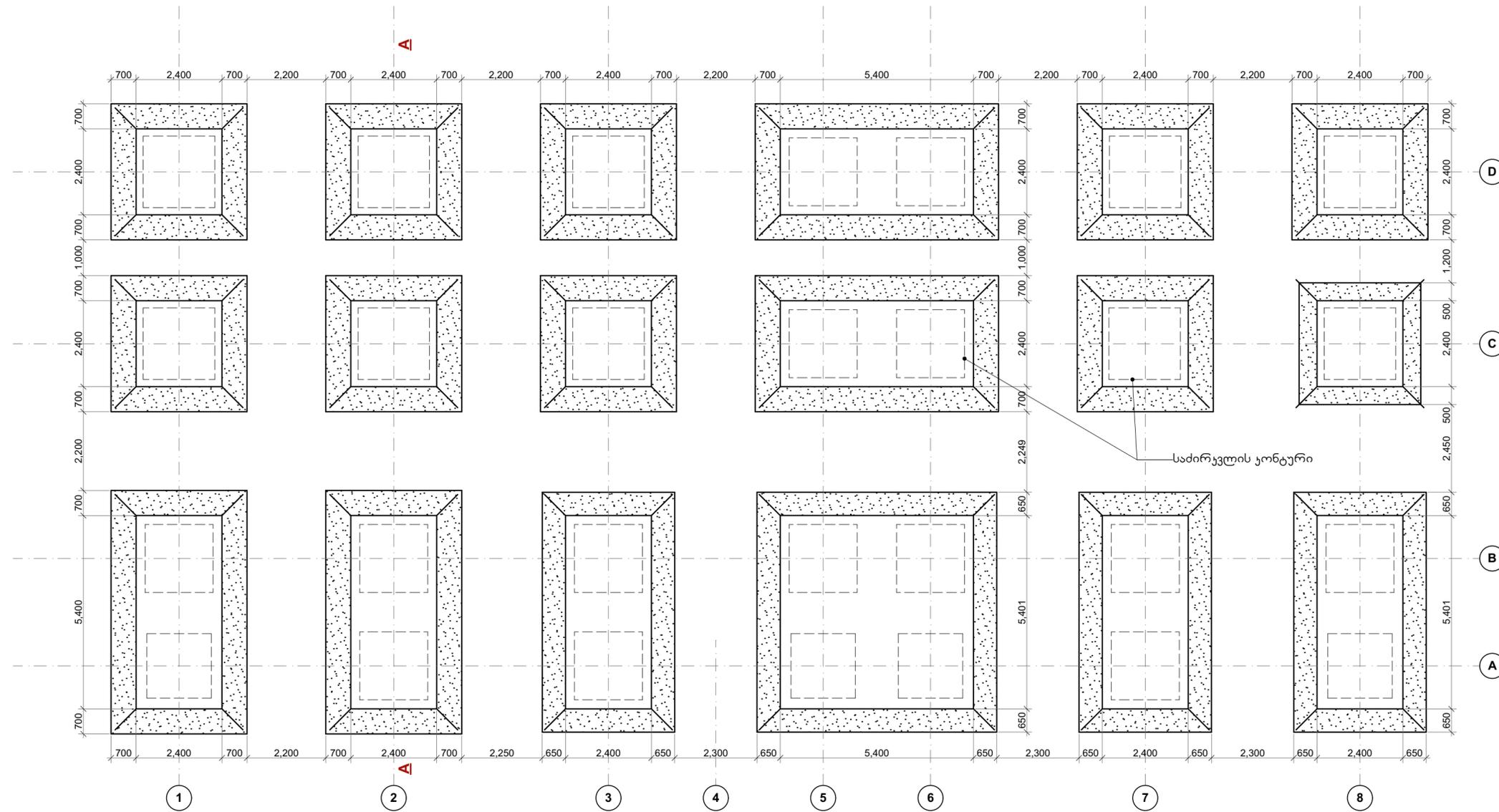
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B. Qantaria

ა. გერგედავა
A. Gergedava



Format A - 2

Plan of excavation of pad foundation



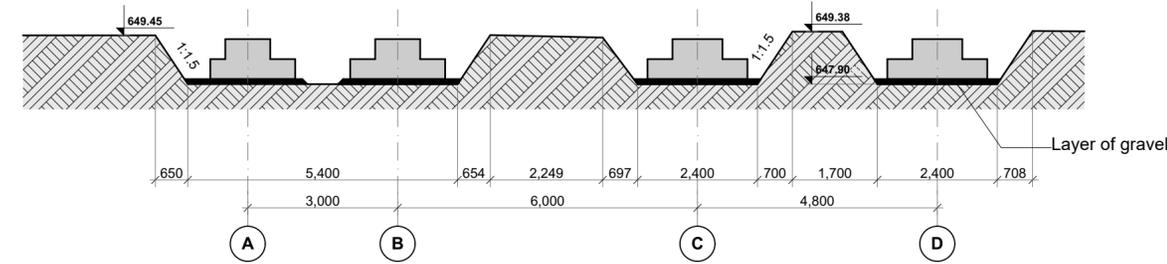
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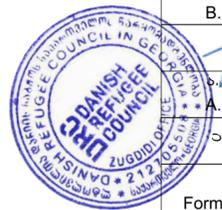
Plan of
excavation
of pad
foundation

Profile A-A of Foundation Excavation



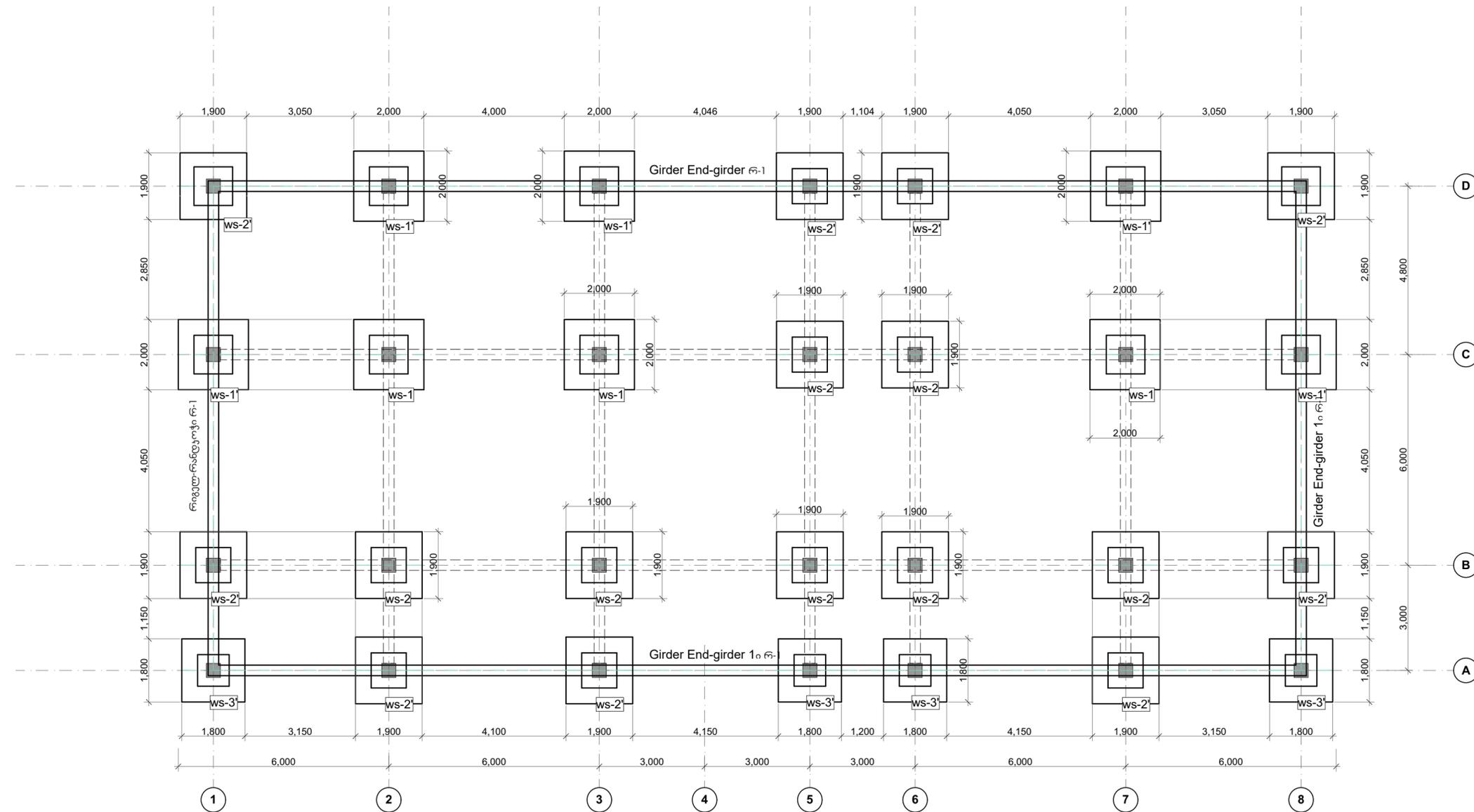
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A. Gergedava



Format A - 2

Plan of Foundation



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PLan of foundation
with marking

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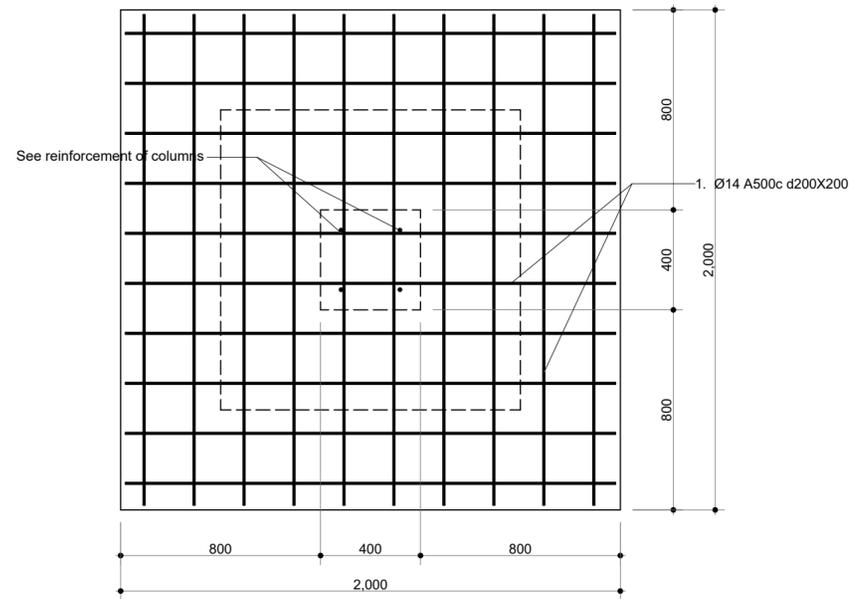


Note:
Anchor - forks of coumns in foundations should be installed in
accordance with column drawings

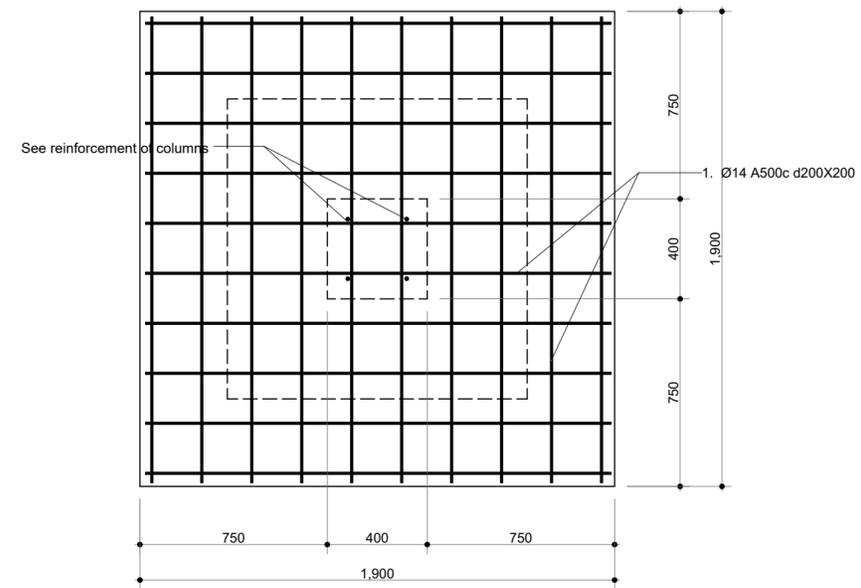
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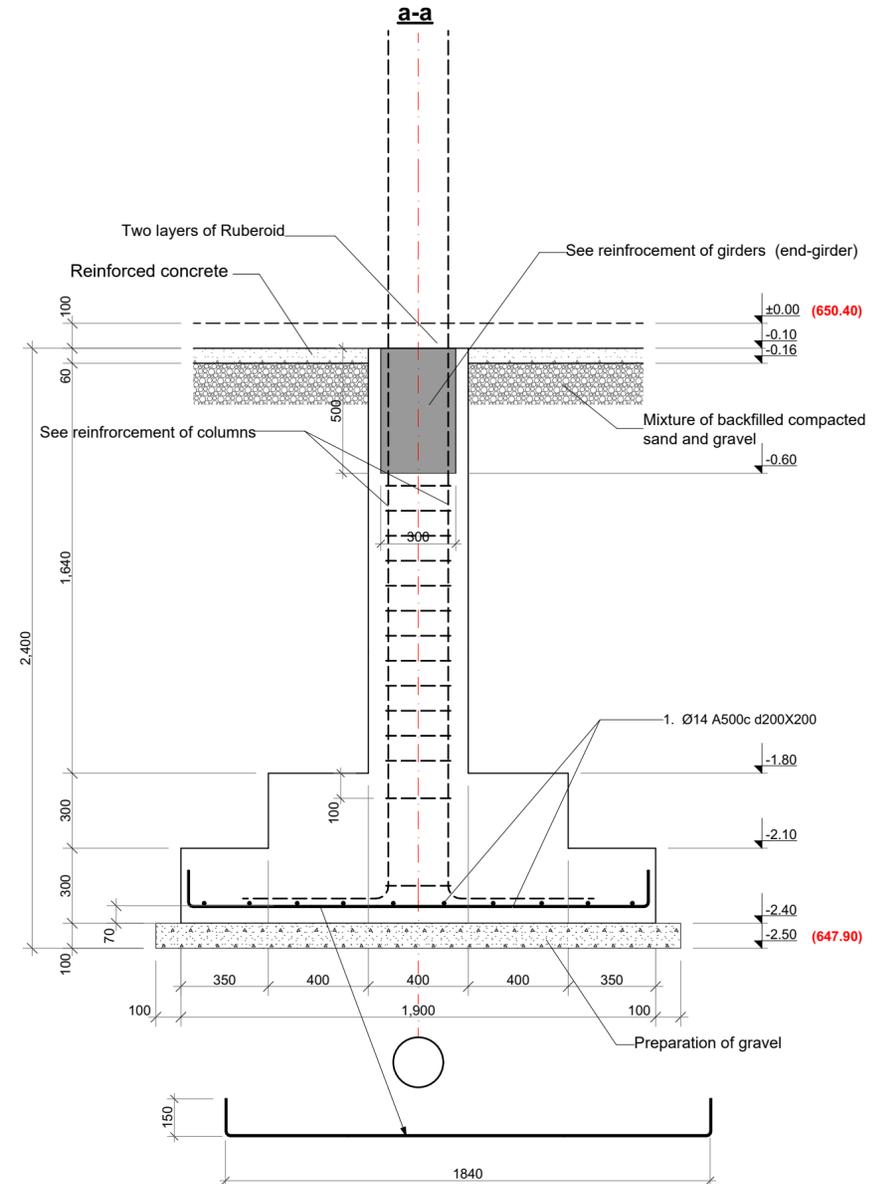
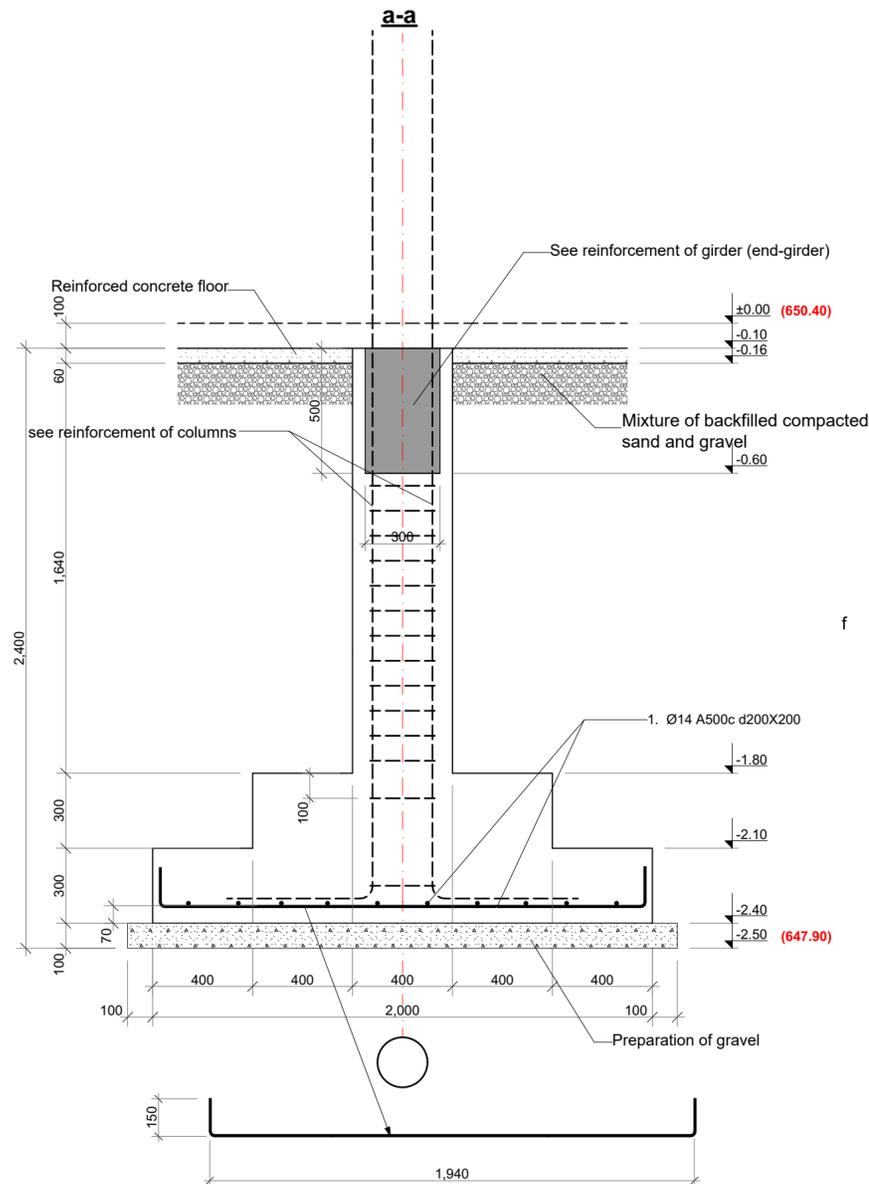
Pad foudation ws-1



