PRELIMINARY DESIGN FOR ADAPTATION OF THE BULDING
FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

43597

CONTENTS OF THE PRELIMINARY DESIGN DOCUMENTATION FOR ADAPTATION OF THE BUILDING FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

SUMMARY

Total cost of adaptation of the building
for the Cultural Center of the Republic of Serbia in Beijing is:

1. building and trade works.....CNY
2. water supply and sewerage systems..... CNY
3. power supply systems.....CNY
4. telecommunications - structured cabling system.....CNY
5. fire alarm security system.....CNY
6. burglar alarm security system.....CNY
7. video surveillance.....CNY

TOTAL COST (in CNY).....

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PRELIMINARY ARCHITECTURAL DESIGN

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TECHNICAL DESCRIPTION

PRELIMINARY ARCHITECTURAL DESIGN

BUILDING FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

Concept

The existing building is to be adapted to accommodate facilities needed for the Cultural Center of the Republic of Serbia. Each floor consists of two sections: an open multi-purpose section, and auxiliary areas and rooms. The architectural structure implies poly-functionality, flexibility, efficiency, and the modern value system of the Serbian society. Multi-purpose space is primarily suited for cultural events in various forms, expressions, and dynamic schemes. It is suitable for organizing exhibitions, showing movies and videos, hosting interactive performances, chamber theater performances and dance numbers, recitals, literary evenings, panels, roundtables, lectures, workshops, seminars, scientific conferences and meetings.
The auxiliary zones include the area for obtaining information in analog (brochures, publications) and digital (CDs) formats, and a library where guests can leaf through, read and borrow books and other publications. The auxiliary rooms serve to support the basic functions and cover the administrative section - offices, and a kitchenette, sanitary rooms, and a closet.

Urban planning conditions

The building to be adapted for the Cultural Center of the Republic of Serbia is located in Beijing, 2 Jiu Xia Qiao Street, Chaoyang District, B section, B03-6, and covers the surface area of 283.6 m², within Artistic district 798. The building has the ground floor and an upper floor, interconnected by an external, open staircase, with the total gross floor area of 283.60 m2. This is a free-standing building. Access to the ground floor is directly from the street, next to a grade-separated, open terrace with two trees. Next to the ground floor entrance is a gate behind which is the external staircase for access to the upper floor. The total net area of the newly adapted space is P = 269.55 m2.

Present conditions

Present condition of the building is used to the maximum within the new solution for economic reasons, and also because the building is a protected cultural asset, i.e. industrial heritage, and the exterior appearance and the basic spatial structure must not be changed.
The building is of good quality, but needs to be inspected in detail, and all dilapidated elements need to be replaced or repaired. The interior structural elements, conditioned by the previous purpose of the building, include partition masonry walls on both floors, a bar on the ground floor, and a stage and suspended ceiling on the upper floor.
Demolition: All existing internal, partition walls, stage, bars, and sanitary rooms and kitchen will be removed in order to adapt the space for its future furnishings.

Layout design

The layout design for the new purpose matches the pre-set program and includes: *Ground floor* with a vestibule leading to the lobby and further on to the info desk area, the sitting area, and directly to the flexible exhibition area fitted with movable, rotating and removable panels, lit from ceiling racks with a flexible system of lighting fixtures, such as those used in tv studios. The mentioned area is completely free, and can be fitted for various, temporary spatial arrangements. The lobby also provides access to toilets, one of which is suited for persons with reduced mobility.

The upper floor is accessed, as already mentioned, from the external staircase leading to the vestibule and further on to the open library with transparent shelves directing to the flexible exhibition area. Right from the entrance is the Director's office, located in the most protected part of the area, to provide the possibility for undisturbed work in case of program activities in the central area. The office with two workstations is separated from the exhibition area by a glass partition, and, if needed, it can serve as an editing room, preparation room for exhibitors, program participants, etc., in addition to its basic purpose as office space. Additional amenities are a kitchenette, a storage area and a toilet. The kitchenette is positioned so as to serve effectively both the director's office and the flexible area. The storage area is located in such a way to serve multiple purposes in addition to being a closet and a storeroom. The toilet on the upper floor is necessary, primarily because of the fact that the floors are interconnected by the external, uncovered staircase, which makes the usage of sanitary rooms on the ground floor difficult, particularly in winter or under poor weather conditions.

Materials and execution

Structure: Since this is an already erected building, its existing bearing structure is a skeletal system made up of steel columns and beams with reinforced-concrete slabs cast over corrugated metal decking. The steel columns are U-channels, and the ceiling beams are I-sections. The beams in the floor structure are braced with steel wire ropes.

Face walls and roof: External shell (envelope) of the building is made of brickwork, 38 cm thick, and is kept in place. The existing plinth and window and door lintels made of artificial stone are to be freshened up by sanding. The roof cover is kept in its existing condition, but needs to be inspected, and any dilapidated parts need to be repaired or replaced.

Exterior staircase: Exterior steel staircase interconnecting the ground floor and the upper floor is to be kept in its present condition. The finish coat and corroded parts are to be removed down to the sound metal surface, which is then protected with double anti-corrosive coating and finished with oil paint in color as selected by the Designer.

Veranda: The veranda is made of wooden boards on wooden framing. It is to be kept in its current condition. The wooden framing is to be inspected and any damaged or dilapidated elements are to be replaced. Wooden boards are to be sanded. The boards and the framing are to be finished with two coats of protective paint.

Interior finishing works: The interior finishing works include partition walls, floors and ceilings. *The interior partition walls* are made of gypsum-cardboard panels, d=1.25 cm thick, on aluminum framing, with the cavity filled with loose stone wool for soundproofing. If the partition walls are used to form sanitary rooms or the kitchenette, they shall be clad with ceramic tiles in adhesive, in color as selected by the Designer, in full wall height, i.e. up to the ceiling. They shall be coated with dispersive paint in color as selected by the Designer. Floors are kept in their current condition. Wooden parquet flooring on the ground floor is to be kept, sanded and varnished in two coats. Ceramic tile flooring on the upper floor is to be kept. The flooring on the ground floor and on the upper floor is to be inspected, and any damaged portions are to be replaced, primarily in the areas of the existing partition walls that are removed. *The ceiling* on the ground floor consists of visible steel beams, I-sections, braces that strengthen them, and the bottom side of the floor slab. The mentioned ceiling is kept in its present condition. The ceiling on the upper floor is suspended, made of gypsum cardboard that is to be removed, and the exposed surface is to be finished in the same way as the one on the ground floor - cleaned, degreased, and painted in the same color as the one on the ground floor.

Installation systems

The building is to be fitted with the following installations systems:

- HVAC system
- power supply system
- telecommunications
- water supply and sewerage systems
- fire and burglar alarm systems

HVAC systems. The building is designed to have a VRF air-conditioning system with an air source heat pump with direct expansion, covering heat gains and losses. The system consists of one outdoor unit and several indoor units. The designed heating and cooling system offers a reasonable solution to cover summer and winter periods with maximum energy savings and comfort in the building.

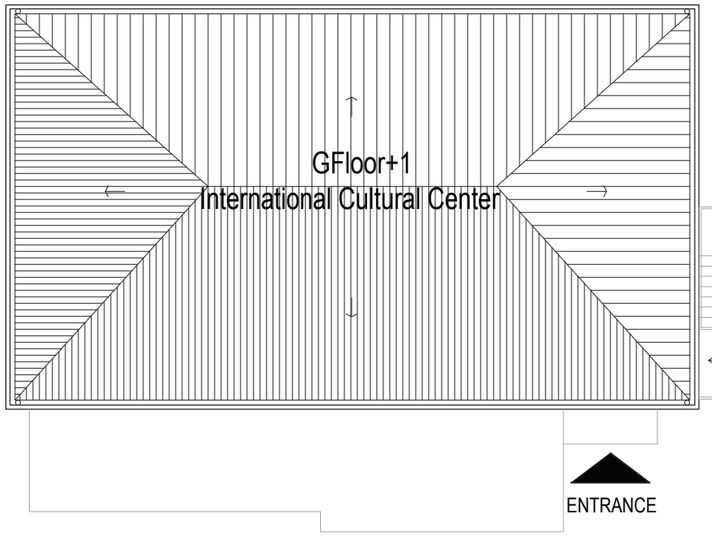
Power supply system. Power supply system includes consumers in the kitchenette and lighting in the building.

Telecommunications - structured cabling system: The design specifies cable conduits needed to connect the building to the public telecom grid in the form of 3xPE pipes, diam. 50 mm, laid all the way to the RACK on the ground floor. Telecom drop cable is not subject of this design.

Water supply and sewerage: The building is to be provided with a sanitary block and kitchenette on the upper floor, and a toilet and a toilet for persons with disabilities on the ground floor. The design of water supply and sewerage systems includes the water supply lines, the hydrant network, and the sewerage system within the building and up to 1m out of the building.

Fire and burglar alarm systems. The building is designed to be fully monitored by an automatic fire alarm system. Manually activated fire alarms are placed along the escape routes. Alarming is foreseen by sirens. A technical security (burglar alarm) system is foreseen to protect the building against burglary - a modern addressable system with microprocessor-controlled central station. The burglar alarm system covers all entrances to the building and rooms at risk of illegal entry and burglary.

Layout Scale 1:150



Jiu Xia Qiuao, Chaoyang District no. 2

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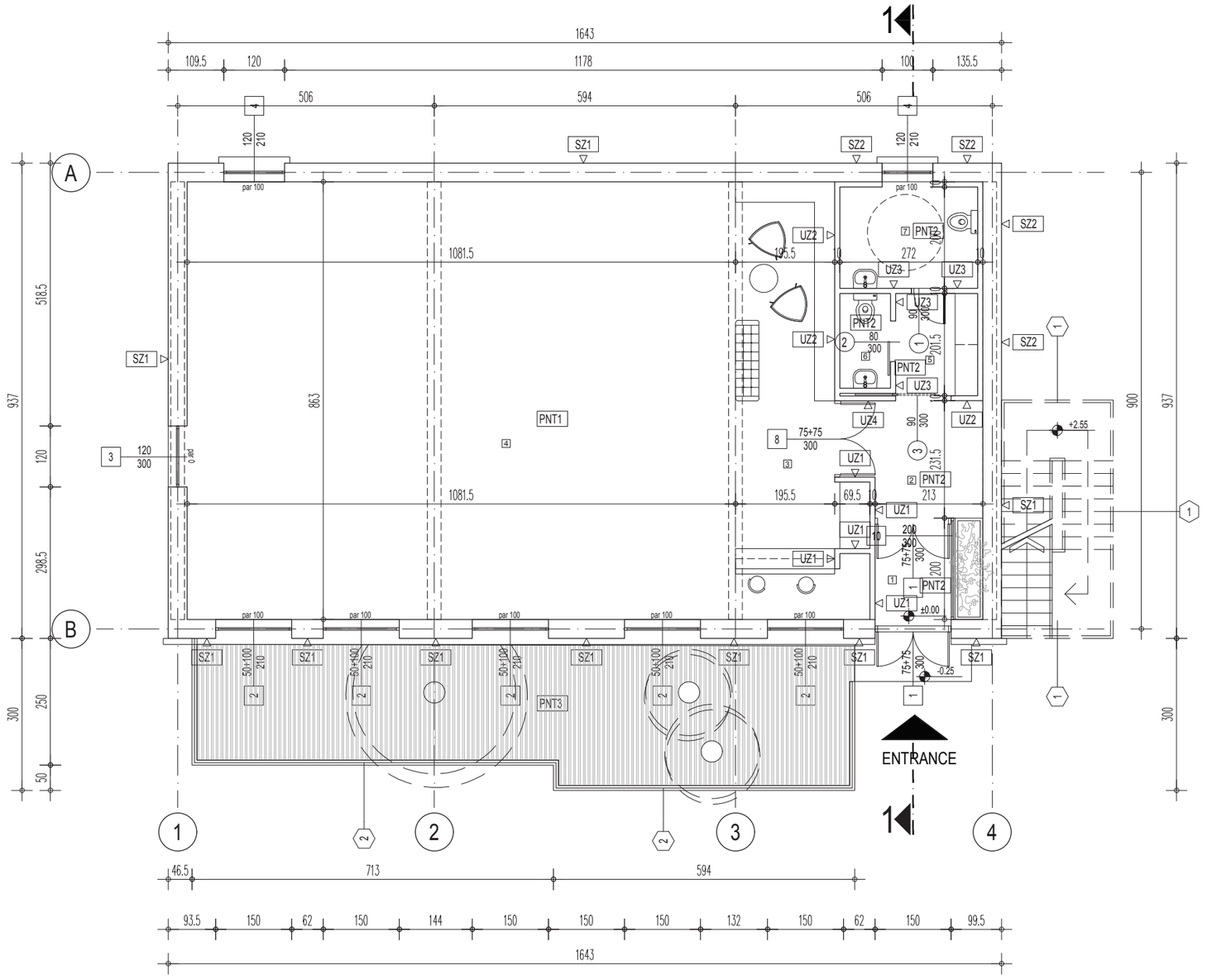
Ground floor plan Scale 1:100



Ground floor plan

No.	ROOM/SPACE	Area-A (m^2)	Perimeter-P (m)	FINISHING		
				FLOOR	WALL	CEILING
1	Vestibule	3.09	7.13	granite tiles	dispersive paint	dispersive paint
2	Lobby	7.22	14.45	granite tiles	dispersive paint	dispersive paint
3	Basic information area	18.65	24.55	existing parquet	dispersive paint	dispersive paint
4	Exhibition area	93.33	38.89	existing parquet	dispersive paint	dispersive paint
5	Toilet lobby	7.56	7.67	granite tiles	granite tiles	dispersive paint
6	Toilet	1.91	5.84	granite tiles	granite tiles	dispersive paint
7	Toilet	5.92	9.83	granite tiles	granite tiles	dispersive paint

NET AREA	137.68 m^2
GROSS AREA	153.95 m^2

STRUCTURAL PHYSICS

DESCRIPTION OF EXTERNAL WALLS

SZ1

- existing brick wall 38.0cm

SZ2

- existing brick wall 38.0cm
- substructure 8.0cm
- moisture-resistant gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

DESCRIPTION OF INTERNAL WALLS

UZ1

- gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- gypsum cardboard 1.25cm

UZ2

- moisture-resistant gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- moisture-resistant gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

UZ3

- ceramic tiles in adhesive 1.0cm
- M/R gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- M/R gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

UZ4

- moisture-resistant gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- moisture-resistant gypsum cardboard 1.25cm
- space for sliding door 5.0cm
- moisture-resistant gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

DESCRIPTION OF FLOOR ON THE GROUND

PNT1

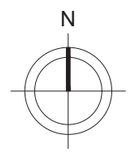
- existing parquet on the existing floor structure

