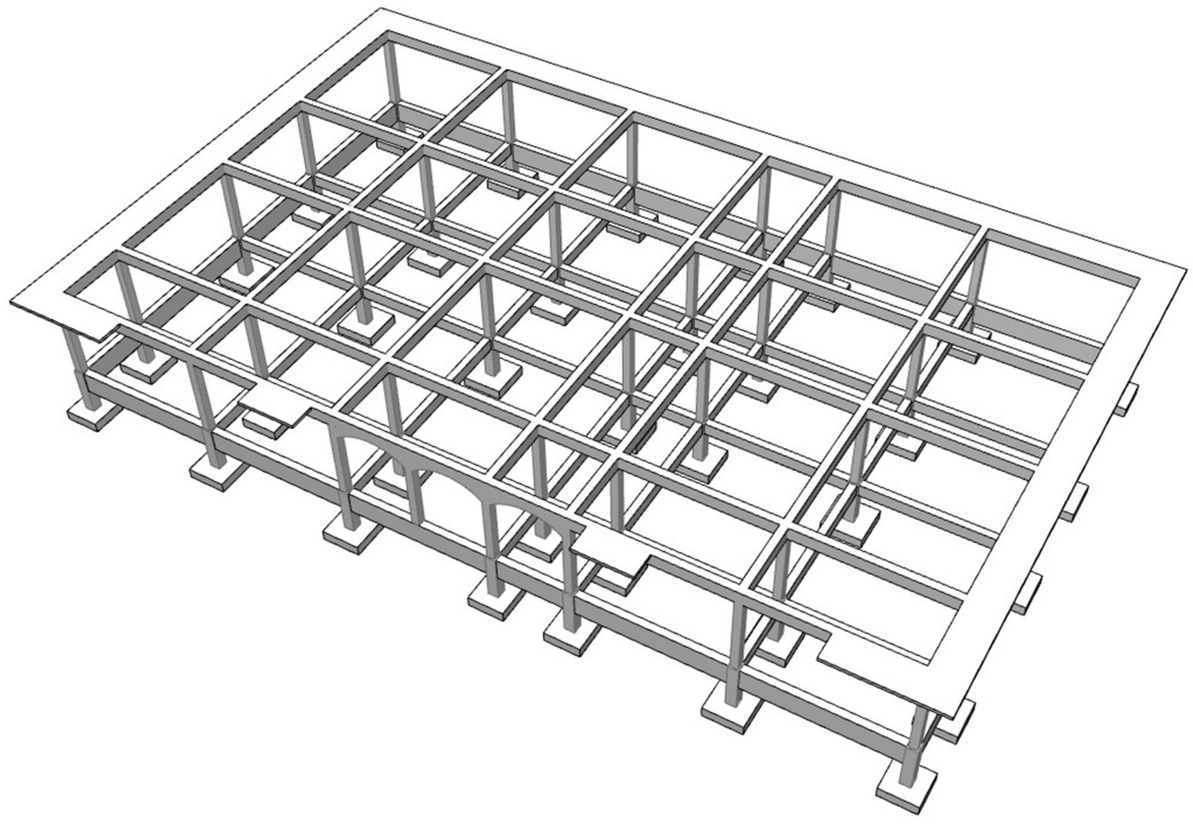
DANISH REFUGEE COUNCIL

Architechtural Project

Typical Kindergarten
for three groups
Mshvidobis street, 306, Senaki

Structural Part of the Project



2020

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Explanatory Letter
General Information

The construction site (cadastral code of the land plot 44.01.38.140) is located in the city of Senaki. According to the norms of "construction climatology" the climatic characteristics of the construction site are the following:
- The average annual temperature is + 14.5. C
- Absolute maximum temperature + 40 ° C
- Absolute minimal temperature - 17 ° C
- Annual precipitation -1831 mm
- Snow cover weight - 0.5 kPa
- Standard height of seasonal ground frost - 0 m
- Standard wind pressure 0.6 kPa
- The prevailing wind direction - East
- According to the map of the seismic regions, Senaki belongs to the 8-point seismic zone.
- Based on the data of the geological findings, the estimated seismicity of the construction site is 9 points.

The area allocated for construction in terms of engineering geology is in satisfactory physical condition; the geological phenomena (landslides, falls, etc.) are not observed.
-According to the geological survey (attached to the project)the first engineering-geological element is considered as the basis of the foundation - with the following technical specifications:

Engineering-geologic element I (layer #3) Clay, brown, high-plastic, saturated with water (dQiv)

E-G Element II	Characteristics of physical-mechanical properties	Index	UoM	Numeric value
1	Density	ρ	g/cm3	1.76
2	Frame density	ρd	""	1.29
3	Solid particle density	ρs	""	2.72
4	Porosity	n	%	52.29
5	Porosity coefficient	e	particle	1.097
6	Humidity	W	%	36.05
7	Moisture at the edge of fluctuation	WL	particle	44.39
8	Moisture at the edge of plasticity	Wp	""	23.34
9	The number of plasticity	Ip		21.05
10	Angle of friction inside	φ	Degree	6.92
11	Specific traction	C	kPa	28.61
12	Deformation module	E0	mPa	6123
13	Reporting impedance	R0	kPa	150
14	Poisson's coefficient	μ		0.38

The report of the building design calculation scheme is executed in the program "LIRA".The building presented in the project is a one-storey stone building with an average floor height of 1.0 meters from the floor level.
The first-floor mark 0.00 corresponds to the absolute mark 23.30The height of the floor of the building from the floor to the ceiling is 3.4 meters.
A natural sand-gravel mixture (fraction 0.5-70 mm) should be used for backfilling and arranging the embankment on the construction site. It is necessary to compact it layer by layer every 20 cm in height with a vibrating machine.
There are pad foundations designed, with a gravel pad under them.
The bearing structure of the building is a complex reinforced concrete frame, in particular, a space structure composed of monolithic reinforced concrete columns, rafters, and girders.
The filling of the external walls is done with a reinforced embankment of small pumice blocks 30 cm thick.
Partitions are made of reinforced small wall pumice block with a thickness of 10 cm.
The size of small pumice blocks is no less than M70 (volume weight 800 kg / m 3), therefore the mark of the mortar used for the embankment should be no less than M70.
Floors in bathrooms are finished with tile, and in rooms with wooden planks (deck). The thermal insulation of the floor is done with XPS tiles, and ceiling heating is done with glass.
Suspended ceilings in the kitchens are made of plastic, while in the rooms are made of gypsum boards.
The bearing structure of the roof is made of wood, while the roofing is made of painted metal sheets.
Roof and ceiling wood structures are made from second-class dried coniferous wood material.
The windows are made of double-glazed metal profiles.
The entrance doors are made of steel and iso-aluminum, PVC in the joints, and wood in the rooms (so-called MDF).
External stairs and entryways are covered with basalt tiles.
A concrete walkway is arranged around the building.
Concrete of grade B25 is used in the monolithic constructions of the frame.
Before backfillng, the outer surfaces of the foundation walls, columns, and foundation slab should be treated with bitumen mastic to a mark of 0.00, and waterproofing linoleum should be applied in two layers.
The dimensions on the drawings are given in millimeters and meters, the markings in meters. All sheets of the structural part are considered as one whole and the data of other sheets as well as architectural drawings should be taken into account when considering any sheet.
The elements of the structural reinforcement must be bent in a cold mechanical manner.
After removing the ground, the condition of the ground should be additionally assessed. It is, therefore, possible to adjust the foundation structure.
All changes made to the project during construction must be agreed with the project authors.

References:

პროექტირების დროს გამოყენებული ლიტერატურა:
- *СНиП. 2.03.01-84* - "ბეტონის და რკინაბეტონის კონსტრუქციები"*
- *СНиП. II-7-81* - "მშენებლობა სეისმურ რაიონებში"*
- *СНиП. 2.01.07-85* - "დატვირთვები და ზემოქმედება"*
- *СНиП 2.02.01-83* - "შენობების და ნაგებობების ფუძე-საძირკვლები"*
- *ГОСТ 14098-91 - "არმატურის და დეთონის ჩასაკვანძებელი ელემენტების შედუღება რკინეთონის კონსტრუქციებში"*

უსაფრთხოება: მშენებლობის პროცესში საჭიროა ვიხელმძღვანელოთ სამშენებლო ნორმების: СНиП. III-4-80-ის მოთხოვნების შესაბამისად და მკაცრად დაიცვან უსაფრთხოების წესები.*

Note:
The project has been adjusted taking into account the remarks presented in the conclusion of the Levan Samkharauli Bureau of Expertise.

DANISH REFUGEE COUNCIL

Danish Refugee Council

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia, Senaki

Stage:
Architectural project

Explanatory note

B. Qantaria

A. Gergedava

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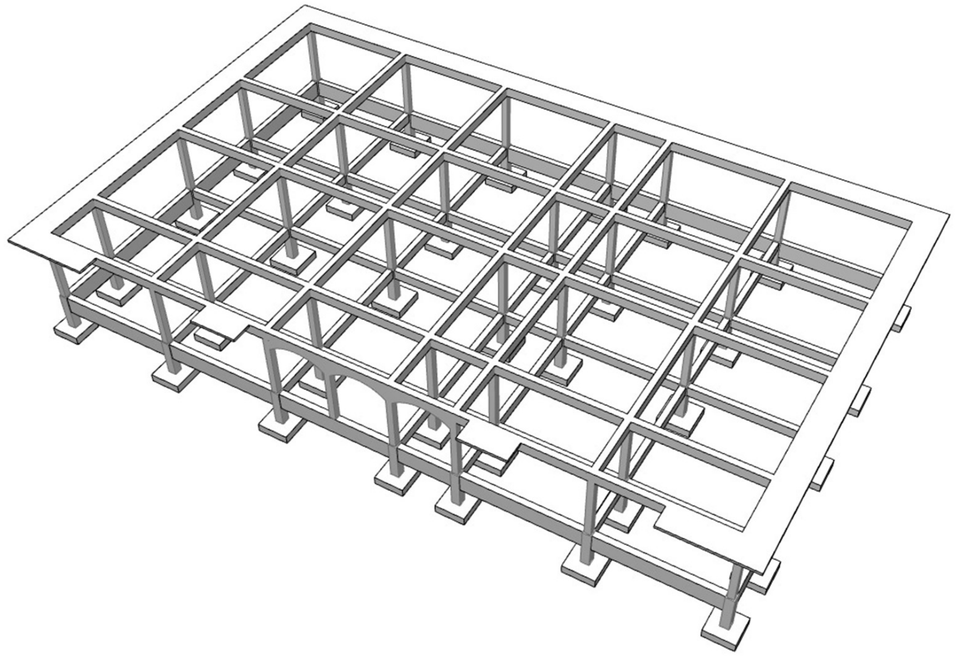
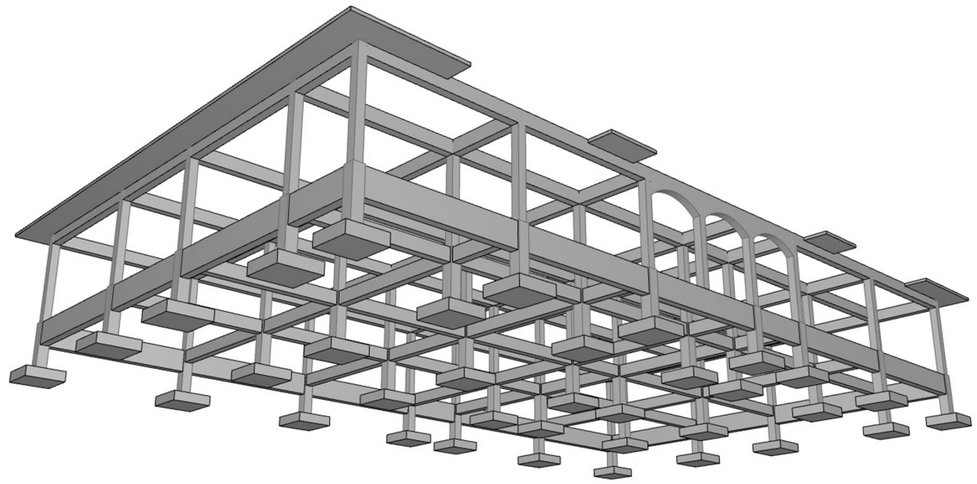
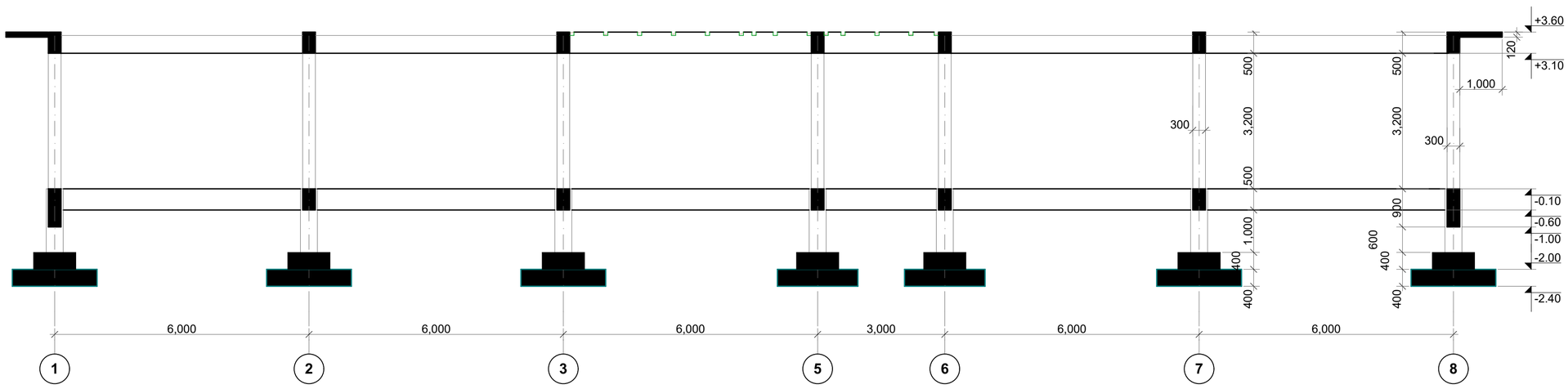
Render of the Mass Concrete





Section on the Structure



DRC DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

-

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Render of the Mass Concrete

B. Qantaria

A. Gergedava

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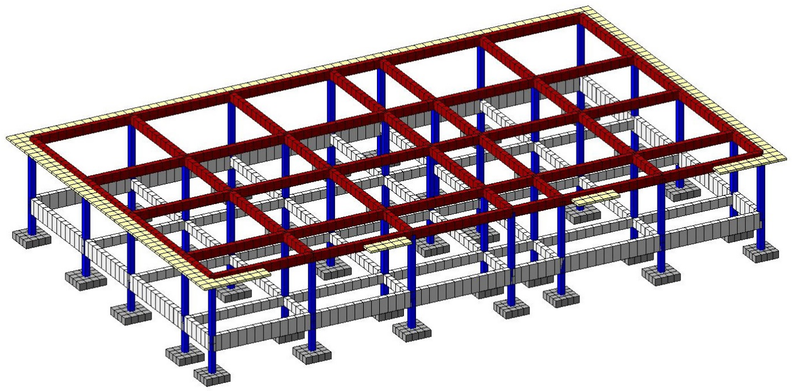
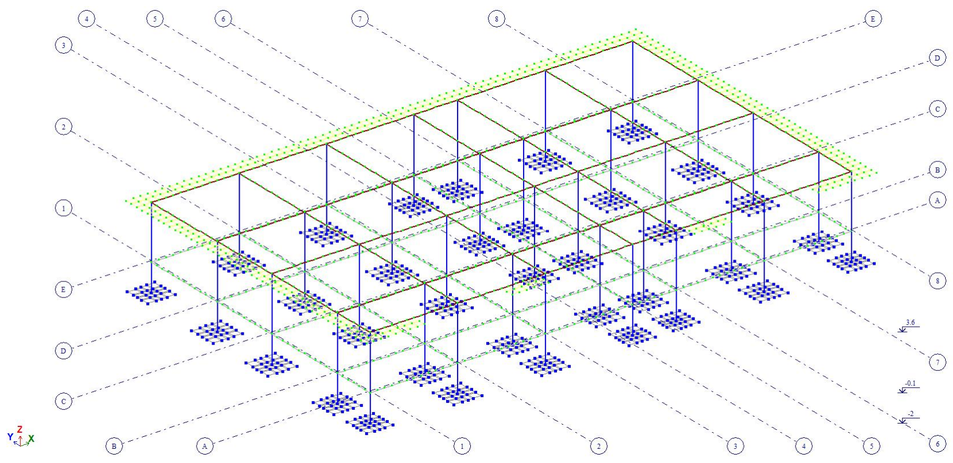
3	32

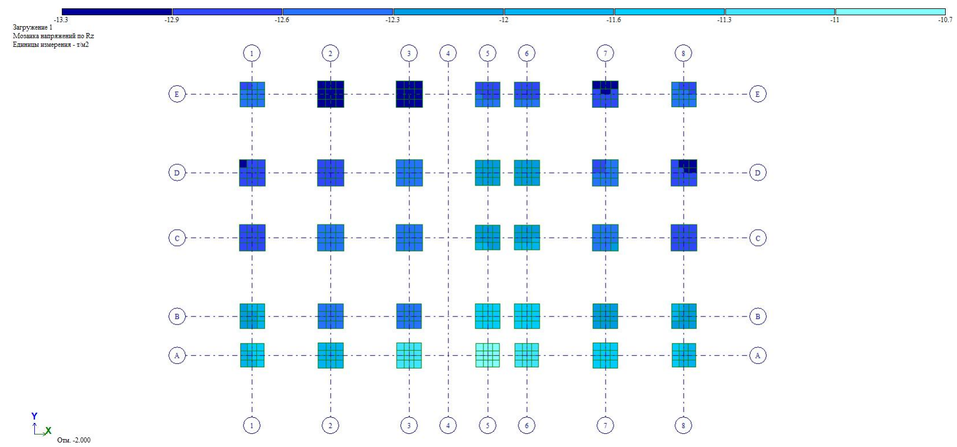
3D Model of Structure



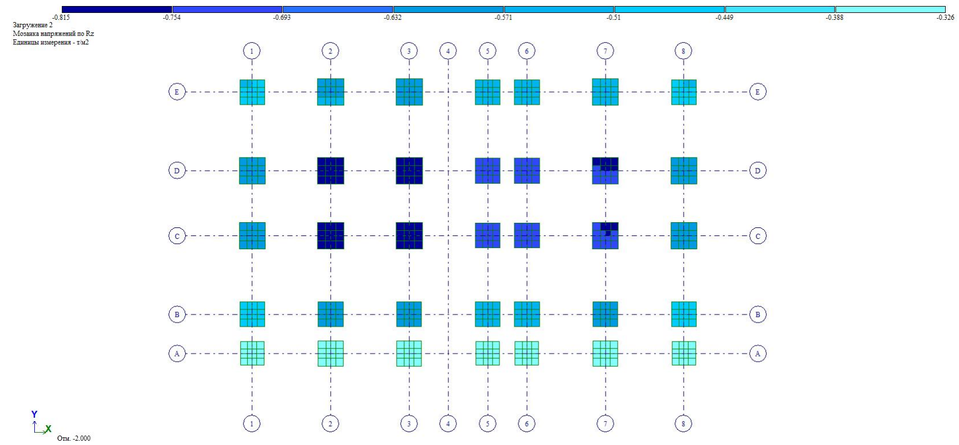
Design Model of the Bearing Structure



Voltages at the base from constant loads



Voltages at the base from temporary loads



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Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

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The results of the construction scheme report in the program LIRA

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

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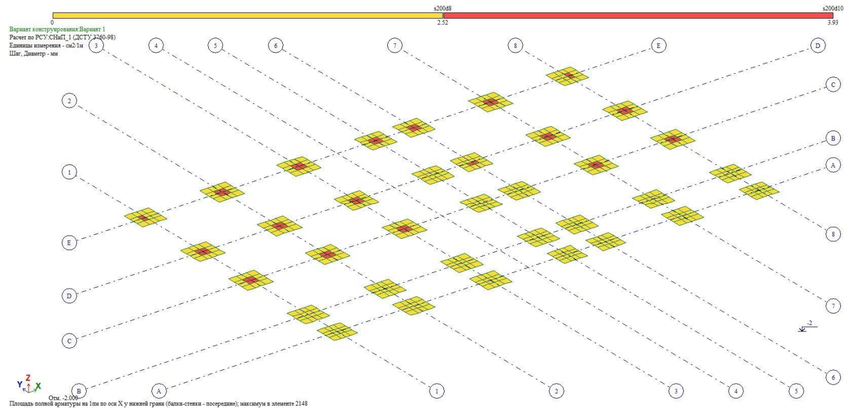
Area of reinforcement of lower zones of the pad foundation in the X-direction



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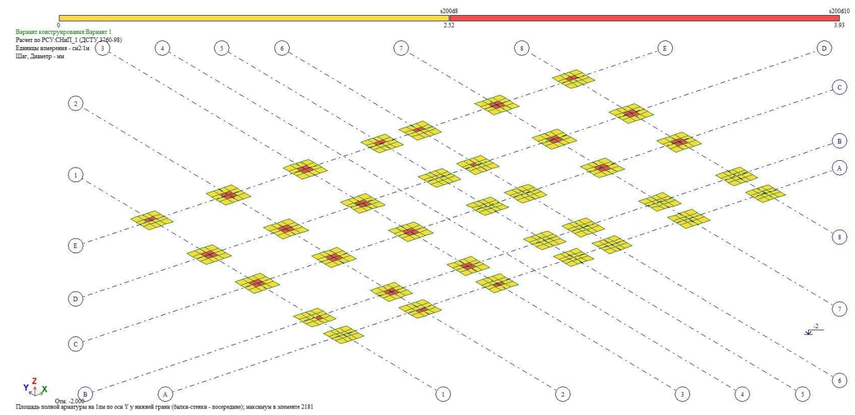

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ა. გერგედავა
A. Gergedava

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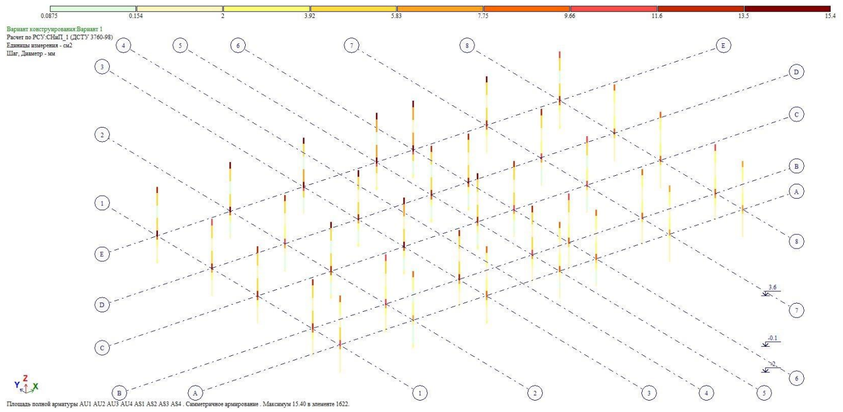
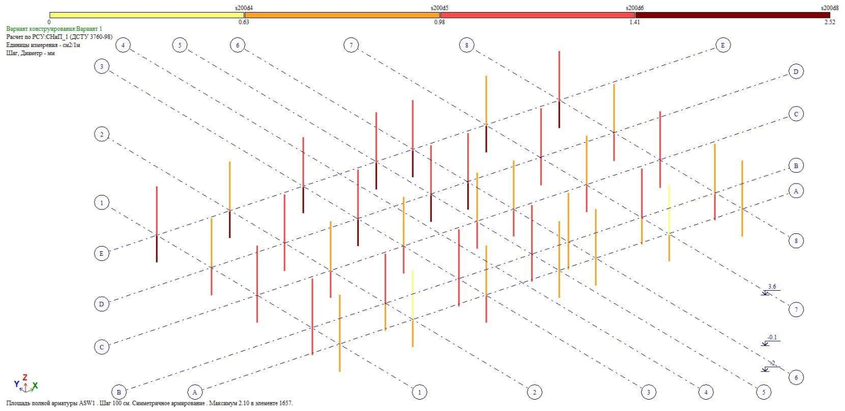
Column longitudinal reinforcement space