Pad foudation ws-2



Typical
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Project address:
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Foundations

ბ. ჯანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

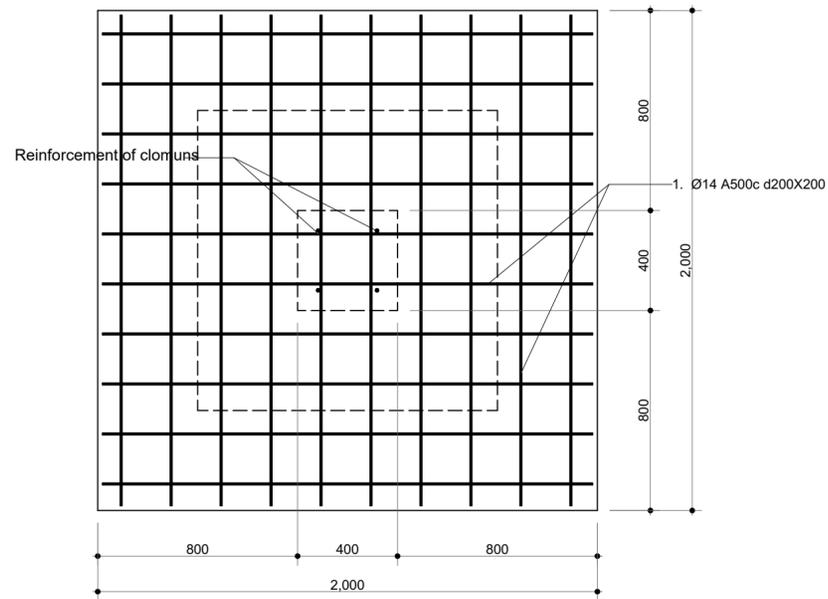


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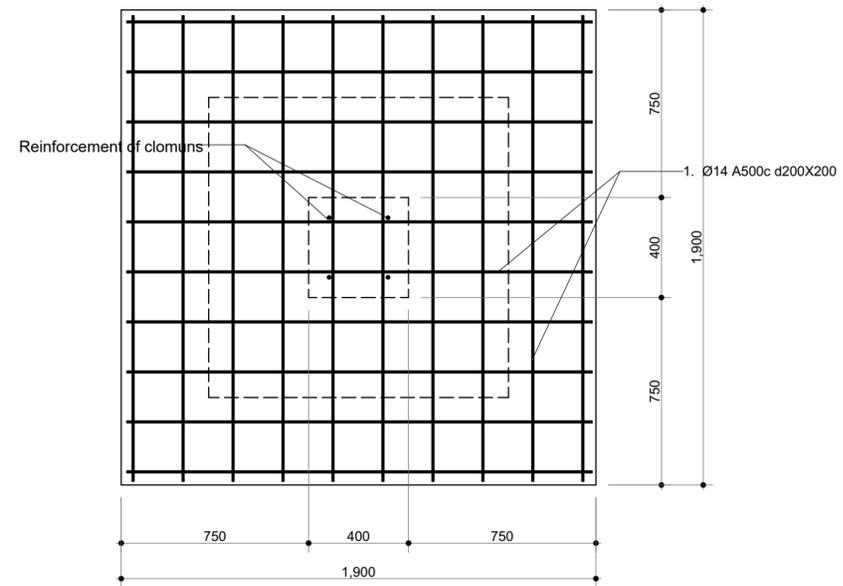
Page	Pages
6	26

Note:
Anchor - forks of columns in foundations should be installed in accordance with column drawings

Pad foudation ws-1

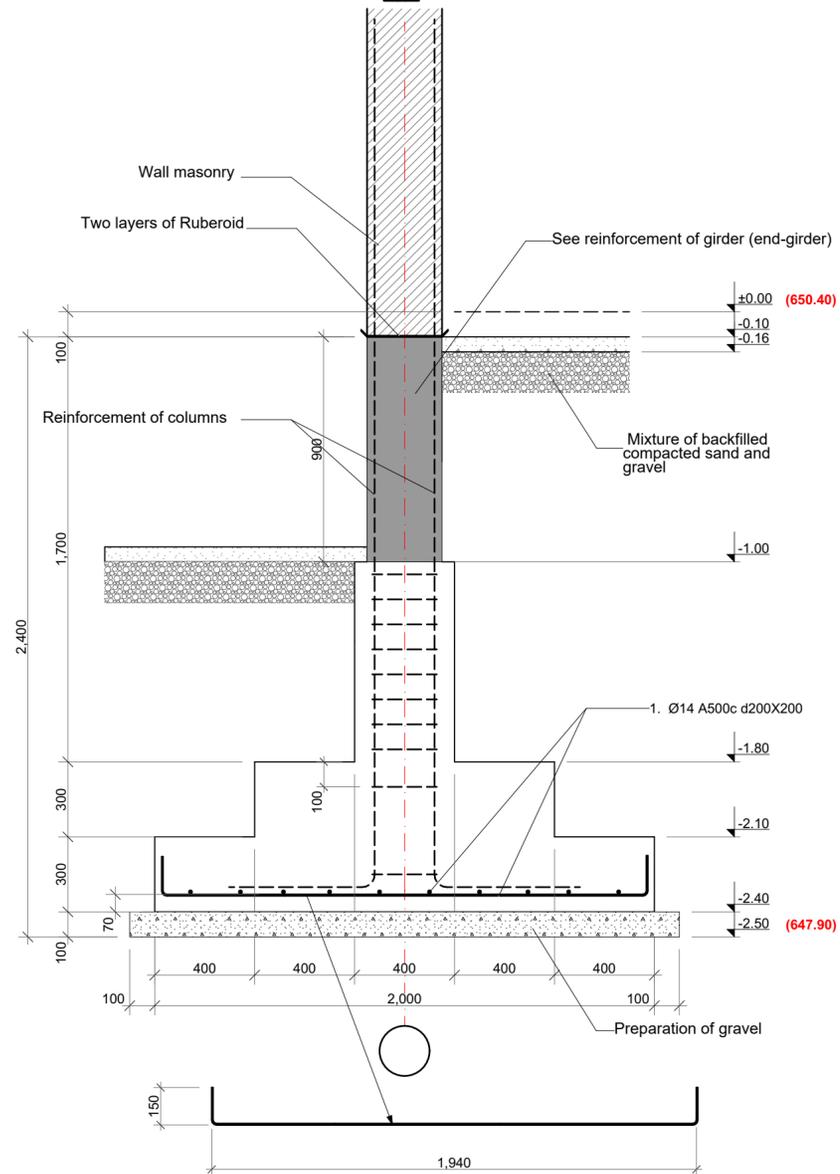


Pad foudation ws-2

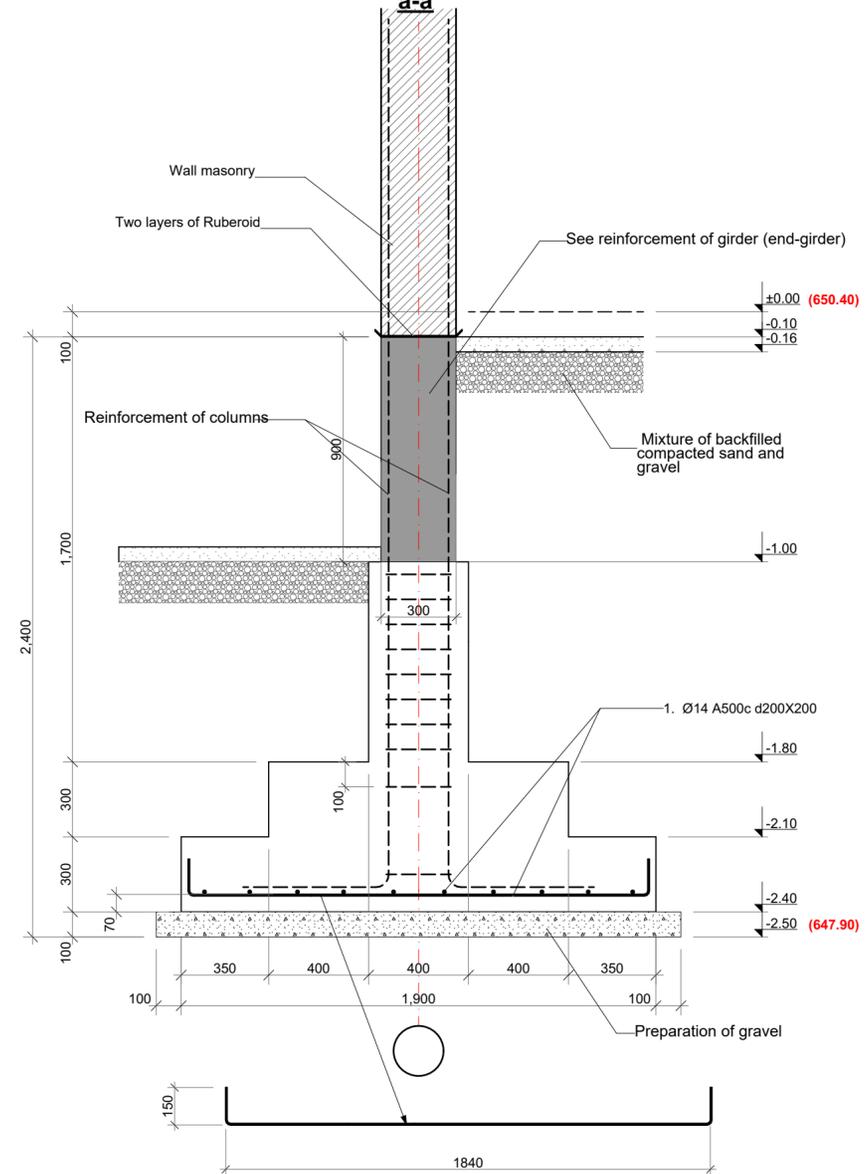


Typical
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5, Akhlagazrdobis
street, Kareli

a-a



a-a



Project address:
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Stage:
Architectural project

Foundatons

ბ. ჯანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

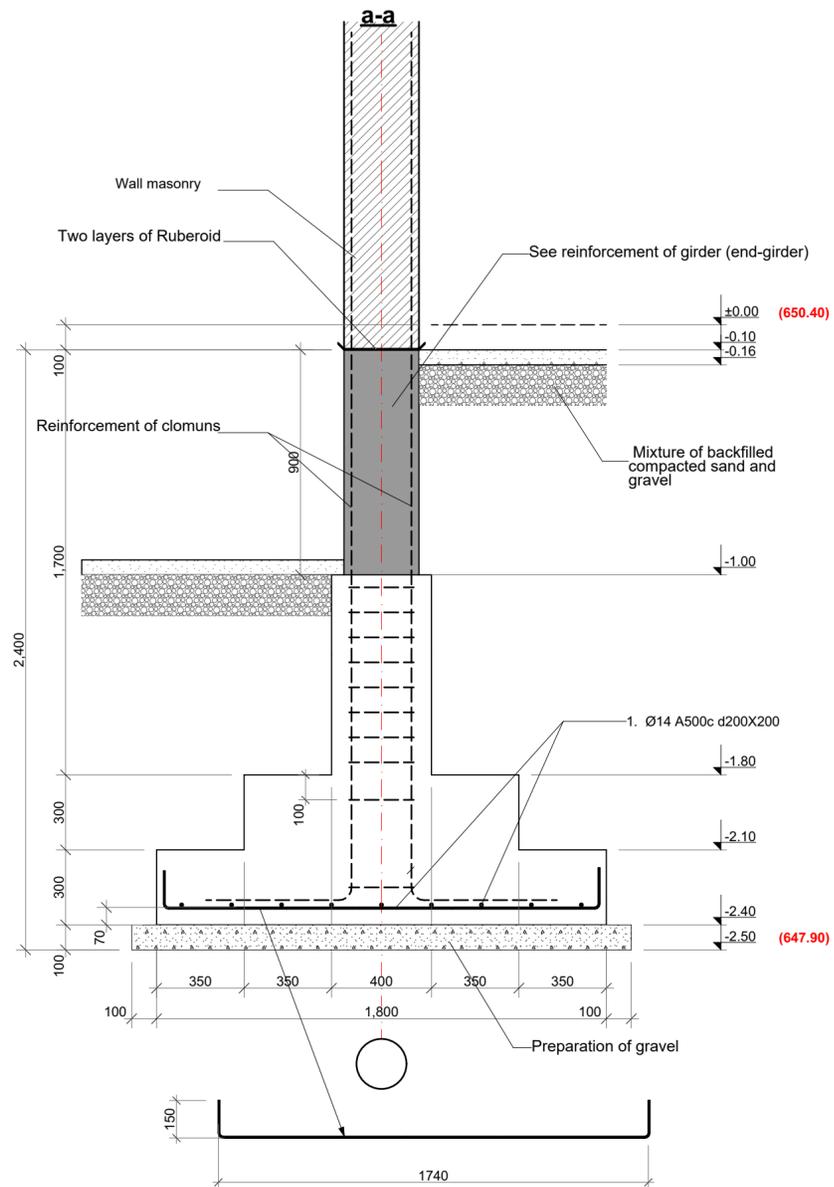
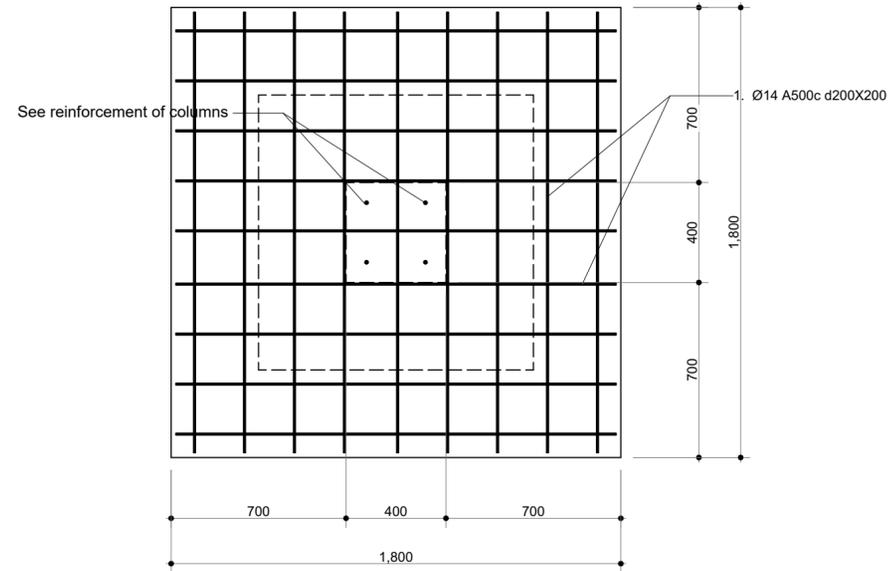


Format A - 2

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Pad foudation ws-1



ელემენტი Element	№	არმატურის პროფილი Reinforcement profile	სიგრძე მმ Length mm	რაოდენობა Quantity	საერთო სიგრძე მ length m	ბეტონი მ3 Concrete m3
წერტილოვანი საძირკველი Pad Foundation						
ws-1 (3 ცალი)		14 A500c	2240	60	134.40	
ws-2 (7 ცალი)		14 A500c	2140	140	299.60	
ws-1' (5 ცალი)		14 A500c	2240	100	224.00	
ws-2' (9 ცალი)		14 A500c	2140	180	385.20	
ws-3' (4 ცალი)		14 A500c	2040	72	146.88	
ბეტონი B25 m3 Concrete						46.7

Specification of Reinforcement

კვეთი Cross-section	საერთო სიგრძე მ Total length m	საერთო სიგრძე დანაკლები Total length with loss	არმატურის წონა Weight of t/m	საერთო წონა Total weight, t	საერთო წონა (კვადრატულ მეტრზე) Total weights (per grade) t	
A240c	6 A240c	0.0	0.222	0.00	0.0	
	8 A240c	0.0	0.394	0.00		
A500c	6 A500c	0.0	0.222	0.00	1.5	
	8 A500c	0.0	0.394	0.00		
	10 A500c	0.0	0.616	0.00		
	12 A500c	0.0	0.887	0.00		
	14 A500c	1190.1	1249.6	1.208		1.51
	16 A500c	0.0	1.578	0.00		
	18 A500c	0.0	1.997	0.00		
	20 A500c	0.0	2.465	0.00		
22 A500c	0.0	2.983	0.00			
25 A500c	0.0	3.851	0.00			
სულ Total				1.51		