PNT2

- granite tiles 1.0cm
- cement screed 4.0cm
- existing floor structure

PNT3

- existing boards on the existing floor structure



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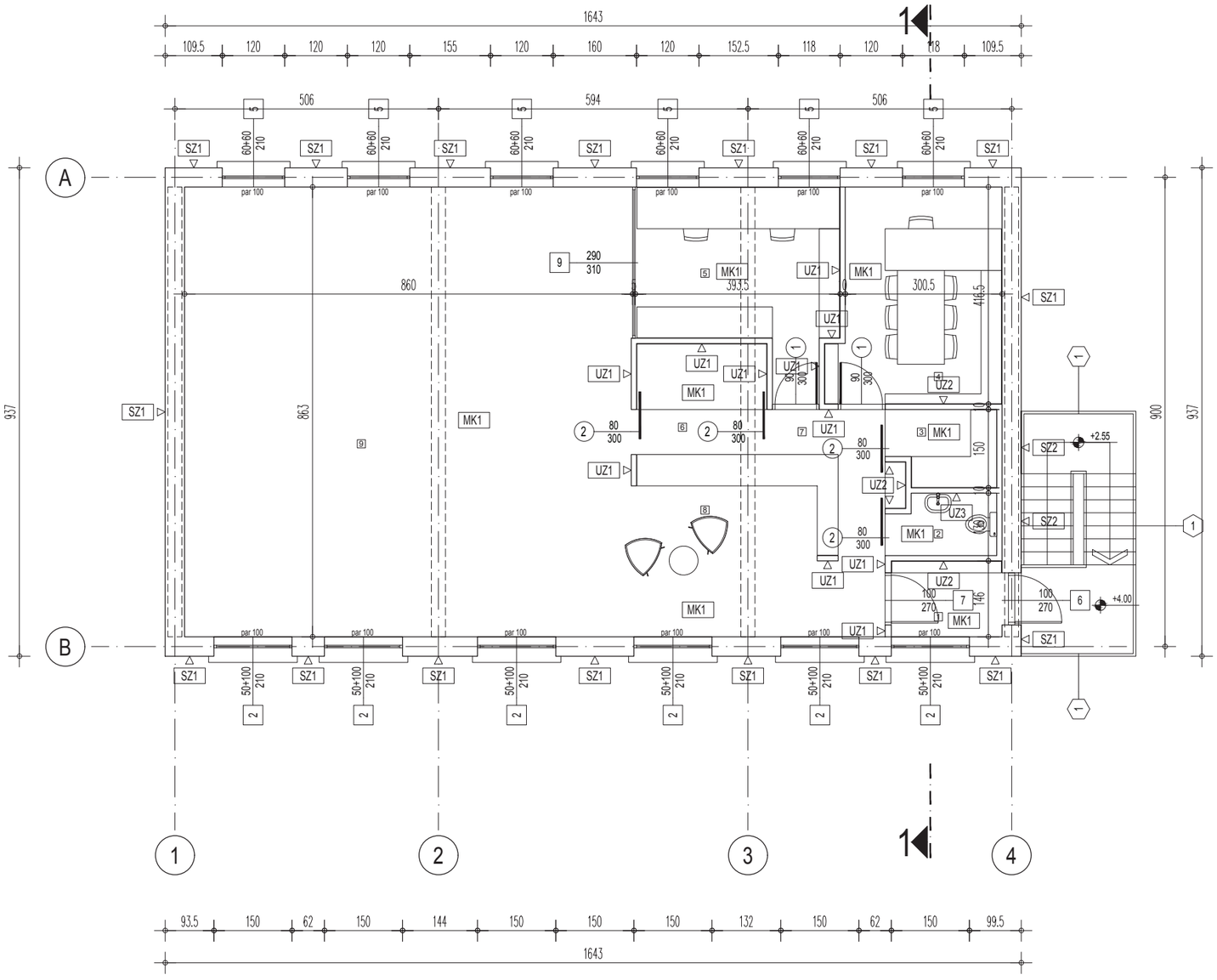
Upper floor plan Scale 1:100



Upper floor plan

No.	ROOM/SPACE	A (m²)	P (m)	FINISHING		
				FLOOR	WALL	CEILING dispersive paint
1	Vestibule	3.10	7.17	existing ceramic tiles	dispersive paint	dispersive paint
2	Toilet	2.40	6.65	existing ceramic tiles	granite tiles	dispersive paint
3	Kitchenette	2.96	7.25	existing ceramic tiles	granite tiles	dispersive paint
4	Director's office	13.00	15.15	existing ceramic tiles	dispersive paint	dispersive paint
5	Office	12.47	16.15	existing ceramic tiles	dispersive paint	dispersive paint
6	Storage area	5.35	9.28	existing ceramic tiles	dispersive paint	dispersive paint
7	Library	3.97	10.73	existing ceramic tiles	dispersive paint	dispersive paint
8	Corridor	7.50	11.62	existing ceramic tiles	dispersive paint	dispersive paint
9	Flexible exhibition area	81.11	44.15	existing ceramic tiles	dispersive paint	dispersive paint

NET AREA	131.87 m²
GROSS AREA	153.95 m²

STRUCTURAL PHYSICS

DESCRIPTION OF EXTERNAL WALLS

SZ1

- existing brick wall 38.0cm

SZ2

- existing brick wall 38.0cm
- substructure 8.0cm
- M/R gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

DESCRIPTION OF INTERNAL WALLS

UZ1

- gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- gypsum cardboard 1.25cm

UZ2

- M/R gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- M/R gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

UZ3

- ceramic tiles in adhesive 1.0cm
- M/R gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- M/R gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

DESCRIPTION OF FLOOR STRUCTURE

MK1

- existing ceramic tiles on the existing floor structure

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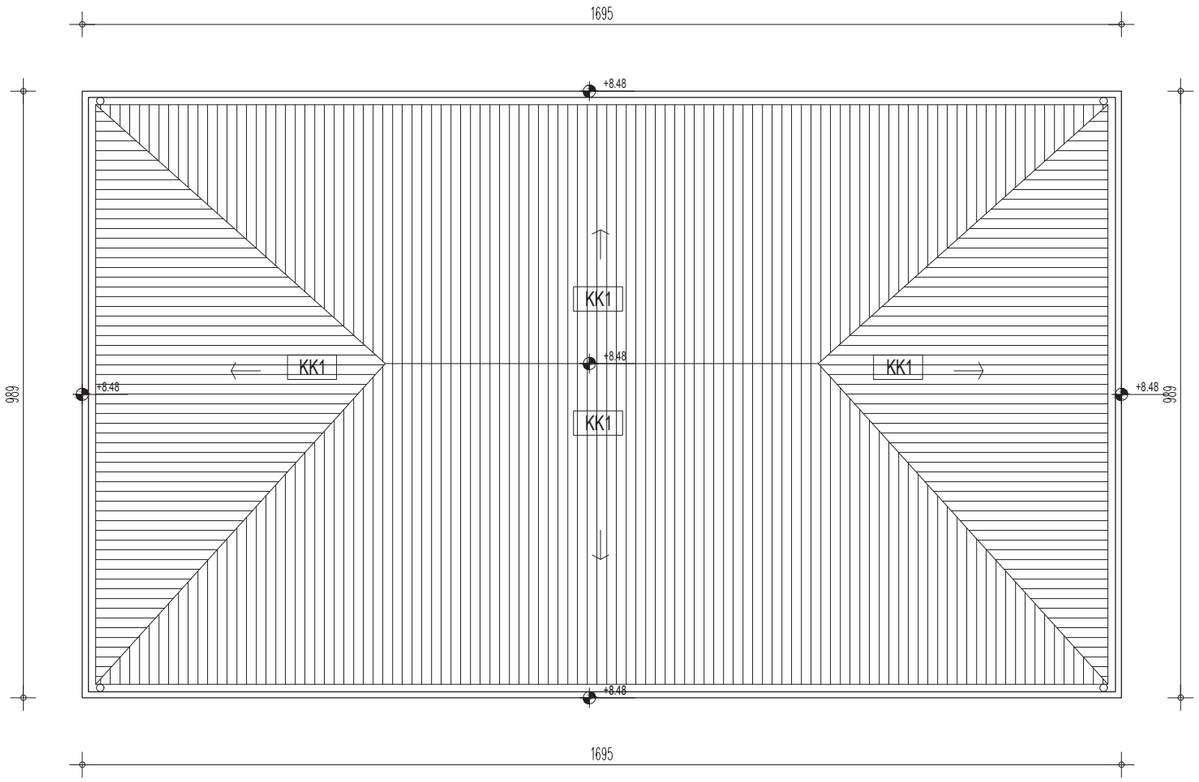
Roof plan Scale 1 :100



STRUCTURAL PHYSICS

DESCRIPTION OF THE ROOF

KK1

- existing roof on the existing roof truss

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sheet 6

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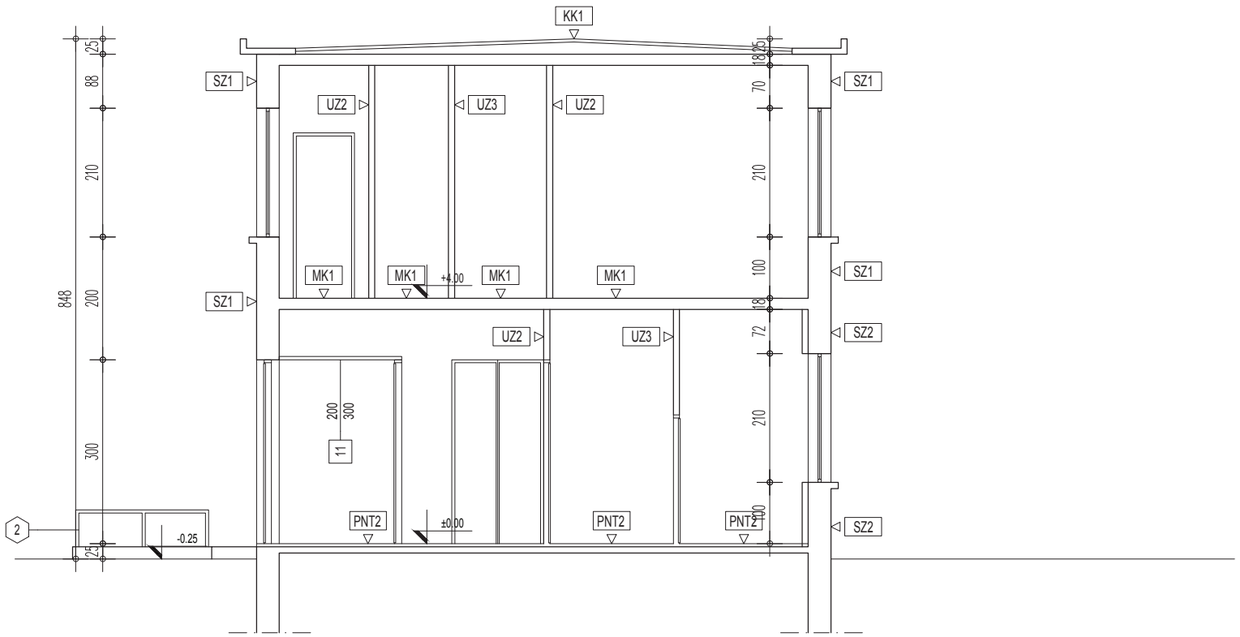
Cross-section 1-1 Scale 1 :100



STRUCTURAL PHYSICS

DESCRIPTION OF EXTERNAL WALLS

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SZ2

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- M/R gypsum cardboard 1.25cm
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DESCRIPTION OF INTERNAL WALLS

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- substructure + stone wool 8.0 cm
- gypsum cardboard 1.25 cm

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- M/R gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- M/R gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

UZ3

- ceramic tiles in adhesive 1.0cm
- M/R gypsum cardboard 1.25cm
- substructure + stone wool 8.0cm
- M/R gypsum cardboard 1.25cm
- ceramic tiles in adhesive 1.0cm