Column longitudinal reinforcement space in the X-direction



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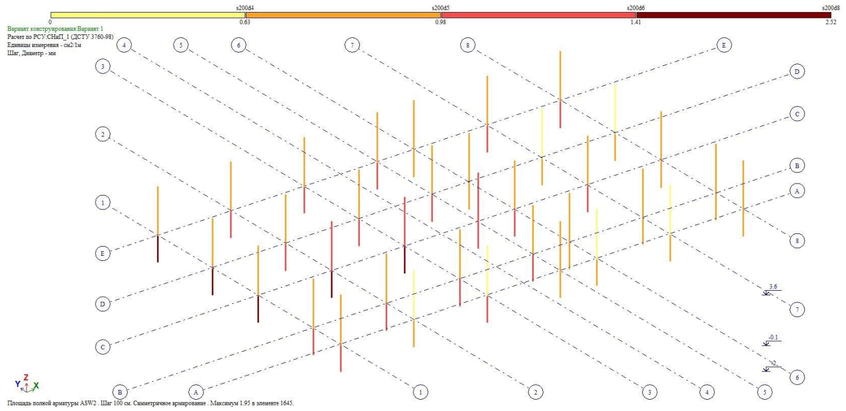

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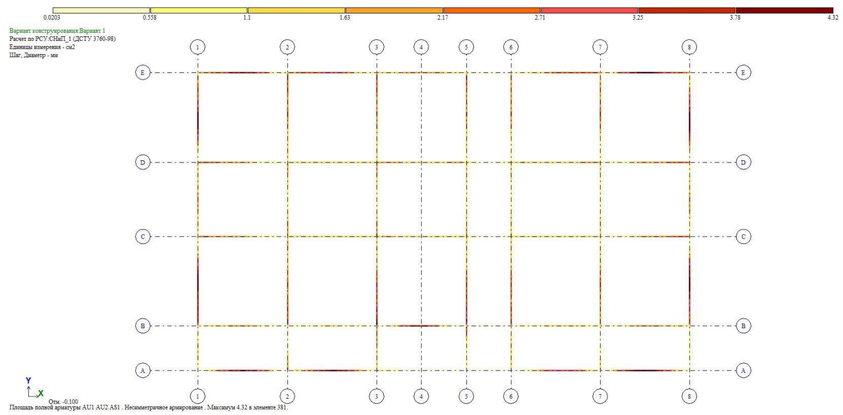
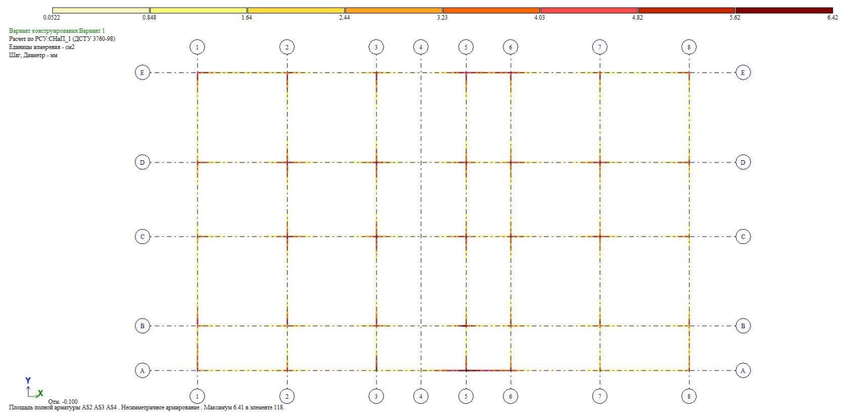
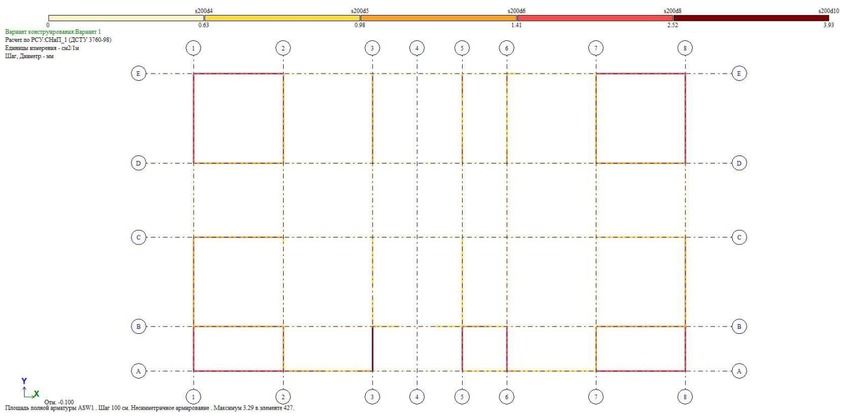
Area of reinforcement of lower zone of end-girder



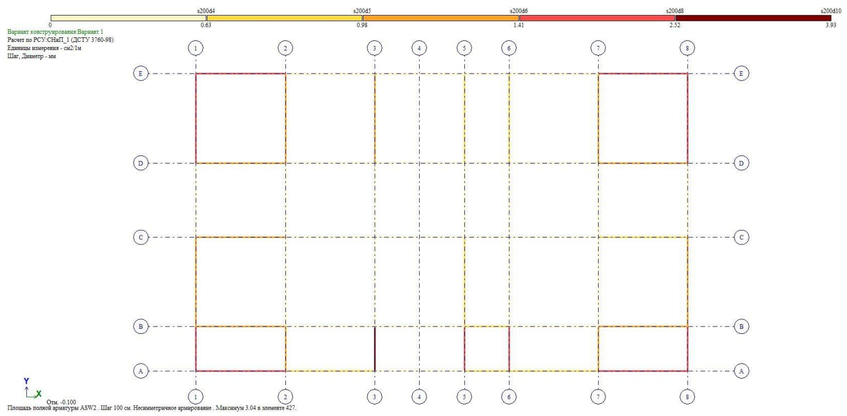
Area of reinforcement of upper zone of end-girder



The area of the transverse vertical reinforcement (hanger)



The area of the transverse horizontal reinforcement (hanger)



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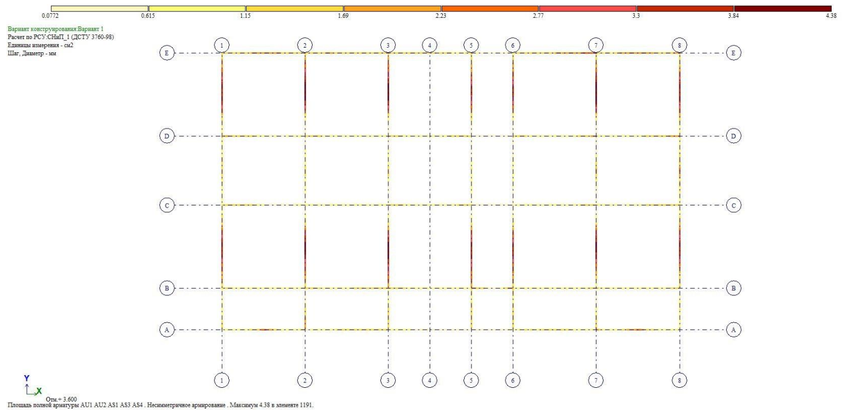
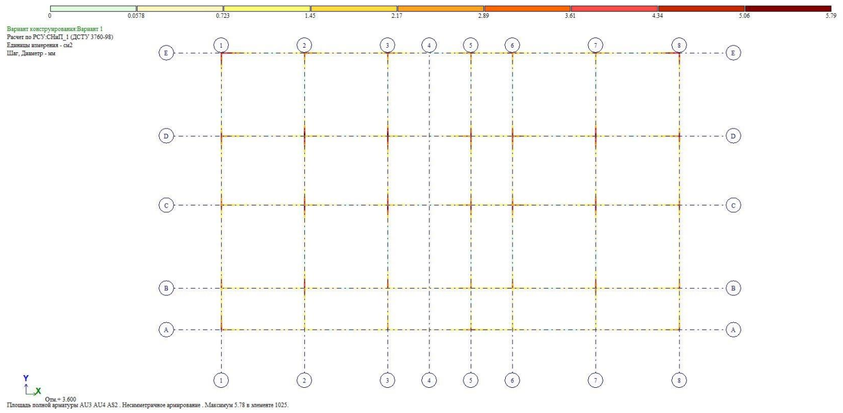
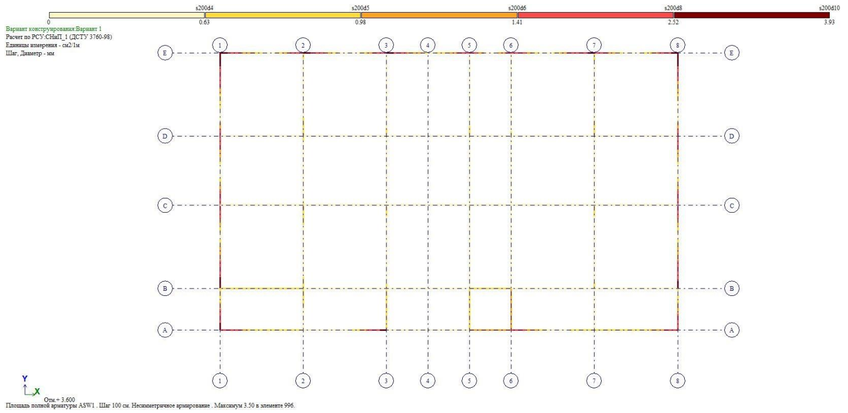
The lower reinforcement area of the girders (+3.60)



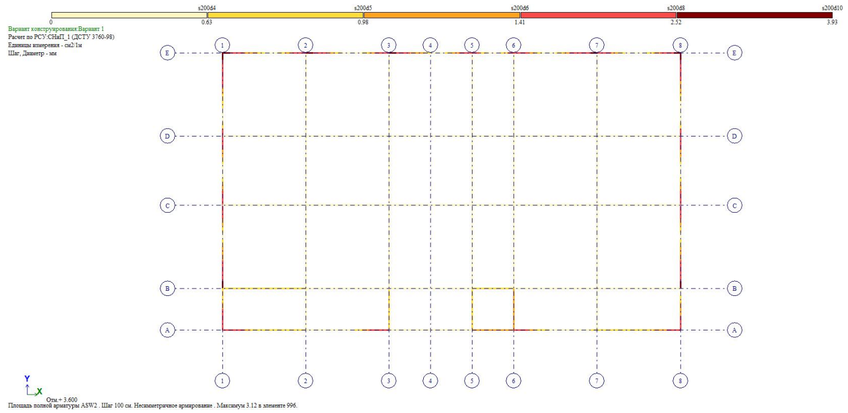
The upper reinforcement area of the girders (+3.60)



Transverse vertical reinforcement (hanger) space of girders (+3.60)



Transverse horizontal reinforcement (hanger) space of girders (+3.60)



DANISH REFUGEE COUNCIL

Typical
Kindergarten
for three groups
Mshvidobis street,
306, Senaki

პროექტის მისამართი:
საქართველო,
სენაკი

Project address:
Georgia,
Senaki

ეტაპი: მუშა პროექტი
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The results of the construction scheme report in the program LIRA

ბ. ქანთარია
B. Qantaria

ა.გერგედავა
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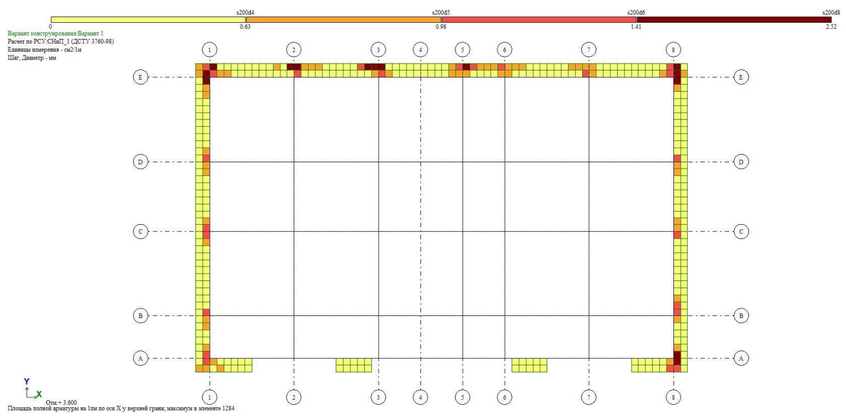
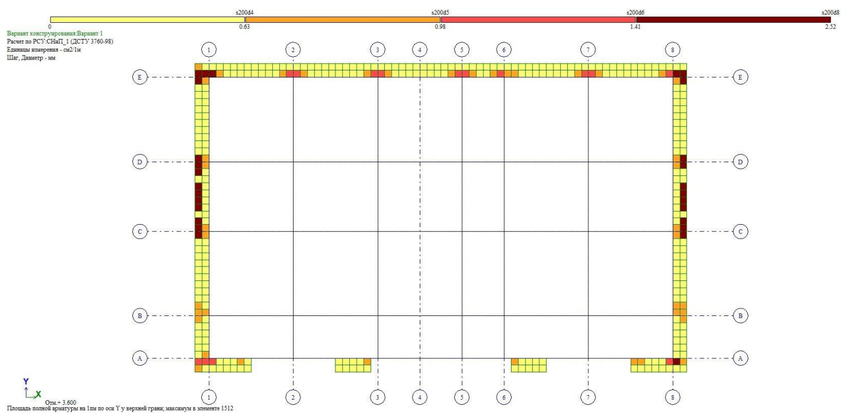
Reinforcement area of the upper zone of the cornice in the X direction



Reinforcement area of the upper zone of the cornice in the Y direction



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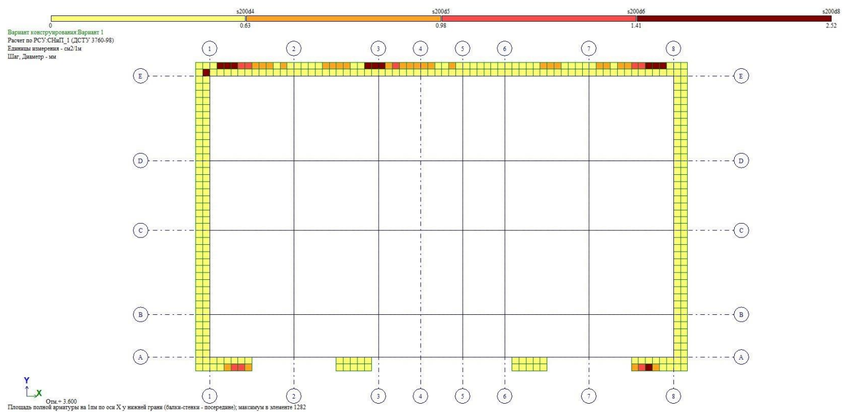
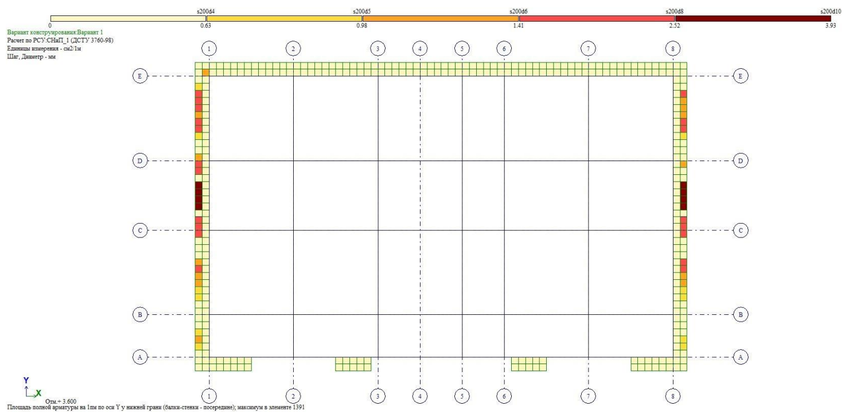


Reinforcement area of the lower zone of the cornice in the Y direction



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Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

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The results of the construction scheme report in the program LIRA

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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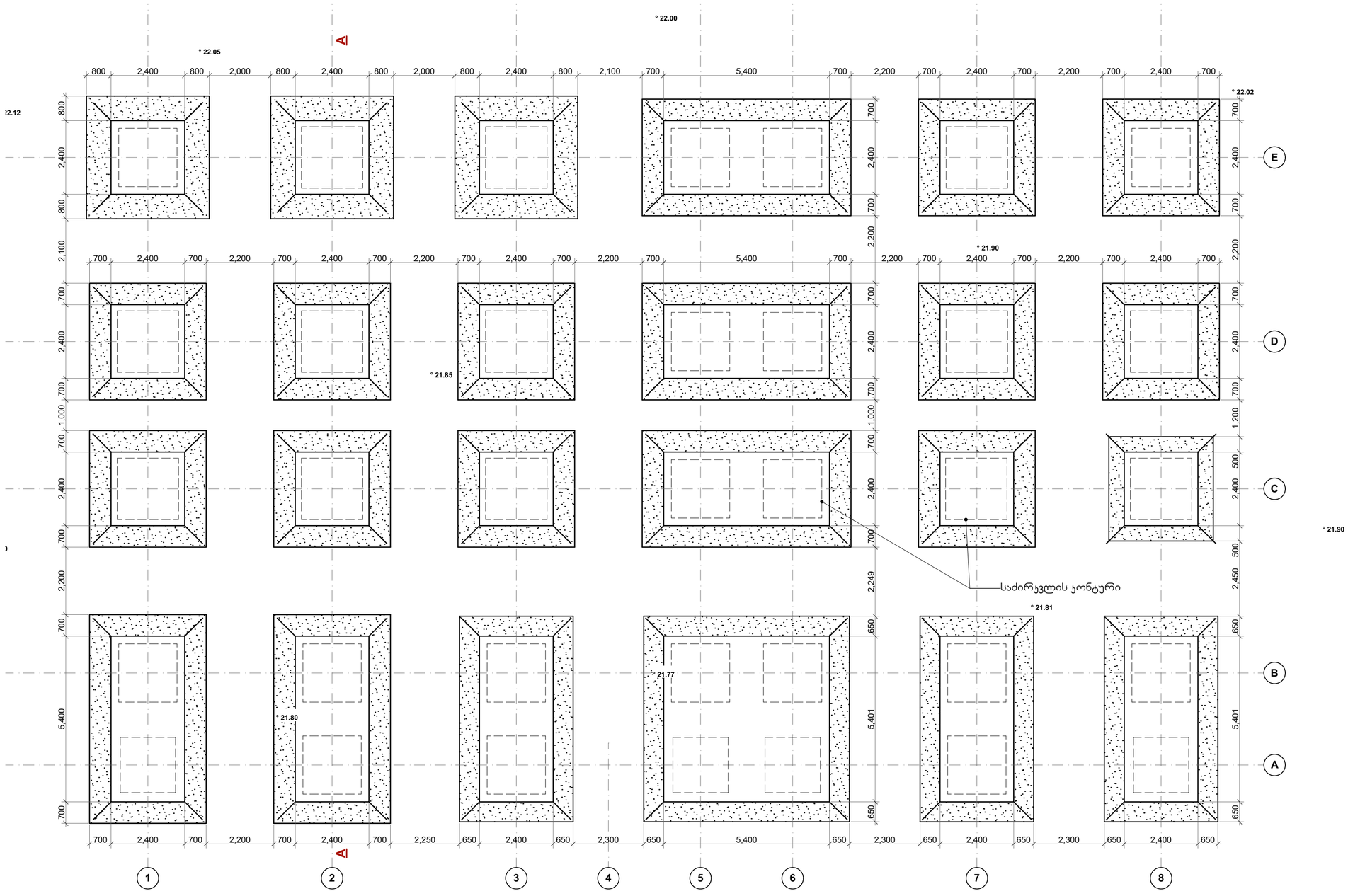
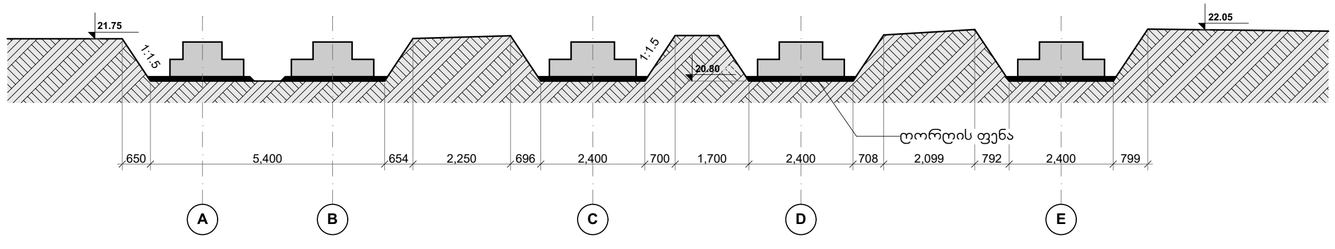
Plan of excavation of pad foundation