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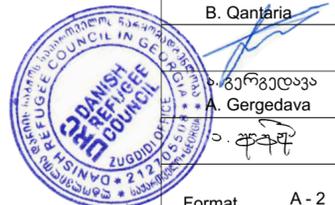
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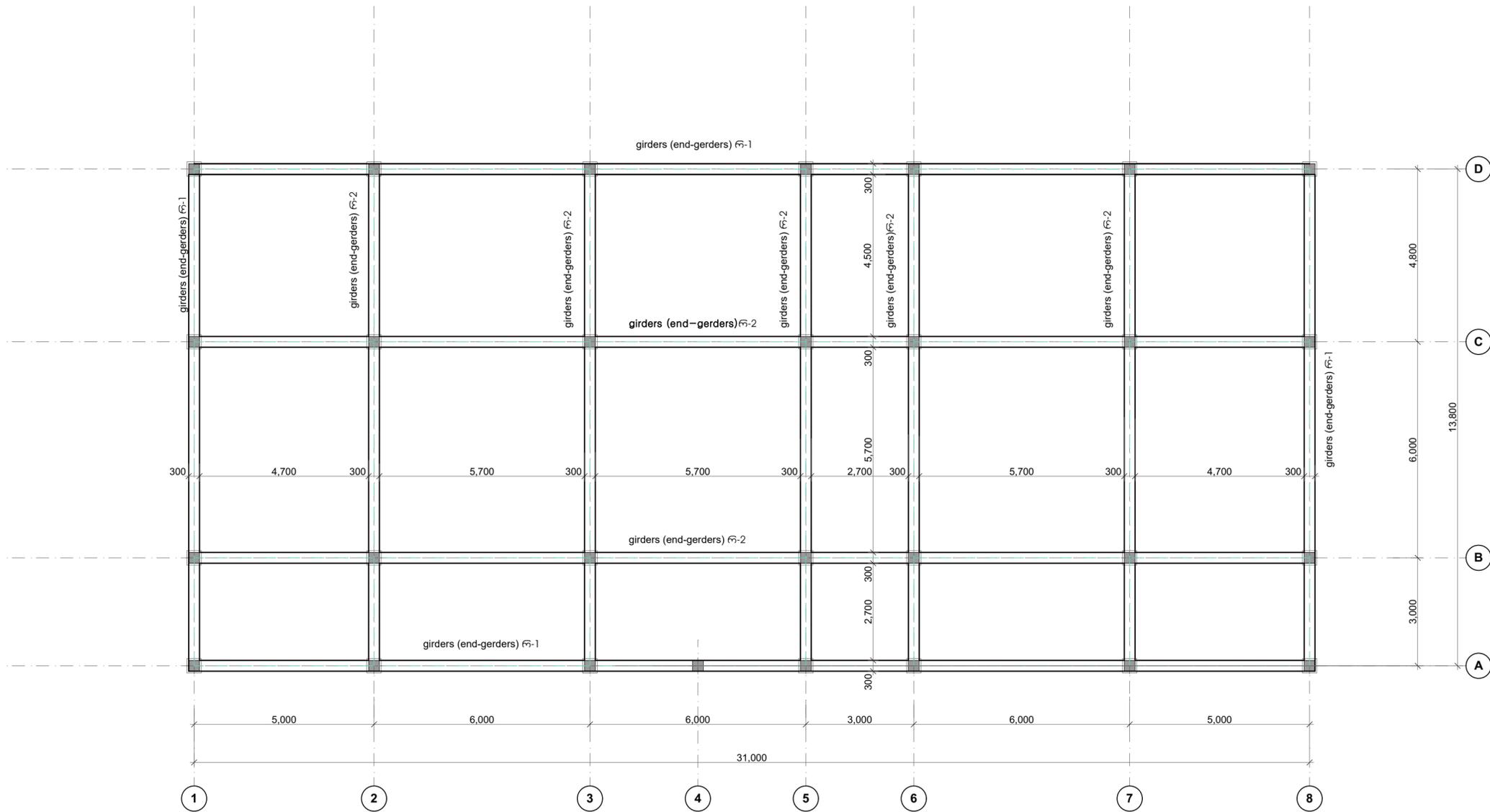
ა. გერგედავა
A. Gergedava



Format A - 2

Plan of monolithic girders (end-girders) at -0.100 level

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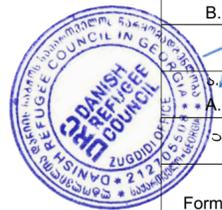
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Plan of monolithic
girders
(end-girders)
at -0.100 level

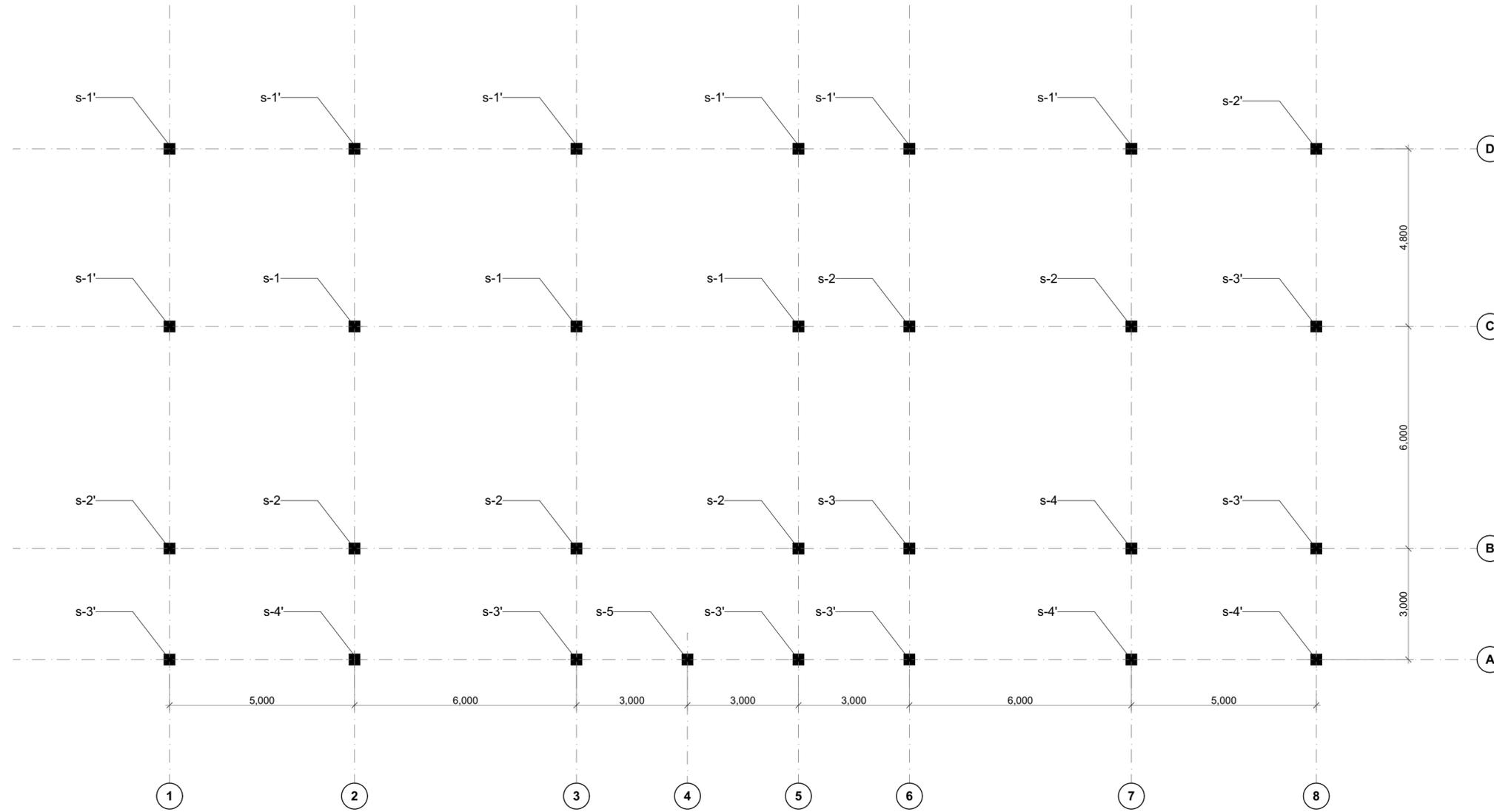
ბ. ჯანთარია
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ა. გერგედავა
A. Gergedava



Format A - 2

Plan of Column Marking



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Marking of Column
on the Plan

ბ. ჯანთარია
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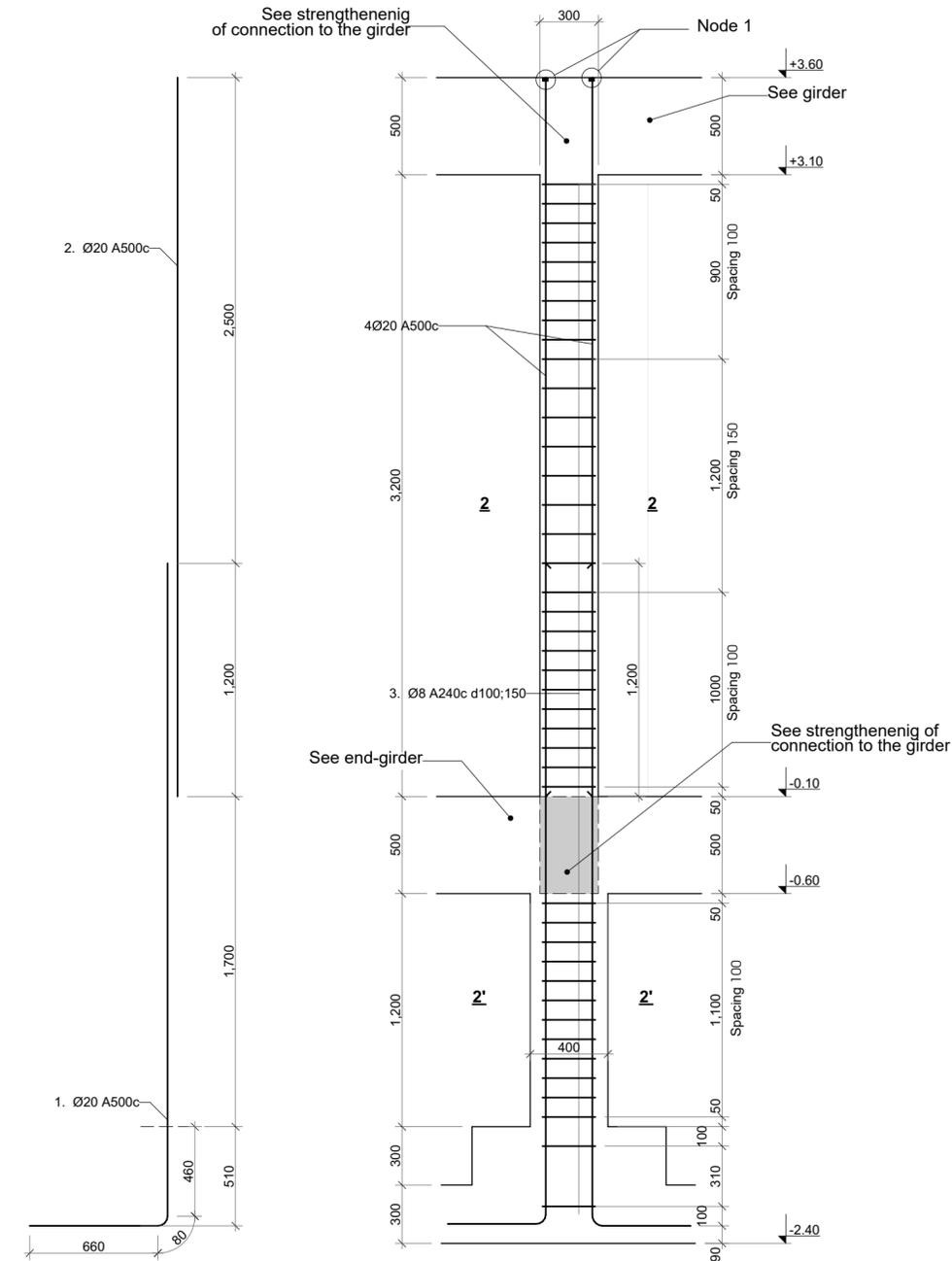
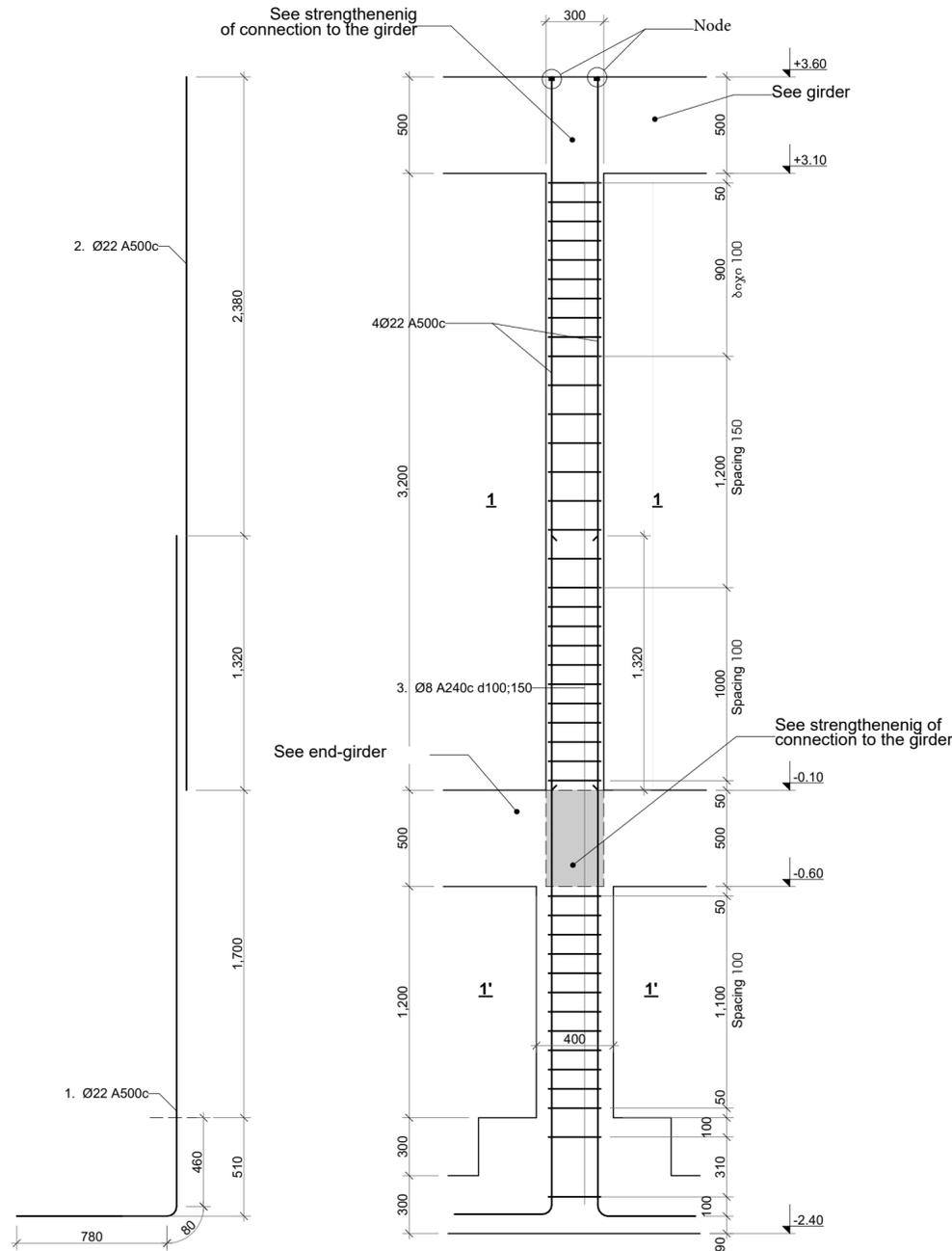
ა. გერგედავა
A. Gergedava



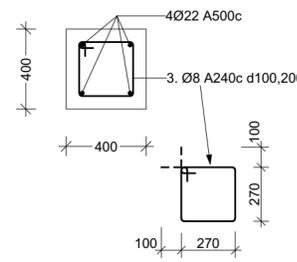
Format A - 2

Column S-1

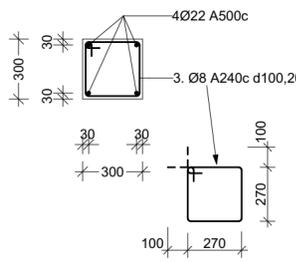
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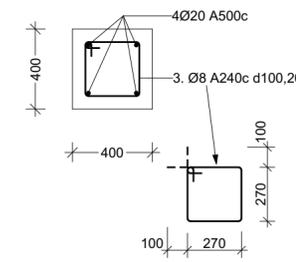
Section 1'-1'



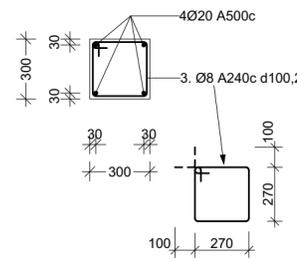
Section 1-1



Section 2'-2'