DESCRIPTION OF FLOOR STRUCTURE

MK1

- existing tiles on
  the existing floor structure

DESCRIPTION OF FLOOR ON THE GROUND

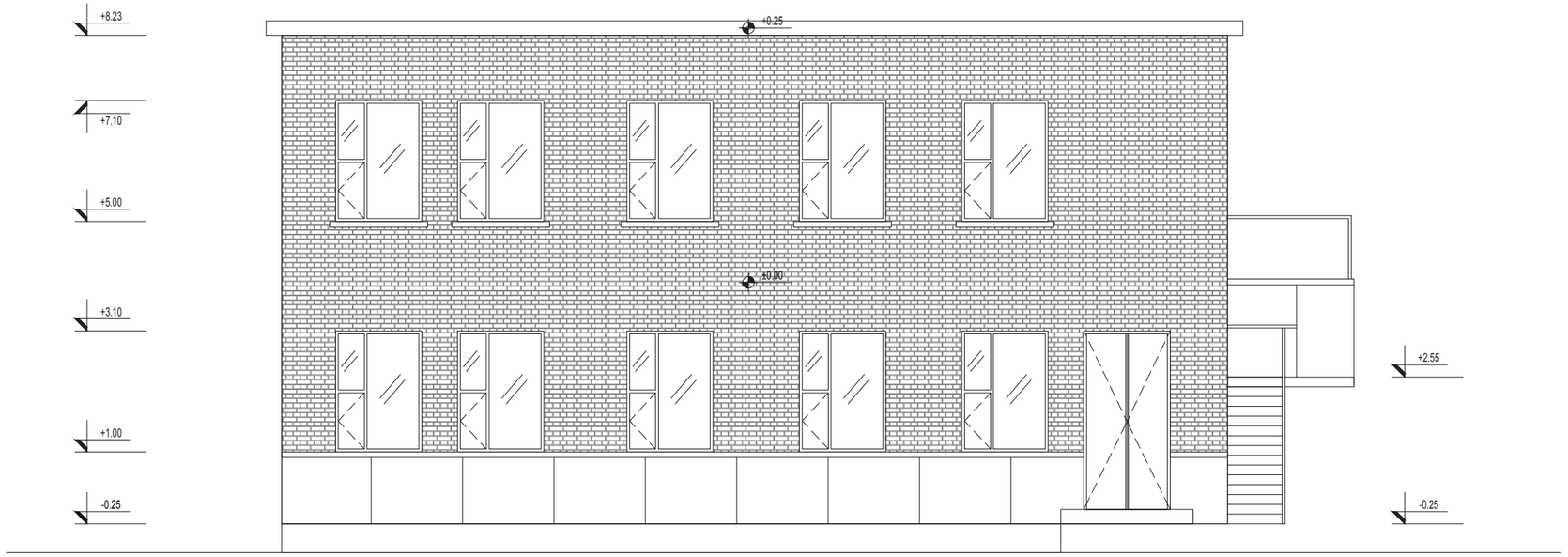
PNT2

- granite tiles 1.0cm
- cement screed 4.0cm
- existing floor structure

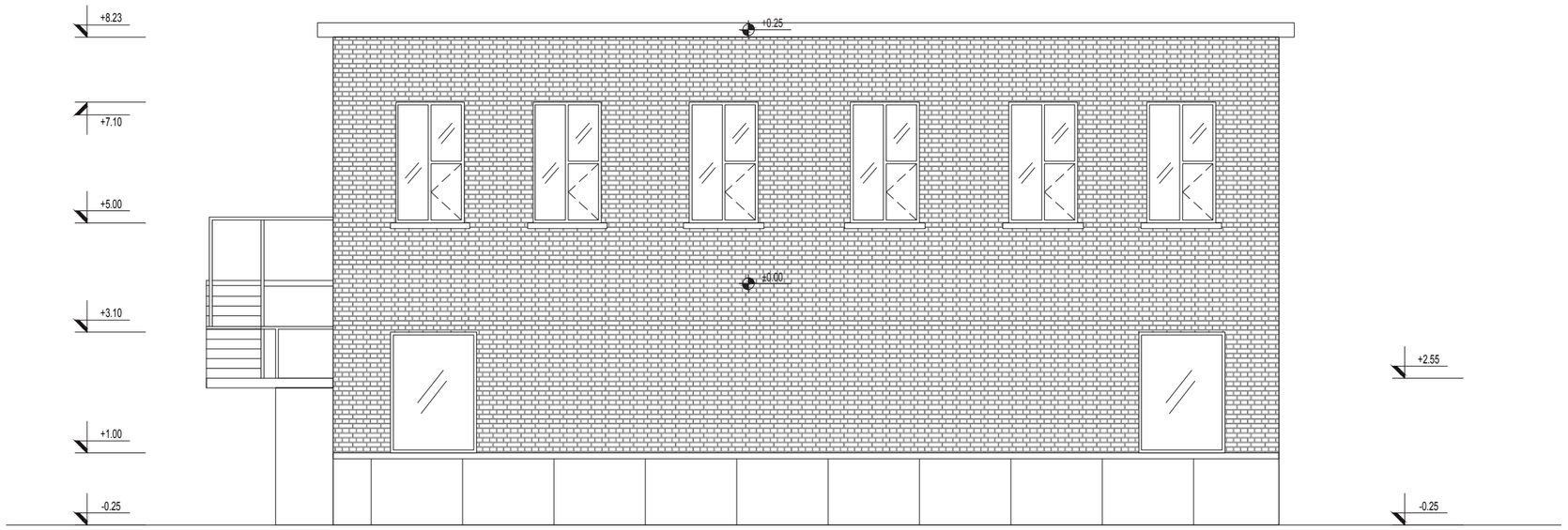
DESCRIPTION OF ROOF

KK1

- existing roof on
  the existing roof truss



View of the southern façade Scale 1:100



View of the northern façade Scale 1:100

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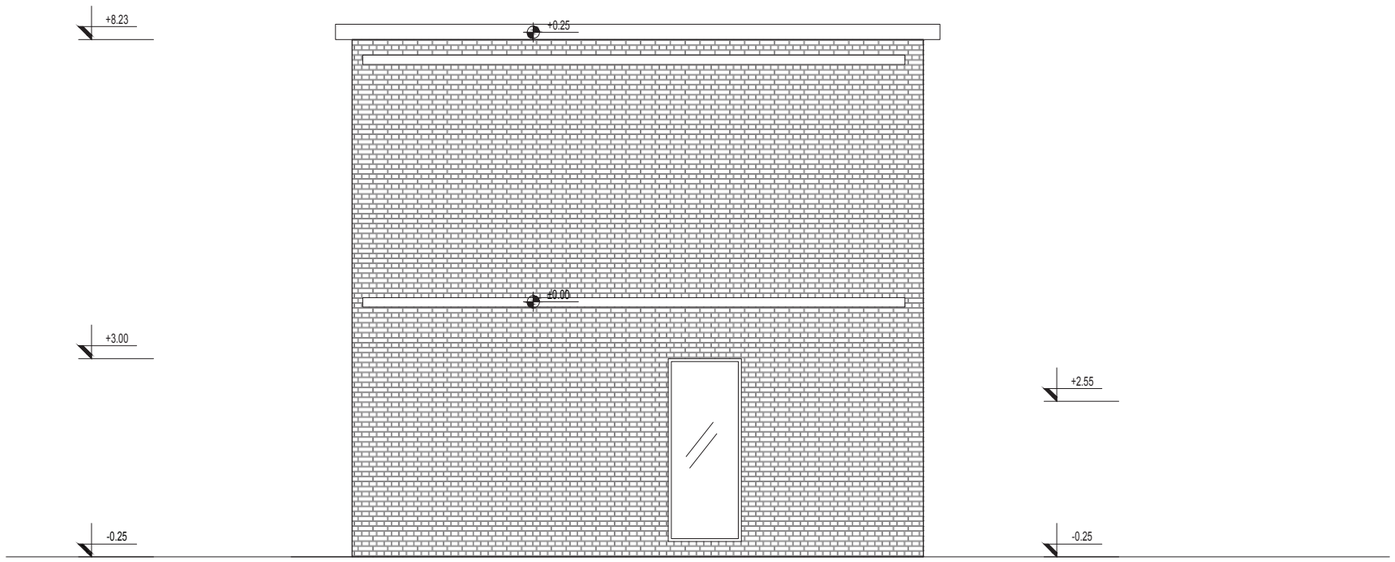
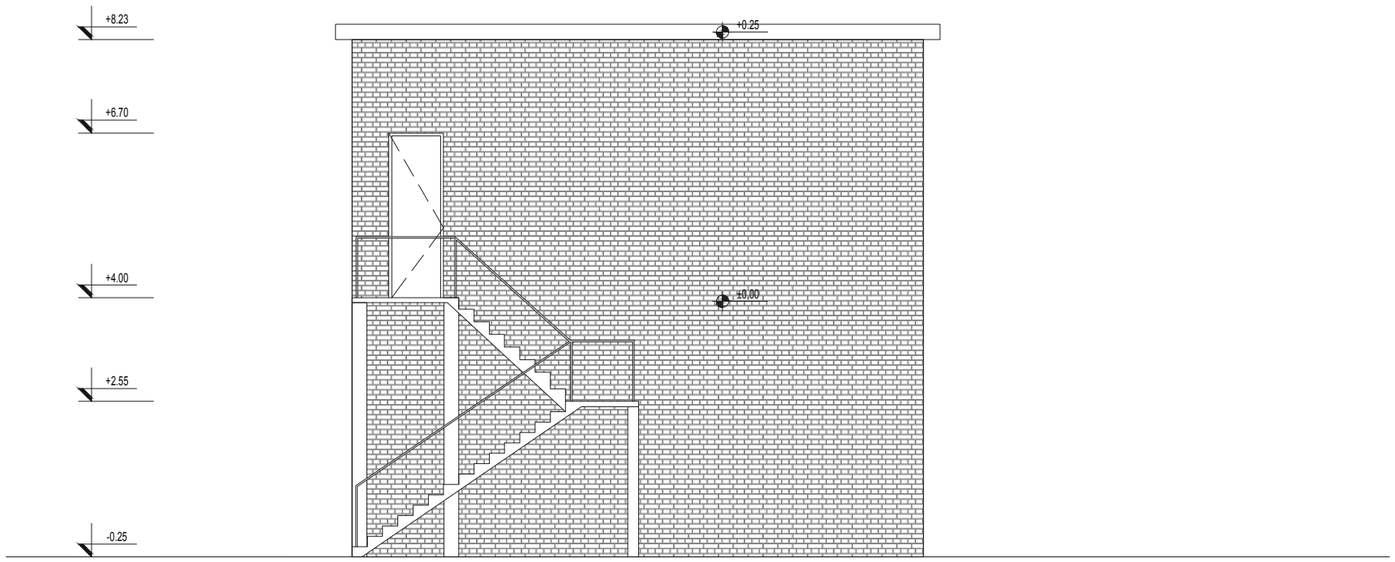


View of the western façade Scale 1:100



View of the eastern façade Scale 1:100

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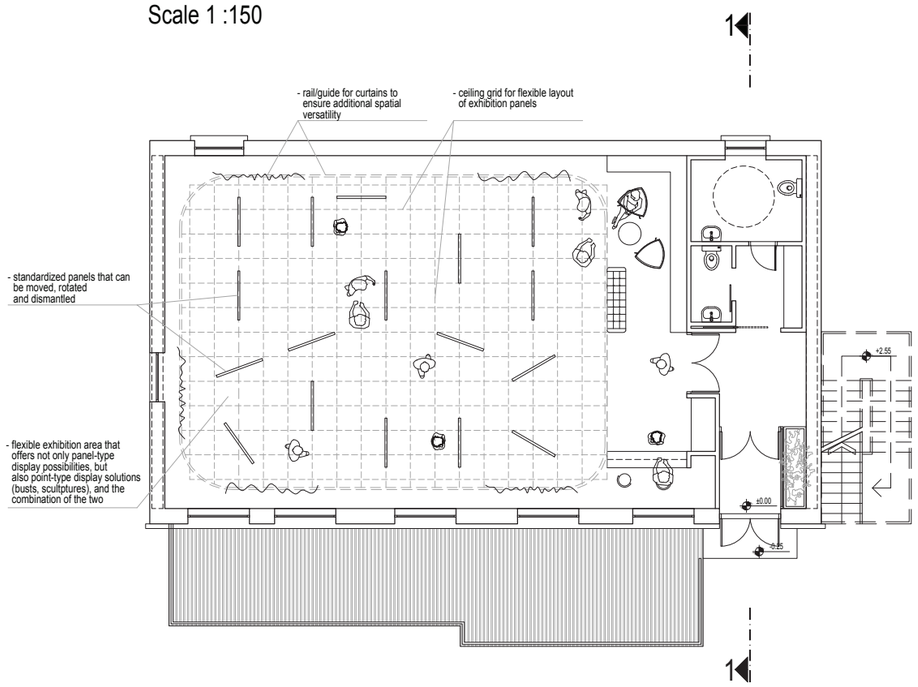
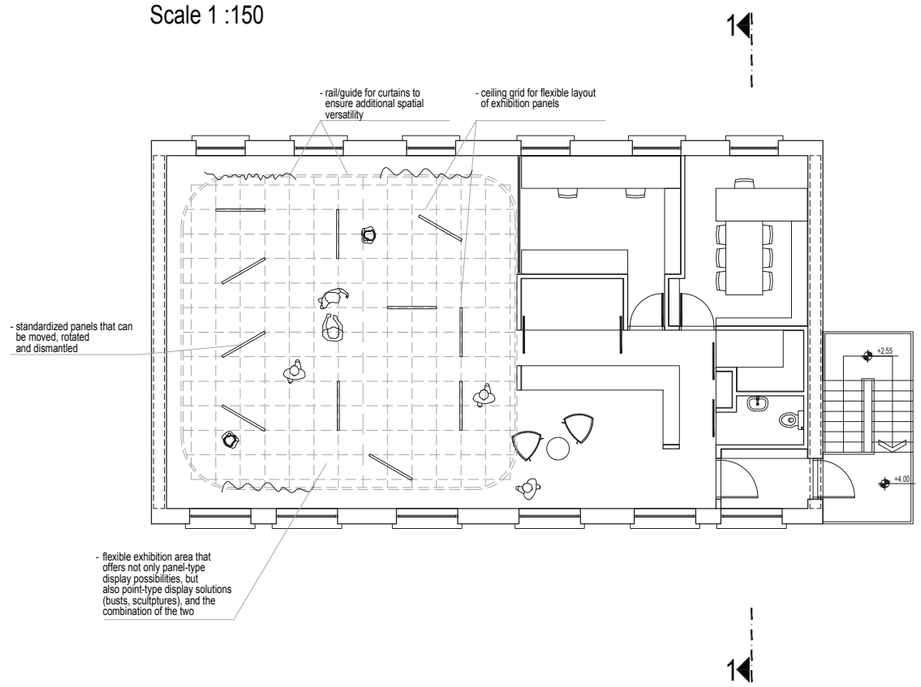
Diagram of use
for the exhibition area -
GROUND FLOOR
Scale 1 :150

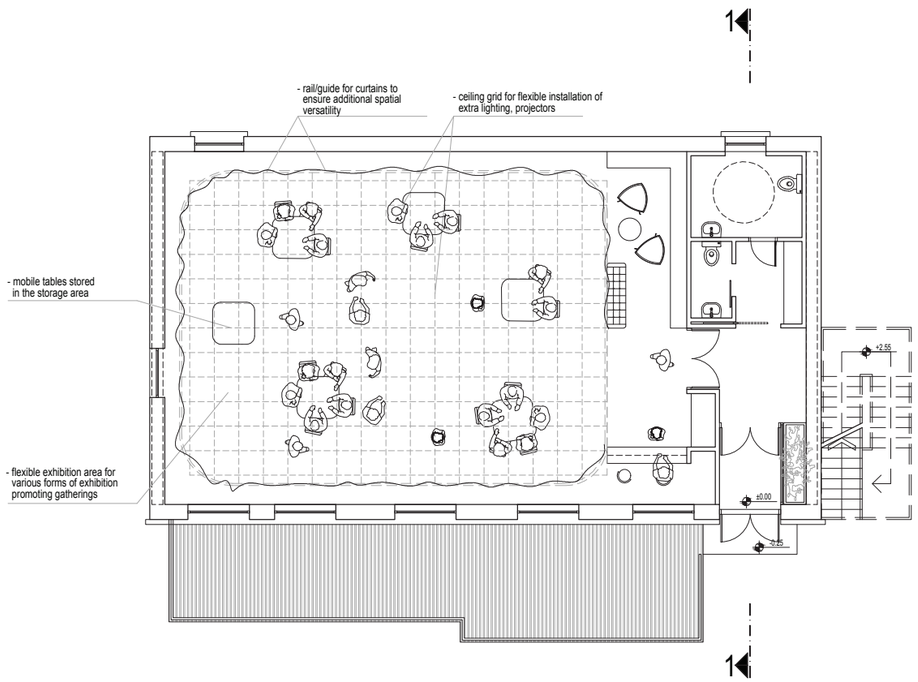


View 1 - GROUND FLOOR

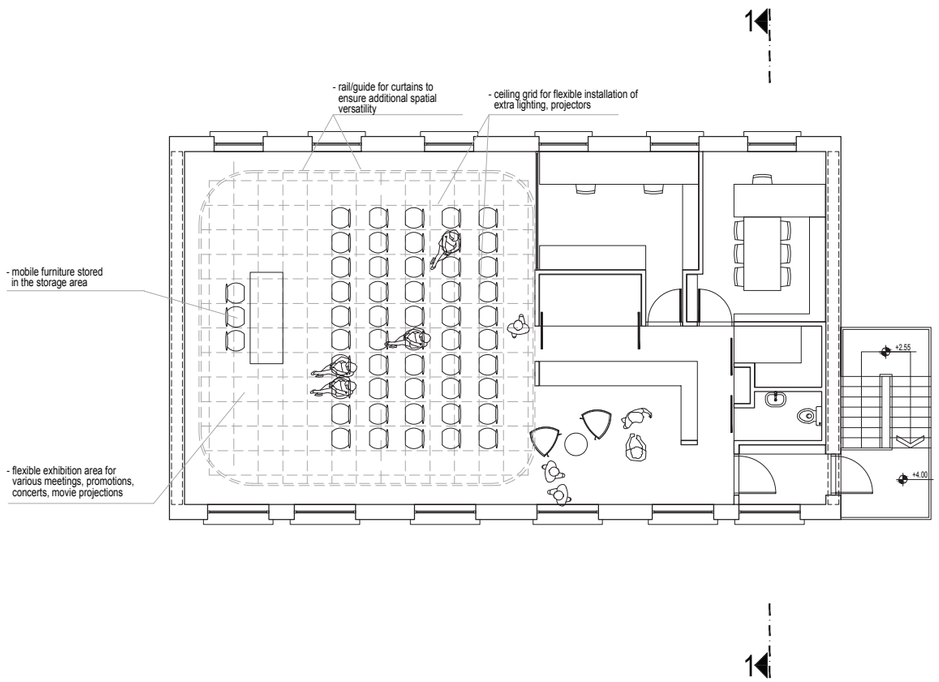
Diagram of use
for the exhibition area -
UPPER FLOOR
Scale 1 :150