Profile A-A of Foundation Excavation



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

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Georgia, Senaki

Stage: Architectural project

Plan of rhe excavation of foundation

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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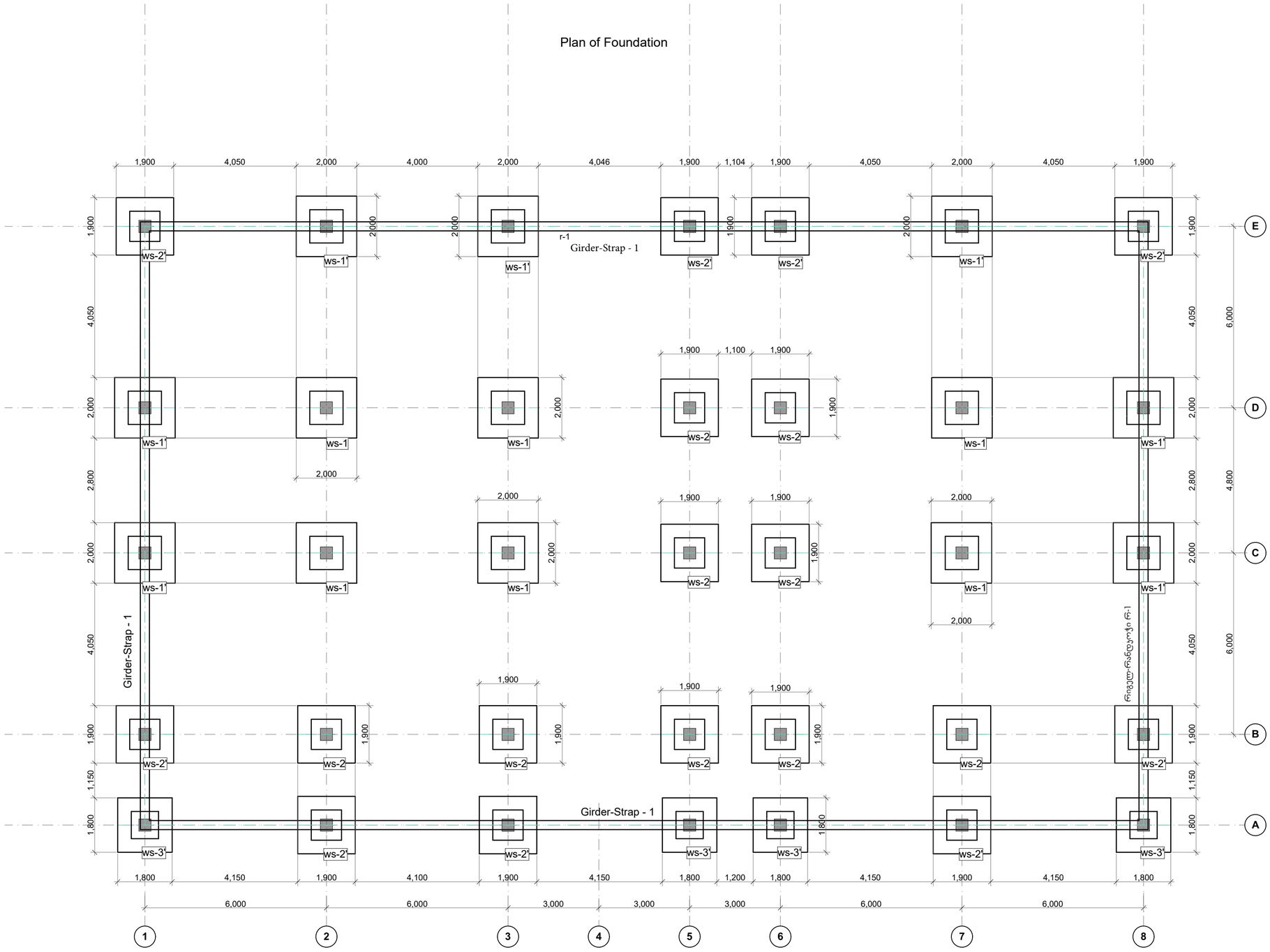
Plan of Foundation



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

DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

-

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PLAN OF FOUNDATION WITH MARKING

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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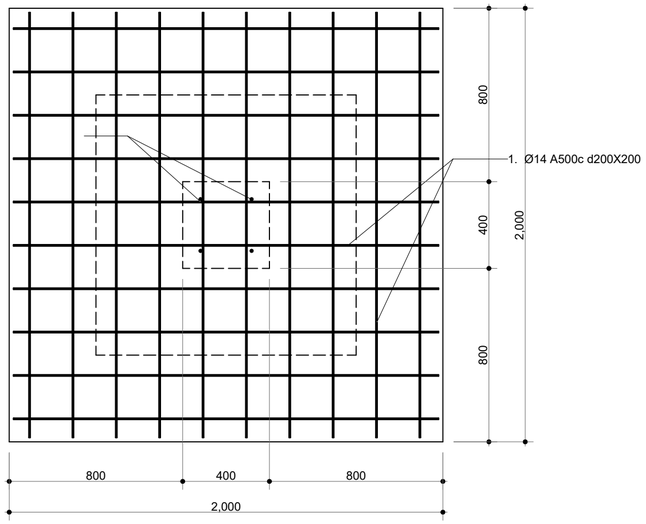
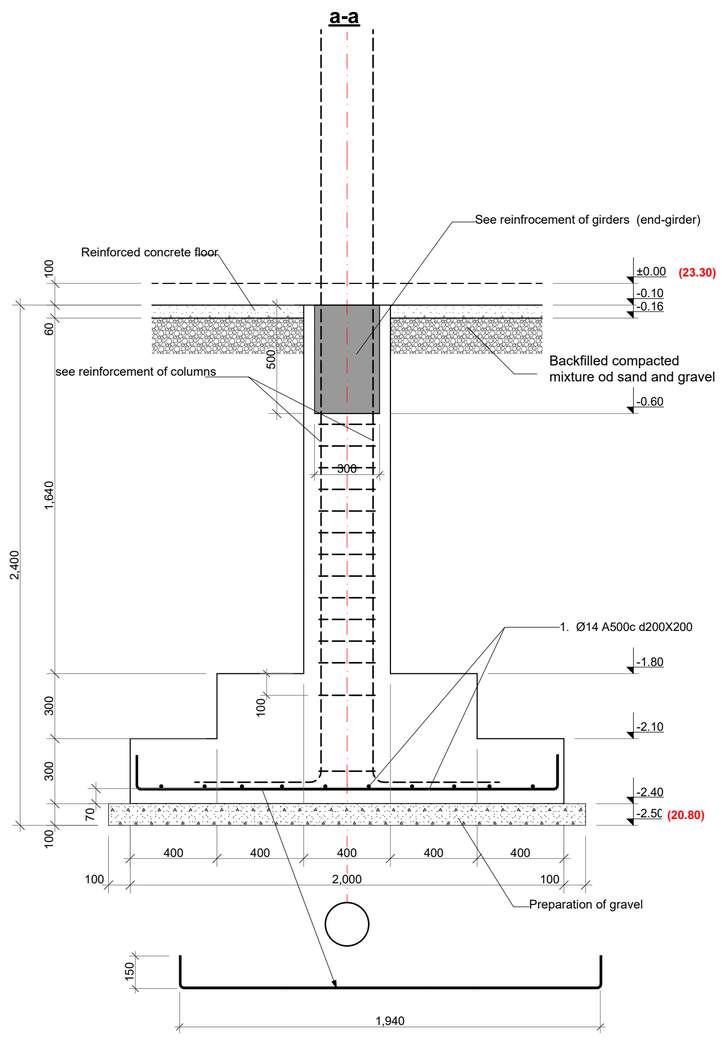
Pad foudation **ws-1**

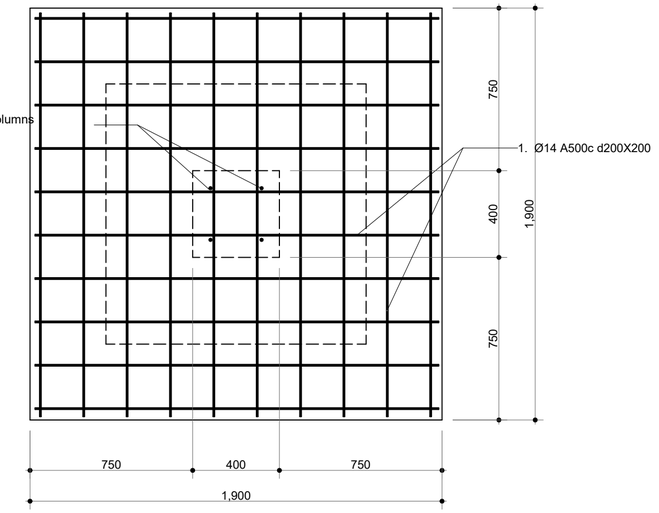
See Reinforcement of columns

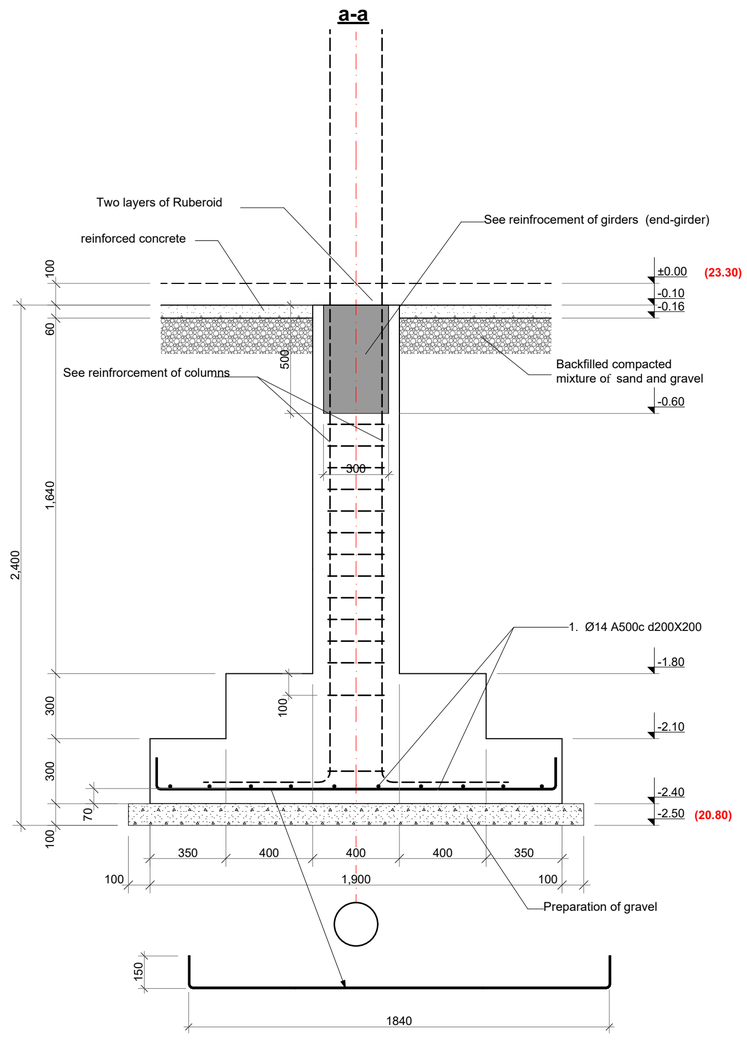




Pad foudation **ws-2**

See the reiforcement of columns





Note:
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FOUNDATIONS

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

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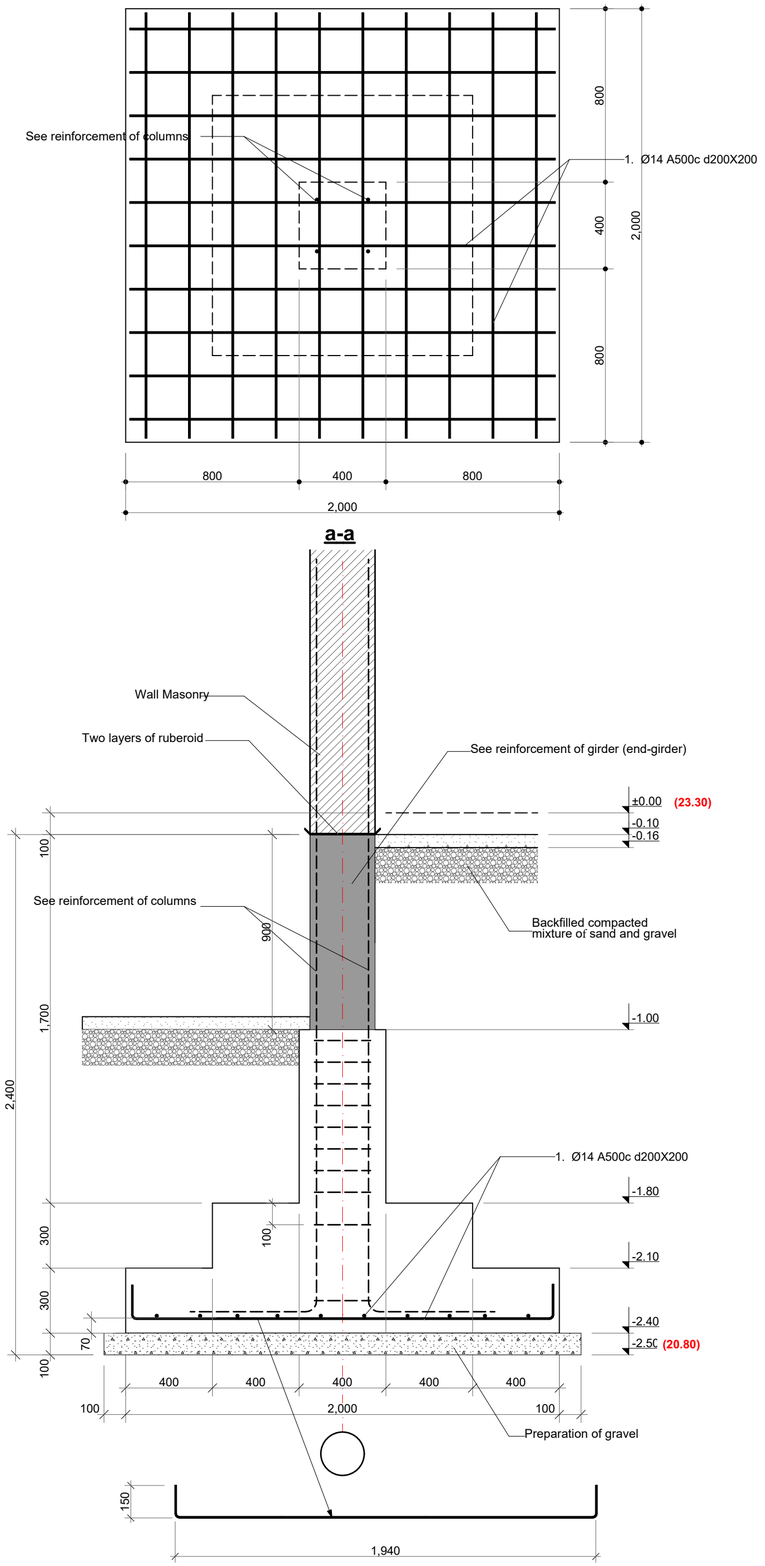
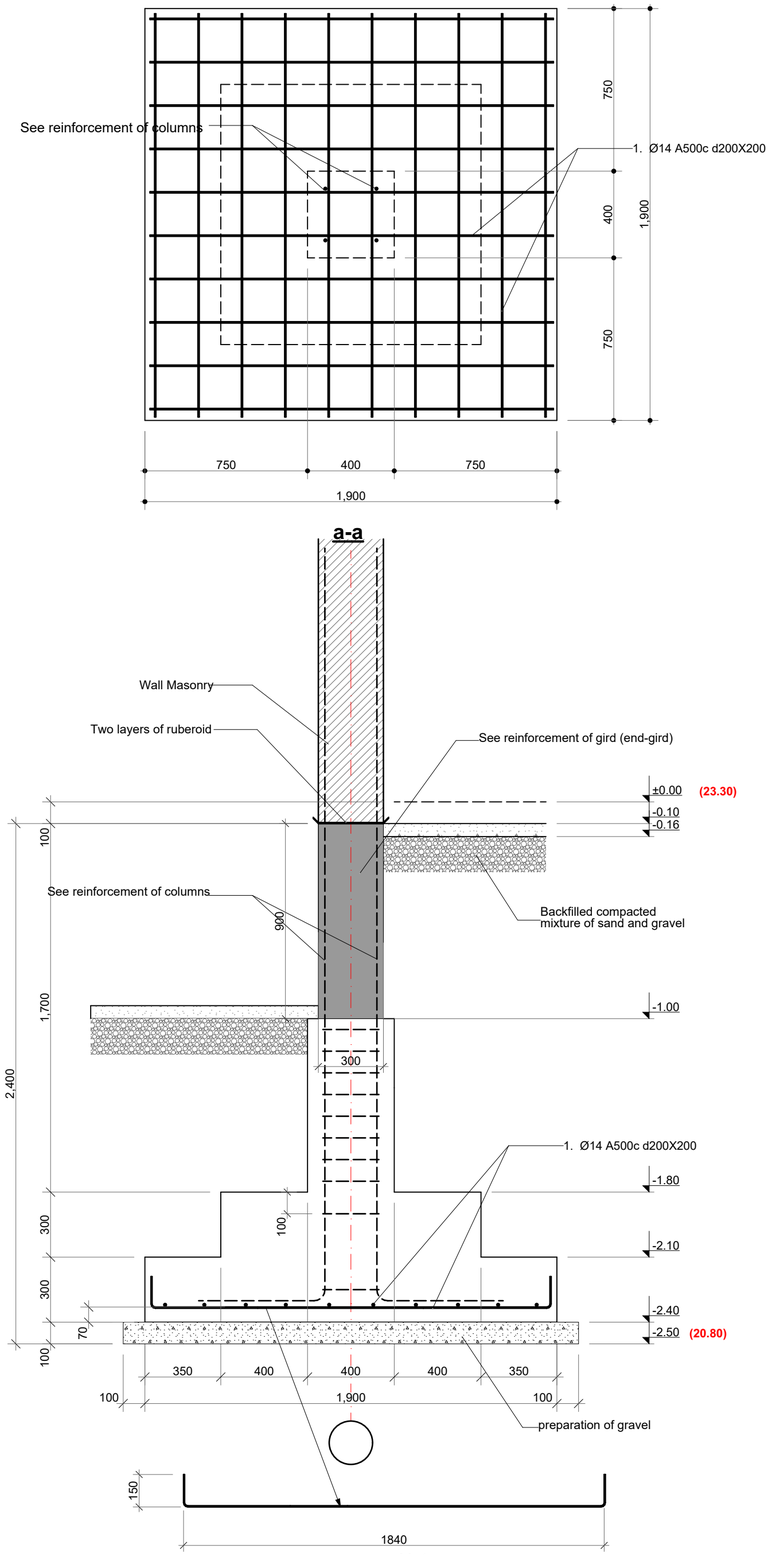
Page	Pages
12	32

Pad foudation ws-1



Pad foudation ws-2



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

DRC DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

-

Project address:
Georgia,
Senaki

Stage:
Architectural project

FOUNDATIONS

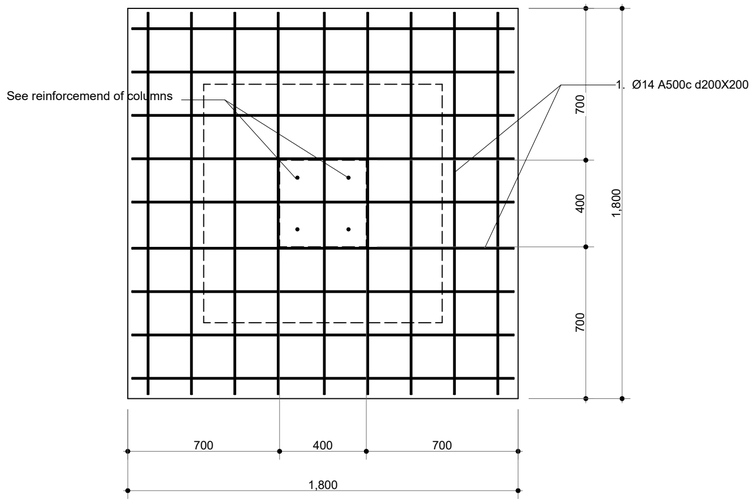
ბ. ქანთარია
B. Qantaria

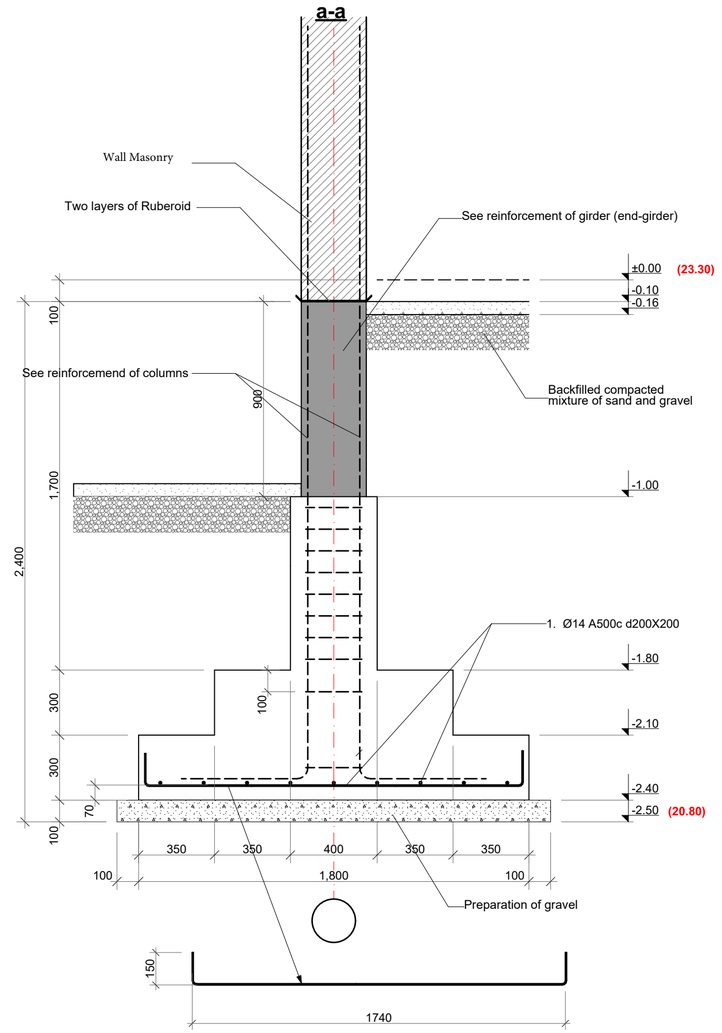
ა. გერგედავა
A. Gergedava

Format A - 2

Page	Pages
13	32

Pad foundation **ws-3'**





ელემენტი Element	№	არმატურის პროფილი reinforcement profile	სიგრძე მმ Length mm	რაოდენობა Q-ty	სულ სიგრძე მ Total length m	ბეტონი მ3 Concrete M3
წყრტილოვანი ხაძირკვლი Pad Foundation						
ws-1 (6 ცალი) **Foundation ws-1 (6 pcs)**		14 A500c	2240	120	268.80	
ws-2 (9 ცალი) **Foundation ws-2 (9 pcs)**		14 A500c	2140	180	385.20	
ws-1' (7 ცალი) **Foundation ws-1' (7 pcs)**		14 A500c	2240	140	313.60	
ws-2' (9 ცალი) **Foundation ws-2' (9 pcs)**		14 A500c	2140	180	385.20	
ws-3' (4 ცალი) **Foundation ws-3' (4 pcs)**		14 A500c	2040	72	146.88	
	ბეტონი B25 m3 **Concrete B25 m3**					53.6

Specification of reinforcement

არმატურის ცხრილი

ჯგუფი Section		სულ სიგრძე მ total length m	სულ სიგრძე დანაკარგით მ Total length with loss m	არმატურის წონა Weight of R/m	სულ წონა Total weight, ton	სულ წონა (ცალის მიხედვით) ტონა	Total weight per grade
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	1.9	
	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	1499.7	1574.7	1.208	1.90		
	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		
ჯამი **Total**					1.90		

DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Foundations

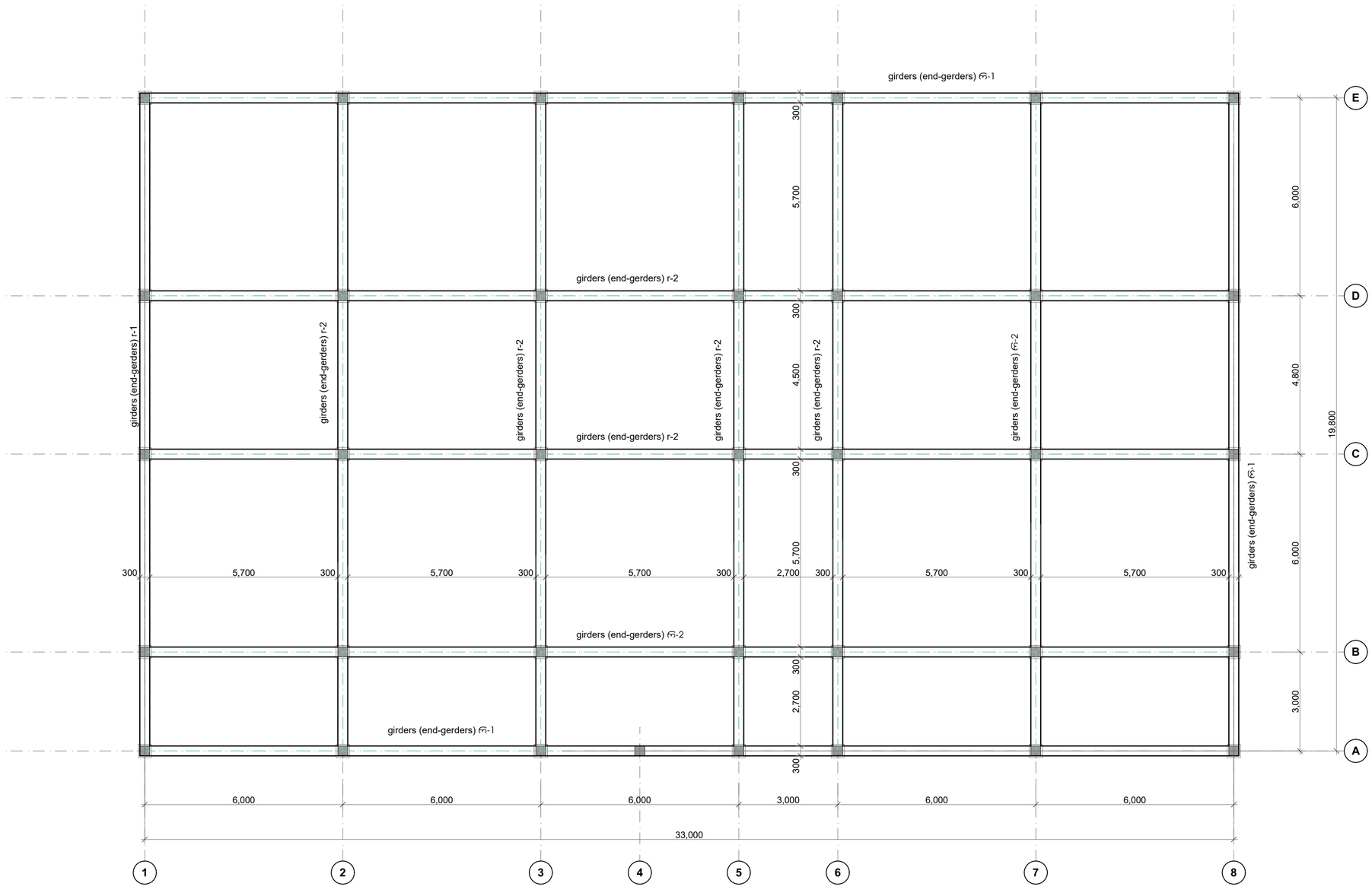
ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

ფორმატი Format A - 2

ფურცელი Page	ფურცლები Pages
14	32

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



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:

Georgia,
Senaki

Stage:
Architectural project

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

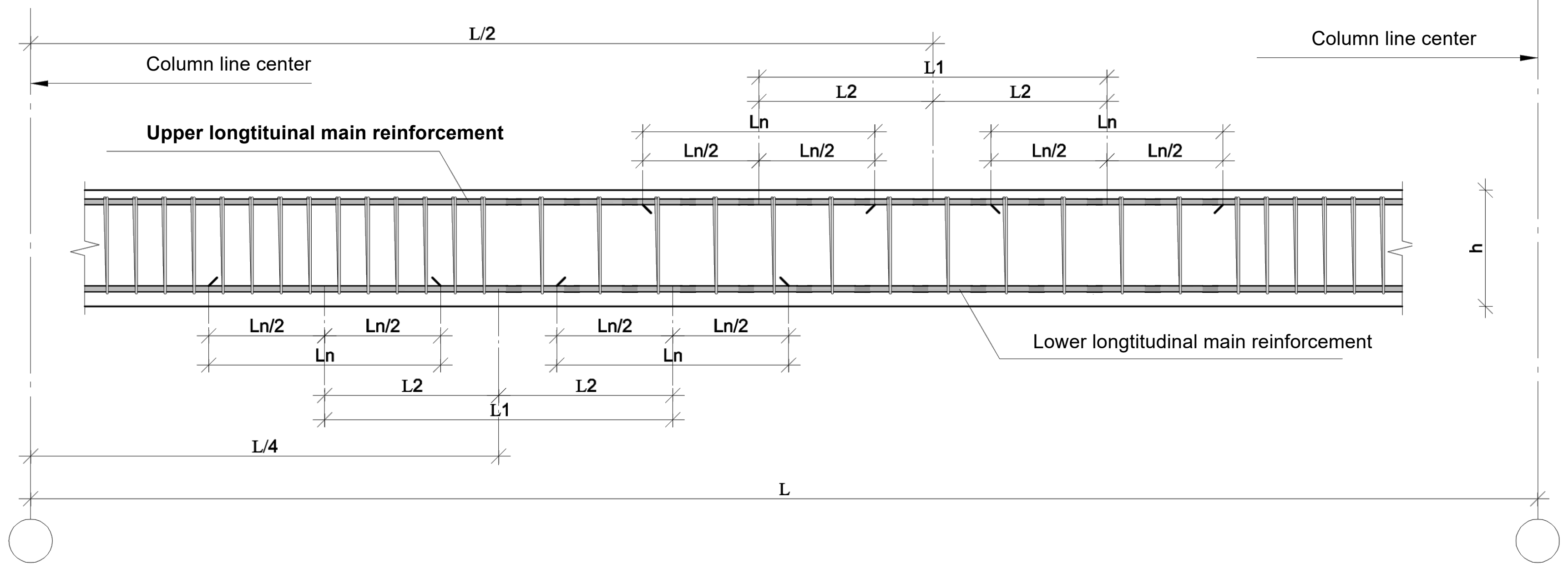
ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

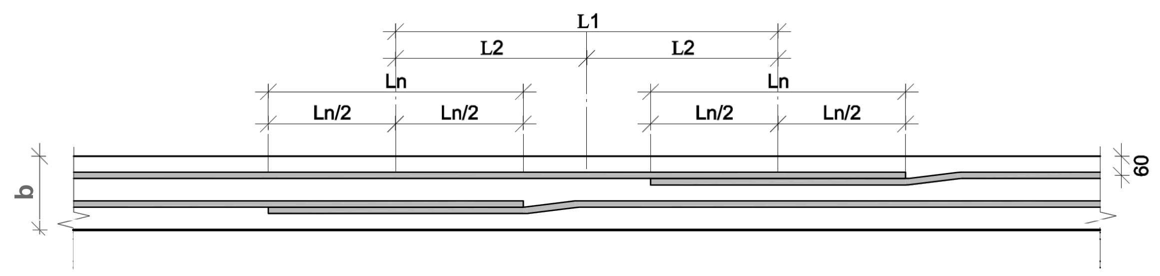
Format A - 2

Page	Pages
15	32

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



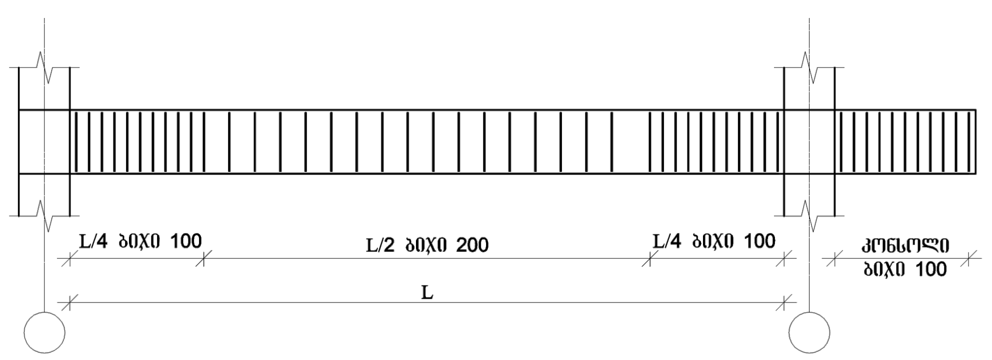
Plan of monolithic gird bonding of crossbar in the upper and lower span of the reinforcement



Parameters
of gird bond crossbar in the upper and lower reinforcement

არმატურის დიამეტრი Ø (მმ)	არმატურის გადადება (მმ) $L_n=40*D$	გადადების ცენტრების შორის მანძილი (მმ) $L_1 \ge 1.5*L_{გად}$	მიმდევრობის "X" წერტილიდან არმატურის გადადების ცენტრამდე მანძილი (მმ) $L_2 \ge L_1/2$	საკიდის გახშირებული ზონა ბიჯი 100 (მმ) $L_3=L_1+L_{გად}$
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

Allocation plan of gird hanger

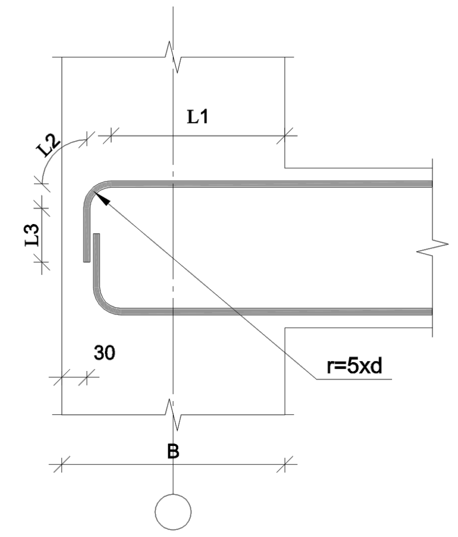


ელემენტი Element	№	არმატურის პროფილი Reinforcement profiles	სიგრძე მმ Length mm	რაოდენობა	საერთო სიგრძე მ Total length m	ბეტონი მ3 Concrete m3
რკინაბეტონის რიგელები (რანდკოჭები), იატაკის ფილა						
რანდკოჭი 1 End-girder 1	1	22 A500c	116600	2	233.2	
	2	20 A500c	114480	2	229.0	
	3	12 A500c	114480	2	229.0	
	4	8 A240c	2180	707	1540.5	
	5	8 A240c	380	265	100.7	
რანდკოჭი 2 End-girder 2	1	22 A500c	218900	2	437.8	
	2	20 A500c	218900	2	437.8	
	3	8 A240c	1380	1327	1830.8	
	ბეტონი B15 m3					57.2
იატაკის რკინაბეტონის ფილა Reinforced cocnrete slabs for floor		6 A500c			6120.00	
	ბეტონი B15 m3					37.2

Specification of reinforcemnt
არმატურის ამოკრეფა

კვეთი Section		საერთო სიგრძე მ Total length m	საერთო სიგრძე დანაკარგით მ Total length m	გრძ.მ-ის წონა Weight of R/m	საერთო წონა ტონა Total weight, ton	საერთო წონა (კლასის მიხედვით) ტონა Total weight per grade, tons
A240c	6 A240c		0.0	0.222	0.00	1.4
	8 A240c	3472.0	3645.6	0.394	1.44	
A500c	6 A500c	6120.0	6120.0	0.222	1.36	5.4
	8 A500c		0.0	0.394	0.00	
	10 A500c		0.0	0.616	0.00	
	12 A500c	229.0	240.5	0.887	0.21	
	14 A500c		0.0	1.208	0.00	
	16 A500c		0.0	1.578	0.00	
	18 A500c		0.0	1.997	0.00	
	20 A500c	667.0	700.4	2.465	1.73	
	22 A500c	671.0	704.6	2.983	2.10	
	25 A500c		0.0	3.851	0.00	
სულ					6.84	

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

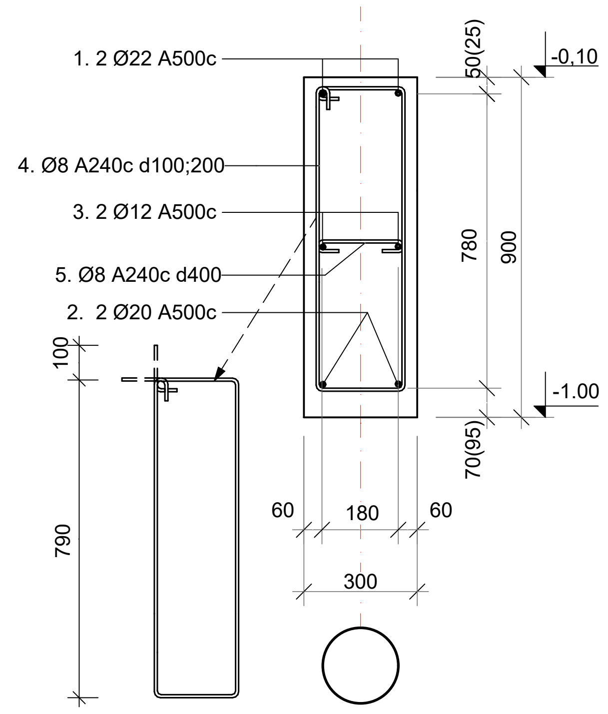


Parameters of fixing node of gird in the upper and lower reinforcement column

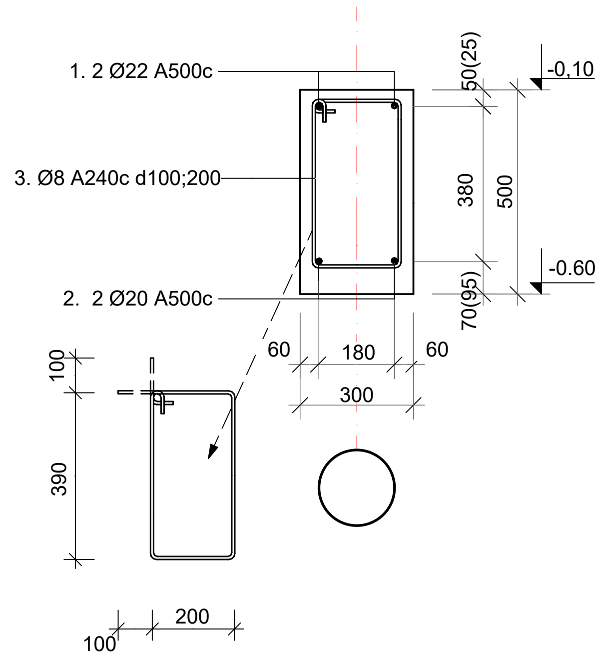
როცა (B=400)

$L_{საანკერო}=40d=L_1+L_2+L_3=2xL_1$ (მმ)					
არმატურის დიამეტრი Ø	$L_{საანკერო}=40Ø$	r=5d მმ.	$L_1=L(საანკ.)x0.5$ (მმ)	$L_2=\frac{(5dx2)XП}{4}$ (მმ)	$L_3=L(საანკ.)-(L_1+L_2)$ (მმ)
Ø16 A500C	640	80	320	126	194
Ø18 A500C	720	90	360	141	219
Ø20 A500C	800	100	400	157	243

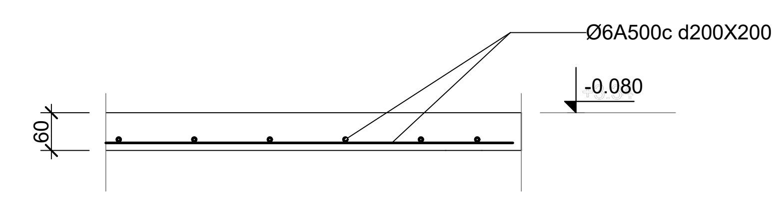
Section on end-girder1



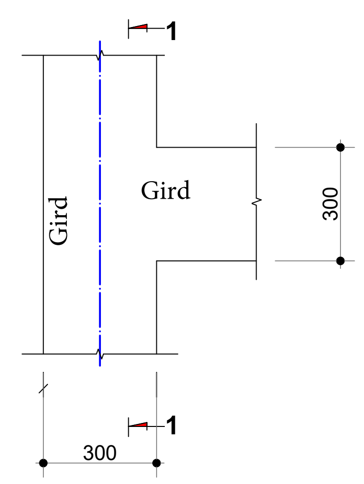
Section on end-girder 2



Reinforcement of floor slabs



Strengthening of the Gird to Gird Connection Node



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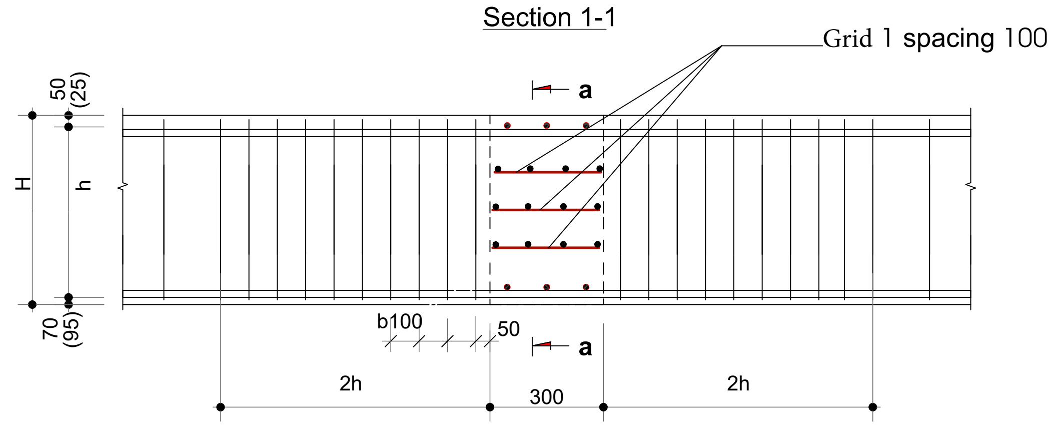
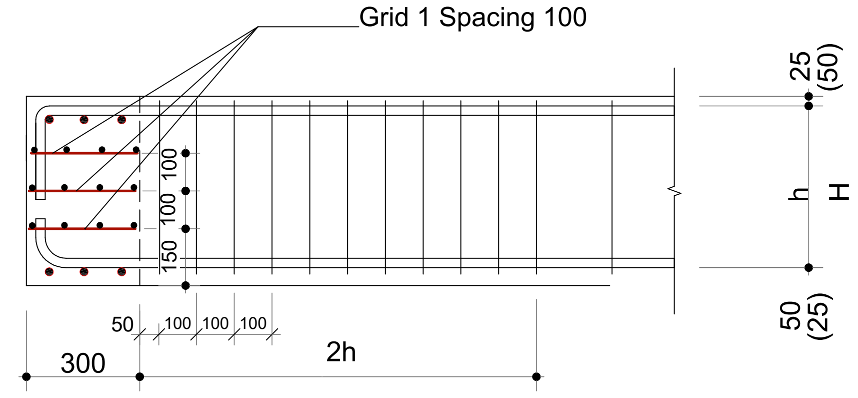
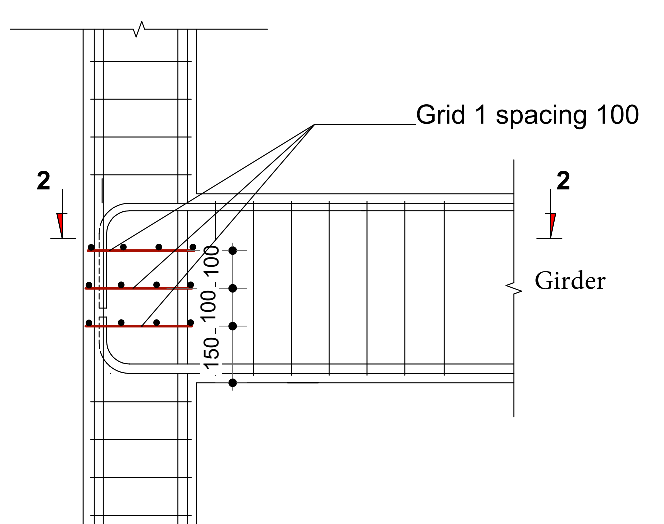


Section a-a

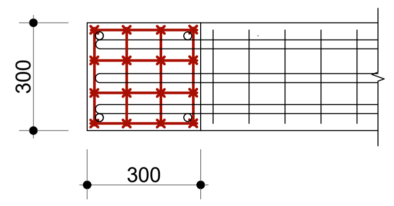


Strengthening of the intersection of grid and columns

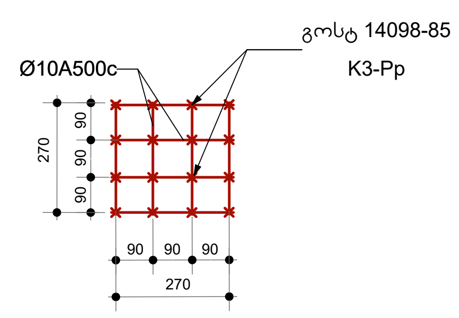
Column



Section 2-2



Grid 1



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:

Georgia, Senaki

Stage:
Architectural project

მონოლითური რიგელი (რანდკოჭი) ჯვანძების გაძლიერება

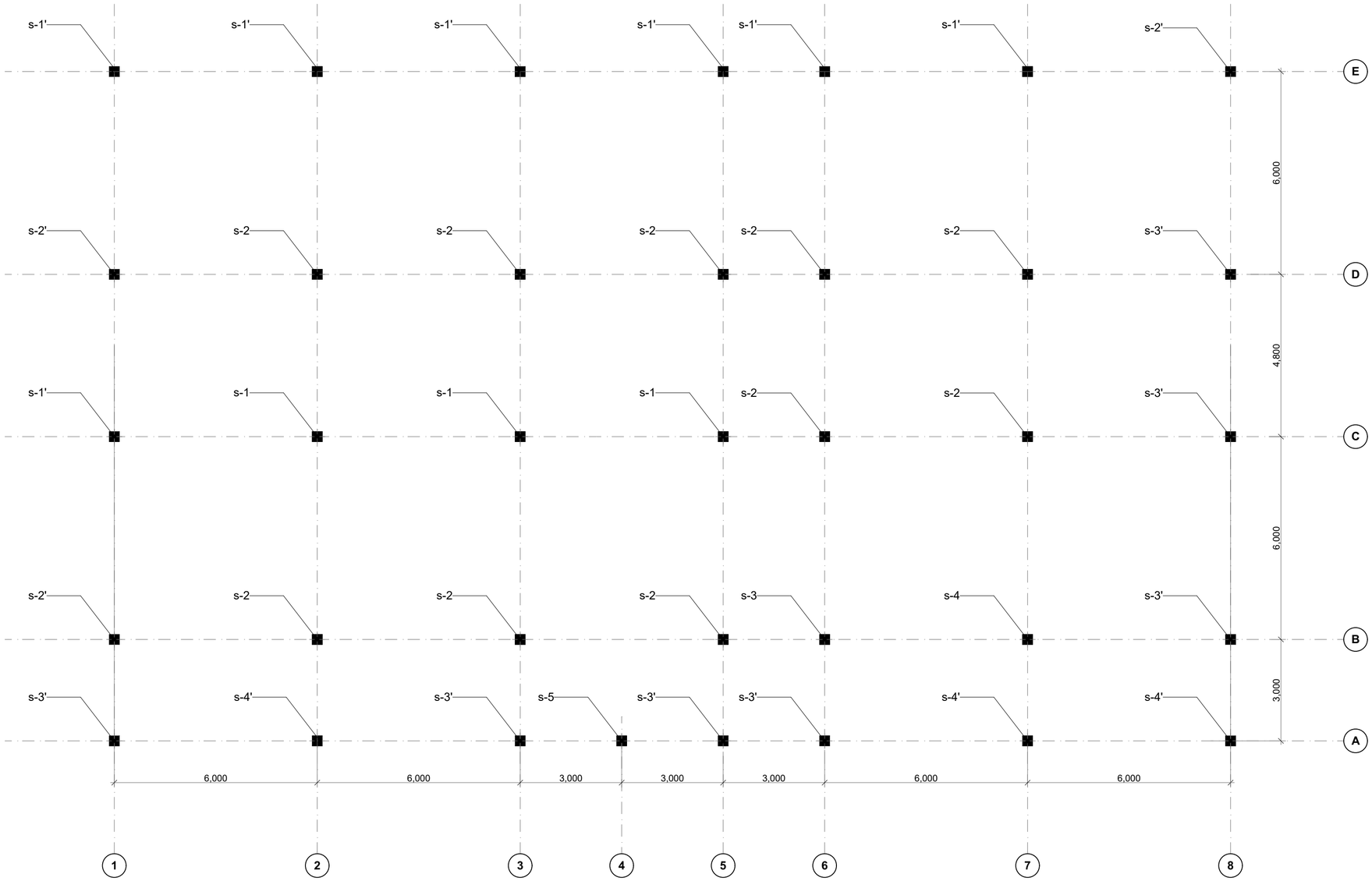
ბ. ყანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

ფორმატი Format | A - 2

ფურცელი Page	ფურცლები Pages
16	32

Plan of Column Marking



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Column **s-5**

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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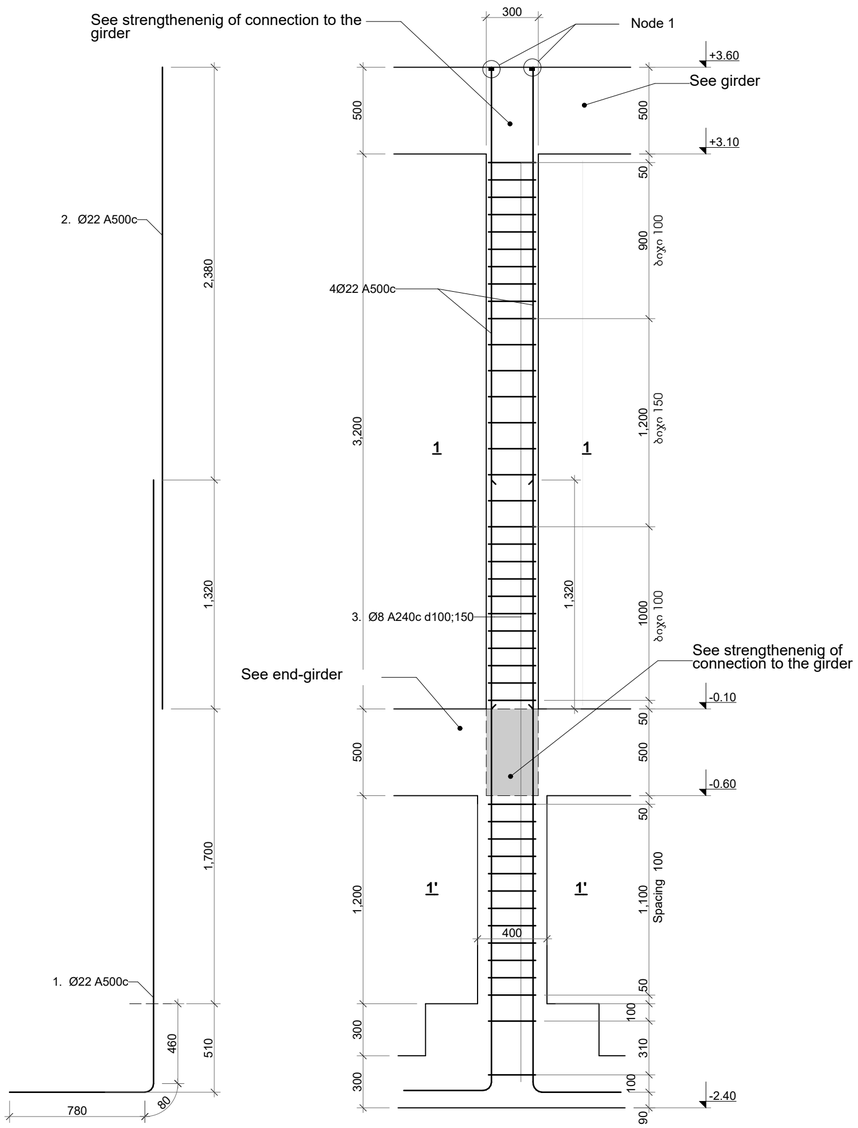
17	32

Column **S-1**



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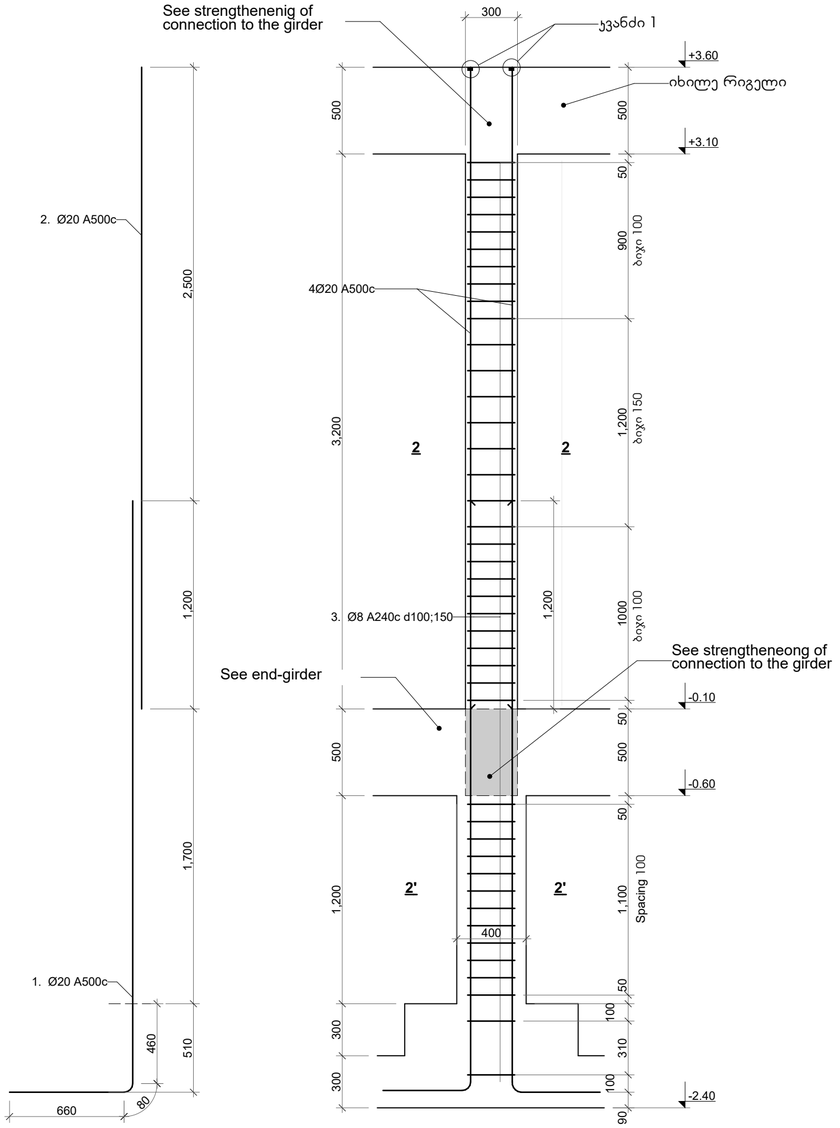

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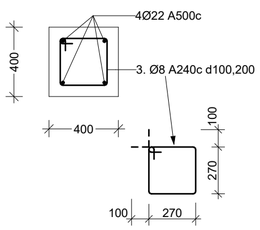

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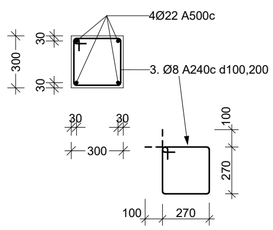
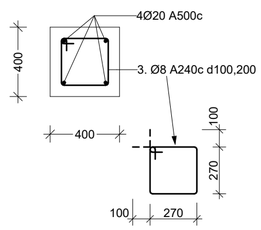


Section **2'-2'**



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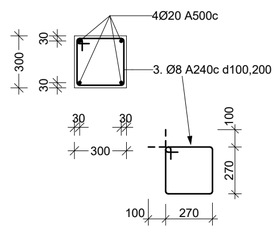

DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:

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Senaki

Stage:
Architectural project

Column **S-1**

Column **S-2**

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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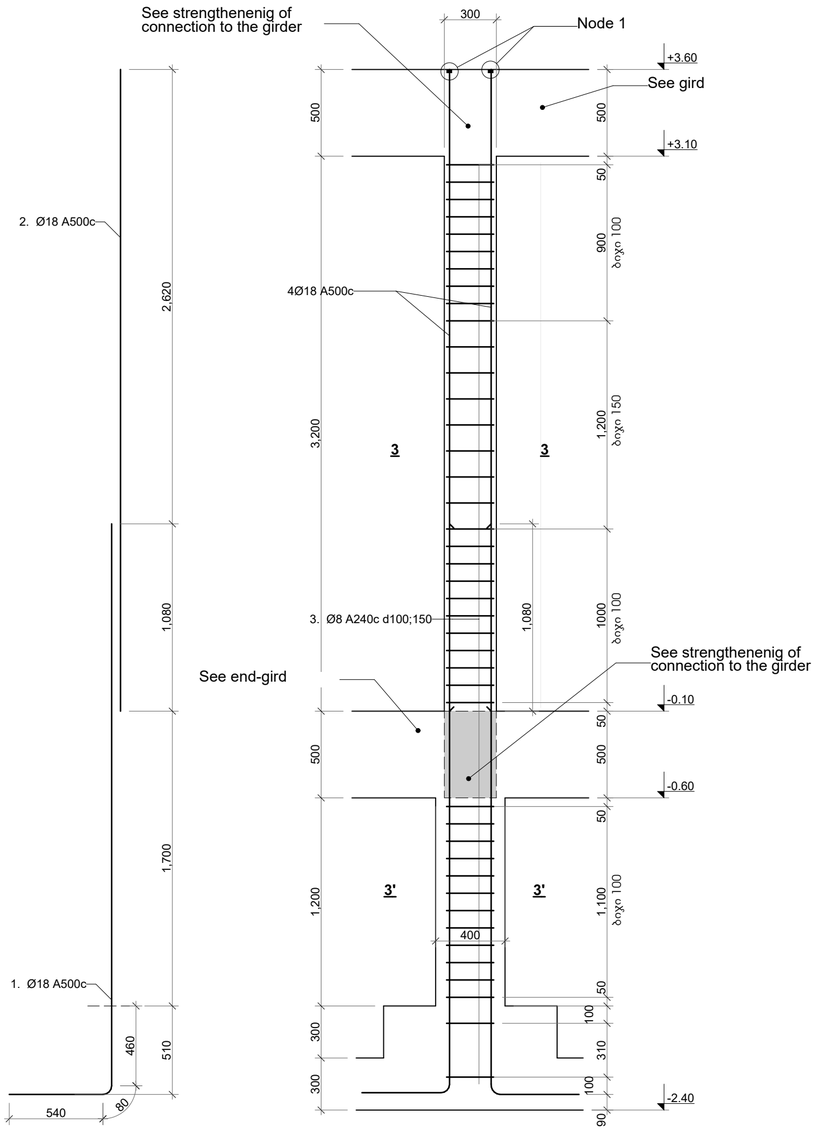
Column **S-3**



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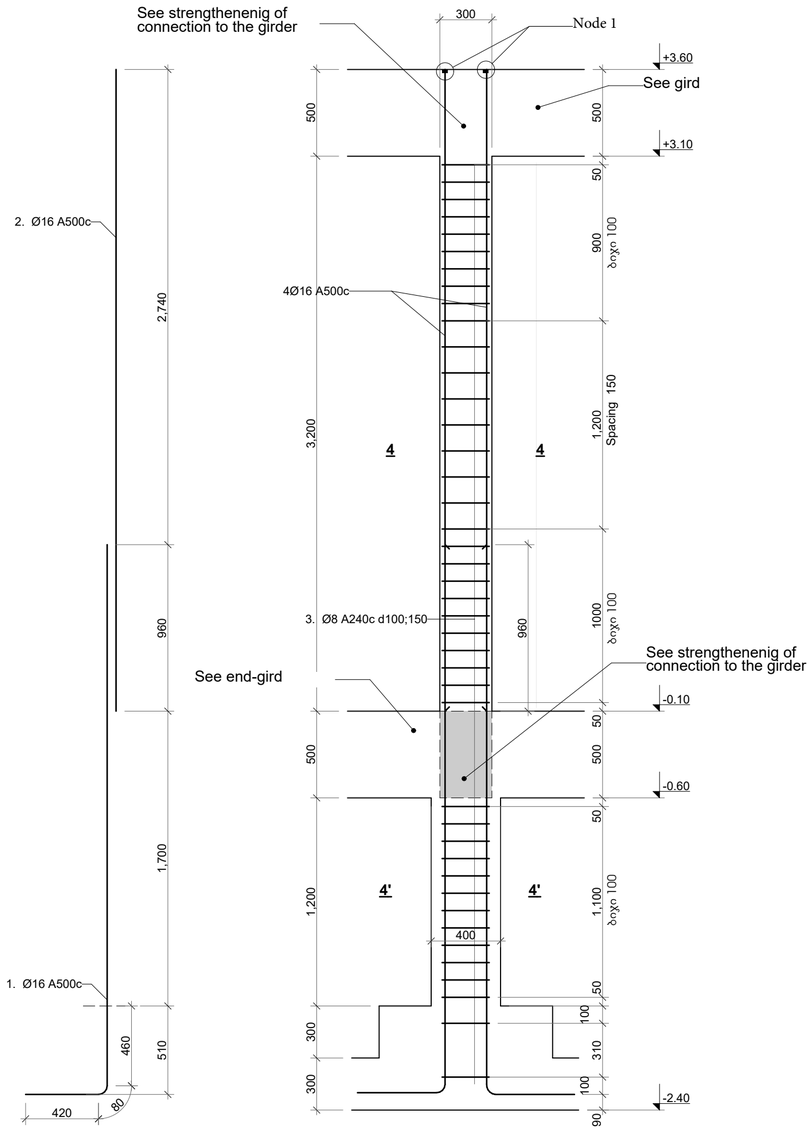

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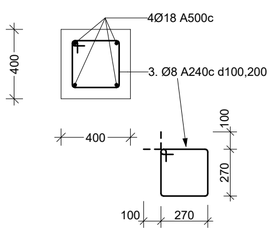

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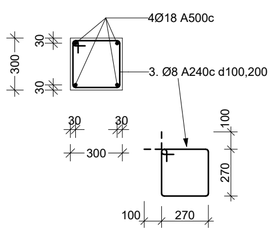

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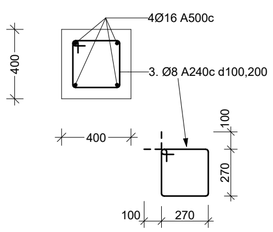

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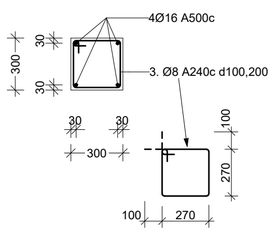

DRC DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Column **s-3**

Column **s-4**

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

Page	Pages
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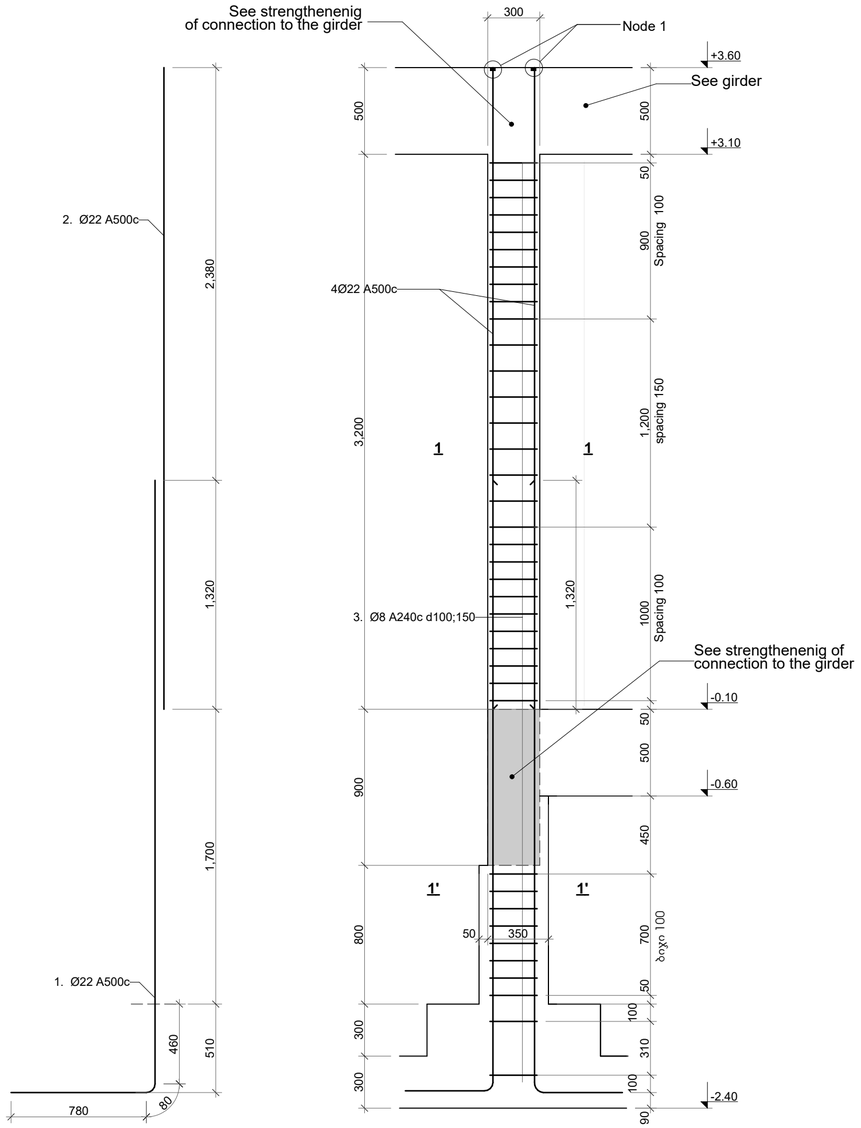
Column **S-1'**



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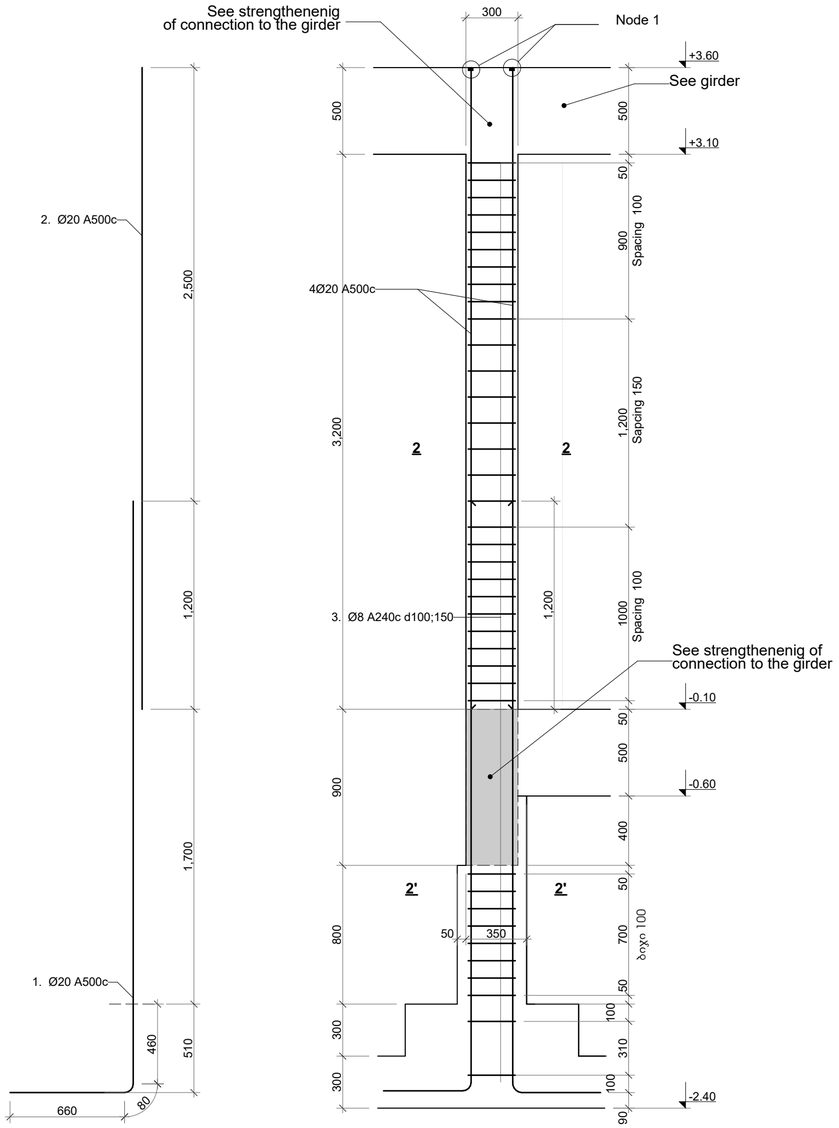

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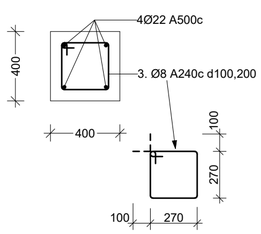

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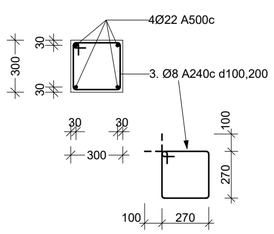