Section 2-2



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Column S-1
Column S-2

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A. Gergedava



Format A - 2

Column S-3

Column S-4

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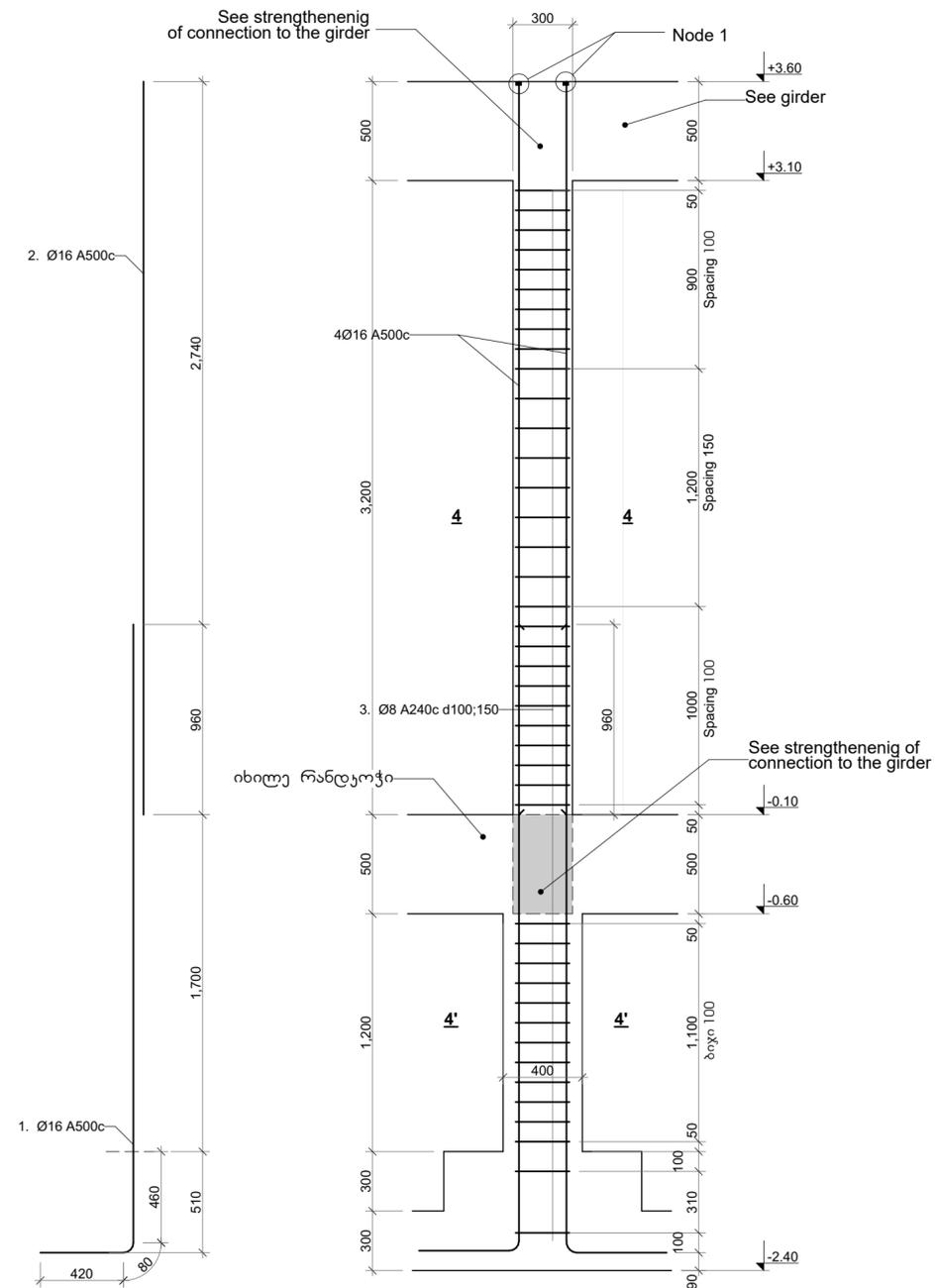
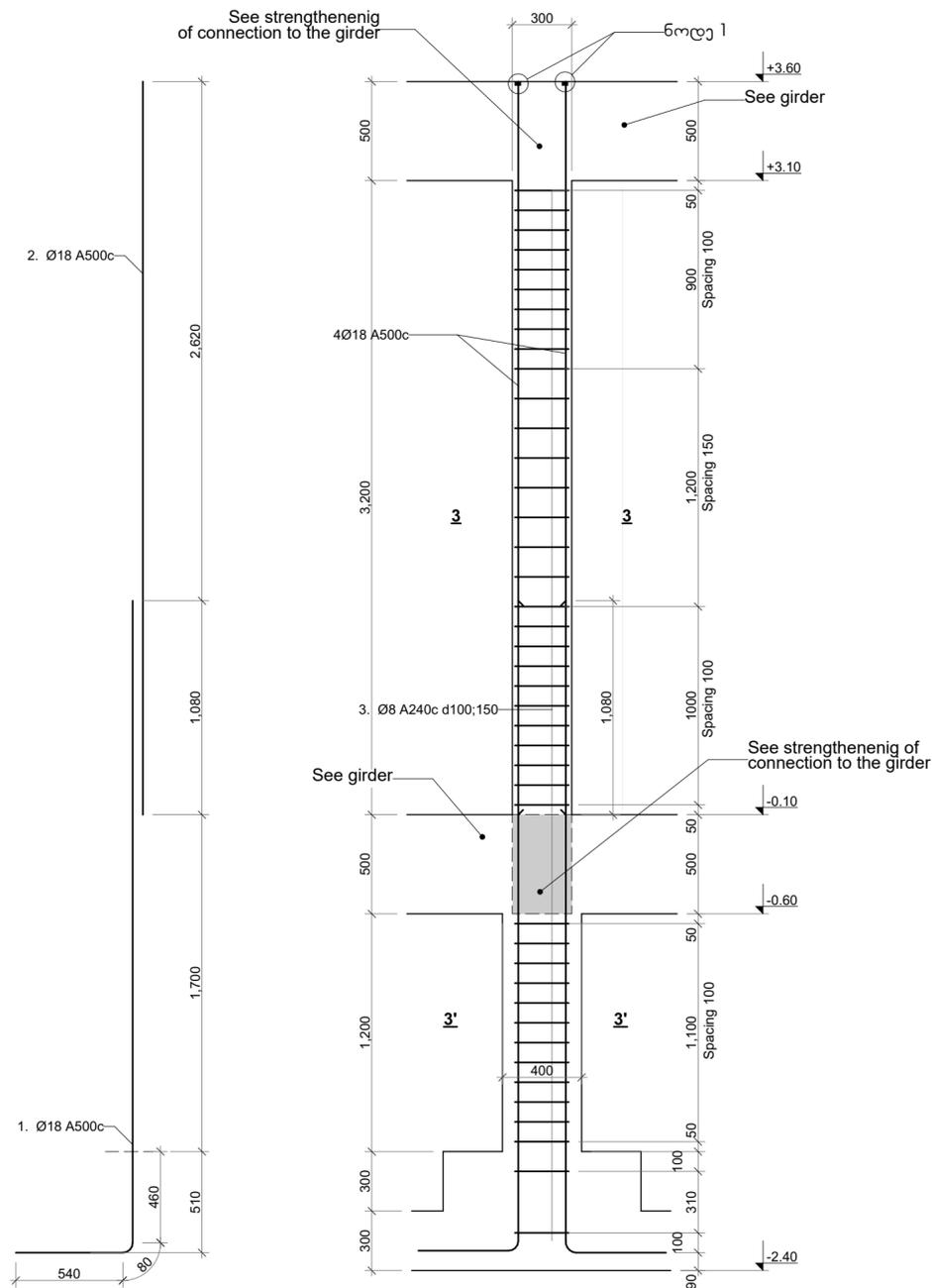
Column s-3
Column s-4

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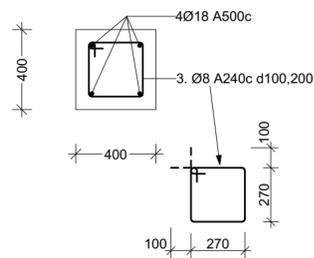
ა. გერგედავა
A. Gergedava

Format A - 2

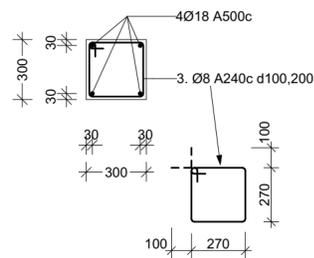
Page 13
Pages 26



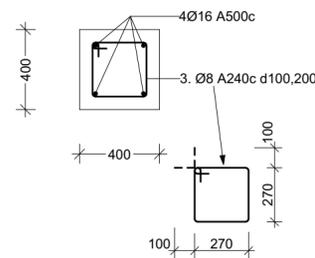
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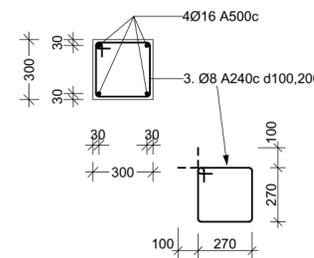
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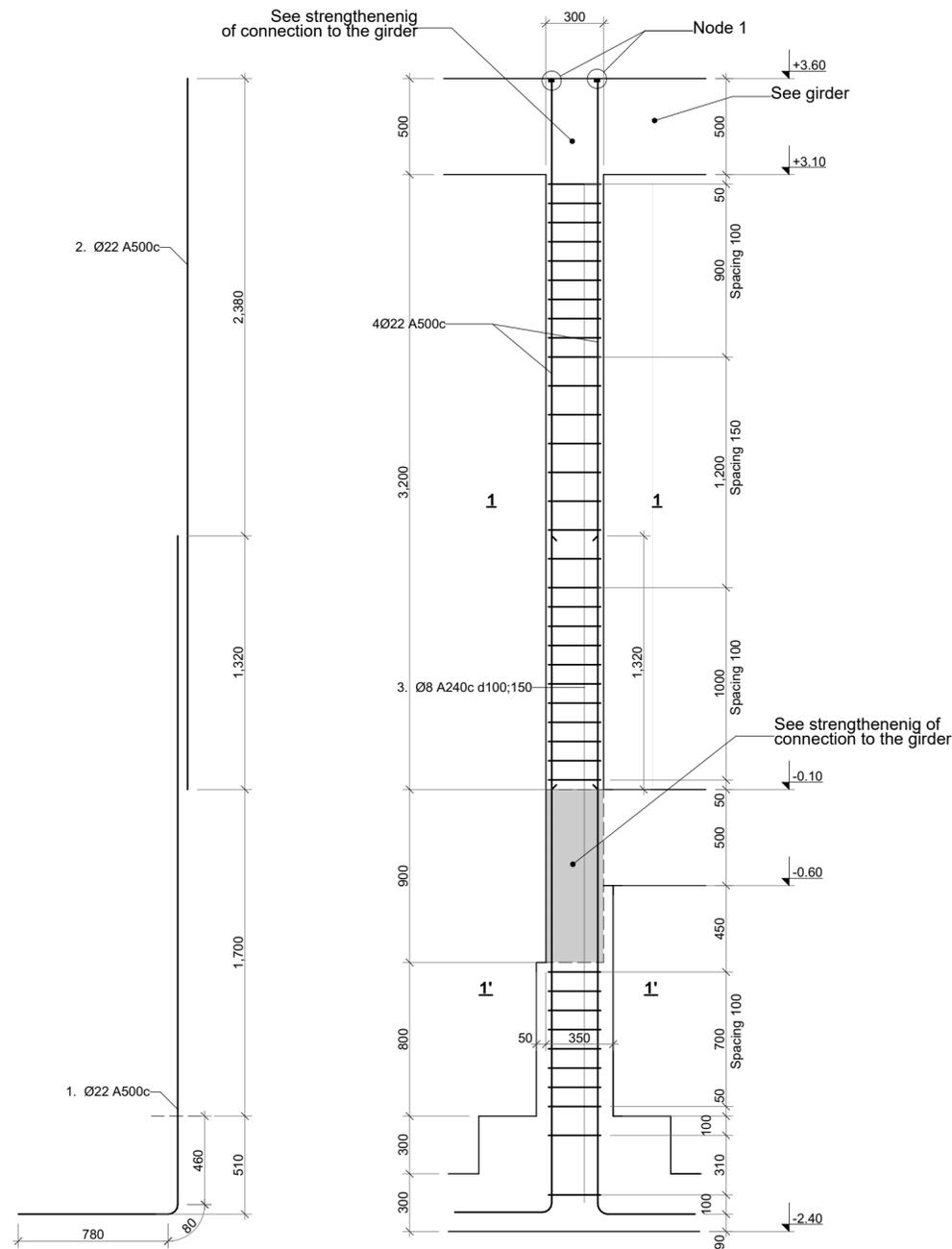
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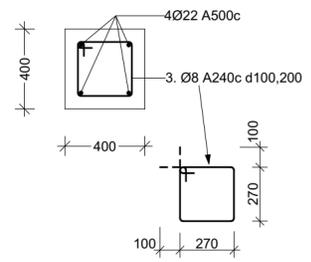
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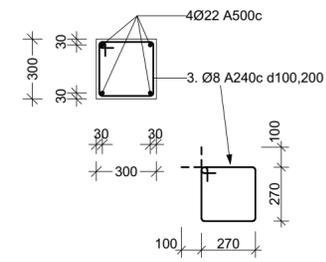
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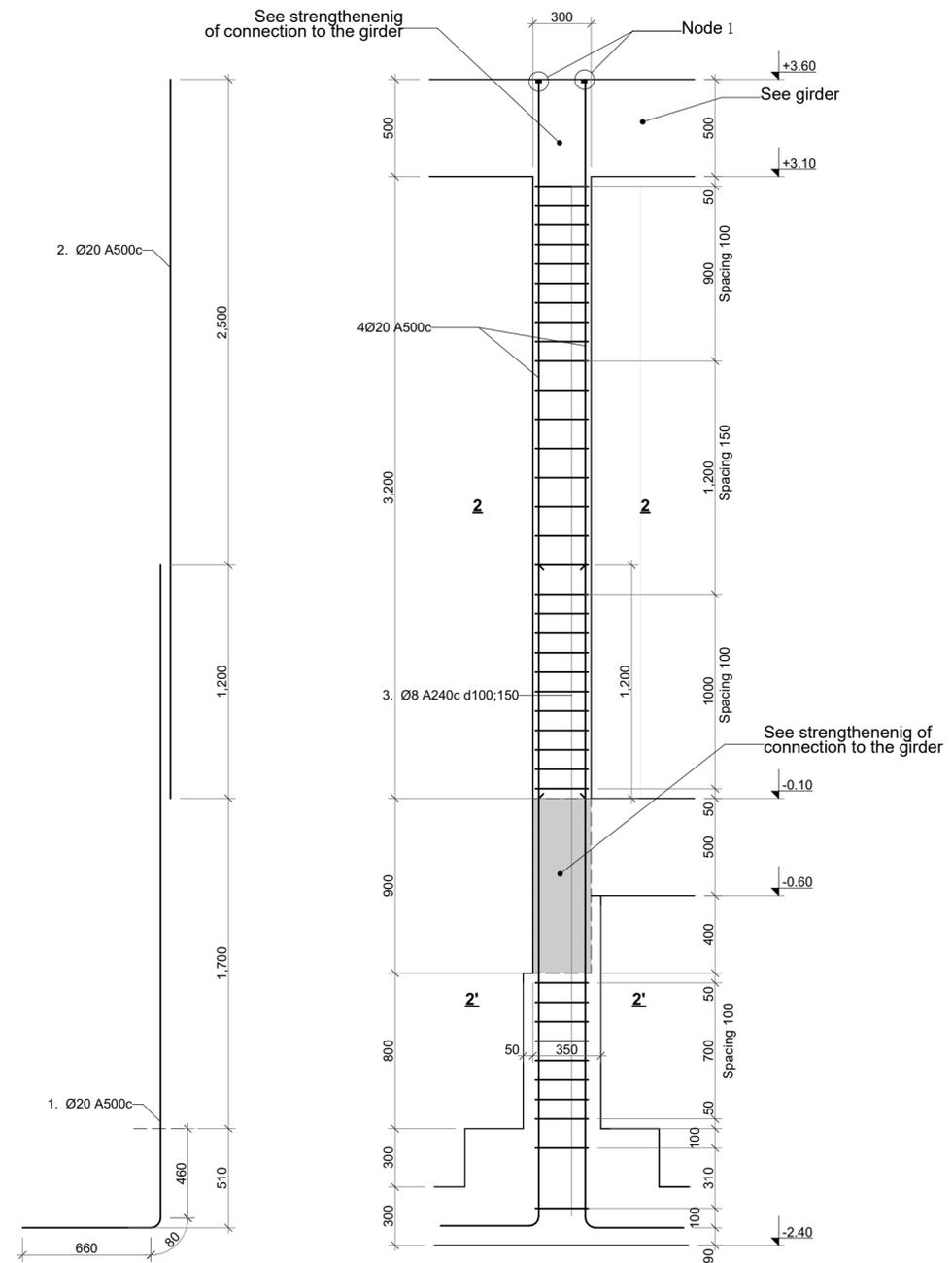
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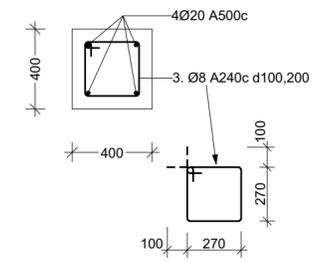
Section 1-1



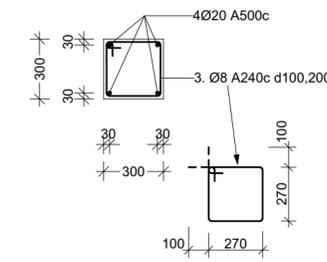
Column S-2'



Section 2'-2'



Section 2-2



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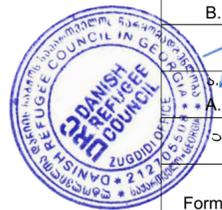
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Column S-1'
Column S-2'

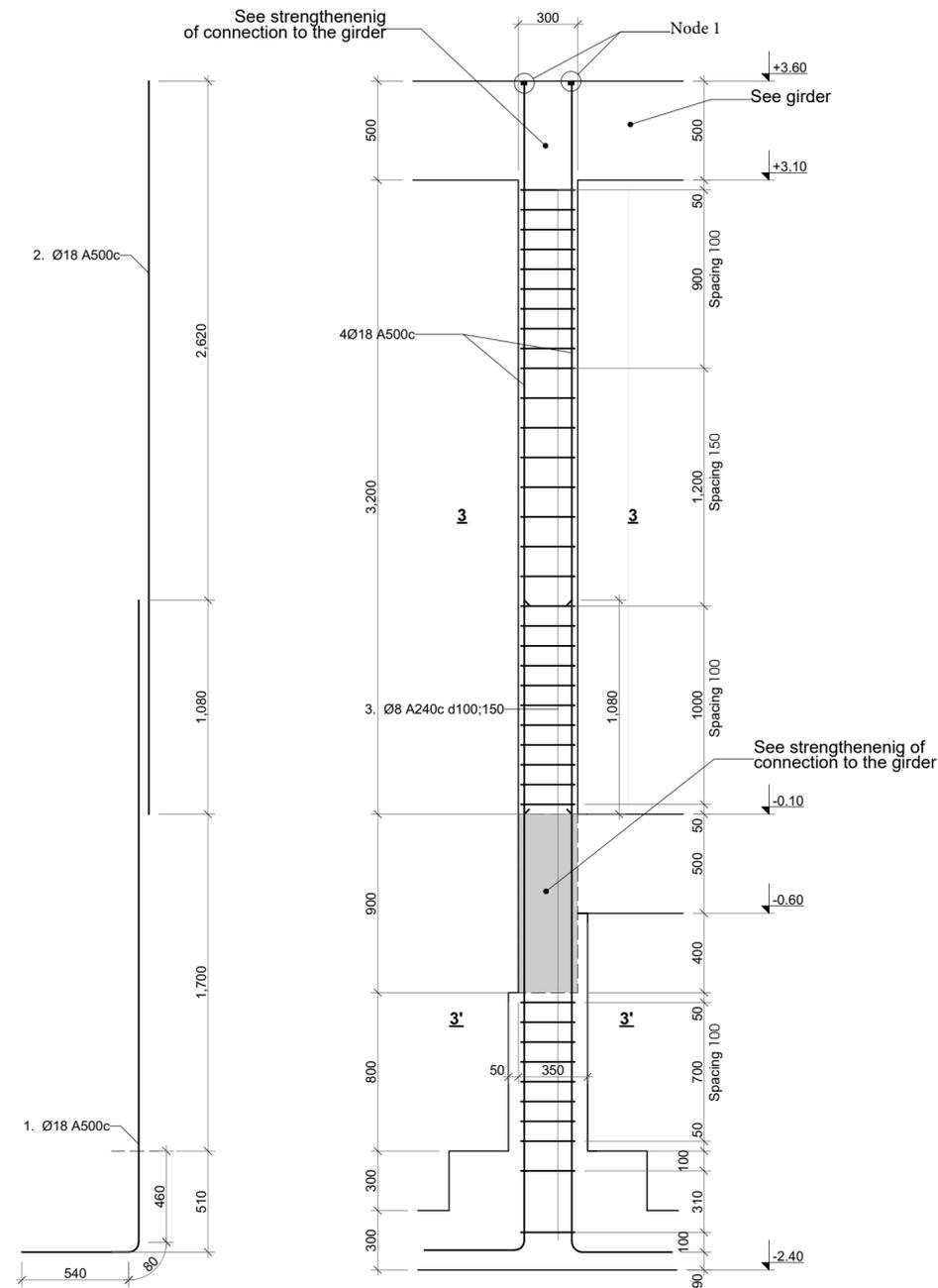
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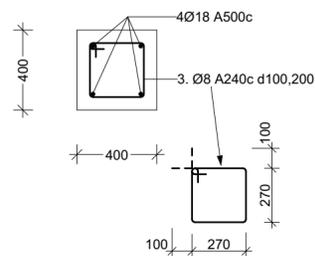