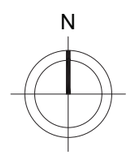
View 1 - UPPER FLOOR



View 2 - GROUND FLOOR



View 2 - UPPER FLOOR



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3D presentation of the exhibition area - GROUND FLOOR

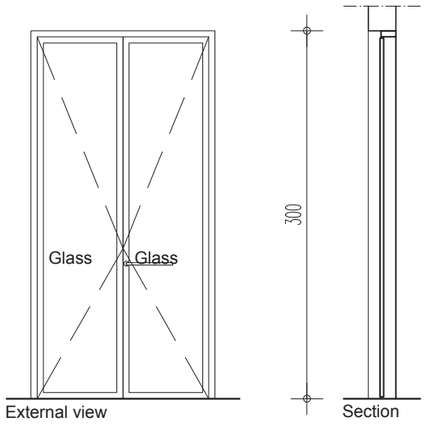
3D presentation of the information area - GROUND FLOOR

3D presentation of the exhibition area - UPPER FLOOR

3D presentation of the exhibition area - UPPER FLOOR

	Project: Serbian Cultural Center in Beijing	Scale:
	ALU WORKS	1:50

Drawing:	Double external door	Code: 1



Scheme:

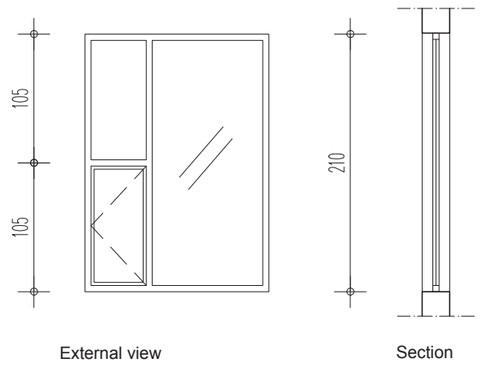
Clear opening:	75+75/300cm

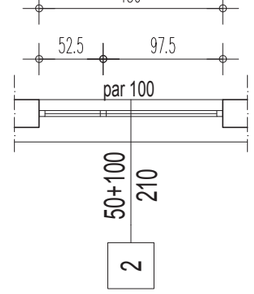
Description:	Fabrication and installation of double glazed doors, according to the existing scheme, made of three-chambered alu sections with thermal break. The sections are plasticized in color as selected by the Designer. Glazing with two insulation glass panes, 4+16+4 mm. The external glass pane is transparent, and the internal pane is made of low-e glass. The space between the panes is filled with argon. Hardware is to be refitted so that the windows can be opened in the opposite direction, and other details need to be agreed with the Designer. The cost needs to include all necessary trimmings. Calculation per 1 fully fitted and installed window/-door.

Total:	1
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE

	Project: Serbian Cultural Center in Beijing	Scale:
	ALU WORKS	1:50

Drawing:	Double window	Code: 2





Scheme:

Clear opening:	75+75/300cm

Description:	THE EXISTING ITEMS ARE TO BE KEPT

Total:	11
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE

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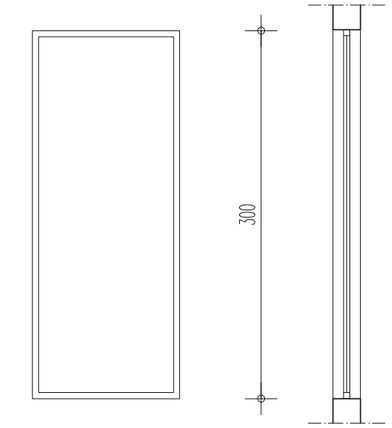
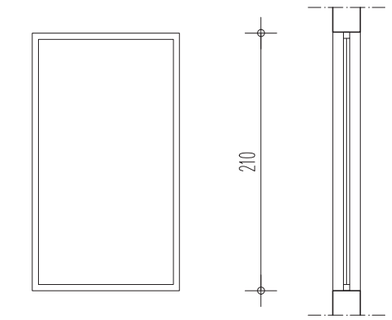
	Project: **Serbian Cultural Center in Beijing**		Scale: 1:50		Project: **Serbian Cultural Center in Beijing**		Scale: 1:50
	ALU WORKS				**ALU WORKS**		
Drawing:	Fixed glazed partition	Code: 3		Drawing:	Fixed glazed partition	Code: 4	
Scheme:				Scheme:			
Clear opening:	120/300cm			Clear opening:	120/210cm		
Description:	THE EXISTING ITEMS ARE TO BE KEPT			Description:	THE EXISTING ITEMS ARE TO BE KEPT		
Total:	1			Total:	2		
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE			Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE		

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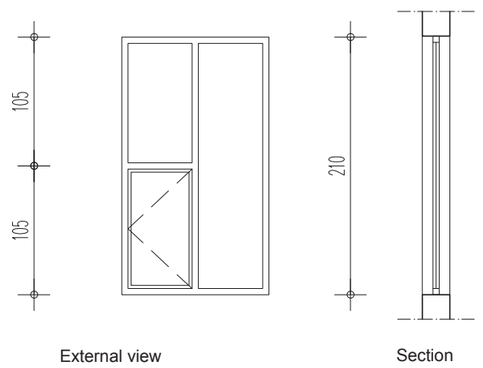
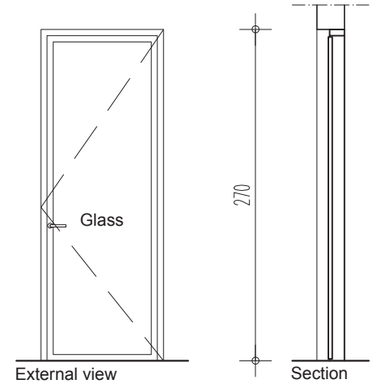
	Project: **Serbian Cultural Center in Beijing**		Scale: 1:50		Project: **Serbian Cultural Center in Beijing**		Scale: 1:50
	ALU WORKS				**ALU WORKS**		
Drawing:	Double window	Code: 5		Drawing:	External single door	Code: 6	





Scheme:		Scheme:	
Clear opening:	60+60/210cm	Clear opening:	100/270cm
Description:	THE EXISTING ITEMS ARE TO BE KEPT	Description:	Fabrication and installation of double glazed doors, according to the existing scheme, made of three-chambered alu sections with thermal break. The sections are plasticized in color as selected by the Designer. Glazing with two insulation glass panes, 4+16+4 mm. The external glass pane is transparent, and the internal pane is made of low-e glass. The space between the panes is filled with argon. Hardware is to be refitted so that the windows can be opened in the opposite direction, and other details need to be agreed with the Designer. The cost needs to include all necessary trimmings. Calculation per 1 fully fitted and installed window/door.
Total:	6	Total:	1
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE	Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE

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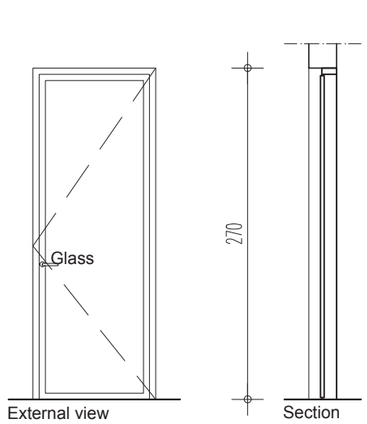
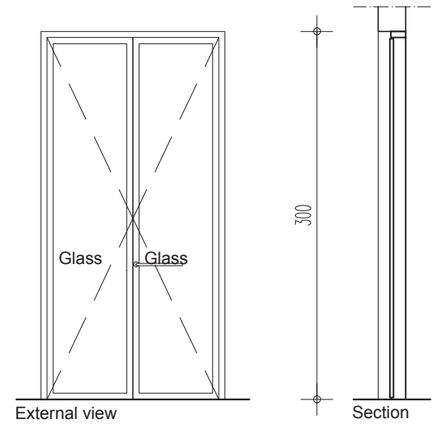
	Project: **Serbian Cultural Center in Beijing**		Scale: 1:50		Project: **Serbian Cultural Center in Beijing**		Scale: 1:50
	ALU WORKS				**ALU WORKS**		
Drawing:	Internal single door	Code: 7		Drawing:	Internal double door	Code: 8	

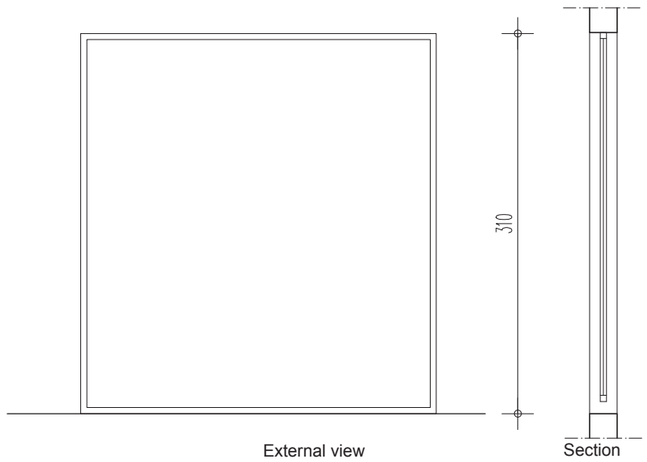




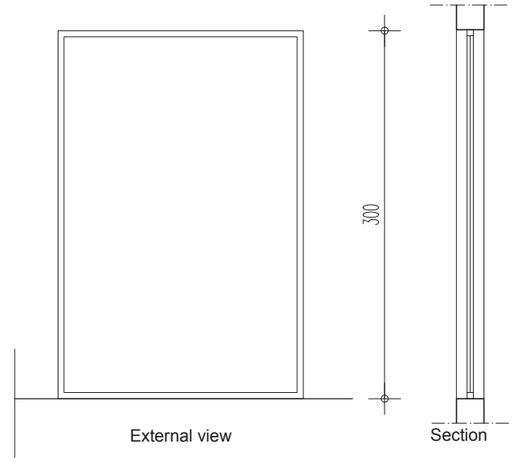
Scheme:		Scheme:	
Clear opening:	100/270cm	Clear opening:	75+75/300cm
Description:	Fabrication and installation of single glazed doors, according to the given scheme, made of three-chambered alu sections with thermal break. The sections are plasticized in color as selected by the Designer. Glazing with two insulation glass panes, 4+16+4 mm. The external glass pane is transparent, and the internal pane is made of low-e glass. The space between the panes is filled with argon. Hardware has to be of good quality, the hand of door and other details need to be agreed with the Designer. The cost needs to include all necessary trimmings. Calculation per 1 fully fitted and installed window/door.	Description:	Fabrication and installation of double glazed doors, according to the given scheme, made of alu sections. The sections are plasticized in color as selected by the Designer. Glazing with 6 mm pane, with protective film applied on both sides. Hardware has to be of good quality, the hand of door and other details need to be agreed with the Designer. The cost needs to include all necessary trimmings. Calculation per 1 fully fitted and installed window/door.
Total:	1	Total:	1
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE	Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE

	Project: **Serbian Cultural Center in Beijing**		Scale: 1:50		Project: **Serbian Cultural Center in Beijing**		Scale: 1:50
	ALU WORKS				**ALU WORKS**		
Drawing:	Fixed glazed partition	Code: 9	Sheet: 17	Drawing:	Fixed glazed partition	Code: 10	Sheet: 17

Scheme:



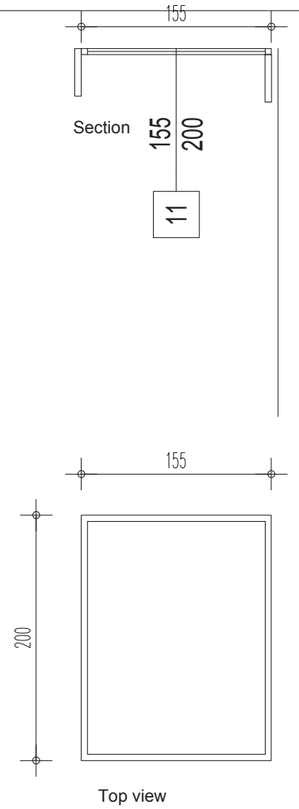
Scheme:



Clear opening:	290/310cm	Clear opening:	200/300cm
Description:	Fabrication and installation of a glazed partition, according to the given scheme, made of alu sections. The sections are plasticized in color as selected by the Designer. Glazed with 6 mm glass pane with protective film applied on both sides. Hardware of good quality, seals and other details need to be agreed with the Designer. The cost needs to include all necessary trimmings. Calculation per 1 fully fitted and installed window/door.	Description:	Fabrication and installation of a glazed partition, according to the given scheme, made of three-chambered alu sections with thermal break. The sections are plasticized in color as selected by the Designer. Glazing with two insulation glass panes, 4+16+4mm. The external glass pane is transparent, and the internal pane is made of low-e glass. The space between the panes is filled with argon. Hardware has to be of good quality, and other details need to be agreed with the Designer. The cost needs to include all necessary trimmings. Calculation per 1 fully fitted and installed window/door.
Total:	1	Total:	1
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE	Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE

	Project: Serbian Cultural Center in Beijing	Scale: 1:50
	ALU WORKS	

Drawing:	Fixed glazed partition	Code: 11



Scheme:

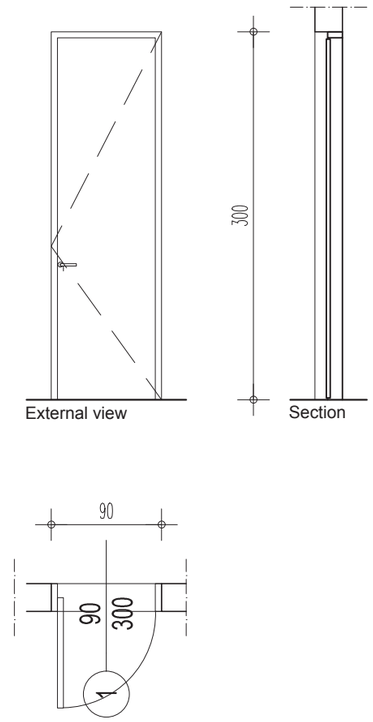
Clear opening:	155/200cm

Description:	Fabrication and installation of a glazed partition to close the upper portion of the vestibule, according to the given scheme, made of three-chambered alu sections with thermal break. The sections are plasticized in color as selected by the Designer. Glazing with two insulation glass panes, 4+16+4mm. The external glass pane is transparent, and the internal pane is made of low-e glass. The space between the panes is filled with argon. Hardware has to be of good quality, and other details need to be agreed with the Designer. The cost needs to include all necessary trimmings. Calculation per 1 fully fitted and installed window.