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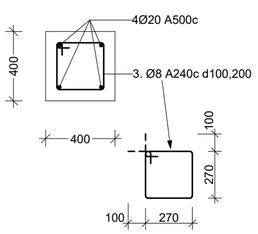
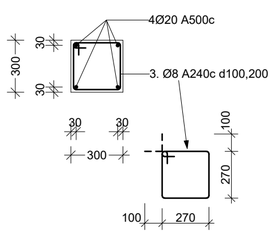


Section **2-2**



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Column **S-1'**
Column **S-2'**

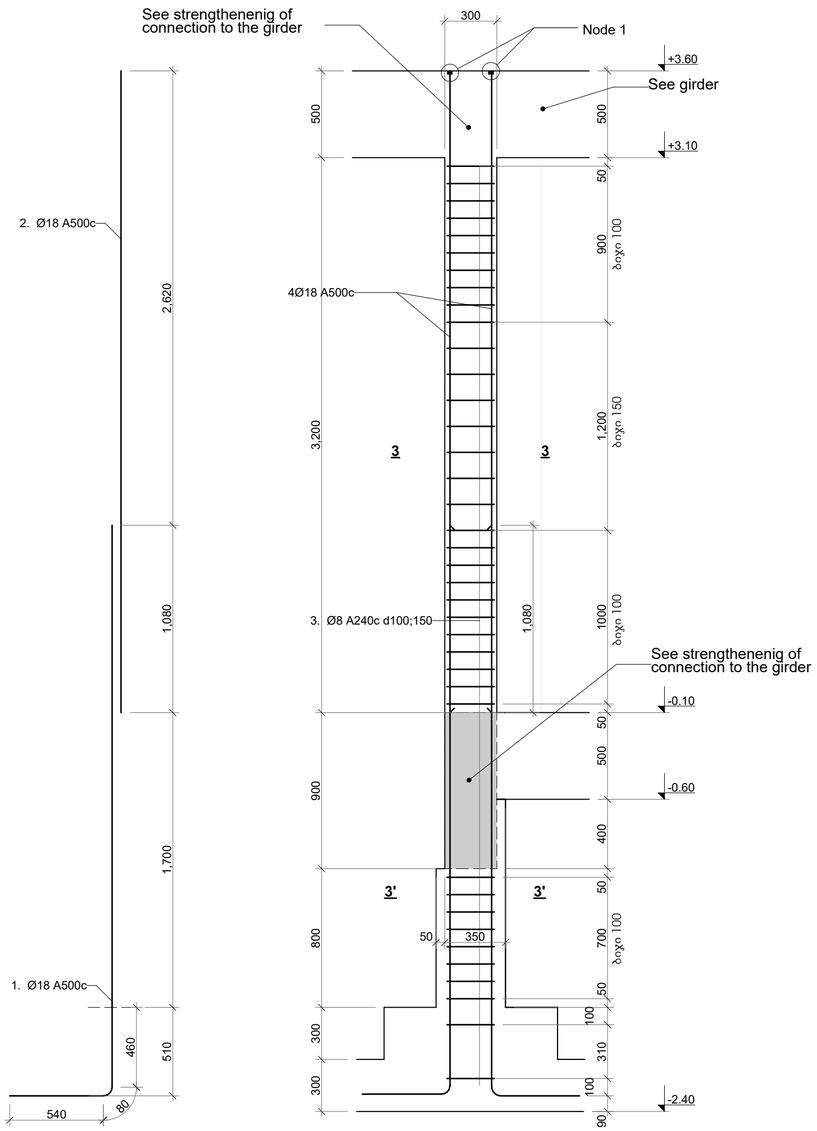
ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

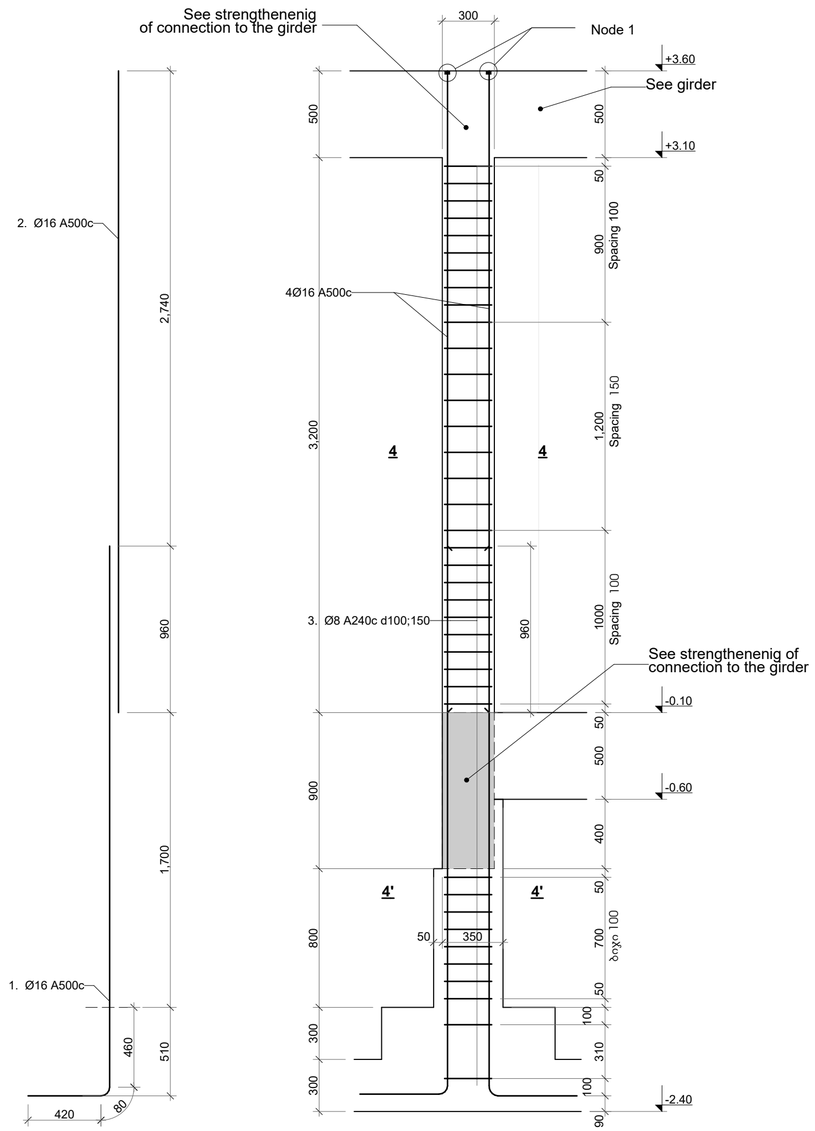
Format A - 2

Page	Pages
20	32

Column **S-3'**



Column **S-4'**



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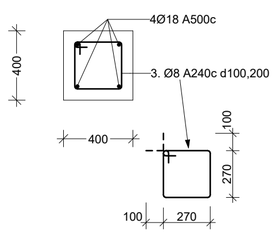

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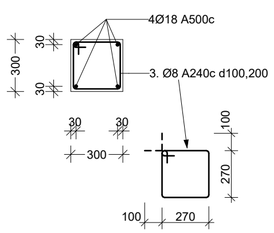

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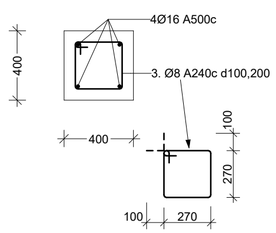
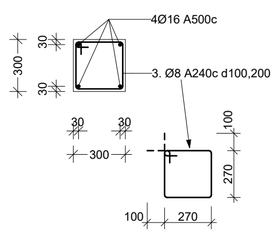


Section **4-4**



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Column **S-3'**
Column **S-4'**

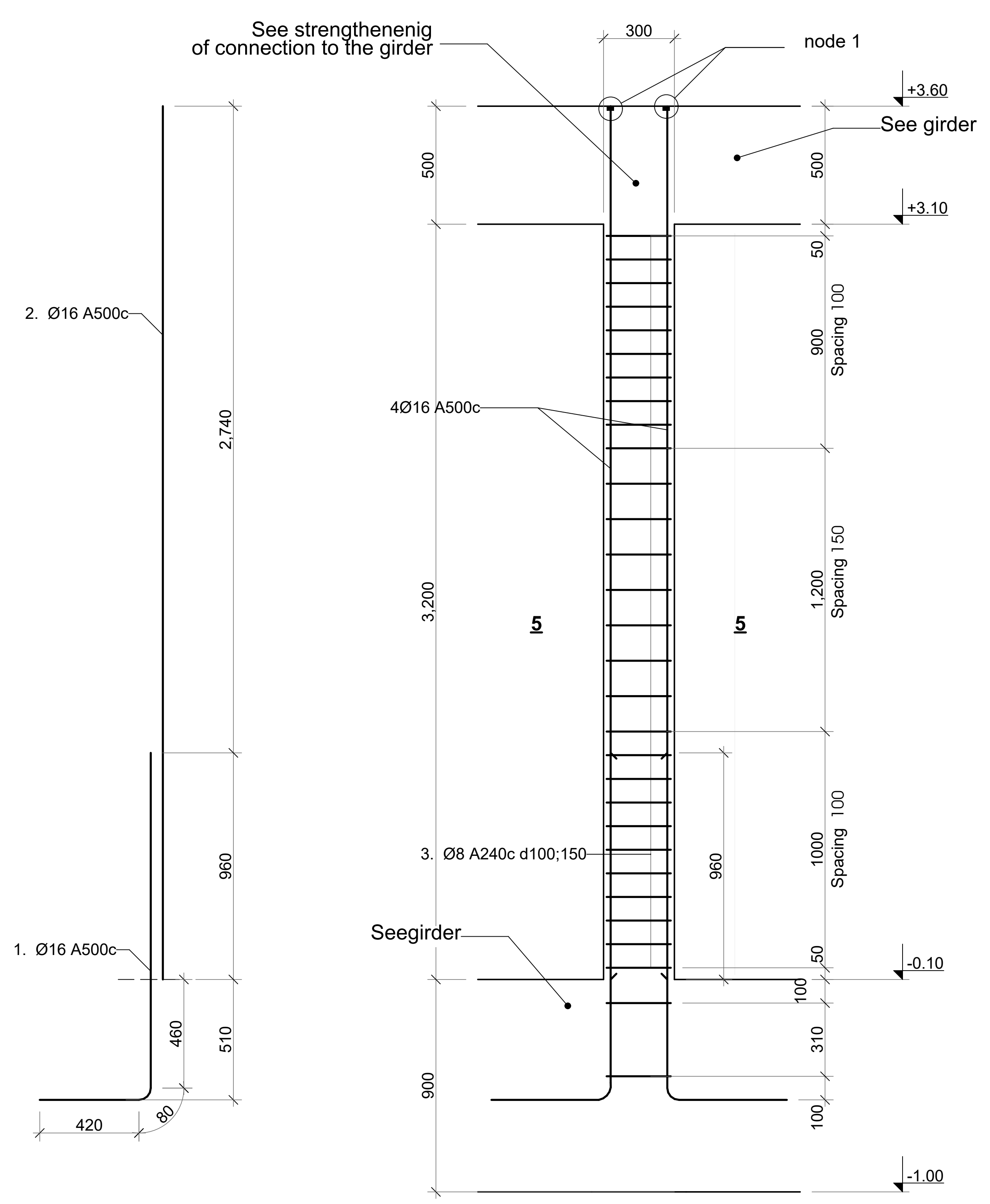
ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

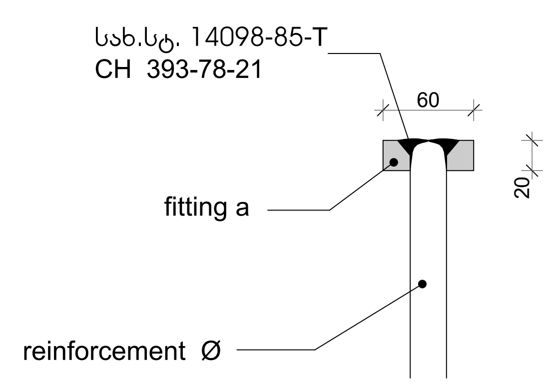
Format A - 2

Page	Pages
21	32

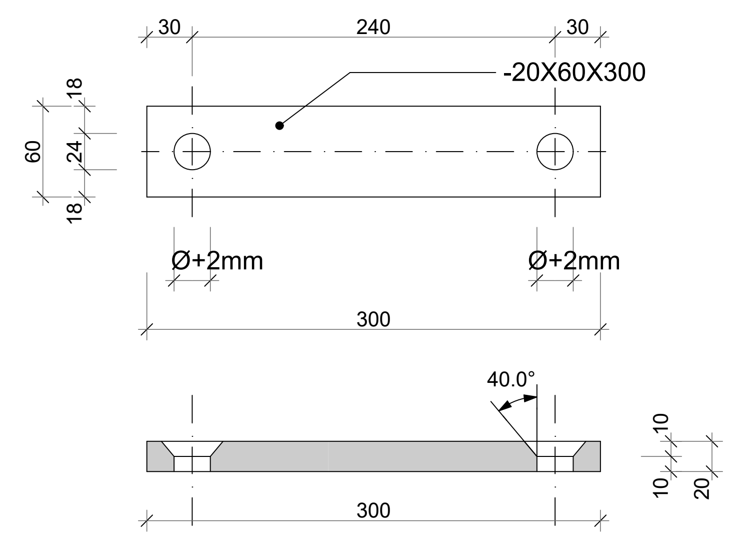
Column S-5



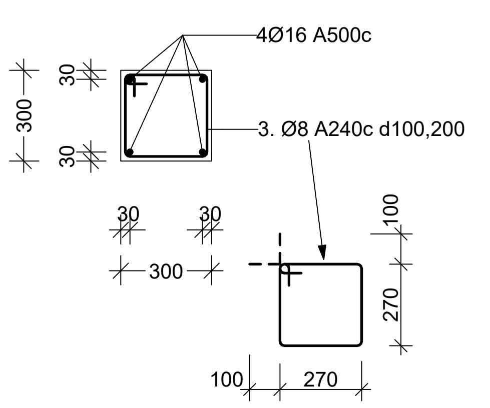
Node 1



fitting a



Sectin 5-5



ელემენტი Element	№	reinforcment profile	Length mm	Q-ty	total length m	Concrete m3
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' (13 ცალი)		20 A500c	4100	52	213.2	
		20 A500c	3700	52	192.4	
		8 A240c	1280	546	698.88	
s-3 და s-3' (8 ცალი)		18 A500c	3860	32	123.52	
		18 A500c	3700	32	118.4	
		8 A240c	1280	336	430.08	
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	
რიგელთან გადაკვეთის უბნების გაძლიერება		10 A500c			1280	
ფოლადის ფურც. −20X60X300				72		
	ბეტონი B25					21.2

Specification of reinforcement

cross-section		Total length m	Total length with loss m	Weight of R/m	Total weight , tons	Total weight per grade , tons
A240c	6 A240c		0.0	0.222	0.00	0.8
	8 A240c	1920.0	2016.0	0.394	0.80	
A500c	6 A500c		0.0	0.222	0.00	3.6
	8 A500c		0.0	0.394	0.00	
	10 A500c	1280.0	1344.0	0.616	0.83	
	12 A500c		0.0	0.887	0.00	
	14 A500c		0.0	1.208	0.00	
	16 A500c	139.6	146.6	1.578	0.23	
	18 A500c	241.9	254.0	1.997	0.51	
	20 A500c	405.6	425.9	2.465	1.05	
	22 A500c	321.6	337.7	2.983	1.01	
	25 A500c		0.0	3.851	0.00	
სულ Total					4.42	

DRC DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

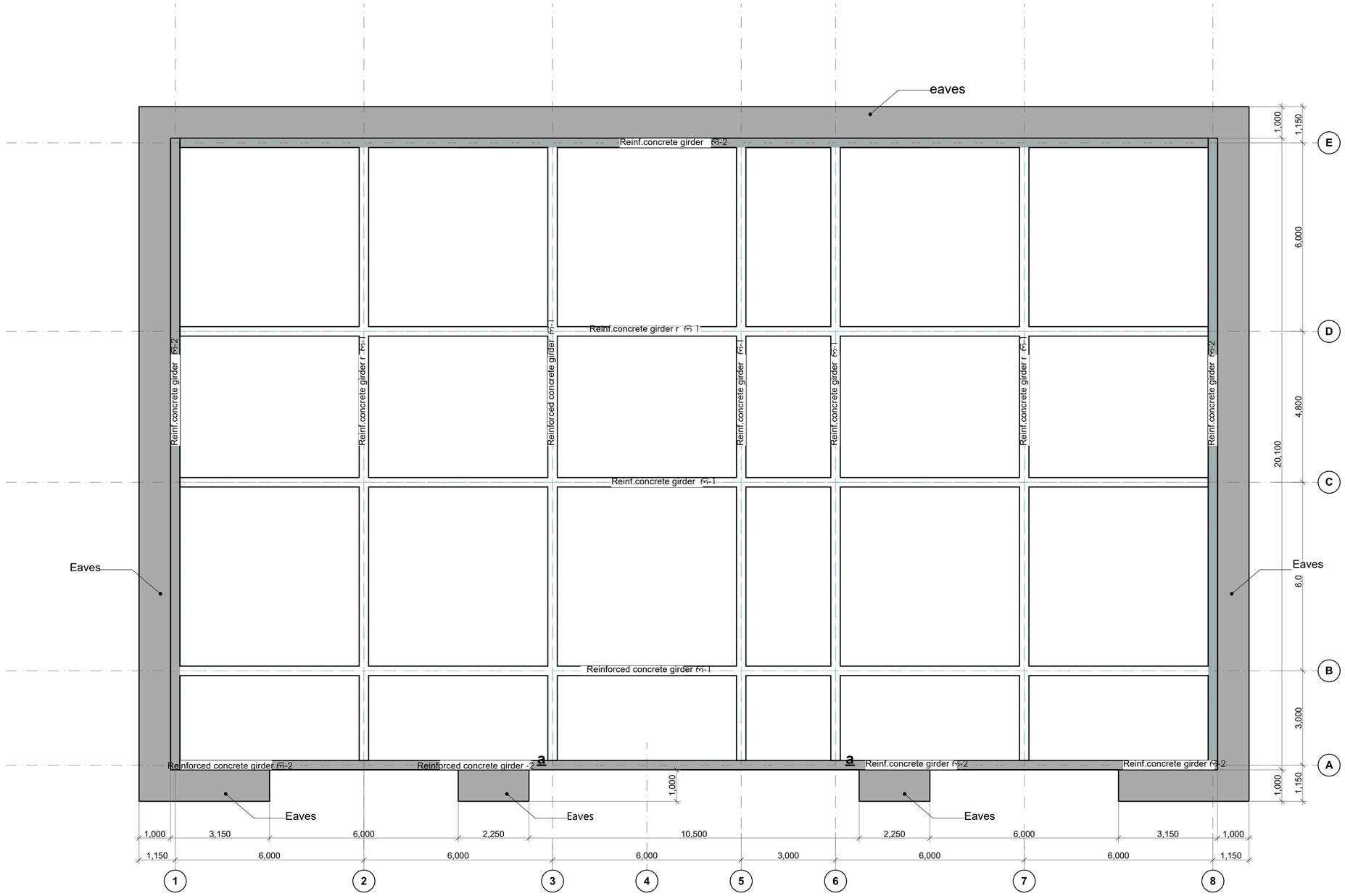
Column s-5

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

Plan of Girders at +3.60 level



DRC DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Plan of Girders at +3.60 level

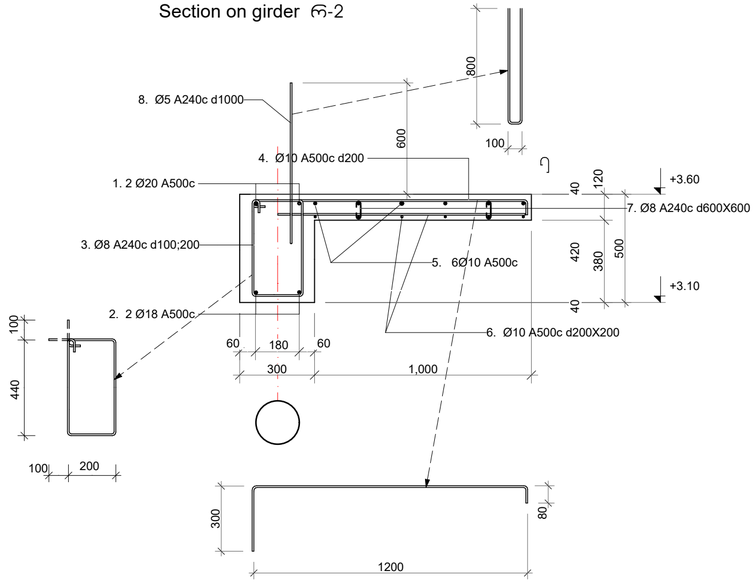
ბ. ქანთარია
B. Qantaria

ა. ჭყონჭელავა
A. Gergedava

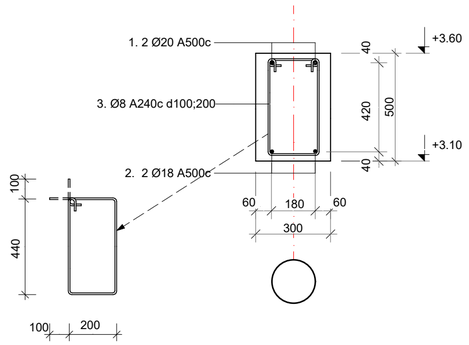
Format A - 2

Page	Pages
23	32

Section on girder ტ-2

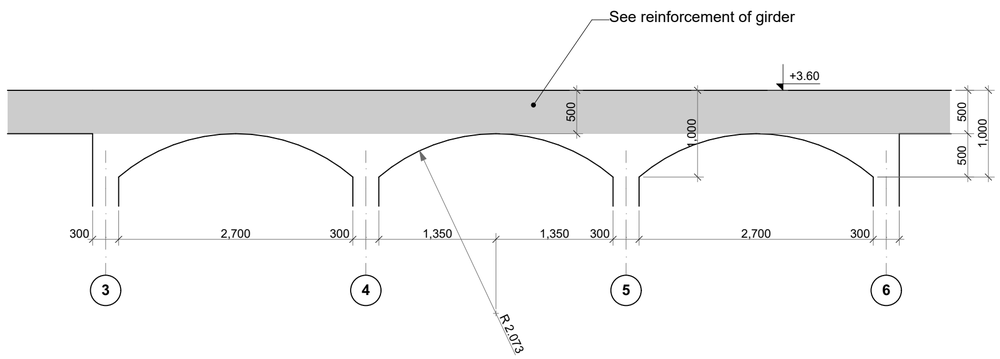


Section on girder ტ-1



Section in arched areas

a-a



ელემენტი Element	№	არმატურის პროფილი reinforcm. profile	სიგრძე მმ length mm	რაოდენობა Q-ty	სულ სიგრძე მ Total length m	ბეტონი მ3 Concrete m3
რკინაბეტონის რიგელები +3.60 ნიშნულზე Reinforced concrete girders ar +3.60						
რიგელი 1 End-girder 1	1	20 A500c	218900	2	437.8	
	2	18 A500c	214920	2	429.84	
	3	8 A240c	1480	1327	1963.5	
რიგელი 2 End-girder 2	1	20 A500c	116600	2	233.2	
	2	18 A500c	114480	2	229.0	
	3	8 A240c	1480	707	1046.4	
	4	10 A500c	1580	470	742.6	
	5	10 A500c	94000	6	564.0	
	6	10 A500c			960.0	
	7	8 A240c	260	288	74.9	
	8	5 A240c	1700	140	238.0	
	ბეტონი B15 m3 Concrete					55.1

Specification of reinforcement

არმატურის ცხრილი

ფოლადის კლასი Section		საერთო სიგრძე მ total length m	საერთო სიგრძე დანაკარგით მ Total length with loss m	ერთეული წონა weight of R/m	საერთო წონა total weight, tons	საერთო წონა (კლასის მიხედვით) ტონა total weight per class , tons
A240c	6 A240c	238.0	238.0	0.222	0.05	1.3
	8 A240c	3085.0	3239.3	0.394	1.28	
A500c	6 A500c		0.0	0.222	0.00	4.6
	8 A500c		0.0	0.394	0.00	
	10 A500c	2267.0	2380.4	0.616	1.47	
	12 A500c		0.0	0.887	0.00	
	14 A500c		0.0	1.208	0.00	
	16 A500c		0.0	1.578	0.00	
	18 A500c	659.0	692.0	1.997	1.38	
	20 A500c	671.0	704.6	2.465	1.74	
	22 A500c		0.0	2.983	0.00	
	25 A500c		0.0	3.851	0.00	
	სულ Total				5.92	

Note:
The sheet should be considered with sheet 16, in particular with the reinforcement of girders and the standard diagrams of their connection to columns.

DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

რიგელი რ-1
ჭრილები
კვანძები

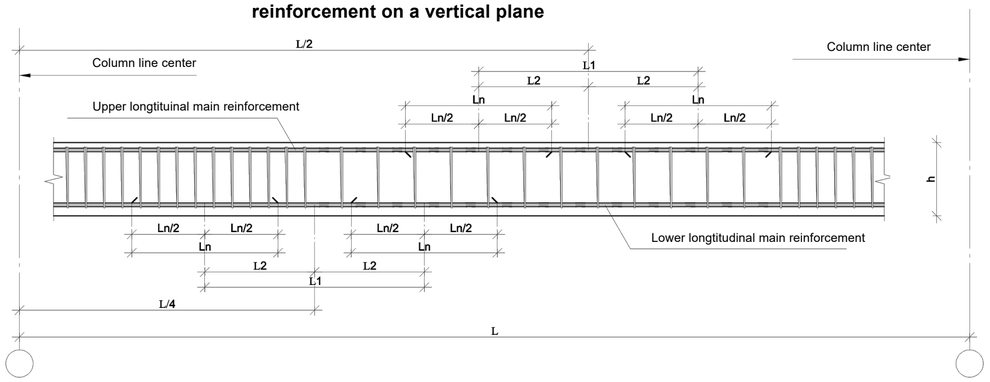
ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

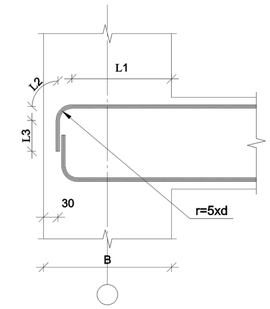
ფორმატი Format A - 2

ფურცელი Page	ფურცლები Pages
24	32

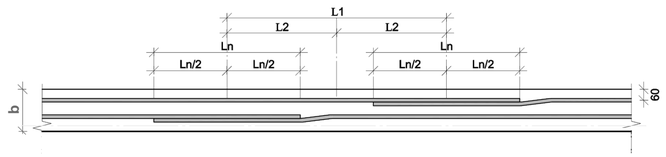
Locations of monolithic gird bonding by crossbar in the upper and lower span of the reinforcement on a vertical plane



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



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

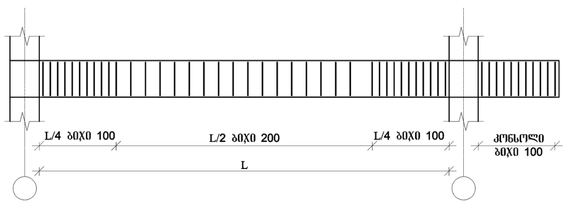
არმატურის დიამეტრი Ø (მმ)	ანკერული ბალღის სიგრძე L_n=40*D	გაჭიმულ ზონაში გადაბმის სიგრძე L_2=1.5*L_{an}	გრეხილპროფილიანი არმატურის გადაბმის სიგრძე (მმ) L_2=L_n/2	სახელმძღვანელო ცხრილის მიხედვით L_3=L_1+L_{an}
Ø16 A500C	640	960	480	1600
Ø18 A500C	720	1080	540	1800
Ø20 A500C	800	1200	600	2000
Ø22 A500C	880	1320	660	2200
Ø25 A500C	1000	1500	750	2500

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

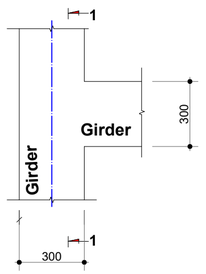
ფილა (B=400)

$L_{ანკერული}$=40d=L_1+L_2+L_3=2xL_1 (მმ)					
არმატურის დიამეტრი Ø	$L_{ანკერული}$=40Ø	r=5d მმ.	L_1=L_1(სახსრის)x0.5 (მმ)	L_2=(5dx2)XΠ 4 (მმ)	L_3=L_1(სახსრის)-(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

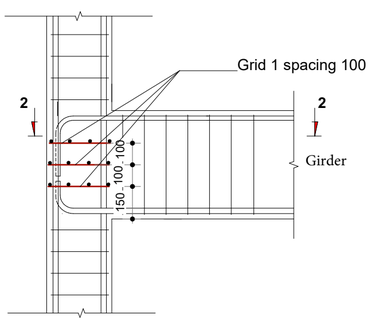


Strengthening of the Gird to Gird Connection Node

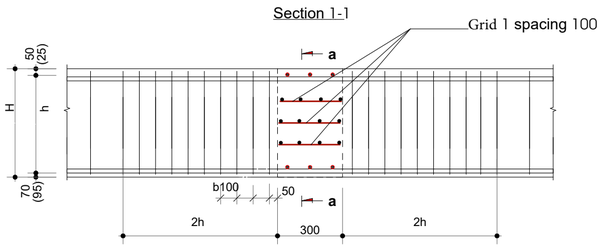


Strengthening of the intersection of grid and columns

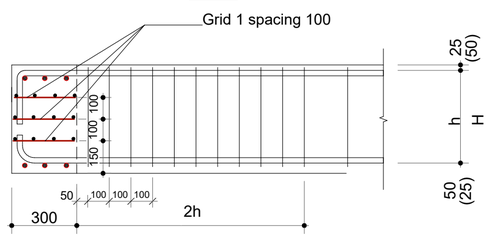
Columns



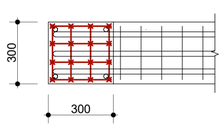
Section 1-1



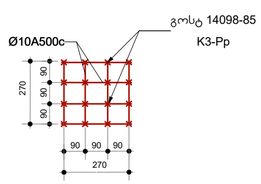
Section a-a



Section 2-2



Grid 1



Typical Kindergarten for three groups
Mshvidobis street, 306, Senaki

Project address:
Georgia, Senaki

Stage:
Architectural project

Monolith girders, strengthening of nodes

ბ. ქანთარია
B. Qantaria

ა.გერგედავა
A. Gergedava

Format A - 2

Page	Pages
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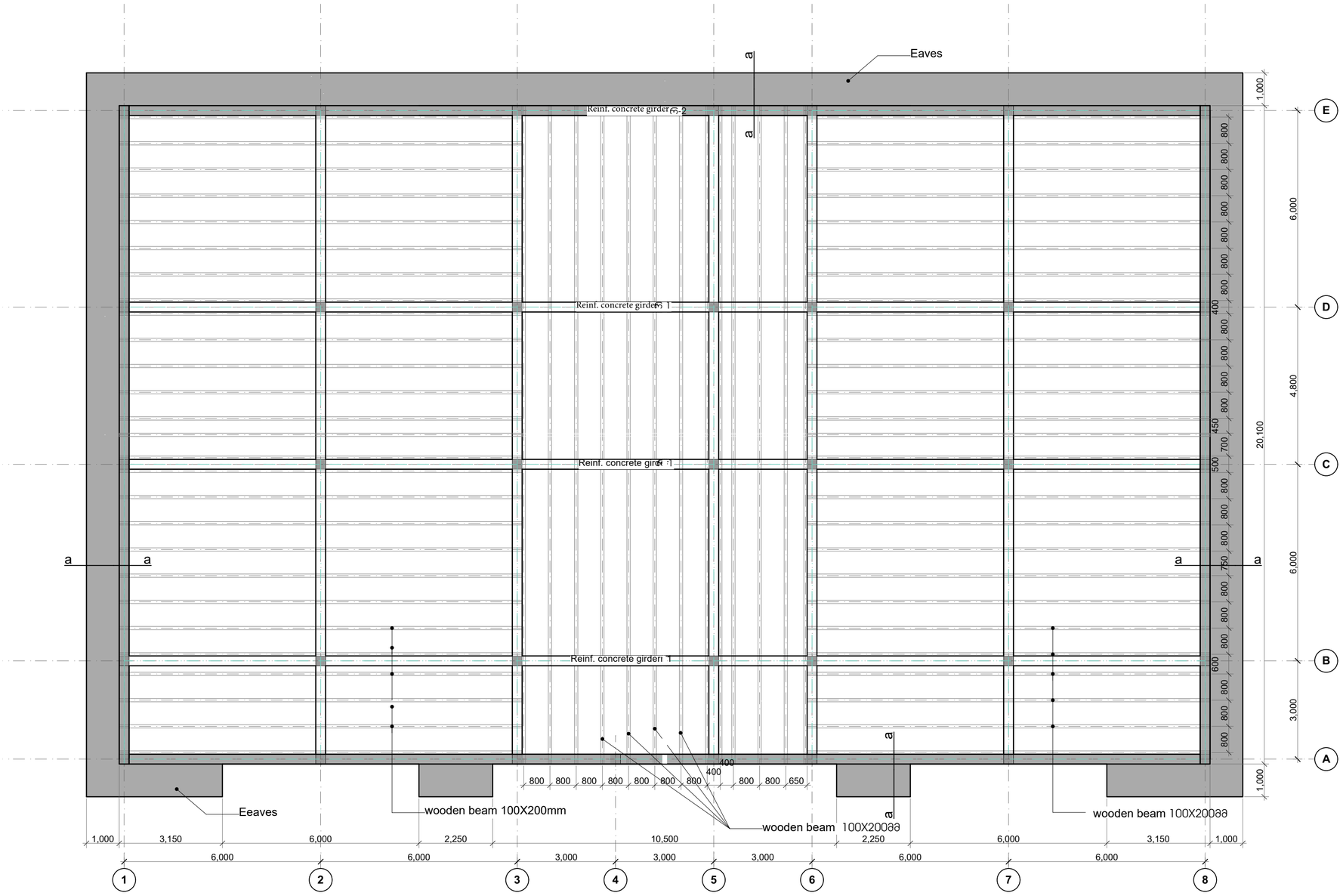
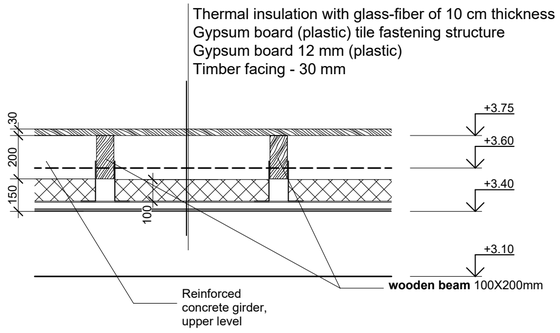
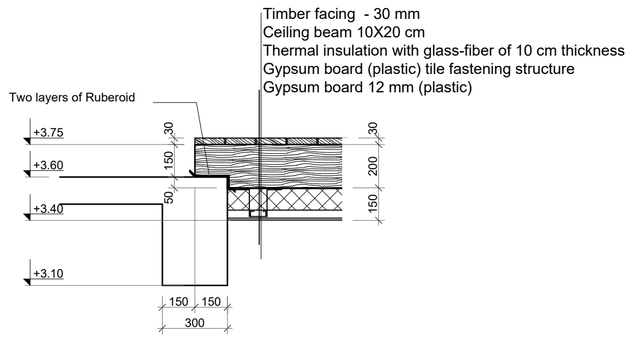
Plan of ceiling wooden beams at +3.60 level



Ceiling structure



a-a



Specifications

Cross-section of beam	Length m	Q-ty	Total length m	Volume
Wooden beam 100x200	6	134	804	17.7
Wooden beam 100x200	3	13	39	0.9
Wooden beam 100x200	4.8	13	62.4	1.4
			Σ	19.9

DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

PLan of wooden structure at+3.60 level

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

Page	Pages
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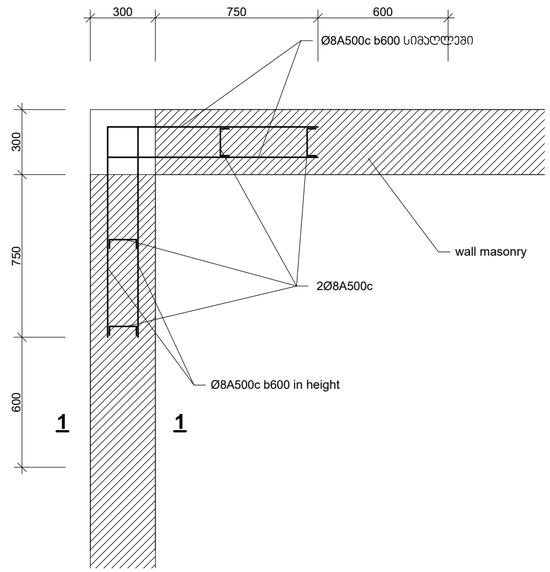
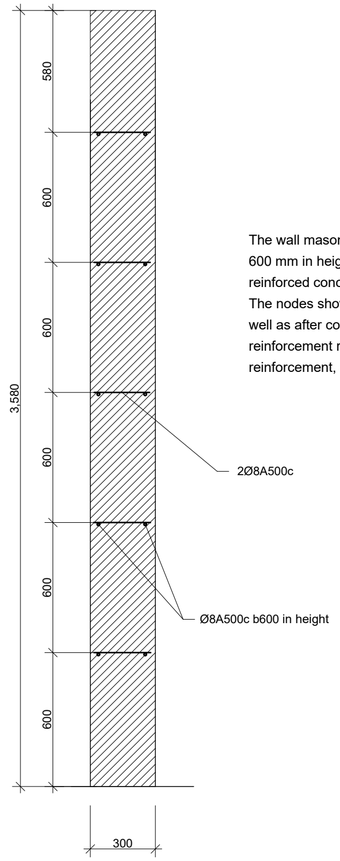
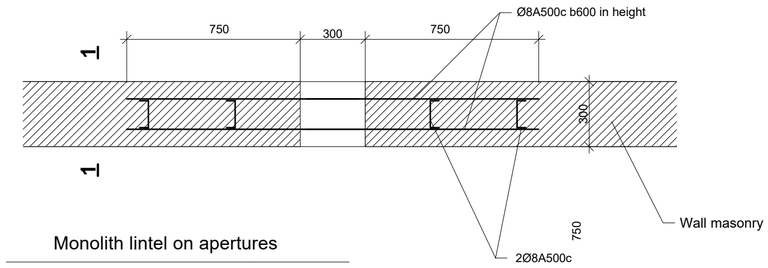
Connection of the columns to the external walls

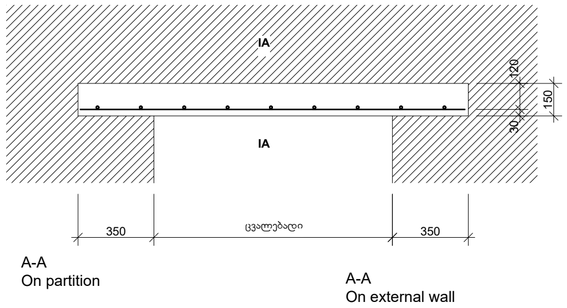


1 - 1



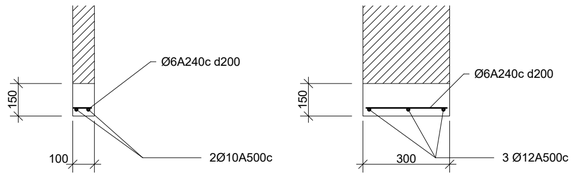


Monolith lintel on apertures



A-A
On partition

A-A
On external wall



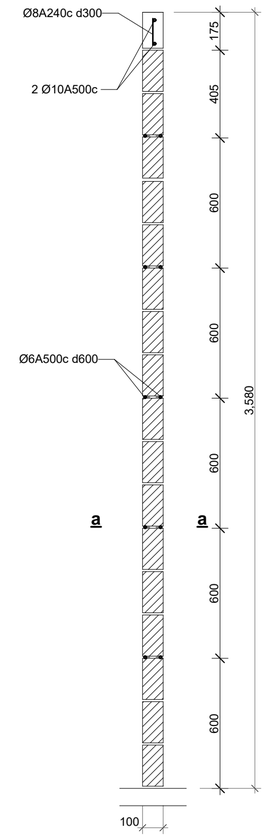
The wall masonry should be connected to the wall frames by reinforcement cantilever of 750 mm long and 600 mm in height. If the wall (masonry) length is more than 3 meters, it must be connected to the reinforced concrete structure of the ceiling with reinforcement rods.
The nodes shown in the drawing can be made by building the framed and bearing walls simultaneously, as well as after concreting. It requires perforation of the frame structure at 20 cm depth and anchor reinforcement rods by a polymer cement solution. Stone partitions should be reinforced with 2Ø6AI reinforcement, at 600mm spacing in height, and anchored with reinforced concrete frame or wall masonry.

ელემენტი Element	№	არმატურის პროფილი reinfrocement profile	სიგრძე მმ Length m	რაოდენობა Q-ty	სულ სიგრძე მ Total length m	ბეტონი მ3 Concrete m3
ზღუდარები Lintels						
ზღუდარი გარე კედელზე Lintel on external wall	1	12 A500c			512	
	2	6 A240c			410	
ზღუდარი შიგა კედლებზე Lintel on internal wall	1	10 A500c			396	
	2	6 A240c			114	
	ბეტონი B25 m3 Concrete					7.9
კედლების და ტიხრების არმირება Reinforcement of walls and partitions						
ტიხრების არმირება Reinforcement of partitions		6 A500c			3040	
გარე კედლების და სვეტების კავშირი Connections of external walls and columns		10 A500c			1360	

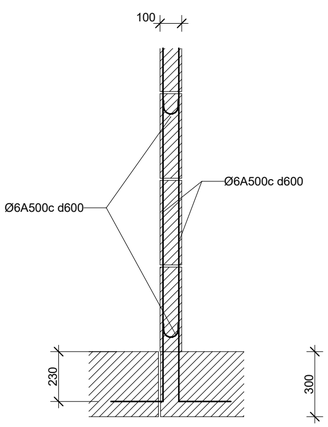
Specification of reinforcement

ელემენტი Element	Section	სულ სიგრძე მ Total length m	სულ სიგრძე დანაკარგით მ Total length with loss m	დანაკარგის წონა weight of r/m T	სულ წონა Total weight	სულ წონა (კლასის მიხედვით) Total weight per class , Tons
A240c	6 A240c	524.0	524.0	0.222	0.12	0.1
	8 A240c		0.0	0.394	0.00	
A500c	6 A500c	3040.0	3040.0	0.222	0.67	2.3
	8 A500c		0.0	0.394	0.00	
	10 A500c	1756.0	1843.8	0.616	1.14	
	12 A500c	512.0	537.6	0.887	0.48	
	14 A500c		0.0	1.208	0.00	
	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				2.40	

Partition reinforcement



a - a



Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Lintels, connection of columns and walls

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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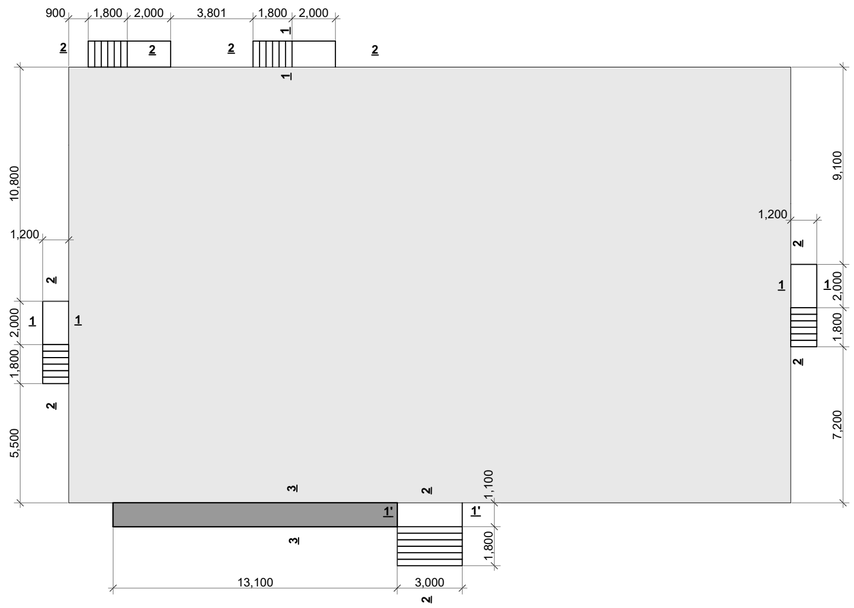
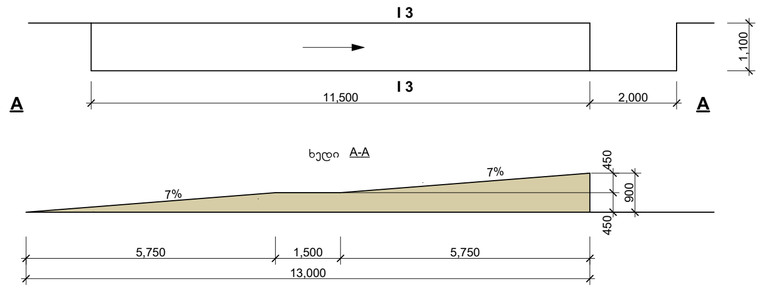
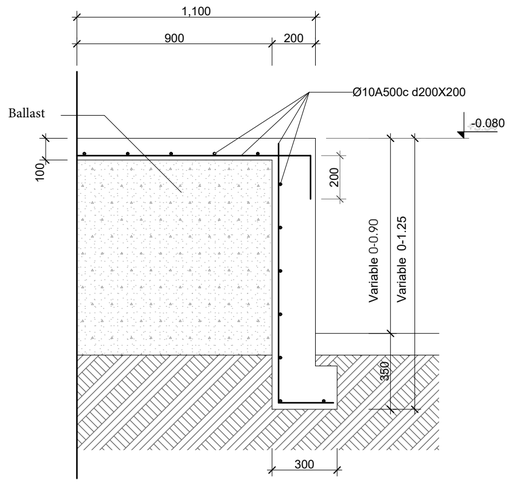
Staircases and Ramp on the Plan