Format A - 2

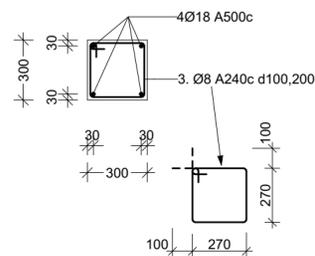
Column S-3'



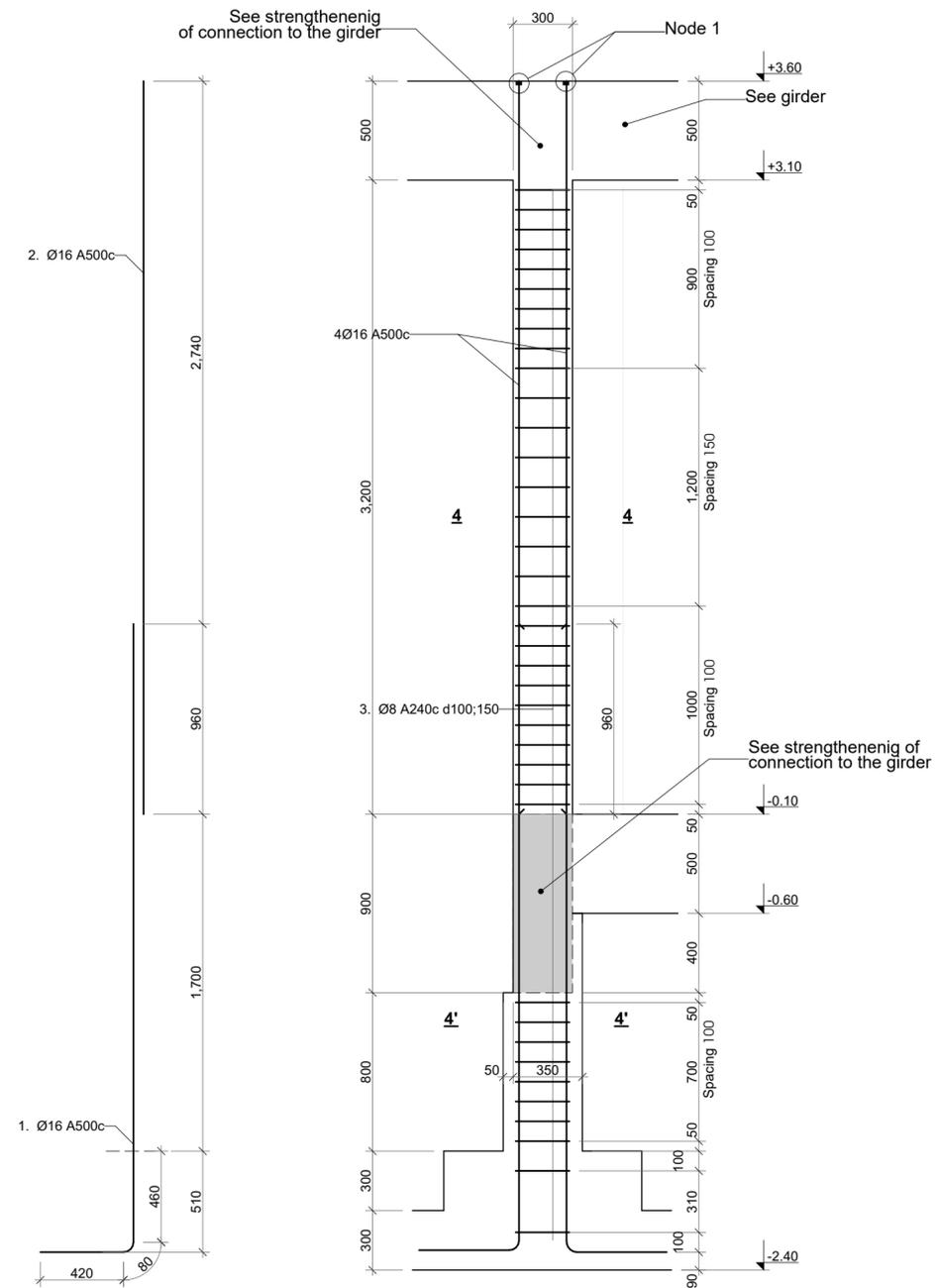
Section 3'-3'



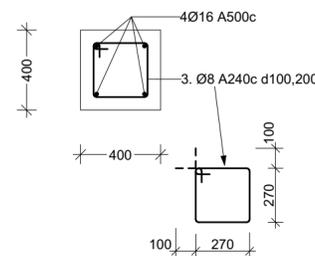
Section 3-3



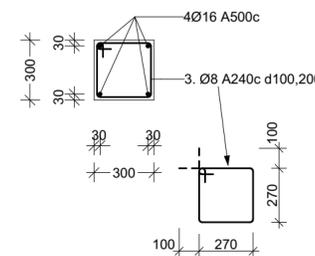
Column S-4'



Section 4'-4'



Section 4-4



Typical
Kindergarten for
Two Groups
5, Akhlagzrdobis
street, Kareli

Project address:
Georgia,
Kareli

Stage:
Architectural project

Column S-3'
Column S-4'

ბ. ჯანთარია
B. Qantaria

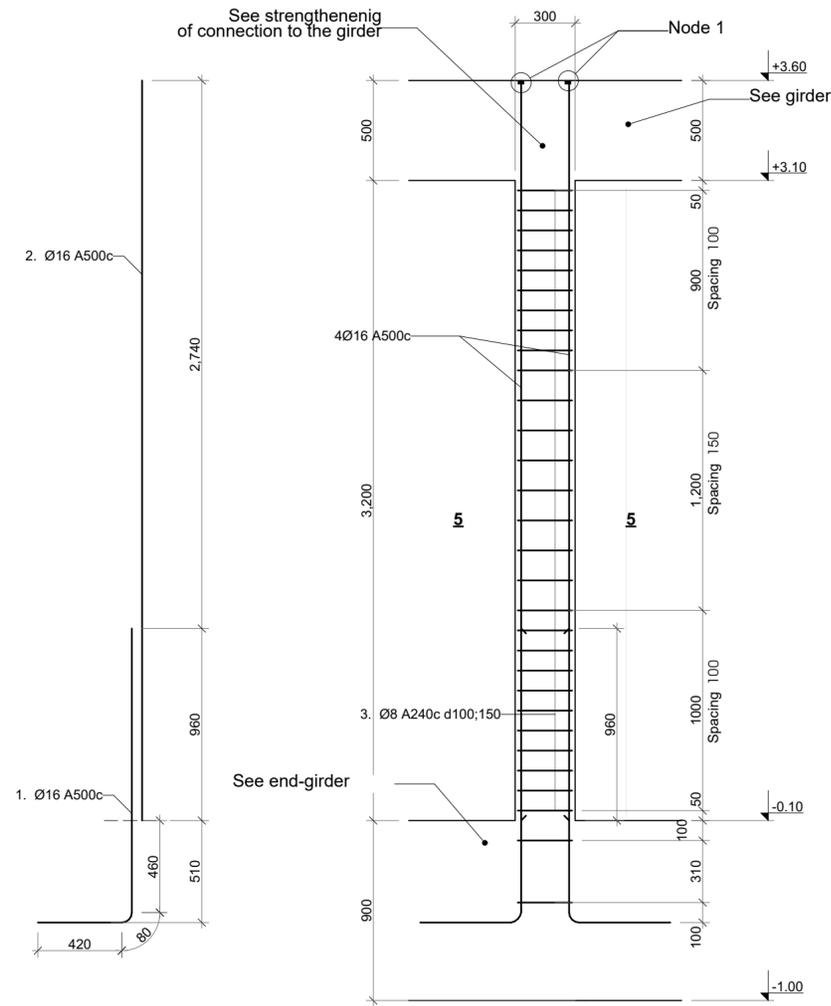
ა. გერგდავა
A. Gergedava



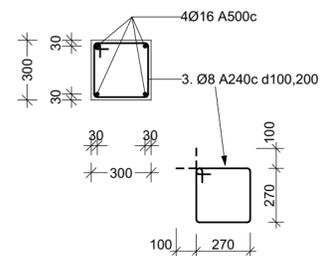
Format A - 2

Page	Pages
15	26

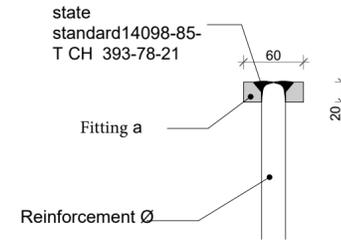
Column S-5



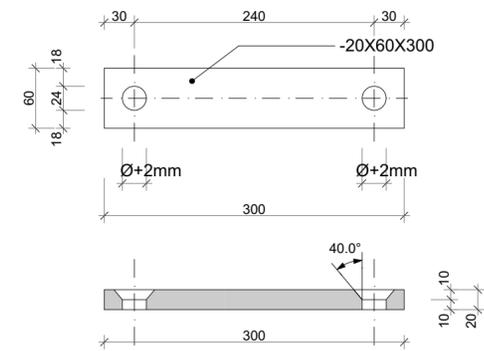
Section 5-5



Node 1



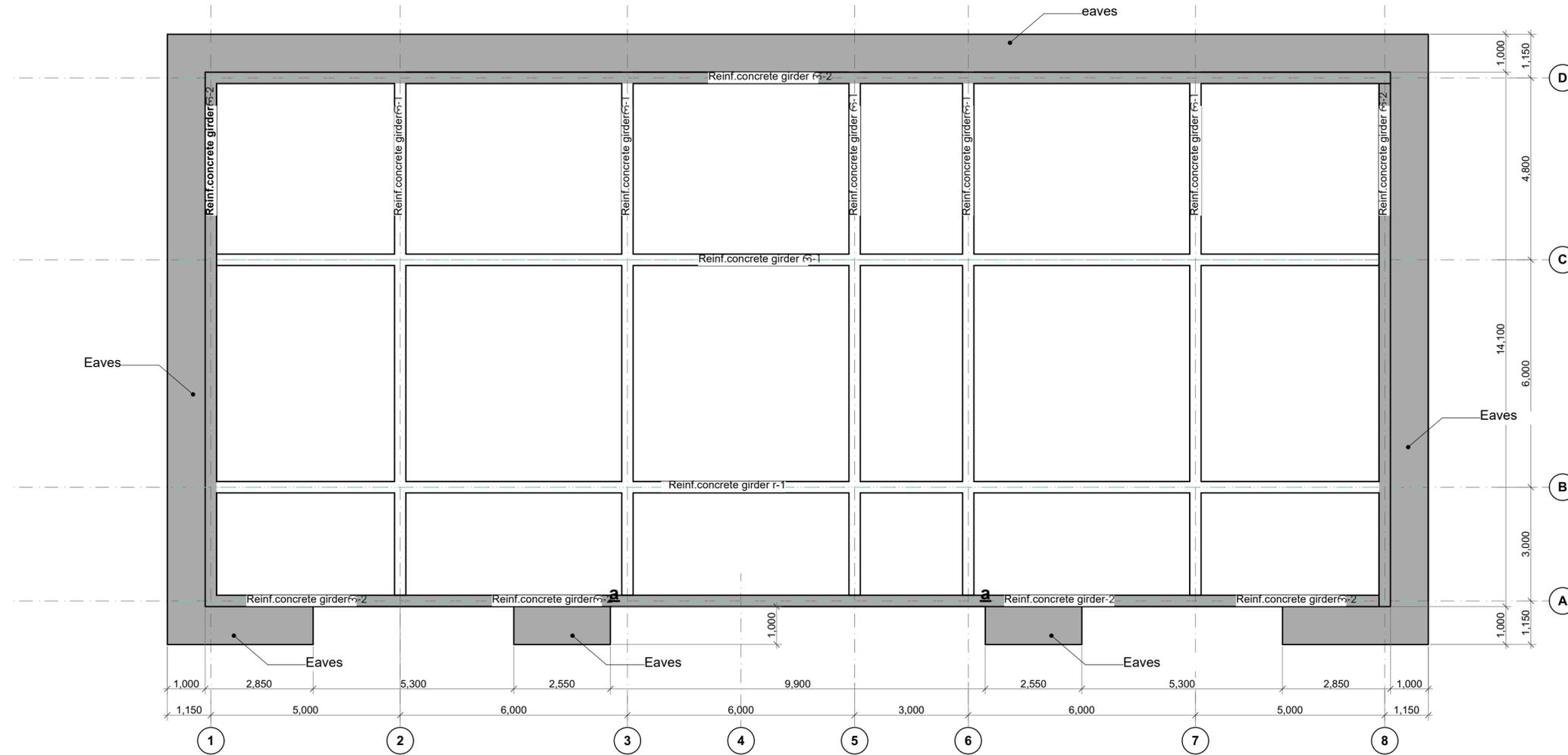
Fitting a



ელემენტი Element	№	არმატურის პროფილი Reinforcement profile	სიგრძე მმ Length mm	რაოდენობა Quantity	საერთო სიგრძე მ Total length m	ბეტონი მ3 Concrete m3	Specification of reinforcement არმატურის ადოსრვა					
							კვეთი Cross-section	საერთო სიგრძე მ Total length m	საერთო სიგრძე დანაკლებით მ Total length with loss m	გრძობის წონის weight of r/m	საერთო წონის Total weight, t	საერთო წონის (კვადრატული მეტრი) Total weight (per grade) t
რკინაბეტონის სვეტები Reinforced concrete columns												
s-1 და s-1' (10 ცალი)	1	22 A500c	4340	40	173.6							
	2	22 A500c	3700	40	148							
	3	8 A240c	1280	420	537.6							
s-2 და s-2' (7 ცალი)	20 A500c	4100	28	114.8								
	20 A500c	3700	28	103.6								
	8 A240c	1280	294	376.32								
s-3 და s-3' (7 ცალი)	18 A500c	3860	28	108.08								
	18 A500c	3700	28	103.6								
	8 A240c	1280	294	376.32								
s-4 და s-4' (4 ცალი)	16 A500c	3620	16	57.92								
	16 A500c	3700	16	59.2								
	8 A240c	1280	168	215.04								
s-5 (1 ცალი)	16 A500c	1920	4	7.68								
	16 A500c	3700	4	14.8								
	8 A240c	1280	30	38.4								
strengthening of areas of girder crossing რიგულთან გადაკვეთის უბნების გაძლიერება		10 A500c			1040							
Steel sheet 20x60x300 ფოლადის ფურც. -20X60X300						72						
ბეტონი B25 Concrete						18.95						
							სულ Total		3.56			



Plan of girders at +3.60 level



Typical
Kindergarten for
Two Groups
5, Akhlagzrdobis
street, Kareli

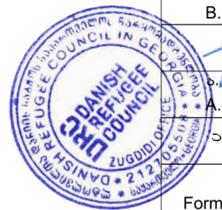
Project address:
Georgia,
Kareli

Stage:
Architectural project

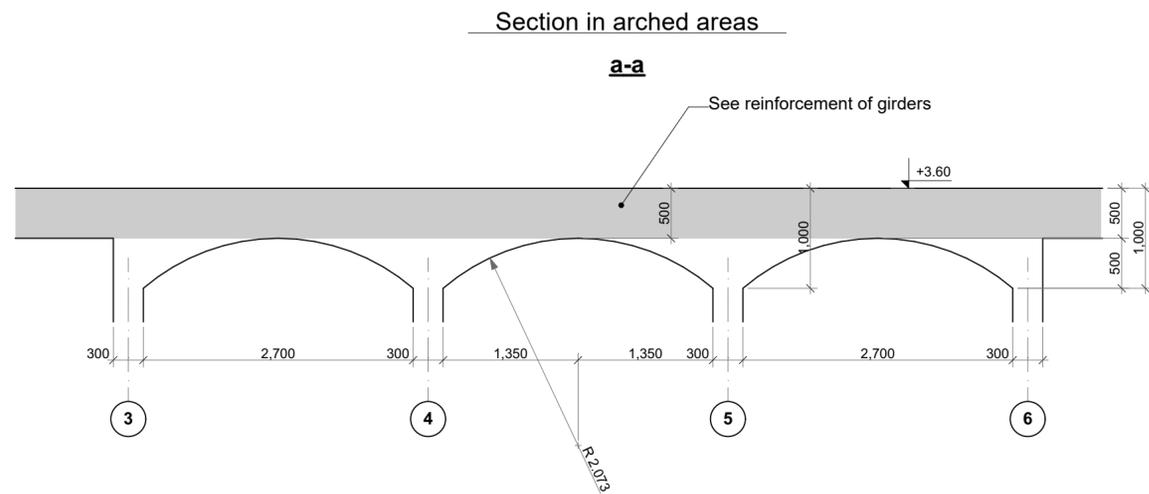
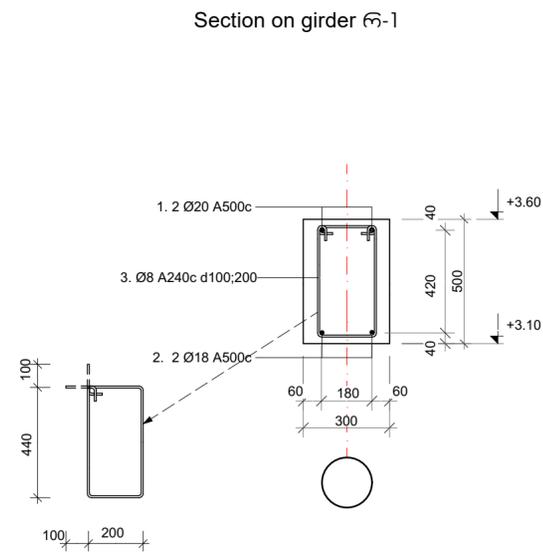
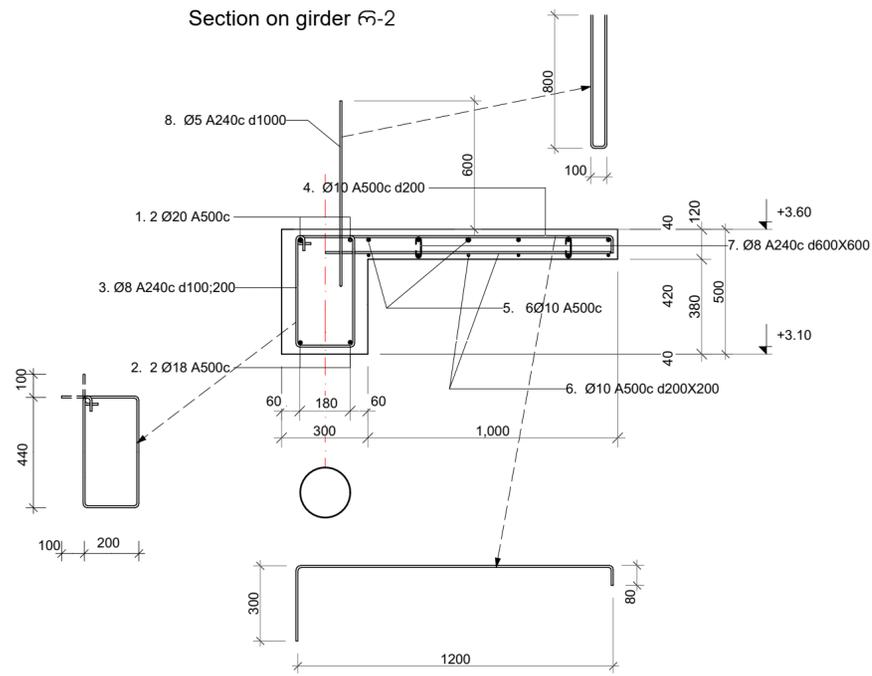
Plan of girders at
+3.60 level