Total:	1
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE

	Project: Serbian Cultural Center in Beijing	Scale: 1:50
	JOINERY	

Drawing:	Internal single door	Code: 1



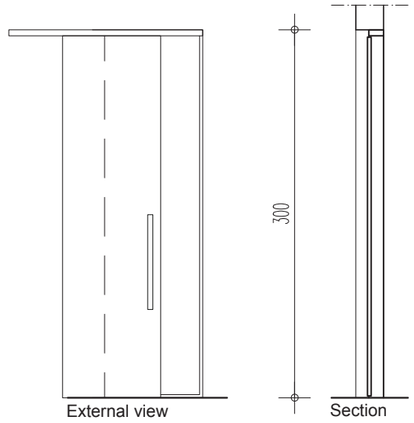
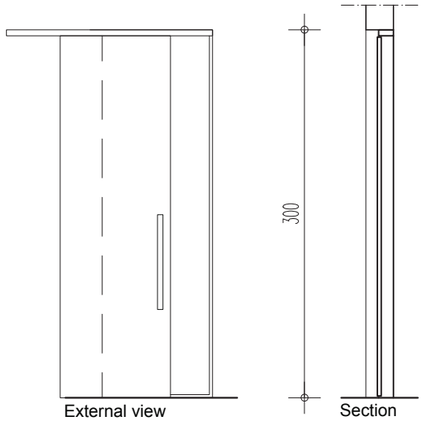
Scheme:

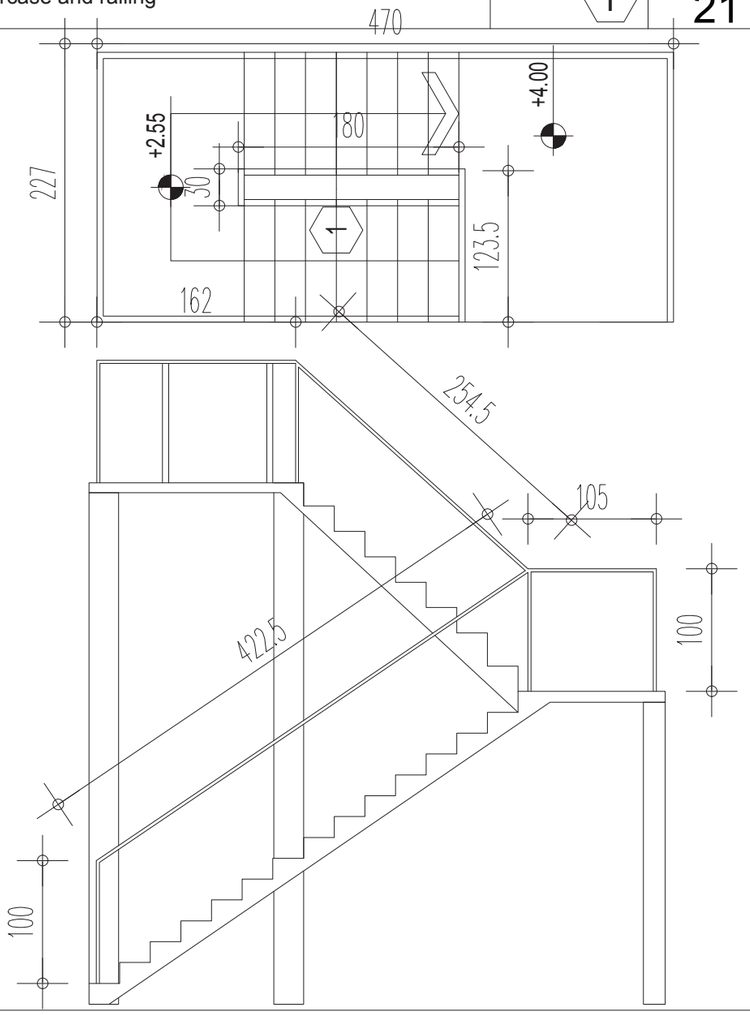
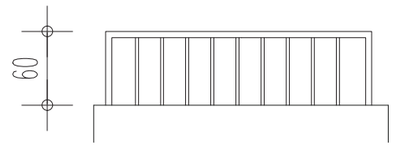
Clear opening:	90/300cm

Description:	Fabrication, delivery and installation of solid internal single doors. Door frame made of MDF, strengthened with pieces of solid wood in the zone of hinges and lock. The door leaf frame is made of solid wood, with extruded chipboard infill, and the leaf is clad with 6 mm thick MDF panels on both sides, with finishing as selected by the Designer. Adjustable finishing decorative molding trims for door frames and high-quality hardware need to be included, as a full set. Calculation per 1 installed and fully functional door.

Total:	3 (2L ; 1R)
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE

43597

	Project: **Serbian Cultural Center in Beijing**		Scale: 1:50		Project: **Serbian Cultural Center in Beijing**		Scale: 1:50
	JOINERY				**JOINERY**		
Drawing:	Internal single sliding door	Code: 2		Drawing:	Internal single sliding door	Code: 3	
Scheme:				Scheme:			
Clear opening:	80/300cm			Clear opening:	90/300cm		
Description:	Fabrication, delivery and installation of solid internal single sliding doors. Door frame made of MDF, strengthened with pieces of solid wood in the zone of hinges and lock. The door leaf frame is made of solid wood, with extruded chipboard infill, and the leaf is clad with 6 mm thick MDF panels on both sides, with finishing as selected by the Designer. Adjustable finishing decorative molding trims for door frames and high-quality hardware need to be included, as a full set. Calculation per 1 installed and fully functional door.			Description:	Fabrication, delivery and installation of solid internal single sliding doors. Door frame made of MDF, strengthened with pieces of solid wood in the zone of hinges and lock. The door leaf frame is made of solid wood, with extruded chipboard infill, and the leaf is clad with 6 mm thick MDF panels on both sides, with finishing as selected by the Designer. Adjustable finishing decorative molding trims for door frames and high-quality hardware need to be included, as a full set. Calculation per 1 installed and fully functional door.		
Total:	5			Total:	3		
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE			Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE		

	Project: **Serbian Cultural Center in Beijing**				Project: **Serbian Cultural Center in Beijing**		
	JOINERY		Scale 1:50		**JOINERY**		Scale: 1:50
Drawing:	Staircase and railing	Code: 1	Sheet: 21	Drawing:	Staircase and railing	Code: 2	Sheet: 22
Scheme:				Scheme:			
Clear opening:	1698cm			Clear opening:	1775cm		
Description:	Repair by removing the old paint and rust down to the sound metal surface, which is then protected with double anti-corrosive coating and finished with oil paint in color as selected by the Designer.			Description:	Repair by removing the old paint and rust down to the sound metal surface, which is then protected with double anti-corrosive coating and finished with oil paint in color as selected by the Designer.		
Total:	3 (2L; 1R)			Total:	3 (2L ; 1R)		
Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE			Note:	ALL MEASUREMENTS TO BE TAKEN ON THE SITE		

43597

PROJECT: ADAPTATION OF THE BUILDING FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

SUBJECT: PRICED BILL OF QUANTITIES FOR BUILDING AND TRADE WORKS

1 DISMANTLING AND DEMOLITION

		Unit of measure	Quantity	Price with tax	Price without tax
1	Demolishing a brick wall, 25 cm thick, removing waste material and debris from the building, loading on the truck and hauling to the dump site. Demolition work has to be carried out carefully, by hand only, to avoid damaging the existing parquet flooring. Calculation per 1 m3 of demolished wall.	m3	1.93		
2	Dismantling partition walls, 12 cm thick, made of gypsum cardboard panels on suitable framing, including dismantling doors in the walls, and ceramic tiling, if any. Removing waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2 of dismantled wall, as a full set of work tasks.	m2	63.96		
3	Dismantling a partition wall, 25 cm thick, made of gypsum cardboard panels on suitable framing. Removing waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2 of dismantled wall, as a full set of work tasks.	m2	9.50		
4	Dismantling a wooden platform (stage), 30 cm high, with its support structure, including dismantling the existing wooden edging at the joints between the floor in the room and the platform wall, and between the platform floor and the wall of the room. Removing all waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2, as a full set of work tasks.	m2	14.34		
5	Dismantling wooden bars (drinks bar), including wooden lining on suitable framing and the wooden worktop. Removing all waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2 in vertical projection, as a full set of work tasks.	m2	9.12		
6	Dismantling the wooden grid-type ceiling decoration, including all hanging metal elements. Removing waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2, as a full set of work tasks.	m2	40.90		
7	Dismantling the entire upper-floor suspended ceiling made of gypsum cardboard panels on suitable framing. Removing all waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2, as a full set of work tasks.	m2	135.49		
8	Removing a part of the existing wooden parquet flooring, on the ground floor, from areas where the new granite tile flooring is designed to be placed. This shall be done by cutting the existing flooring neatly, and removing all flooring layers all the way down to the support structure. Removing waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2.	m2	23.51		
9	Removing a part of the existing ceramic tile flooring, on the upper floor, from areas where sanitary rooms are designed to be constructed. This shall be done by cutting the existing flooring neatly, and removing all flooring layers all the way down to the support structure. Removing all waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2.	m2	6.74		
10	Dismantling gypsum cardboard lining from upper-floor metal columns, including all support elements. Removing all waste material from the building, loading on the truck, and hauling to the dump site. Calculation per 1 m2.	m2	11.00		
VI	TOTAL DISMANTLING AND DEMOLITION:				

2 MASONRY

	Unit of measure	Quantity	Price with tax	Price without tax
1 Sanding parts of the artificial stone façade to get a clean and fresh surface. Calculation per 1m2 of unfolded surface area.	m2	50.73		
2 Laying reinforced cement screed, 4-6 cm thick, flat and graded, as a base for final flooring, using 1:3 cement mortar. The screed shall be reinforced with mesh Q-126 (4mm/100mm rebars), embedded into the middle portion of the screed. Calculation per 1 m2, as a full set of work tasks.	m2	30.76		

TOTAL MASONRY

3 WATERPROOFING

	Unit of measure	Quantity	Price with tax	Price without tax
1 Waterproofing floors and walls in the toilet, to the height of 20 cm around the perimeter and 100 cm at washbasins as backsplash. This is done by applying a two-component coating to prepared surfaces, according to the manufacturer's instructions and applicable regulations. Calculation per 1 m2 of completed waterproofing.	m2	31.18		

TOTAL WATERPROOFING

4 JOINERY

	Unit of measure	Quantity	Price with tax	Price without tax
1 Making, delivering and installing solid internal single doors. Door frame made of MDF, strengthened with pieces of solid wood in the zone of hinges and lock. The door leaf frame is made of solid wood, with expanded chipboard infill, and the leaf is clad with 6 mm thick MDF panels on both sides, with finishing as selected by the Designer. Adjustable finishing decorative molding trims for door frames and high-quality hardware need to be included, as a full set. Calculation per 1 fully installed door.	pcs	3.00		
2 Making, delivering and installing solid internal single sliding doors. Door frame made of MDF, strengthened with pieces of solid wood in the zone of lock. The door leaf frame is made of solid wood, with expanded chipboard infill, and the leaf is clad with 6 mm thick MDF panels on both sides, with finishing as selected by the Designer. Adjustable finishing decorative molding trims for door frames and high-quality hardware need to be included, as a full set. Calculation per 1 fully installed door.				
dim 80/300 (2)	pcs	5.00		
dim 90/300 (3)	pcs	3.00		
3 Dismantling the existing boards from the veranda, dressing and reinstalling them after prior inspection of the support framing and replacement of any damaged or dilapidated elements, if needed. All wooden elements, boards and framing, shall be finished with appropriate protective coating. Calculation per 1 m2 of veranda surface area.	m2	34.05		

TOTAL JOINERY

5 ALU WORKS

	Unit of measure	Quantity	Price with tax	Price without tax
1 Fabricating and installing internal glazed doors made of plasticized alu sections without thermal break. Coating as selected by the Designer, glazing with safety glass, 6 mm thick, hardware of good quality, as a full set. Installation according to workshop details prepared by the Contractor based on measurements taken on the site. Fabrication and installation shall be carried out observing all recommendations given by the manufacturer of alu sections. The hand of door according to the scheme. Calculation per 1 fully installed and finished door.				
-single door				
dim 100/270 (7)	pcs	1.00		
-double door				
dim 150/300 (8)	pcs	2.00		
2 Fabricating and installing internal fixed glazed partitions made of plasticized alu sections without thermal break. Coating as selected by the Designer, glazing with safety glass, 6 mm thick. Installation according to workshop details prepared by the Contractor based on measurements taken on the site. Fabrication and installation shall be carried out observing all recommendations given by the manufacturer of alu sections. Calculation per 1 fully installed and finished partition.				
dim 290/310 (9)	pcs	1.00		
dim 200/300 (10)	pcs	1.00		
dim 155/200 (11)	pcs	1.00		

TOTAL ALU WORKS

6 METALWORK

		Unit of measure	Quantity	Price with tax	Price without tax
1 Removal of the existing inswing glazed entrance door, refitting it for outswing, including refitting hinges and hardware on the door leaf. After refitting, the door shall be painted with the same type of paint and in the same color as used previously, and installed in the existing opening. Calculation per 1 fully refitted and installed door.					
-double door, dimensions	150/300	pcs	1.00		
-single door, dimensions	100/270	pcs	1.00		

		Unit of measure	Quantity	Price with tax	Price without tax
1	Removing old paint from all metal staircase elements, including railing, and cleaning them from rust. Any worn-out or deformed elements shall be replaced or repaired. After thorough cleaning and repair, all elements shall be protected with double anti-corrosive coating and finished with matt oil paint for metal, in color as selected by the Designer. Calculation per 1 m2 of unfolded surface area, including a full set of work tasks.	m2	42.81		
2	Removing old paint from all metal fence elements in front of the building, and cleaning them from rust. Any worn-out or deformed elements shall be replaced or repaired. After thorough cleaning and repair, all elements shall be protected with double anti-corrosive coating and finished with matt oil paint for metal, in color as selected by the Designer. Calculation per 1 m2 of unfolded surface area, including a full set of work tasks.	m2	18.00		
3	Removing old paint from all steel support structure elements in the building, columns, breams and bracing, and cleaning them from rust. After thorough cleaning, all elements shall be protected with double anti-corrosive coating and finished with matt oil paint for metal, in color as selected by the Designer. Calculation per 1 m2 of unfolded surface area, including a full set of work tasks.	m2	74.21		

TOTAL METALWORK

7 DRYWALL WORK

		Unit of measure	Quantity	Price with tax	Price without tax
1	Fabricating and installing prefabricated partition walls, 12 cm thick in total, with single metal framing, lined on both sides with conventional and moisture-resistant gypsum cardboard panels in two layers, 2*12.5 mm thickness. Filling the space between panels with loose stone wool, for soundproofing. Places where openings or interior design elements are designed to be shall be strengthened as necessary. All outside corners shall be protected with typical corner guards. Seams between panels shall be taped and mudded. Joints with the floor and ceiling shall be finished fully in accordance with the manufacturer's specification. Calculation per 1 m2 of completed wall, including a full set of work tasks from the description.	m2	157.13		
2	Dry-lining the existing brick walls, over single metal framing, with two layers of moisture-resistant gypsum cardboard panels, 2*12.5mm thickness. Seams between panels shall be taped and mudded. Joints with the floor and ceiling shall be finished fully in accordance with the manufacturer's specification. Calculation per 1 m2 of completed wall lining, including a full set of work tasks from the description.	m1	38.87		

TOTAL DRYWALL WORK

8 TILEWORK

		Unit of measure	Quantity	Price with tax	Price without tax
1	Tiling floors with anti-slip ceramic tiles, class A, in color, size and surface finish as selected by the Designer. The tiles shall be butt-jointed in adhesive. Calculation per 1 m2.	m2	31.06		
2	Tiling walls with ceramic tiles, class A, in color, size and surface finish as selected by the Designer. The tiles shall be butt-jointed in adhesive. Calculation per 1 m2.	m2	141.51		

TOTAL TILEWORK

9 PARQUET FLOORING

		Unit of measure	Quantity	Price with tax	Price without tax
1	Repairing the existing parquet flooring at the places of demolished walls, using parquet strips of the same characteristics and sizes as the existing ones, laying them in adhesive, over the completed cement screed. Calculation per 1 m2 of repaired surface.	m2	0.60		
2	Sanding all surfaces of the existing and newly laid parquet flooring, and varnishing them in two coats, including varnishing the existing skirting. Calculation per 1 m2 of completed sanding and varnishing.	m2	112.00		

TOTAL PARQUET FLOORING

14 PAINTWORK

		Unit of measure	Quantity	Price with tax	Price without tax
1	Painting rendered internal walls over the old paint with adequate dispersive paint in color as selected by the Designer, including removal of the old paint and floating, and the necessary scaffolds. Calculation per 1 m2 of painted surface, including a full set of work tasks.	m2	392.21		
2	Painting internal ceilings over the old paint with adequate dispersive paint in color as selected by the Designer, including removal of the old paint and floating, and the necessary scaffolds. Calculation per 1 m2 of painted surface, including a full set of work tasks.	m2	269.55		
3	Painting the newly built gypsum cardboard walls with adequate dispersive paint in color as selected by the Designer, including prior floating, and the necessary scaffolds. Calculation per 1 m2 of painted surface, including a full set of work tasks.	m2	207.75		

TOTAL PAINTWORK

SUMMARY

TOTAL

Belgrade, December 2017

PRELIMINARY DESIGN OF WATER SUPPLY AND SEWERAGE SYSTEM

TECHNICAL DESCRIPTION

PRELIMINARY DESIGN OF WATER SUPPLY AND SEWERAGE SYSTEMS

FOR THE BUILDING FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

The reconstruction of the Pavilion of the Republic of Serbia in China includes the construction of a sanitary block and a kitchenette on the upper floor, and a toilet and a toilet for persons with disabilities on the ground floor. The water supply and sewerage design includes installation of water supply pipes, hydrant network and sewers within the building and up to 1 m out of the building.