Plan of Ramp

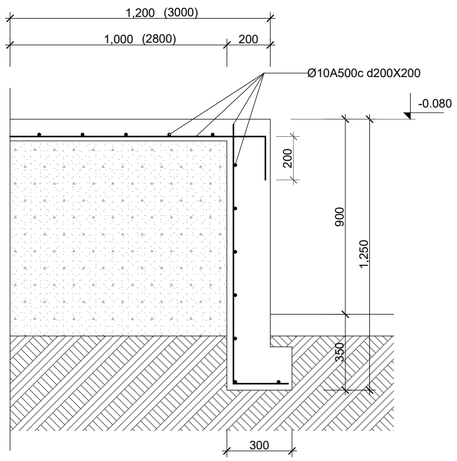


Section 3-3

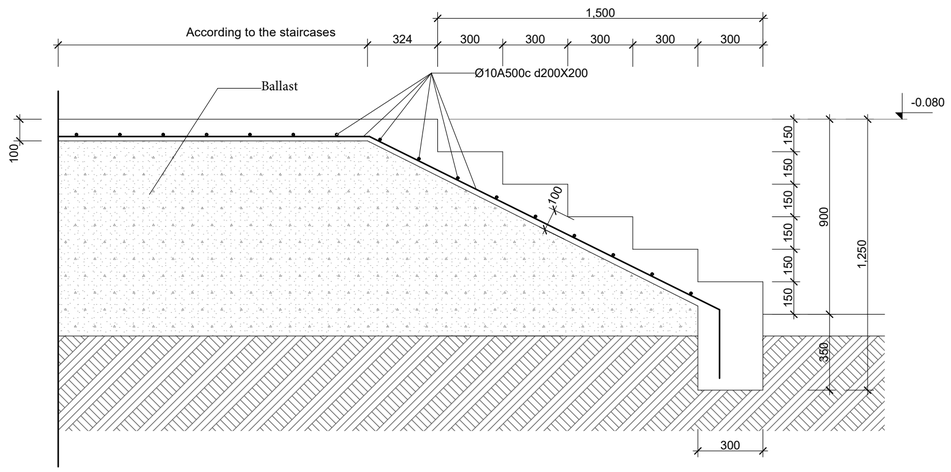


ელემენტი Element	№	არმატურის პროფილი Reinforcement profile	სიგრძე მმ Length mm	რაოდენობა Q-ty	სულ სიგრძე მ Total length m	ბეტონი მ3 Concrete m3
კიბეები და პანდუსი Staircases and ramp						
კიბეები და პანდუსი Staircases and ramp	1	10 A500c			1280	
	ბეტონი B25 m3 Concrete B25 m3					14.5

Section 1-1 (1'-1')



Section 2-2



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
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Senaki

Stage:
Architectural project

external stairs, entryways and ramps at -0.06 level

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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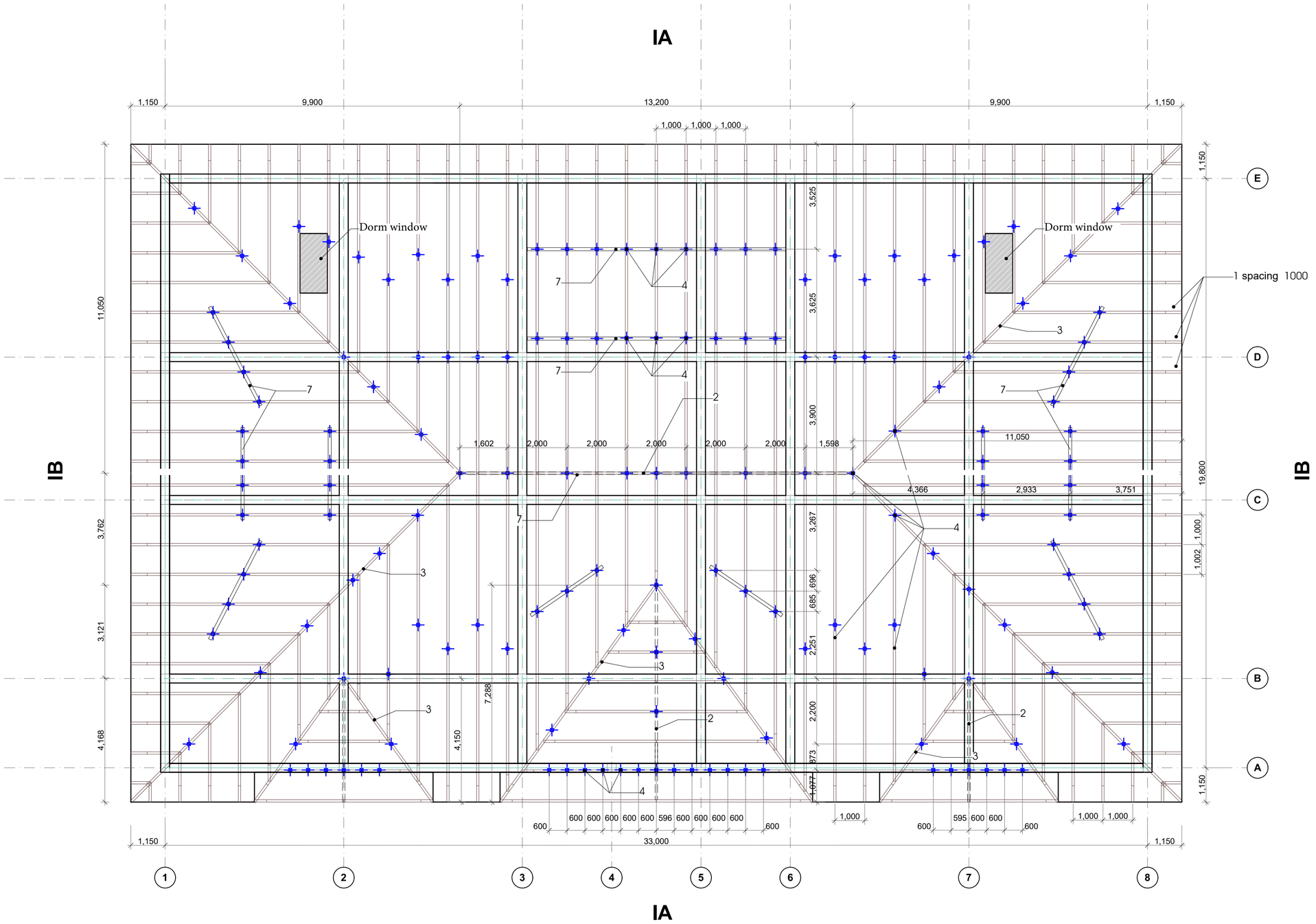
Plan of the Wooden structure of Roof



DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:

Georgia, Senaki

Stage: Architectural project

Plan and render of roof wooden structure

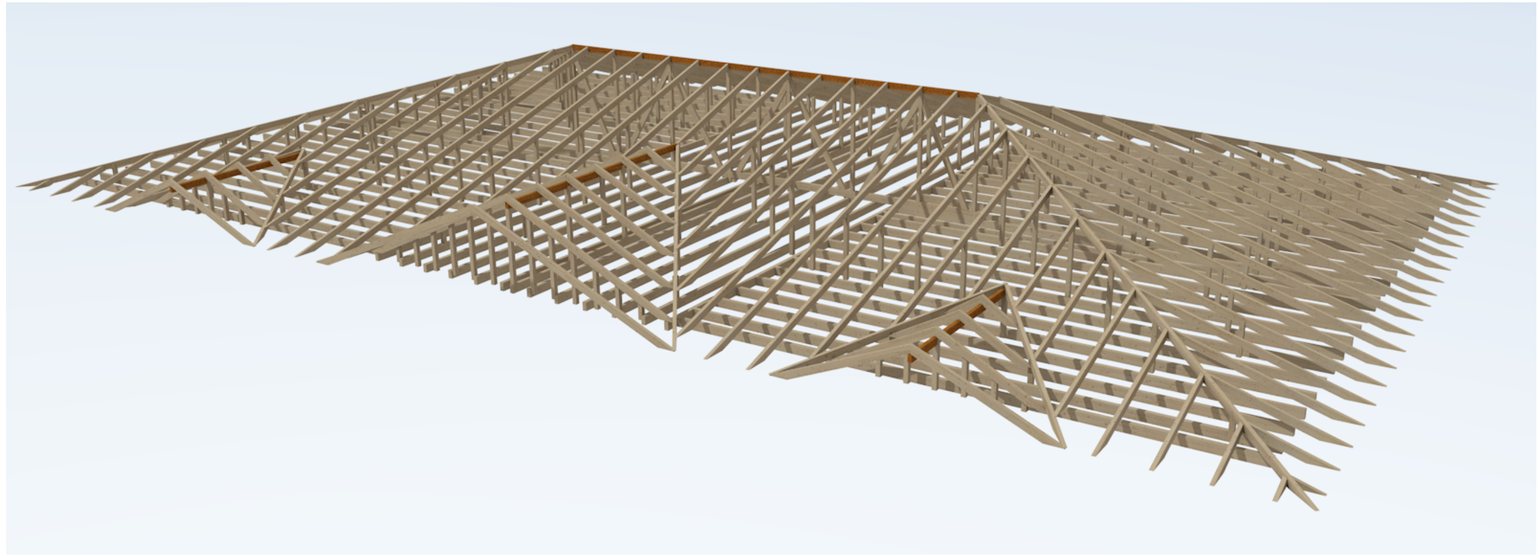
ბ. ქანთარია
B. Qantaria

ა.გერგედავა
A. Gergedava

ფორმატი Format A - 2

ფურცელი Page	ფურცლები Pages
29	32

Render of the Roof Wooden Structure

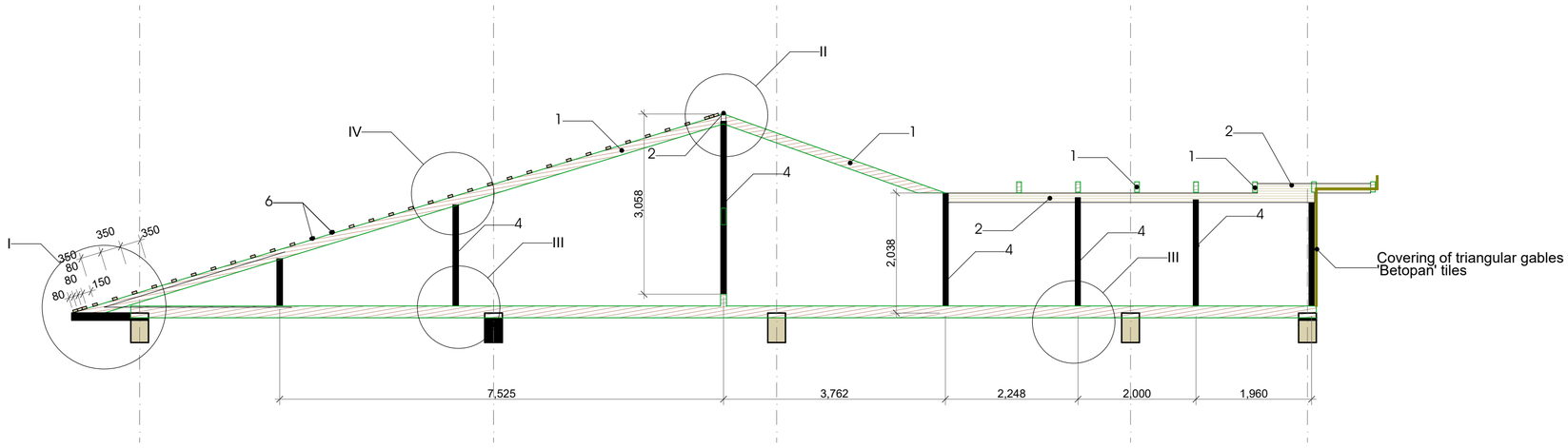


Specification of the Woden Elements

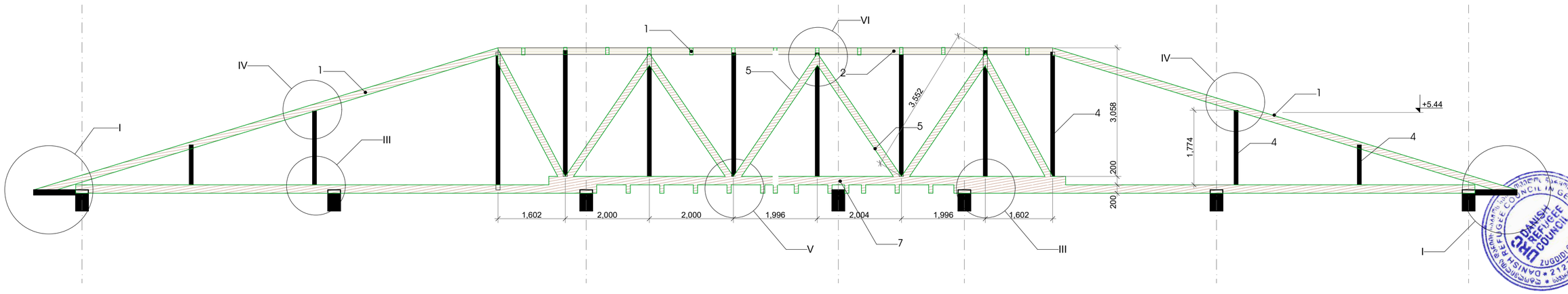
ხის ელემენტების სპეციფიკაცია					
№	კოჯის კვეთი Beam section	სიგანე მმ Width mm	სიმაღლე მმ Height mm	სულ ერთ სიგრძე m total length m	მოცულობა მ3 Volume m3
1	ნიფხვი Rafter	80	160	840	10.75
2	ქედის კოჭი Ridge beam	80	160	32	0.41
3	დიაგონალური ნიფხვი Diagonal Rafer	80	160	108	1.38
4	დგარი Pillar	100	100	304	3.04
5	ტრიბუნა კავშირებისთვის Brace for connections	100	100	28	0.28
6	ლარადის ძელაკი Squared timber bar	40	80	2897	9.27
7	გადანაწილებელი კოჭი Spreading beam	80	160		0.60
				Σ	25.73

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

Section **A-A**



Section **B-B**



DRC DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia,
Senaki

Stage:
Architectural project

Section **A-A; B-B** render

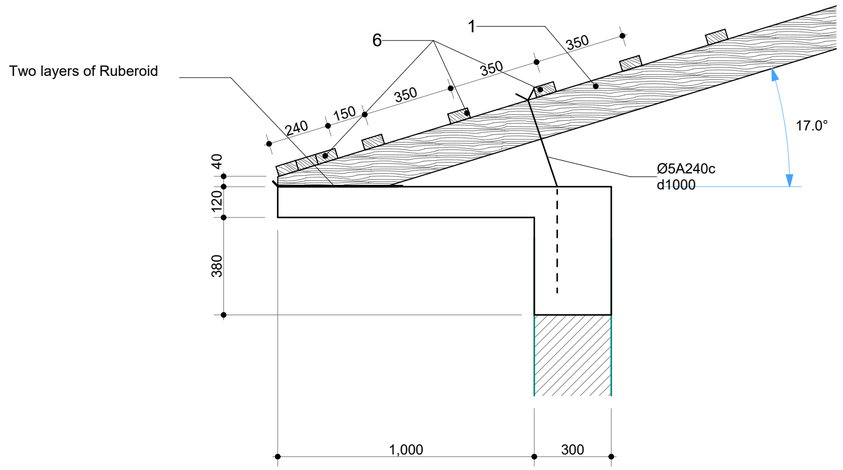
ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

ფურცელი Page	ფურცლები Pages
30	32

I



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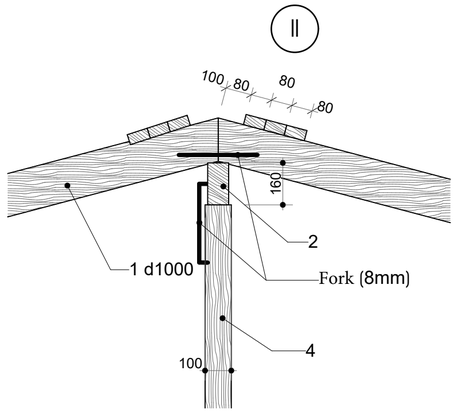

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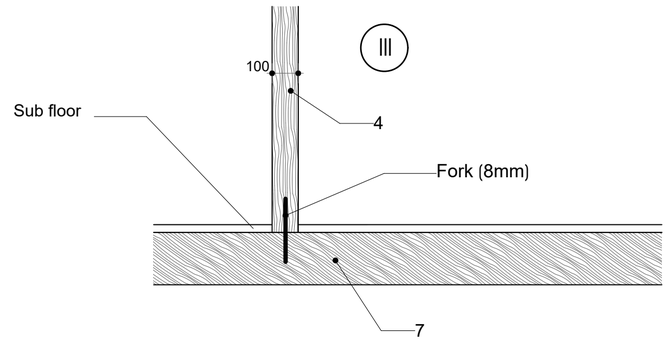
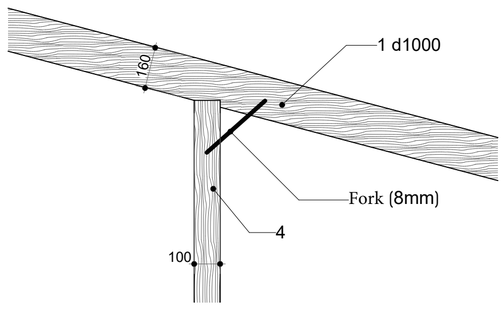


IV



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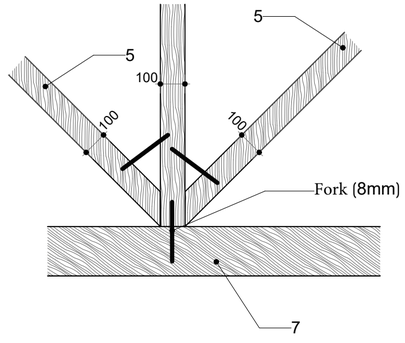
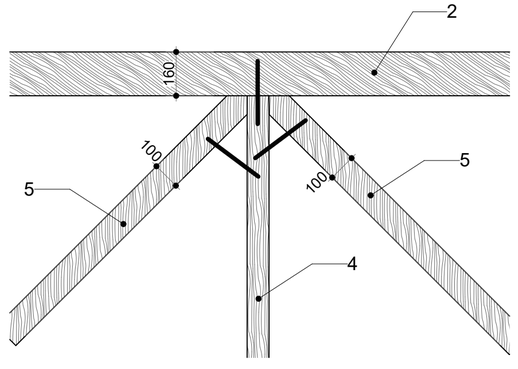


VI



Note:

It is necessary to treat wooden structures with both fire-retardant solutions and antiseptics.

DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:

Georgia,
Senaki

Stage:
Architectural project

Nodes

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B. Qantaria

ა. გერგედავა
A. Gergedava

ფორმატი
Format A - 2

ფურცელი Page	ფურცლები Pages
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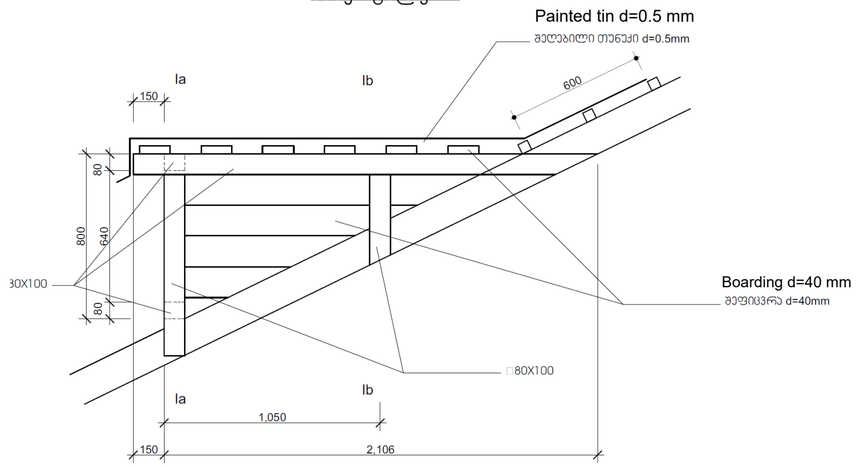
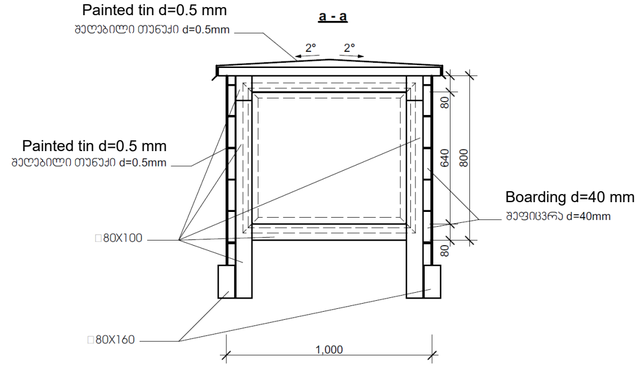
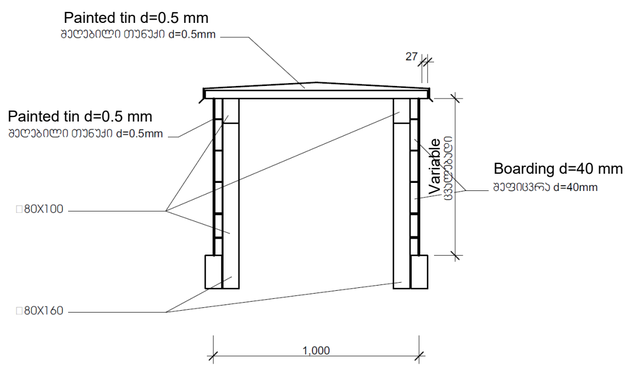
Dorm window
სამერცხლური

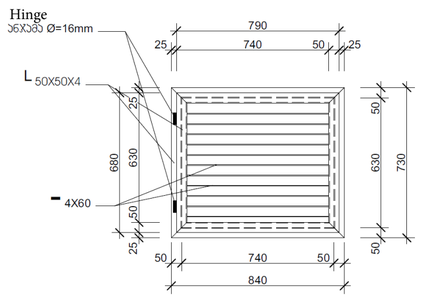


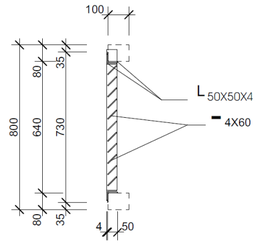


b - b



Steel Fan Window
ფოლადის სარკმელი





ფოლადის სპეციფიკაცია Specification of Steel				
კვეთი Cross-Section	სიგრძე m Length m	რაოდენობა Q-ty	სულ სიგრძე m total length m	წონა kg weight kg
L50X50X4	0.73	2	1.46	4.23
L50X50X4	0.84	2	1.68	4.87
L50X50X4	0.68	2	1.36	3.94
L50X50X4	0.79	2	1.58	4.58
_60X4	0.69	11	7.59	14.27
			∑	31.90

DANISH REFUGEE COUNCIL

Typical Kindergarten for three groups Mshvidobis street, 306, Senaki

Project address:
Georgia, Senaki

Stage:
Architectural project

Dorm window

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

Page	Pages
32	32