ბ. ჯანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava



Format A - 2



ელემენტი Element	№	არმატურის პროფილი Reinforcement profiles	სიგრძე მმ Length mm	რაოდენობა Qty	საერთო სიგრძე მ Total length m	ბეტონი მ3 Concrete m3	Specification of Reinforcement არმატურის ასპერევა						
							კვეთი cross-section	საერთო სიგრძე მ Total length m	საერთო სიგრძე რანკინგით მ Total length with loss m	გრძობის წილი Weight of r/n	საერთო წონა ტონა Total weight t	საერთო წონა (კლასის მიხედვით) ტონა Total length per class , t	
რკინაბეტონის რიგელები +3.60 ნიშნულზე Rein.concrete girders at +3.60 level													
რიგელი 1 Girder 1	1	20 A500c	142300	2	284.6		A240c	6 A240c	218.0	218.0	0.222	0.05	1.2
	2	18 A500c	140800	2	281.6			8 A240c	2672.4	2806.0	0.394	1.11	
	3	8 A240c	1480	1170	1731.6								
რიგელი 2 Girder 2	1	20 A500c	102000	2	204.0		A500c	6 A500c		0.0	0.222	0.00	3.6
	2	18 A500c	99000	2	198.0			8 A500c		0.0	0.394	0.00	
	3	8 A240c	1480	590	873.2			10 A500c	2044.4	2146.6	0.616	1.32	
	4	10 A500c	1580	380	600.4			12 A500c		0.0	0.887	0.00	
	5	10 A500c	94000	6	564.0			14 A500c		0.0	1.208	0.00	
	6	10 A500c			880.0			16 A500c		0.0	1.578	0.00	
	7	8 A240c	260	260	67.6			18 A500c	479.6	503.6	1.997	1.01	
	8	5 A240c	1700	128	217.6			20 A500c	488.6	513.0	2.465	1.26	
						ბეტონი B25 m3 Concrete		22 A500c		0.0	2.983	0.00	
								25 A500c		0.0	3.851	0.00	
								სულ Total			4.75		

Project address:
Georgia,
Kareli

Stage:
Architectural project

Girder r-1
Sections
Nodes

ბ. ქანთარია
B. Qantaria

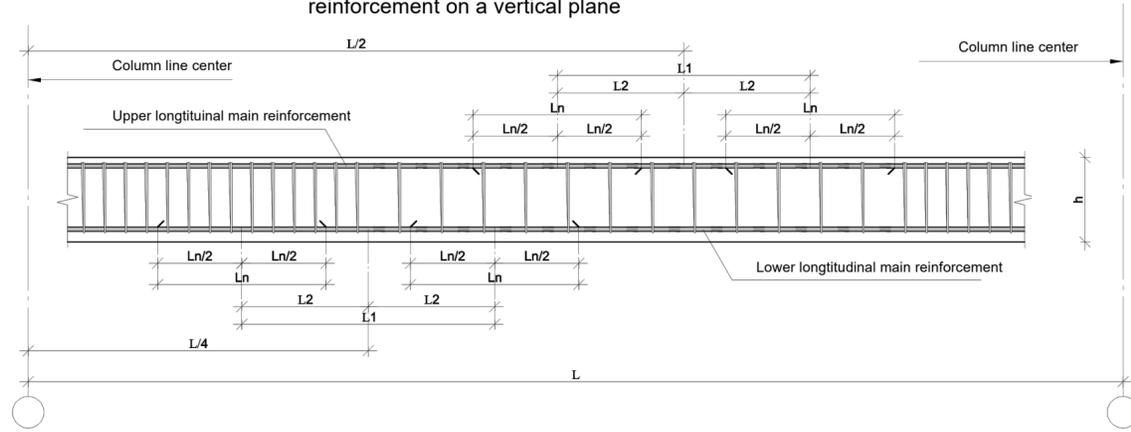
ა. გერგედავა
A. Gergedava



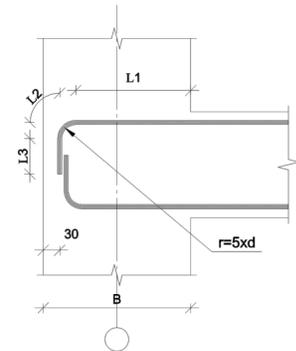
Note:
The sheet should be considered with sheet 16, in particular the standard plan for reinforcing railings and connecting them to columns.

Format A - 2

Locations of monolithic gird bonding by crossbar in the upper and lower span of the reinforcement on a vertical plane

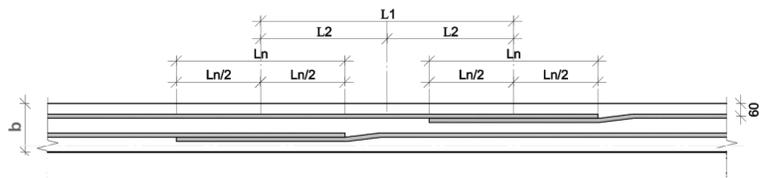


Fixing (bending) Node of Grid in the upper and lower reinforcement column



Parameters of fixing node of grid in the upper and lower reinforcement column

Plan of monolithic gird bonding of crossbar in the upper and lower span of the reinforcement



Parameters of gird bond crossbar in the upper and lower reinforcement

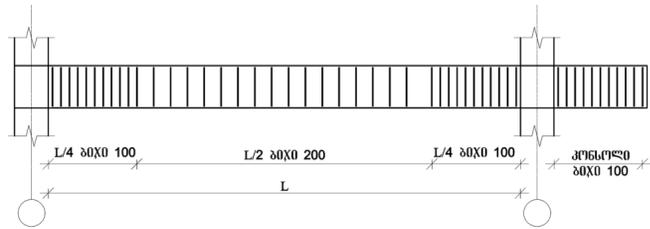
არსაბუნების მუხარამის Ø (მმ)	არსაბუნების ძაბვის სიღრმე (მმ) L ₁ =4D	ძაბვის სიღრმე, სიგრძე, მუხარამის სიგრძე L ₂ ≥1.5L ₁	არსაბუნების "X" მუხარამის სიგრძე, სიგრძე, სიგრძე, სიგრძე L ₃ ≥L ₂	საბუნების ძაბვის სიღრმე, სიგრძე, სიგრძე L ₃ =L ₁ +L ₂
Ø16 A500C	640	960	480	1600
Ø18 A500C	720	1080	540	1800
Ø20 A500C	800	1200	600	2000
Ø22 A500C	880	1320	660	2200
Ø25 A500C	1000	1500	750	2500

მ(90)ა (B=400)

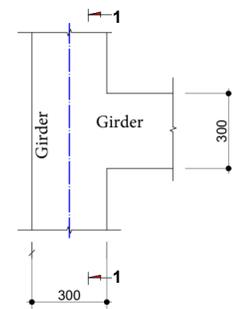
L₁საბუნების=400=2L₁+L₂+L₃=2X1₁ (მმ)

არსაბუნების მუხარამის Ø	L ₁ საბუნების=400	r=5d მმ	L ₂ =L ₁ (საბუნების)X0.5 (მმ)	L ₃ =L ₁ (საბუნების)X0.5 (მმ)	L ₃ =L ₁ (საბუნების)+(L ₁ +L ₂) (მმ)
Ø16 A500C	640	80	320	126	194
Ø18 A500C	720	90	360	141	219
Ø20 A500C	800	100	400	157	243

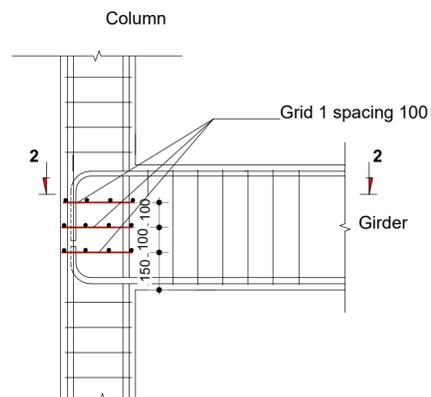
Allocation plan of gird hanger



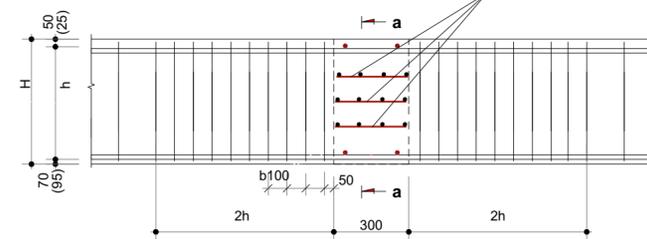
Strengthening of the Gird to Gird Connection Node



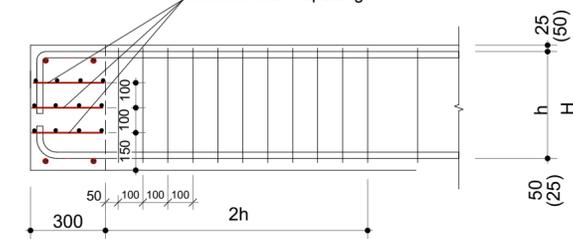
Strengthening of the intersection of grid and columns



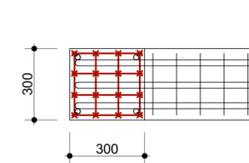
Section 1-1 Grid 1 spacing 100



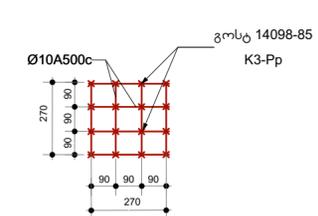
Section a-a Grid 1 spacing 100



Section 2-2



Grid 1



Typical Kindergarten for Two Groups
5, Akhlagzrdobis street, Kareli

Project address:
Georgia,
Kareli

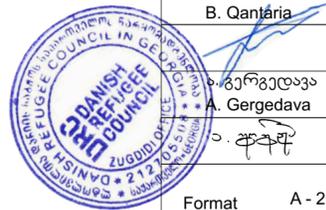
Stage:
Architectural project

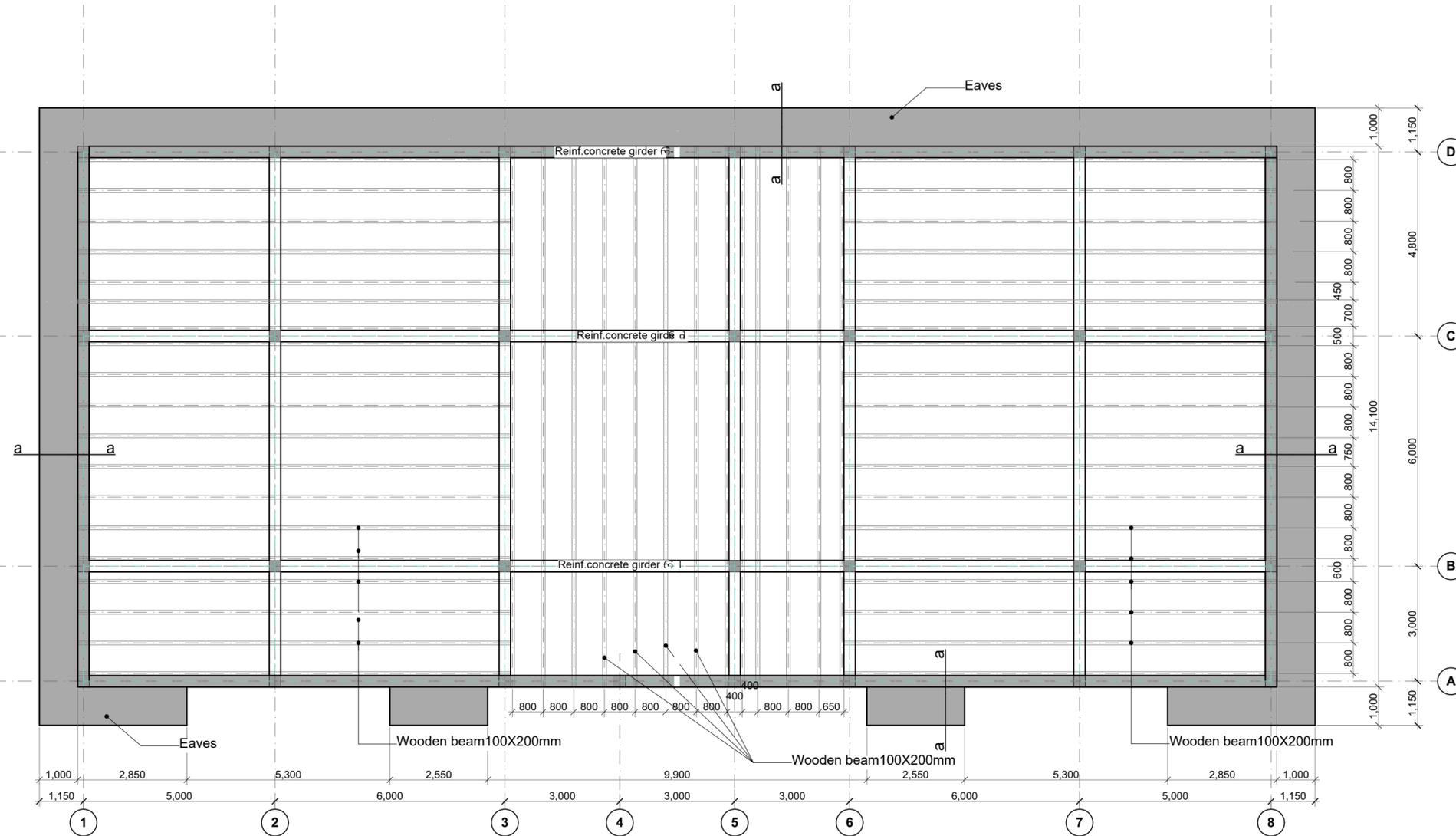
Monolithic girders
Strengthening of nodes

ბ. ჯანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2





Project address:
Georgia,
Kareli

Stage:
Architectural project

Plan of wooden structure at +3.60 level

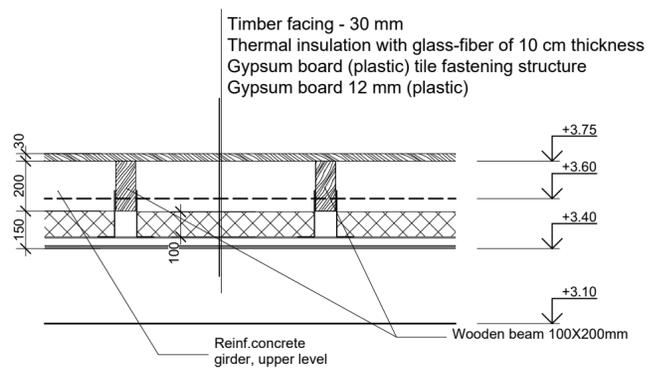
ბ. ჯანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

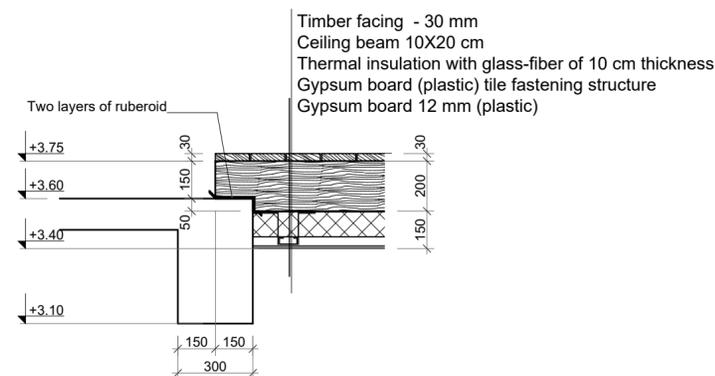
Format A - 2

Page 20
Pages 26

Ceiling Structure



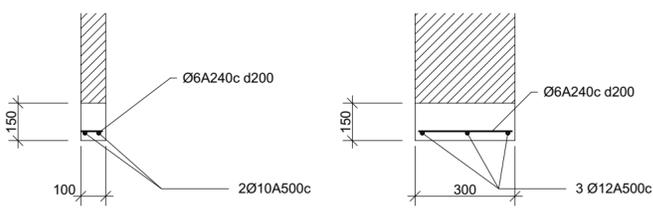
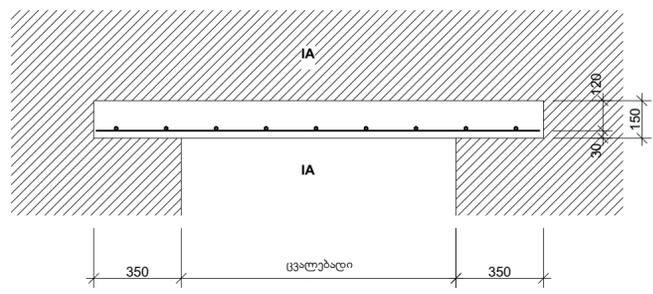
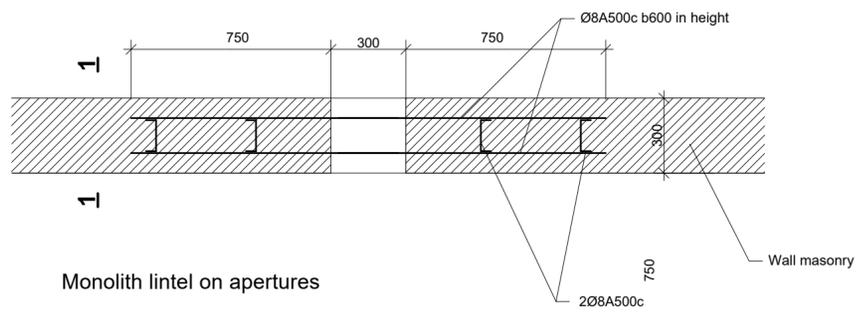
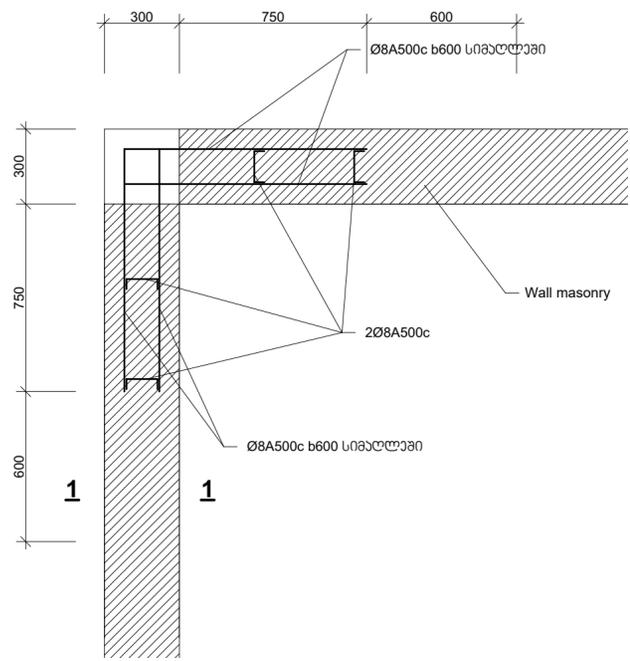
a-a