Water supply piping material: External piping for the hydrant network and sanitary water supply is made of PEHD (PE 100, NP 16) pipes. Within the building, the sanitary water supply system is made of PPR (SDR 6) water supply pipes - straight pieces and shapes.

Vertical water supply pipes are placed within prepared ducts. The water supply system shall be thermally insulated - insulation thickness for the main delivery pipe and vertical pipes is 13 mm. In sanitary blocks, the water delivery pipes are placed within installation walls - insulation thickness 4 mm. Adequate fittings shall be installed in the system for safe and proper work. Each sanitary block shall be provided with one central valve, and a valve before each sanitary unit.

Standpipes provided for fire protection are placed in common areas, in places where they are easy to access. The standpipes are delivered in metal cabinets, including a valve, a 15m long hose, and a nozzle. They are placed so that the fire valve is at the height of 1.5 m above the finished floor level. Along with standpipes, fire extinguishers are delivered and installed for initial firefighting.

After completing the installation of pipes, and before completing the insulation and backfilling the trenches, it is necessary to perform a hydraulic test in the way described in the general technical specifications. A protocol shall be drafted after successfully completing the hydraulic test. Before accepting the water supply system, the system shall be disinfected and the attest on chemical and bacteriological safety of water shall be provided.

Sewerage pipe material: External rainwater and sanitary sewerage made of PVC pipes, class SN 8. Within the building, PP-HT sewerage pipes are planned. Drainage of water from the roof is designed by plasticized RAL 9006 downpipes. Downpipes are connected to the sewerage in the garden over downpipe gullies.

Vertical sanitary sewerage pipes are placed within prepared ducts, ending on the roof with ventilation heads, so that the system could be ventilated. Within sanitary blocks the pipes run through suspended ceilings and walls.

After laying and installing the pipes, but before backfilling the trenches, or repairing walls and slabs, it is necessary to perform a hydraulic test in the way described in the general technical specifications. A protocol shall be drafted after successfully completing the hydraulic test. Before accepting the sewerage system, the system shall be washed out.

The design specifies the installation of new sanitary equipment of class I. Along with sanitary equipment, appropriate fittings are to be delivered and installed.

Installation works

Pipe network - water supply

The pipe network will be implemented in the way shown in the technical description and according to the enclosed plans.

The pipe network for sanitary water supply within sanitary blocks will be installed using plastic polypropylene (PPR) pipes and shaped pieces that need to be provided with attests. This applies to pipes, fittings, the joints between them, and the joints between these components and those made of other material and need to be used for hot and cold water installations. The hydrant network shall be made of galvanized steel pipes that shall be provided with the attest (Pipe threads where pressure-tight joints are not made on the threads), and joints are sealed with fine hemp fibers soaked in flaxseed oil. For turns, branching etc. galvanized shaped pieces shall be used (tempered cast fittings - technical specifications). Water supply system and hydrant network out of the building is made of plastic PEHD pipes. HDPE pipes are light which ensures substantial savings in transport, handling and installation. A big advantage of these pipes is their flexibility during laying, which ensures that the pipeline will keep its strength even with a very small radius of bending. The smallest allowable radius of bending for pipelines is 150 D. Spiral winding technology ensures full homogeneity for pipe walls, prevents stratification and guarantees absolute non-porousness. Joining pipes by extrusion welding ensures absolute tightness even at pipe joints. The possibility to apply pipes at higher temperatures, up to do 60˚C. The paraffin structure of material ensures that the pipes can be used for hydraulic transport of abrasive substances. HDPE pipes have a long service life, over 50 years, and negligible maintenance costs.

Water pipe fittings:

Water pipe fittings shall meet requirements for drinking water pipe fittings, which are:
Threaded brass pipe fittings (valves, valves with drain, check valves, etc.) are used inside the building.
Threaded brass pipe fittings are also used outside for nominal diameters ≤ 40 mm.

Water meters:

Water meters are used to measure water flow rate. They are installed and their size is defined according to the conditions obtained from the competent utility company.

Standpipes and fire extinguishers:

Standpipes and fire extinguishers for initial firefighting are used for fire protection of the building, SRPS EN 671-2; Fixed firefighting systems - Hose systems - Part 2: Hose systems with lay-flat hose. ·

Pipe network - sewerage:

Polypropylene (PP-HT) sewerage pipes for inner sewerage. For the sewerage network within the building, polypropylene sewerage pipes and fittings are used. They are easy to install, they are joined together with joining elements, using rubber seal rings for full tightness of joints. The pipes endure temperatures up to +90 °C. They are resistant to salt water, alcohol, acids, alkalis, sulfates, aggressive gases and all types of detergents. On the other hand, they cannot be used to deliver water with a high concentration of benzene, petrol (oil) or acetone. Socket joints and seal rings are made of EPDM rubber (EN 681).
Sewerage pipes made of unplasticized polyvinylchloride (PVC-U). Pipes for household and street sewerage systems, along with appropriate joining elements, are foreseen discharging all types of wastewater. They are very easy to install, and they are joined together with joining elements, using rubber seal rings for full tightness of joints. The pipes endure temperatures up to +60 °C. They are resistant to salt water, alcohol, acids, alkalis, sulfates, aggressive gases and all types of detergents. On the other hand, they cannot be used to deliver water with a high concentration of benzene, petrol (oil) or acetone. Socket joints and seal rings are made of EPDM rubber (EN 681).

HYDRAULIC DESIGN

HYDRANT/STANDPIPE NETWORK

PE water pipes

section	L	DN	Ds	s	Dun	J.O.	Q	v	drop	losses
from-to	(m)	(mm)	(mm)	(mm)	(mm)	(l/s)	(l/s)	(m/s)	(m/m)	(m)
ext. network	2.00	75.00	75.00	6.80	61.40	400.00	5.000	1.7	0.08	0.16
									Σ	0.16

galvanized pipes										
section	L	DN	Ds	s	Dun	J.O.	Q	v	drop	losses
from-to	(m)	(mm)	(mm)	(mm)	(mm)	(l/s)	(l/s)	(m/s)	(m/m)	(m)
ob-GF	1.50	65	76.10	3.65	68.80	400.00	5.000	1.3	0.08	0.12
GF-UF	4.00	50	60.30	3.65	53.00	100.00	2.500	1.1	0.08	0.32
									Σ	**0.44**

surveying difference	(m)	5.50
losses in the network	(m)	0.60
required superpressure	(m)	25.00
Pressure needed 1 m away from the building	(m)	31.10

Sanitary water supply network:

PE water pipes

section	L	DN	Ds	s	Dun	J.O.	Q	v	drop	losses
from-to	(m)	(mm)	(mm)	(mm)	(mm)	(l/s)	(l/s)	(m/s)	(m/m)	(m)
ext. network	4.00	32.00	32.00	3.00	26.00	4.75	0.545	1.0	0.10	0.40
									Σ	0.40

PP-R water pipes

section	L	DN	Ds	s	Dun	J.O.	Q	v	drop	losses
from-to	(m)	(")	(mm)	(mm)	(mm)	(l/s)	(l/s)	(m/s)	(m/m)	(m)
ob-GF	4.00	5/4	40.00	6.70	26.60	4.75	0.545	1.0	0.09	0.36
GF-UF	1.00	1	32.00	5.40	21.20	2.75	0.415	1.2	0.18	0.18
UF-toilet	2.56	1	32.00	5.40	21.20	2.75	0.415	1.2	0.18	0.46
toilet-k'ette	0.93	1	32.00	5.40	21.20	2.50	0.395	1.1	0.16	0.15
k'ette-S	0.81	3/4	25.00	4.20	16.60	1.75	0.331	1.5	0.42	0.34
S-MS	0.43	3/4	25.00	4.20	16.60	0.50	0.177	0.8	0.12	0.05
									Σ	**1.54**

surveying difference	(m)	5.00
losses in the network	(m)	1.94
required superpressure	(m)	5.00
pressure required 1 m from the building	(m)	11.94

Sanitary sewerage:

Sanitary fixtures	no.	Du	Du
WC	3	2.00	6.00
washbasin	3	0.50	1.50
kitchen sink	1	0.80	0.80
dish washing machine	1	0.80	0.80
Du			9.10
Flow rate (l/s)			2.11

Total flow rate for sanitary sewerage 2.11 l/s

PRICED BILL OF QUANTITIES

No.	Description	UoM	Qty	Unit price	Price
1.	**WATER SUPPLY AND HYDRANT/STANDPIPE NETWORK**				
1.1	**INSTALLATION WORKS**				
1.1	Procure, transport and install plastic polypropylene pipes and adequate fittings to be used for internal water supply system, such as akva term, fusioterm or equivalent. The price for 1 m1 includes all necessary chase cutting and cutting through walls and panels. Calculation and payment per 1 m1 of installed water pipe. PPR pipes - SDR 6				
	40x6.7	m	4.00		
	32x5.4	m	14.00		
	25x4.2	m	40.00		
	20x3.4	m	10.00		
1.1.2	Procure, transport and install galvanized steel water pipes with all necessary fittings. The pipes shall be fixed to walls with double clamps each 1.5-2.0 m. All necessary chase cutting and drilling through brick and concrete walls shall not be paid separately, but included in the price for 1 m1 of piping. Calculation and payment per 1 m1 of installed water pipe.				
	Ø 65 (2 1/2")	m	2.00		
	Ø 50 (2")	m	6.00		
1.1.3	Procure, transport and install water pipes made of polyethylene PE 100 (SDR-11)				
-	PEHD DN 75	m	2.00		
-	PEHD DN32	m	4.00		
1.1.4	Procure, transport and install gate valves in places specified in the design. Payment per 1 installed valve.				
	PPR d25	pcs	2.00		
	PPR d32	pcs	2.00		
1.1.5	Procure, transport and install angle valves with cap. Payment per 1 installed valve.				
	Ø 15	pcs	9.00		
1.1.6	Procure, transport and install thermal insulation, type Armaflex or equivalent, on the water supply network. Calculation and payment per 1 m1.				
	Ø 65 - insulation thickness 13 mm	m	2.00		
	Ø 50 - insulation thickness 13 mm	m	6.00		
	d40 - insulation thickness 13 mm	m	4.00		
	d32 - insulation thickness 13 mm	m	8.00		

No.	Description	UoM	Qty	Unit price	Price
1.1.7	Anti-condensation insulation using synthetic rubber for water pipes placed within walls. Installation fully in accordance with the manufacturer's technical documentation.				
	ø20 x 3.4	m	10.00		
	ø25 x 4.2	m	40.00		
	ø32 x 5.4	m	6.00		
1.1.8	Procure and install in-wall fire standpipe DN50 with nozzle, hose made of Trevira, 15 m long, and valve installed in the stainless steel box with glass door. The box shall be marked visibly and be provided with a key. Payment per 1 installed standpipe.	pcs	2.00		
1.1	TOTAL INSTALLATION WORKS:				
1.2	**OTHER WORKS**				
1.2.1	Pipeline test. After completed installation, the pipeline shall be tested for test pressure according to the enclosed instructions. Payment per 1 m1 of pipeline, regardless of diameter.	m	82.00		
1.2.2	Pipeline disinfection. Disinfect the pipeline according to the instructions. Payment per 1 m1 of disinfected pipeline.	m	82.00		
1.2.3	Connection of the designed water supply system with the water supply network in the garden.	pcs	2.00		
1.2	TOTAL OTHER WORKS:				
1.3	EARTH WORKS				
1.3.1	Excavate a trench for connection of the water supply system and standpipe network for the building with the sanitary water suppply and hydrant network in the garden. Trench walls and floor shall be cut neatly. Excavated material shall be dropped 1.0 m away from the trench edge. Trench walls shall be strutted.	m3	4.00		
1.3.2	Procure, transport, spread sand 10 cm under the pipes, around pipes, and 10 cm above the pipes. Sand shall be tamped to the required degree of compaction.	m3	1.00		
1.3.3	Backfill the trench with excavated material and tamp it in layers to the required degree of compaction.	m3	3.00		
1.3.4	After completed backfilling, the remaining earth shall be hauled to the place specified by the Engineer, not more than 500 m away from the place of loading. If there is a need to fill the ground, the material shall be used for that purpose. Calculation per 1 m3 of hauled earth.	m3	1.00		
1.3	TOTAL EARTH WORKS				
1.	WATER SUPPLY - SUMMARY				
1.1	INSTALLATION WORKS				
1.2	OTHER WORKS				
1.3	EARTH WORKS				

No.	Description	UoM	Qty	Unit price	Price
1.	TOTAL WATER SUPPLY (RSD):				
2.	**SEWERAGE**				
2.1	**INSTALLATION WORKS**				
2.1.1	Procure, transport and install, within the building, three-layer plastic PP-HT sewer pipes with all appropriate shaped pieces and fittings. All necessary chase cutting and drilling through brick and concrete walls shall not be paid separately, but included in the price per 1 m1 of pipes. Still incomplete parts of the network, connections for risers or sanitary fixtures, until their installation, shall be closed with temporary caps of appropriate diameter. All work tasks fully completed, and ready to use, will be paid per 1 m1 of installed and tested network, measured along the pipe centerline.				
	Ø110	m	25.00		
	Ø75	m	2.00		
	Ø50	m	6.00		
2.1.2	Procure, transport and install, outside the building, plastic PVC sewer pipes with all appropriate shaped pieces and fittings, Class SN 8. All necessary chase cutting and drilling through brick and concrete walls shall not be paid separately, but included in the price per 1 m1 of pipes. Still incomplete parts of the network, connections for risers, until their installation, shall be closed with temporary caps of appropriate diameter. All work tasks fully completed, and ready to use, will be paid per 1 m1 of installed and tested network, measured along the pipe centerline.				
	Ø 160	m	14.00		
	Ø 110	m	4.00		
2.1.3	Procure and install ventilation heads made of galvanized sheet metal in places specified in the design. Calculation per 1 installed head.				
	Ø 150	pcs	2.00		
2.1	TOTAL INSTALLATION WORKS:				
2.2	**BUILDING WORKS**				
2.2.1	Excavate trenches for laying sewer pipes.	m3	12.00		
2.2.2	Fine grading of the trench floor. After rough excavation, the trench floor shall be graded exactly according to the designed grading and levels for laying sewer pipes. Calculation per 1 m2 of completed grading.	m2	10.00		
2.2.3	After pipelaying, backfill the trenches in 30 cm layers, tamping the backfill with hand tamper. Tamping shall be performed to achieve the natural bearing capacity of soil. If the conduit route runs through sidewalk or pavement, the compaction degree of backfill shall be min. 95% of max. dry bulk density.	m3	7.00		

No.	Description	UoM	Qty	Unit price	Price
	If the conduit route runs through sidewalk, use gravel for backfilling. When backfilling, ensure that the first layer up to the sand fill around pipes shall be finegrained loose material. Calculation per 1 m3 of backfilled trench.				
2.2.4	After completed backfilling, the remaining earth shall be hauled to the place specified by the Engineer, not more than 500 m away from the place of loading. If there is a need to fill the ground, the material shall be used for that purpose. Calculation per 1 m3 of hauled earth.	m3	5.00		
2.2.5	Fill sand under, around and above pipes. Filling shall be done by hand, taking care not to displace pipes from their designed line and level. Backfilling shall be done 10 cm under and above pipes. Tamping shall be done carefully, with watering if needed. If needed sand shall be screened, to remove any larger pieces, stones and earth. Pipe joints shall be left exposed until water-tightness and trial pressure testing, and then backfilled after completed tests. Payment per 1 m3 of filled material.	m3	5.00		
2.2.6	Demolition of floor slab in the building.	m2	10.00		
2.2.7	Concreting, repairing the waterproofing system, etc. on the floor slabs in the basement and on the ground floor.	m3	10.00		
2.2	TOTAL BUILDING WORKS				
2.3	**OTHER WORKS**				
2.3.1	Test sewer pipes for water-tightness according to the enclosed instructions. Payment per 1 m1 of tested pipeline.	m	51.00		
2.3.2	Flush conduits and remove any rough objects and dirt. Payment per 1 m1 of conduit.	m	51.00		
2.3.3	Connecting the designed sanitary sewerage with the existing sewerage network in manholes outside the building. Payment per 1 completed connection.	pcs	1.00		
2.3	TOTAL OTHER WORKS:				

SEWERAGE - SUMMARY

2.1	INSTALLATION WORKS
2.2	BUILDING WORKS
2.3	OTHER WORKS
2.	TOTAL :

No.	Description	UoM	Qty	Unit price	Price
3.	**SANITARY FIXTURES**				
3.1	Procure, transport and install a full WC set, of shape and in color as selected by the Interior Designer. The set comprises: a) bowl made of white fayence, with a rubber insert between the pan and the floor b) WC seat with cover made of solid plastics, fitted with at least two rubber bumpers on the bottom side c) low-height toilet tank connected to the bowl with a plastic pipe, dia. 32, with clammps and rubber seals The item includes a toilet brush. Payment per 1 fully installed set.	pcs	3.00		
3.2	Procure and install a chromium plated toilet roll holder. Calculation per 1 installed holder.	pcs	3.00		
3.3	Procure and install a ceramic fayence wash basin set, 550 mm wide, with all necessary fittings for proper installation. Calculation per 1 installed piece.	pcs	3.00		
3.4	Procure and install nickel plated mixer taps for wash basins:				
-	free-standing mixer tap	pcs	2.00		
-	free-standing mixer tap for tankless water heater	pcs	1.00		
3.5	Procure and fix framed mirrors above wash basins. Calculation and payment per 1 installed piece. 80/60	pcs	3.00		
3.6	Procure and install plastic soap dispensers, next to wash basins, capacity 0.5l, in color as selected by the Interior Designer. Calculation and payment per 1 installed piece.	pcs	3.00		
3.7	Procure and install paper towel dispensers, next to wash basins, in color as selected by the Interior Designer. Calculation and payment per 1 installed piece.	pcs	3.00		
3.8	Procure and install a sink				
-	with free-standing mixer tap for tankless water heater.	pcs	1.00		
3.9	Procure and install a tap for dish washing machine	pcs	1.00		
3.10	Procure, transport and install electric water heater, and connect it to the water and power supply systems. Payment per 1 installed piece.				
	10 l tankless	pcs	2.00		
	15 l	pcs	1.00		
4.	TOTAL SANITARY FIXTURES				

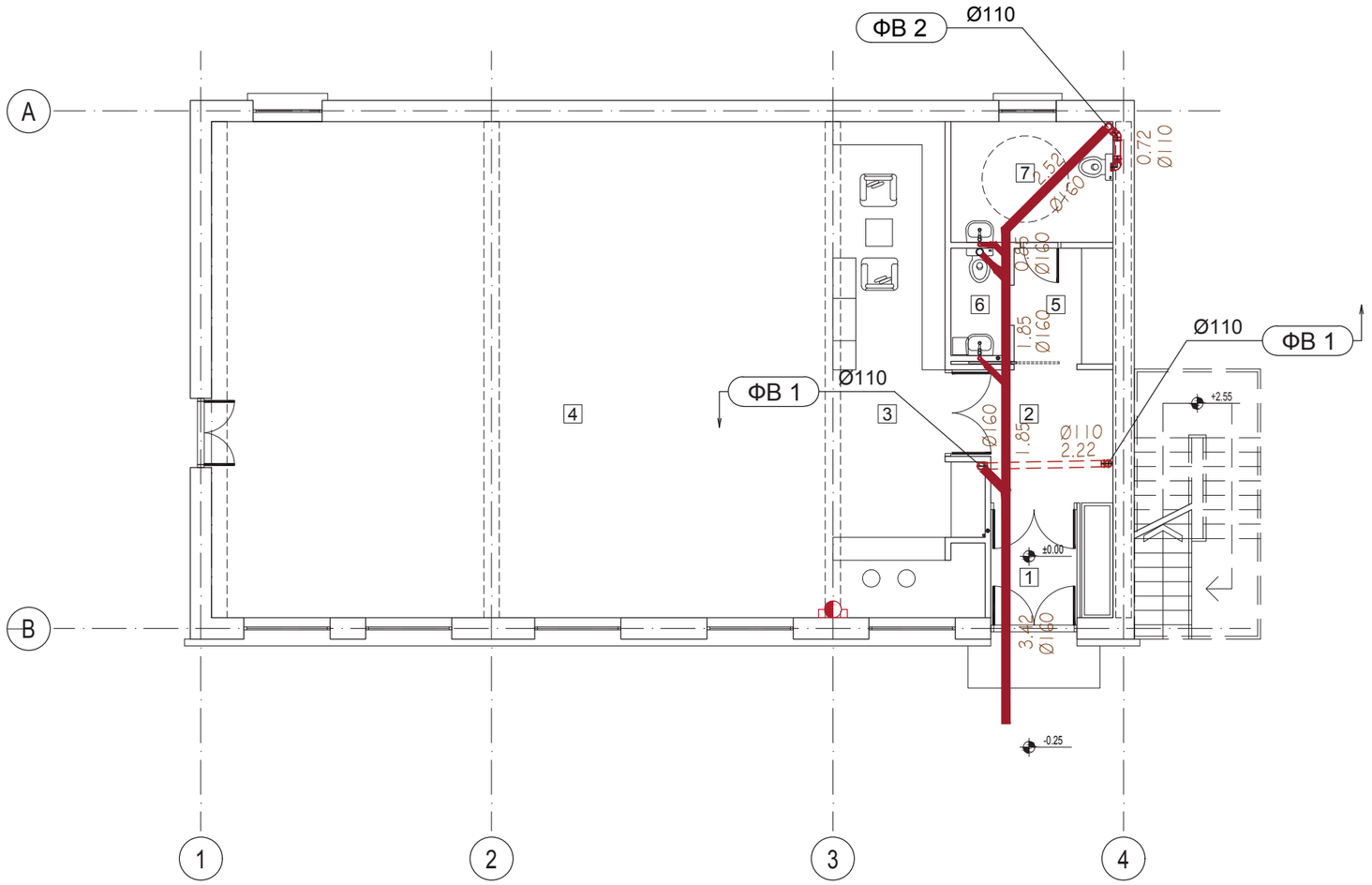
No.	Description	UoM	Qty	Unit price	Price

SUMMARY - HYDRAULIC SYSTEMS

1	WATER SUPPLY SYSTEM
2	SEWERAGE
3	SANITARY FIXTURES
	TOTAL

Ground floor plan - SEWERAGE
Scale 1:100

Ground floor plan	
No.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information area
4	Exhibition area
5	Toilet lobby
6	Toilet
7	Toilet



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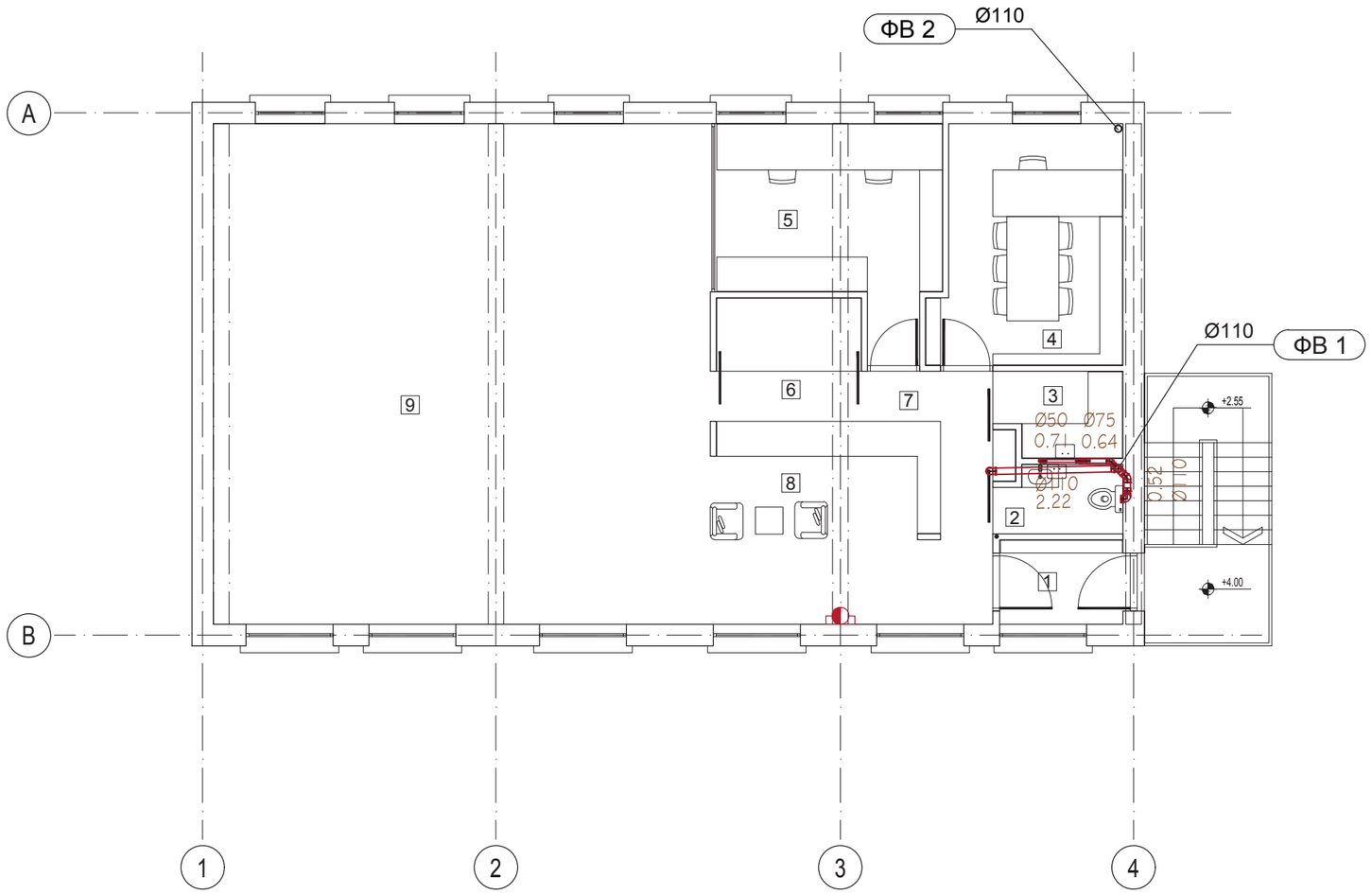
Upper floor plan - SEWERAGE
Scale 1:100

Upper floor plan	
No.	ROOM/SPACE
1	Vestibule
2	Toilet
3	Kitchenette
4	Director's office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition area



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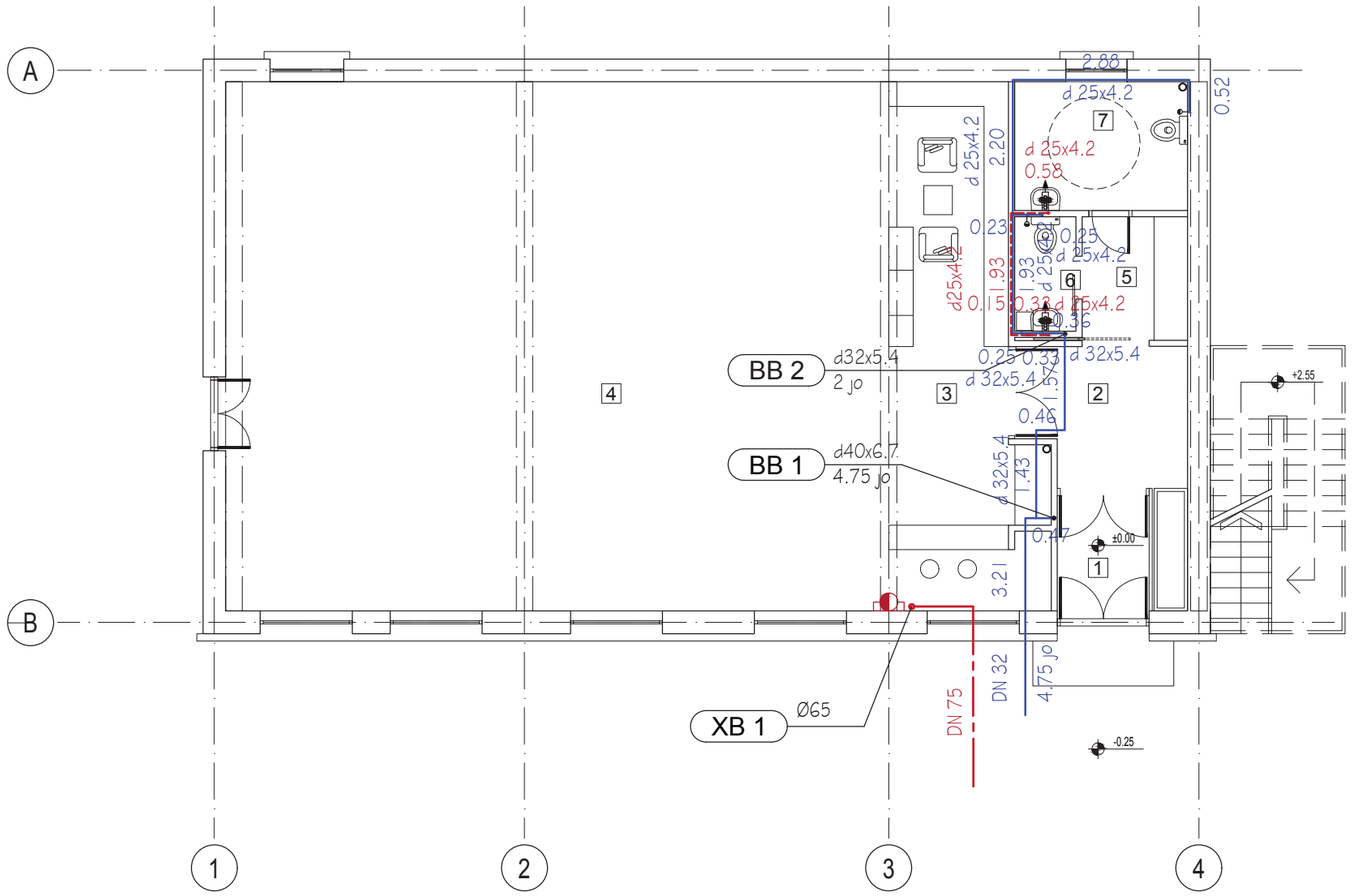
Ground floor plan - WATER SUPPLY SYSTEM
Scale 1:100