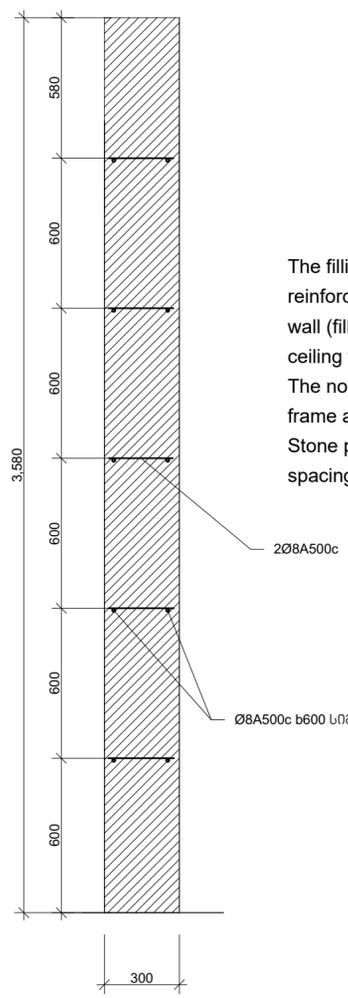
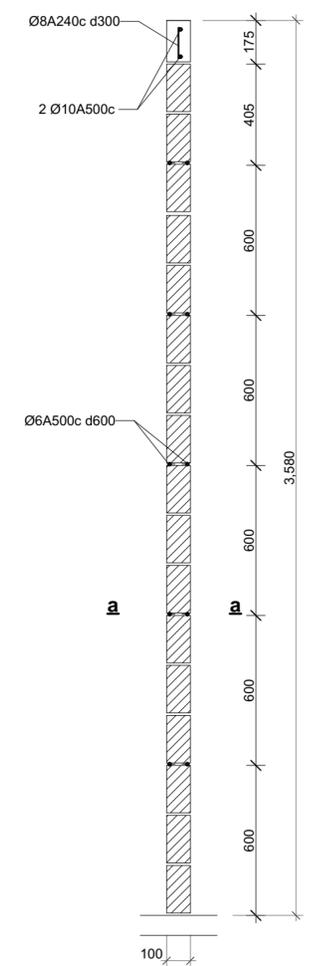
სპეციფიკაცია				
Specification				
კოდი	სიგრძე	რაოდენობა	სულ სიგრძე	მოცულობა
Cross section of Wooden beam	Length m	Q-ty	Total length m	Volume
ბოს კოდი 100X200 Wooden beam 100x200	6	54	324	7.1
ბოს კოდი 100X200 Wooden beam 100x200	3	14	42	0.9
ბოს კოდი 100X200 Wooden beam 100x200	5.2	40	208	4.6
ბოს კოდი 100X200 Wooden beam 100x200	4.8	13	62.4	1.4
			Σ	14.0



Connection of the columns to the external walls



Partition reinforcement



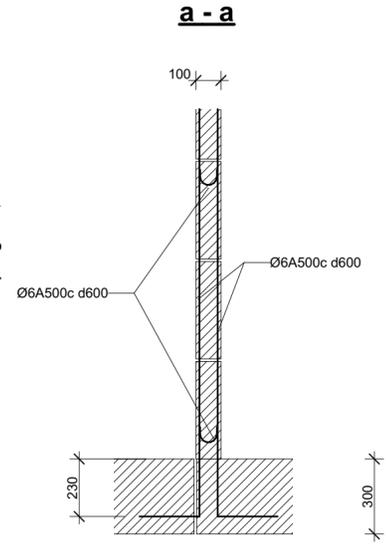
The filling of the wall stone masonry should be connected to the frame columns with reinforcement shafts of 750 mm a length, with a spacing of 600 mm height. If the length of the wall (filling) exceeds 3 meters, it should be connected to the reinforced concrete structure of the ceiling with reinforcement rods.

The nodes presented in the drawing can be performed simultaneously with the masonry of the frame and bearing walls, as well as after concreting.

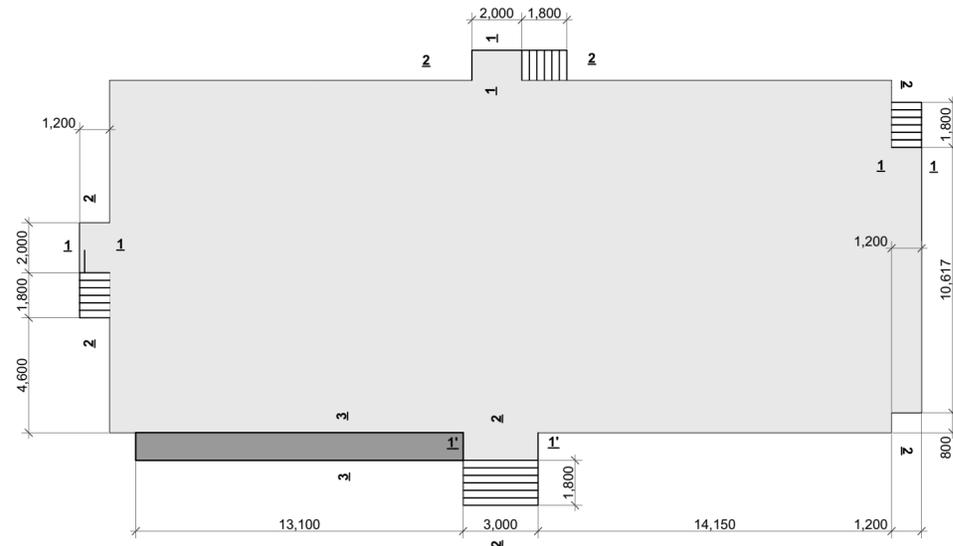
Stone partitions need to be reinforced with 2Ø6A1 reinforcement along the entire length, with a spacing of 600 mm height and attached to a reinforced concrete frame or wall structure.

Specificatio of Reinforcement

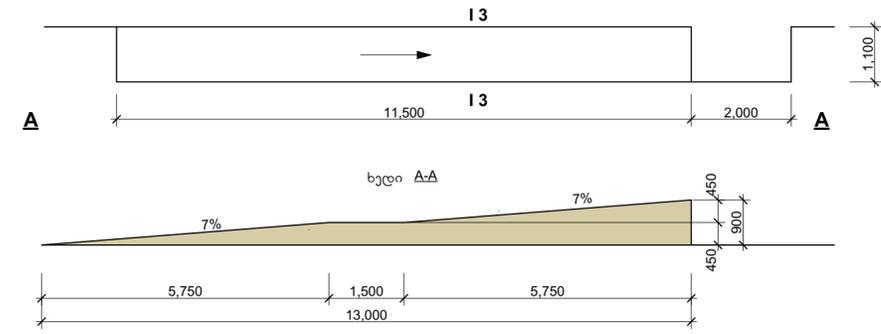
ელემენტი Element	№	არმატურის პროფილი Reinforcement profile	სიგრძე მმ Length mm	რაოდენობა Qty	საერთო სიგრძე მ Total length m	ბეტონი მ3 Concrete m3	
ზღუდარები							
ზღუდარი გარე კედელზე	1	12 A500c			490		
	2	6 A240c			380		
ზღუდარი შიგა კედლებზე	1	10 A500c			363		
	2	6 A240c			102		
ბეტონი B25 m3						6.8	
კიბეები და პანდუსი							
კიბეები და პანდუსი	1	10 A500c			1280		
	ბეტონი B25 m3						14.5
კედლების და ტიხრების არმირება							
ტიხრების არმირება		6 A500c			2860		
გარე კედლების და ხეხტების კვეთი		10 A500c			1260		
სულ Total							3.08



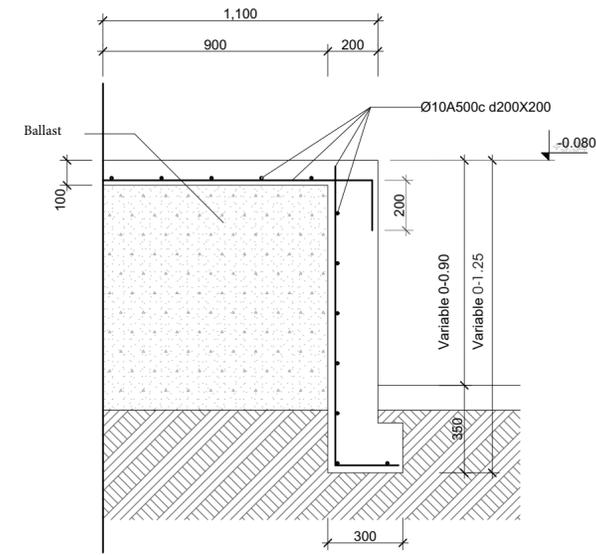
Staircases and Ramp



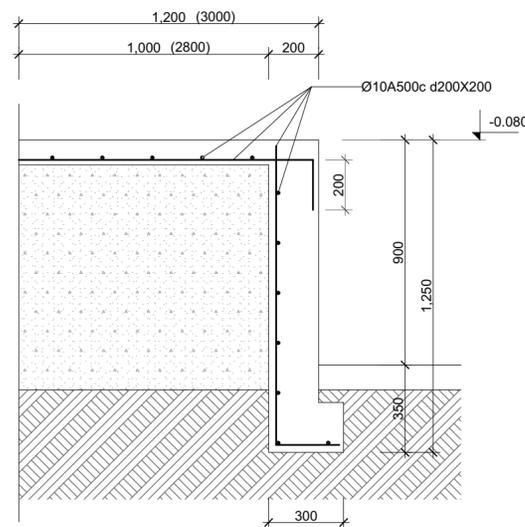
Plan of Ramp



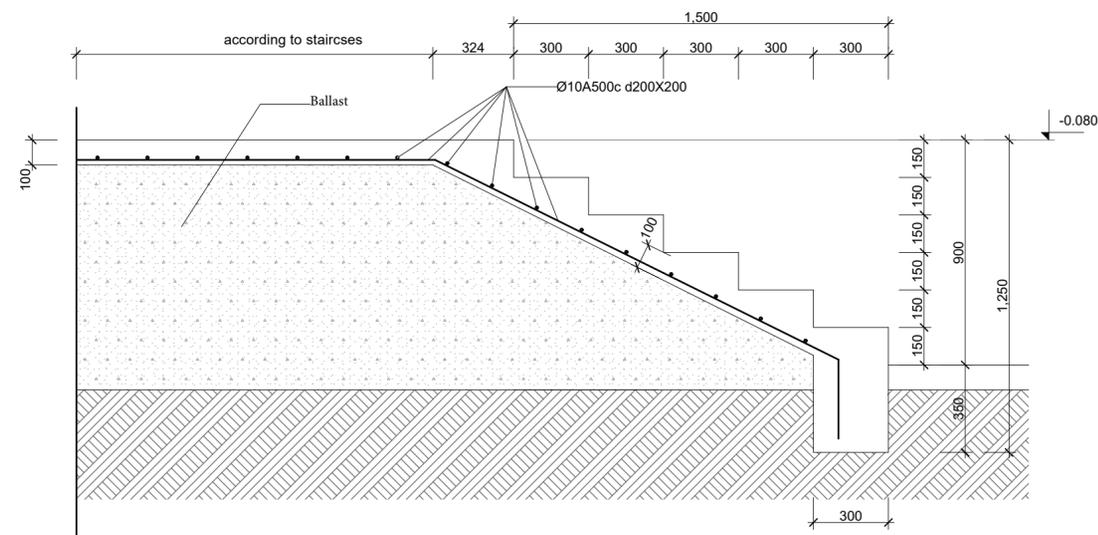
Section 3-3



ჭრისი 1-1 (1'-1')



Section 2-2



Typical
Kindergarten for
Two Groups
5, Akhlagzardobis
street, Kareli

Project address:
Georgia,
Kareli

Stage:
Architectural project

External
staircases,
ramps and
platforms at
-0.06 level

ბ. ჯანთარია
B. Qantaria

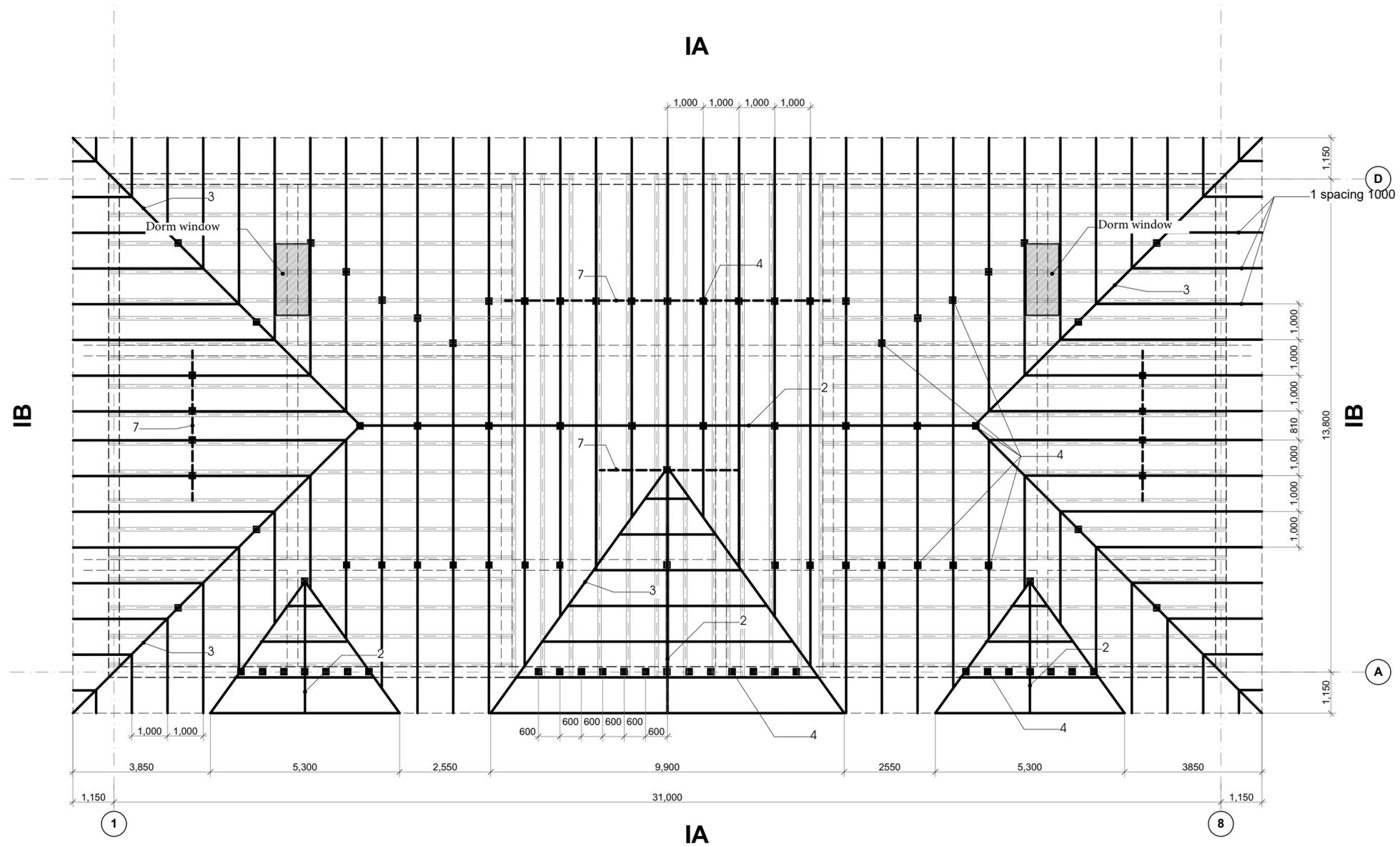
ა. გერგედავა
A. Gergedava



ფორმატი
Format A - 2

Plan of the Wooden structure of Roof

Typical
Kindergarten for
Two Groups
5, Akhlagzardobis
street, Kareli



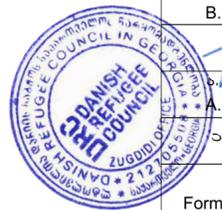
Project address:
Georgia,
Kareli

Stage:
Architectural project

Plan of wooden
structure of roof
and rendering

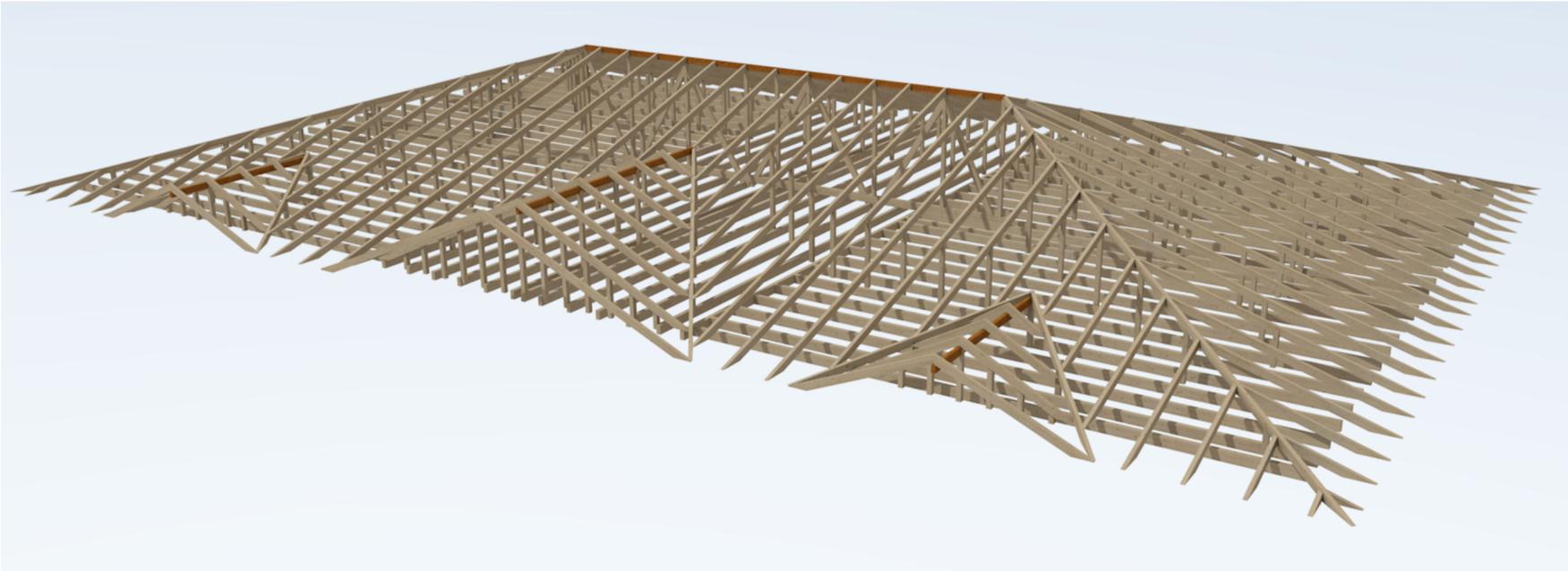
ბ. ჯანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava



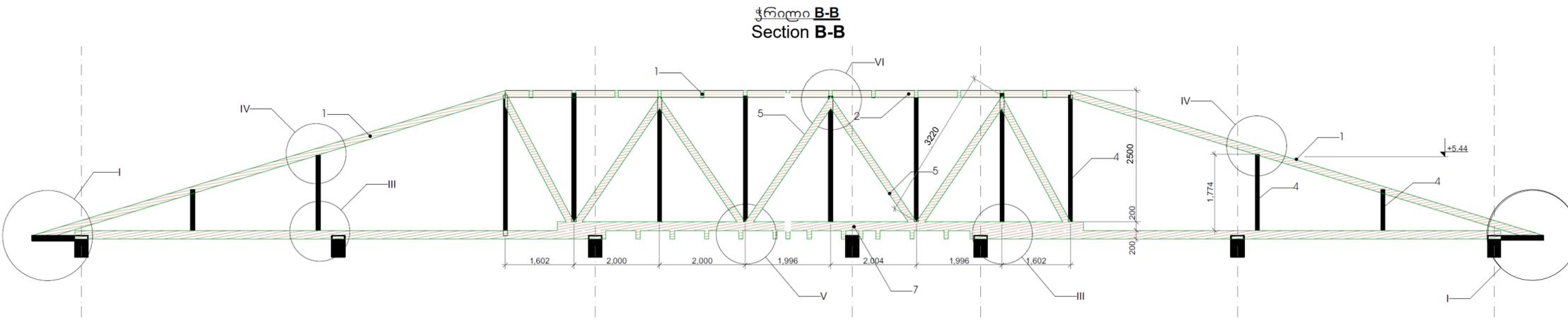
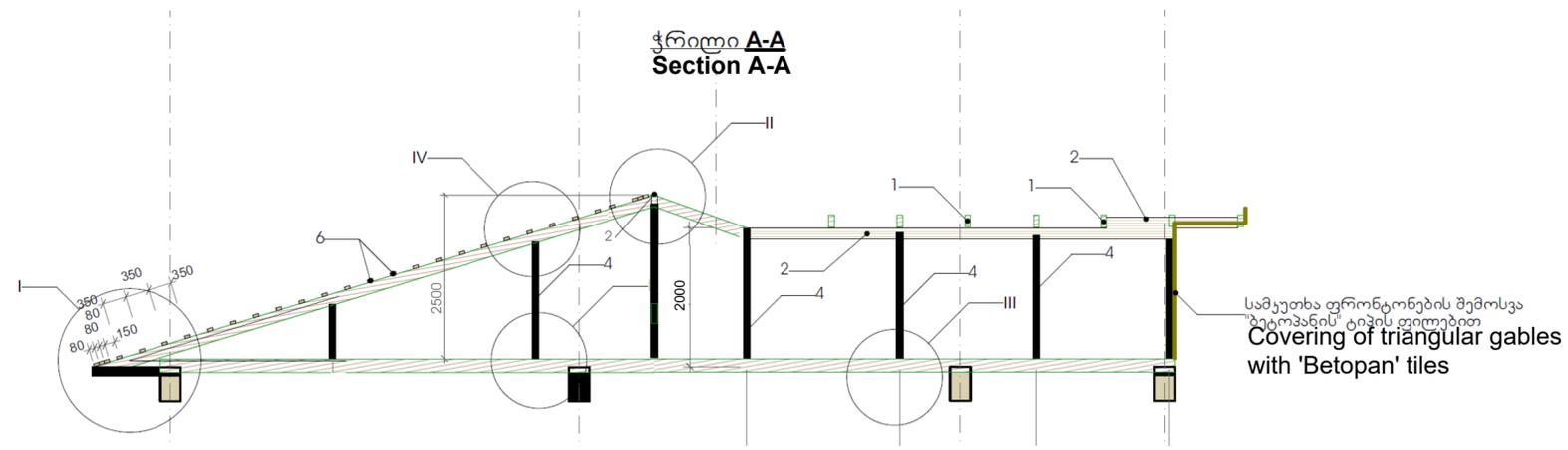
Format A - 2

Render of the Roof Wooden Structure



ბის ქალაქის სახელობის სახეობის სკოლის სკოლის					
N	კომპონენტის სახელი	სიგრძე მმ	სიმაღლე მმ	საერთო სიგრძე მმ	მონტაჟის მუდგ
1	ბოლოვანი	80	160	612	7.83
2	კონსტრუქციის	80	160	30	0.38
3	დამხრული ბოლოვანი	80	160	78	1.00
4	ბოლოვანი	100	100	220	2.20
5	ბოლოვანი კონსტრუქციის	100	100	22	0.22
6	ბოლოვანი კონსტრუქციის	40	80	2110	6.75
7	ბოლოვანი კონსტრუქციის	80	160		0.50
				Σ	18.89

Roof and ceiling wooden structures are made from second-class dried coniferous wood material.



Project address:
Georgia,
Kareli

Stage:
Architectural project

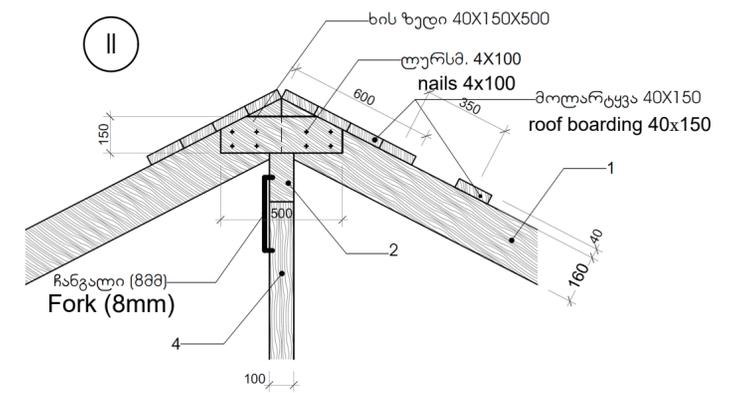
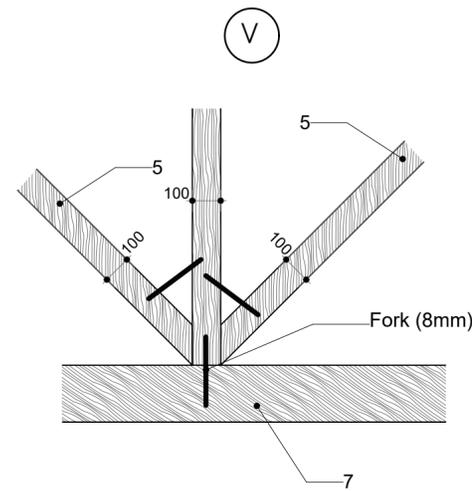
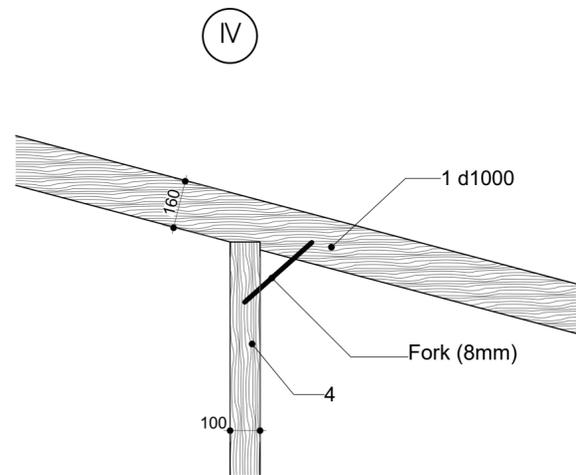
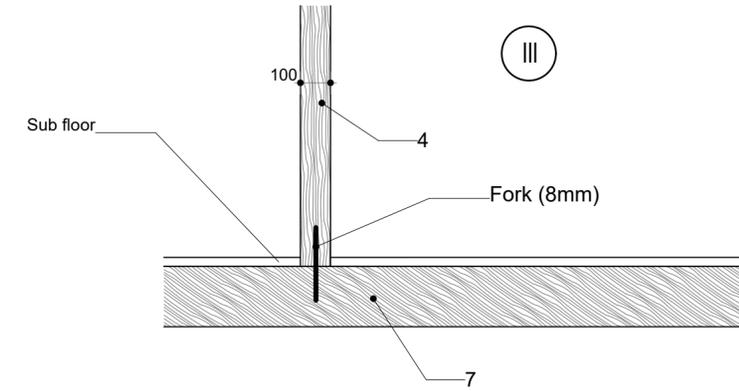
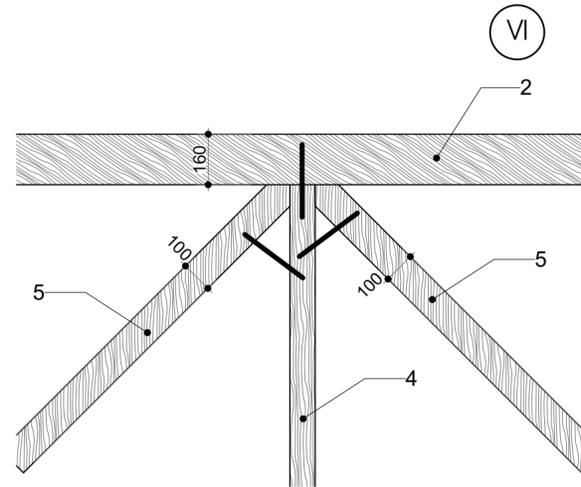
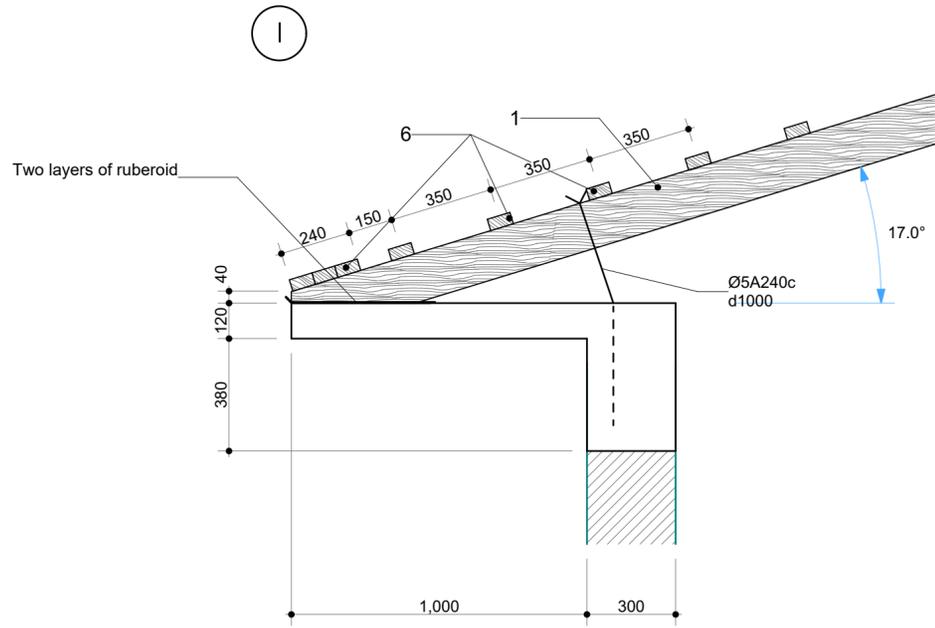
Section A-A; B-B
rendering

ბ. კანტარია
B. Kantaria

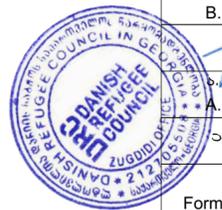
ა. გერგედავა
A. Gergedava

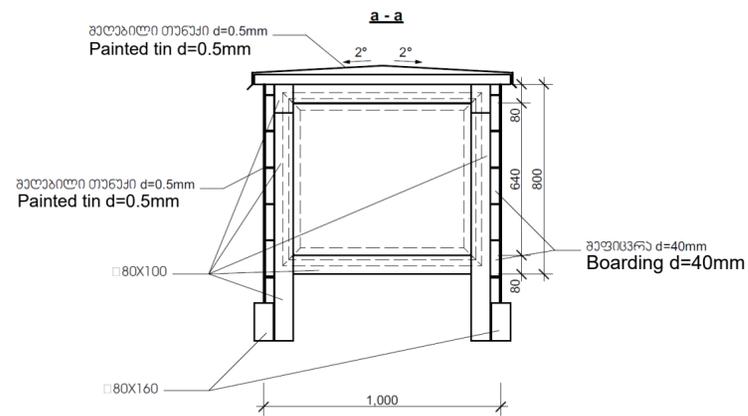
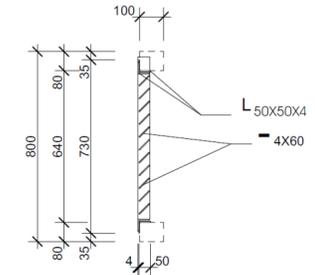
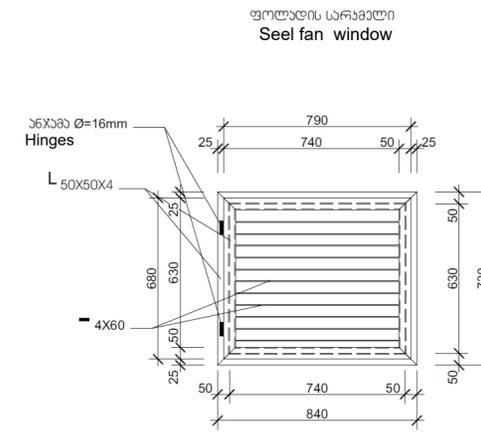
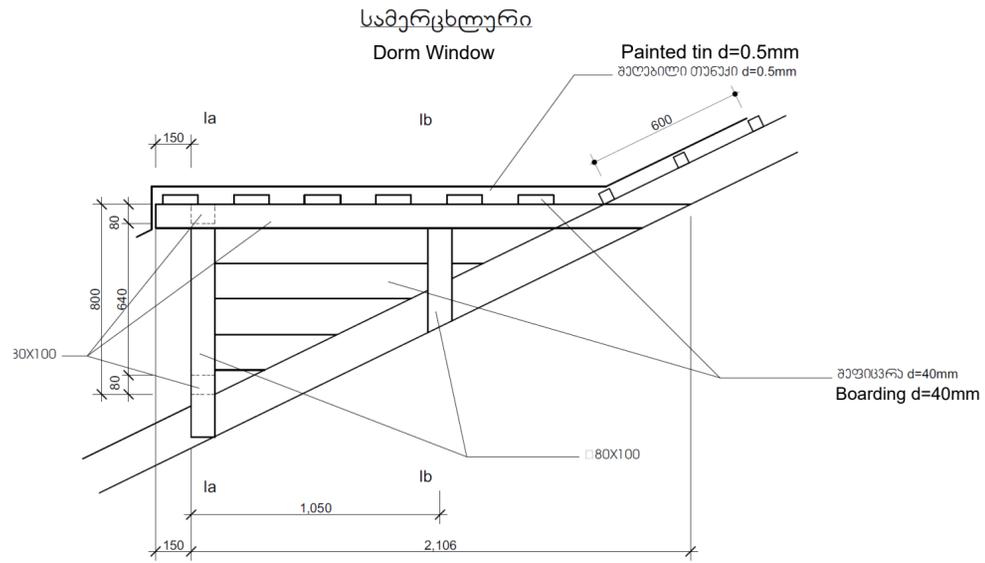


Format A - 2



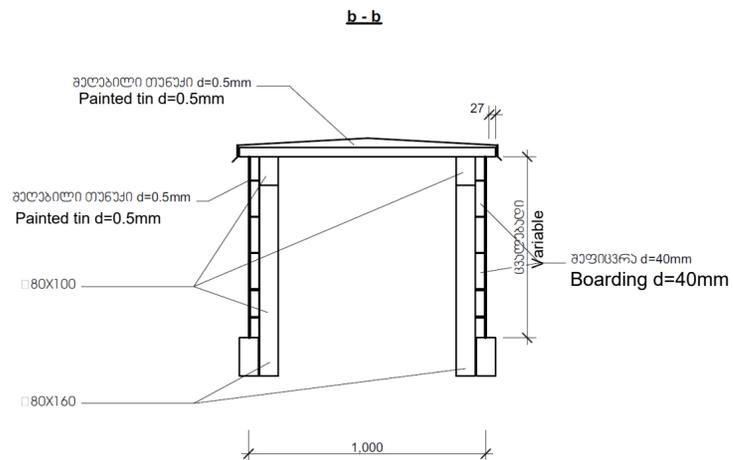
Note:
Wooden structures should be treated with both fire-retardant solutions and antiseptics.





Specification of Steel
ფოლადის სასამართი

პნახაბა Cross-section	სიგრძე Length m	რაოდენობა Q-y	სულ სიგრძე Total length m	მონაკვ Weight kg
L-50X50X4	0.73	2	1.46	4.23
L-50X50X4	0.84	2	1.68	4.87
L-50X50X4	0.68	2	1.36	3.94
L-50X50X4	0.79	2	1.58	4.58
4X60	0.69	11	7.59	14.27
			Σ	31.90



Typical
Kindergarten for
Two Groups
5, Akhlagzrdobis
street, Kareli

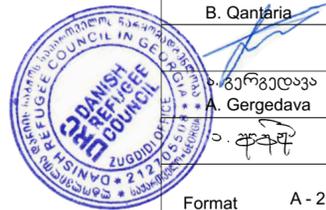
Project address:
Georgia,
Kareli

Stage:
Architectural project

Dorm Window

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava



Format A - 2