Ground floor plan	
No.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information area
4	Exhibition area
5	Toilet lobby
6	Toilet
7	Toilet



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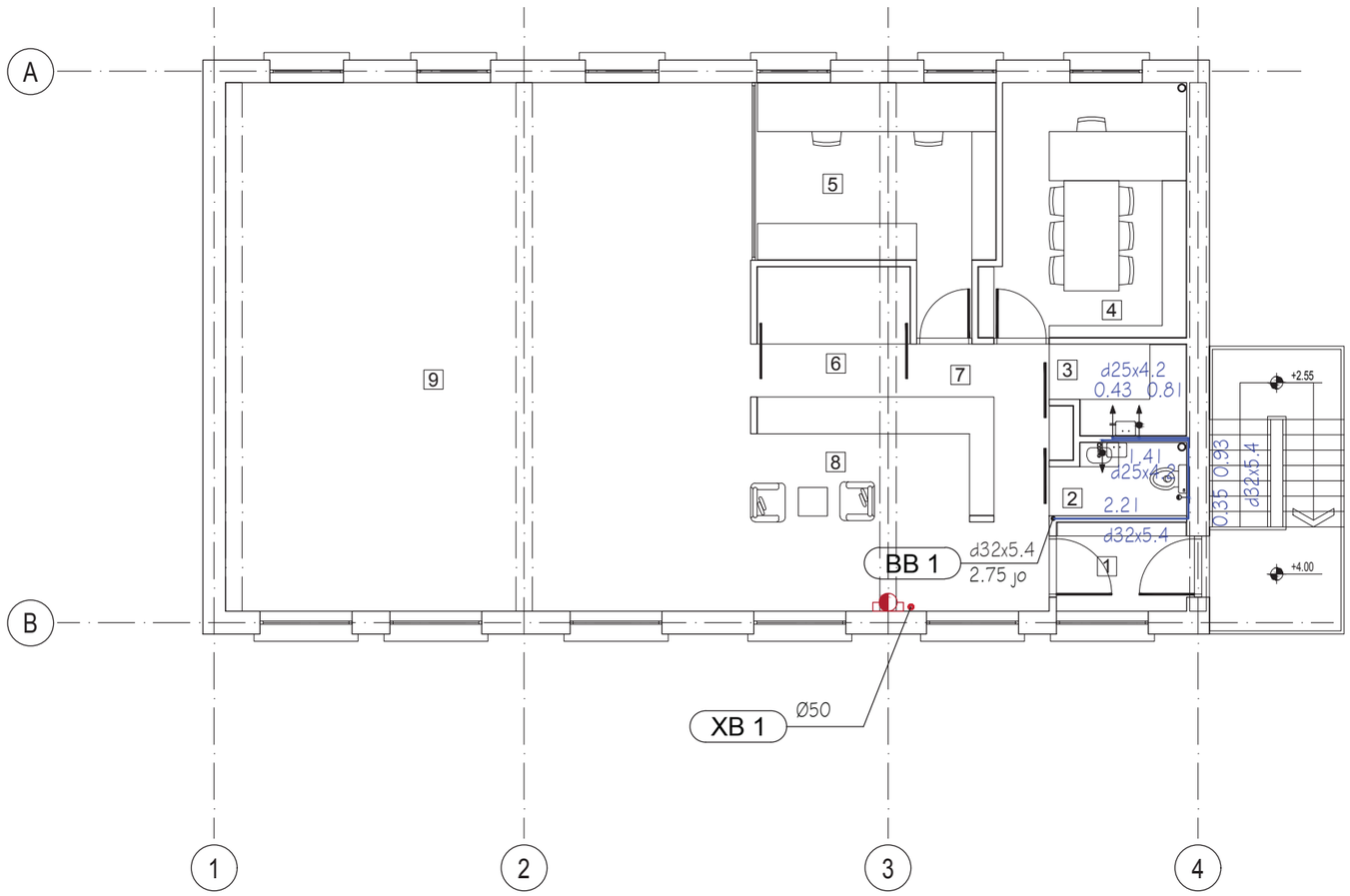
Upper floor plan - WATER SUPPLY SYSTEM
Scale 1:100

Upper floor plan	
No.	ROOM/SPACE
1	Vestibule
2	Toilet
3	Kitchenette
4	Director's office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition area



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PRELIMINARY DESIGN OF POWER SUPPLY SYSTEMS

TECHNICAL DESCRIPTION

PRELIMINARY DESIGN OF POWER SUPPLY SYSTEMS

FOR THE BUILDING FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

Power supply to the building and power consumption measurement are not the subject to this Design. Connection capacity is estimated to Pin= 32kW; Pjed=25kW. From the measurement point to the main distribution cabinet (GRO), N2XH-J 5x16mm^2 cable shall be laid, and for the power supply from GRO to secondary cabinets cables shall be laid in the walls under plaster, type N2XH-J, number and cross-section of conductors as in the distribution block diagram. Electric loads in the building shall be divided into building and technological units: RO-1 and RO-2 general consumption cabinets for ground floor and upper floor, RO-TT distribution cabinet for HVAC consumers and RO-GK distribution cabinet for heating cables. Protection system against excessive touch voltage shall be applied in accordance with local regulations and requirements of the relevant electricity distributor.

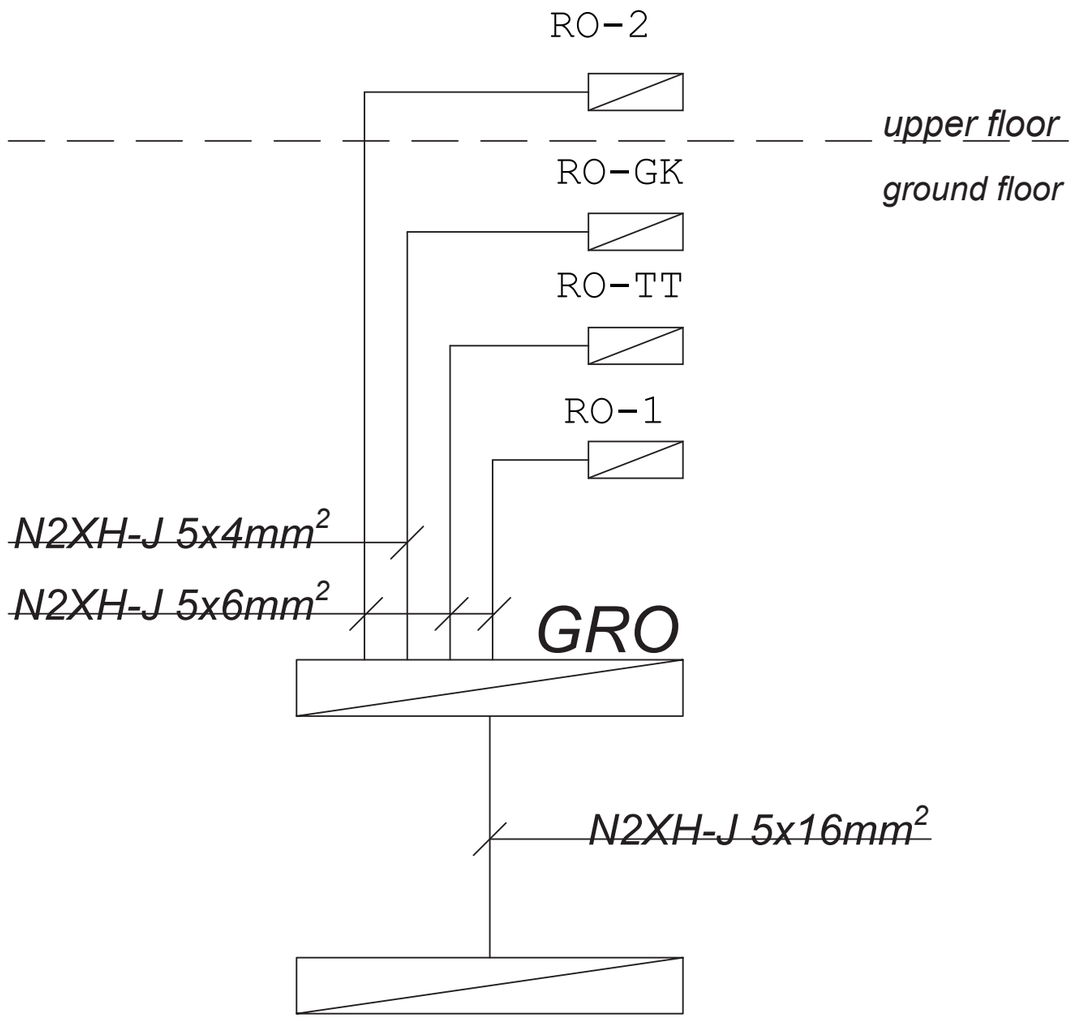
All power supply systems and wiring shall be constructed using cables with halogen-free insulation, laid in walls and ceilings under plaster. The Design provides for electrical wiring for socket outlets, technological loads, HVAC systems, general lighting and emergency anti-panic lighting. Upon completion of the works, it is necessary to develop As-Built Design, perform all the necessary tests and measurements and deliver all the required certificates.

ASSESMENT OF THE INVESTMENT VALUE OF THE ELECTRIC POWER SUPPLY SYSTEMS

- Distribution boxes .....CNY.....
- Power supply cables.....CNY.....
- Secondary wiring ..... CNY.....
- Installation accessories..... CNY.....
- Luminaires .....CNY.....
- Heating cables .....CNY.....

- Total CNY.....

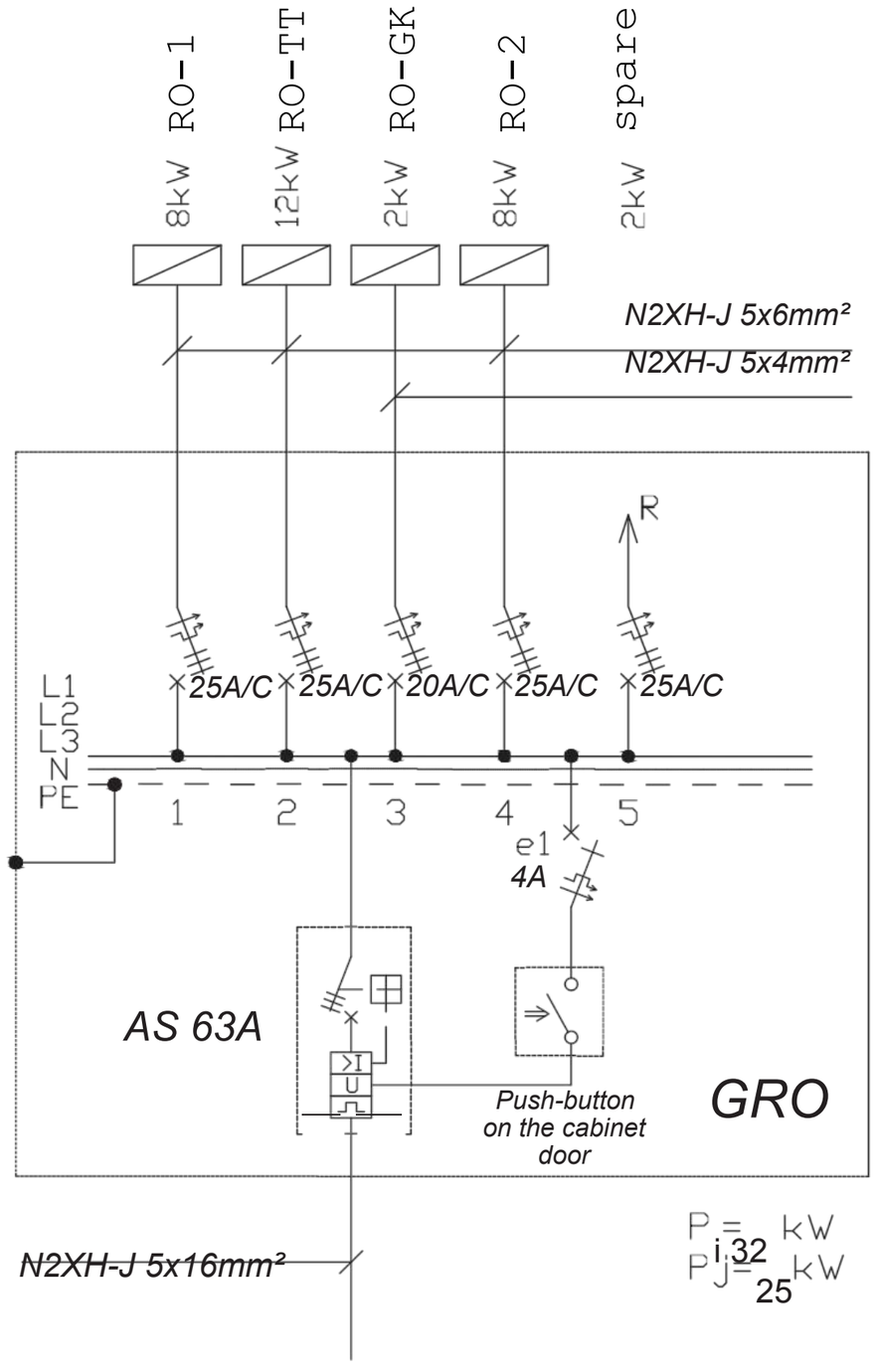
Distribution block diagram of
the power supply systems



RO-MEASUREMENT

(not subject to the Design)

Single-line diagram of GRO



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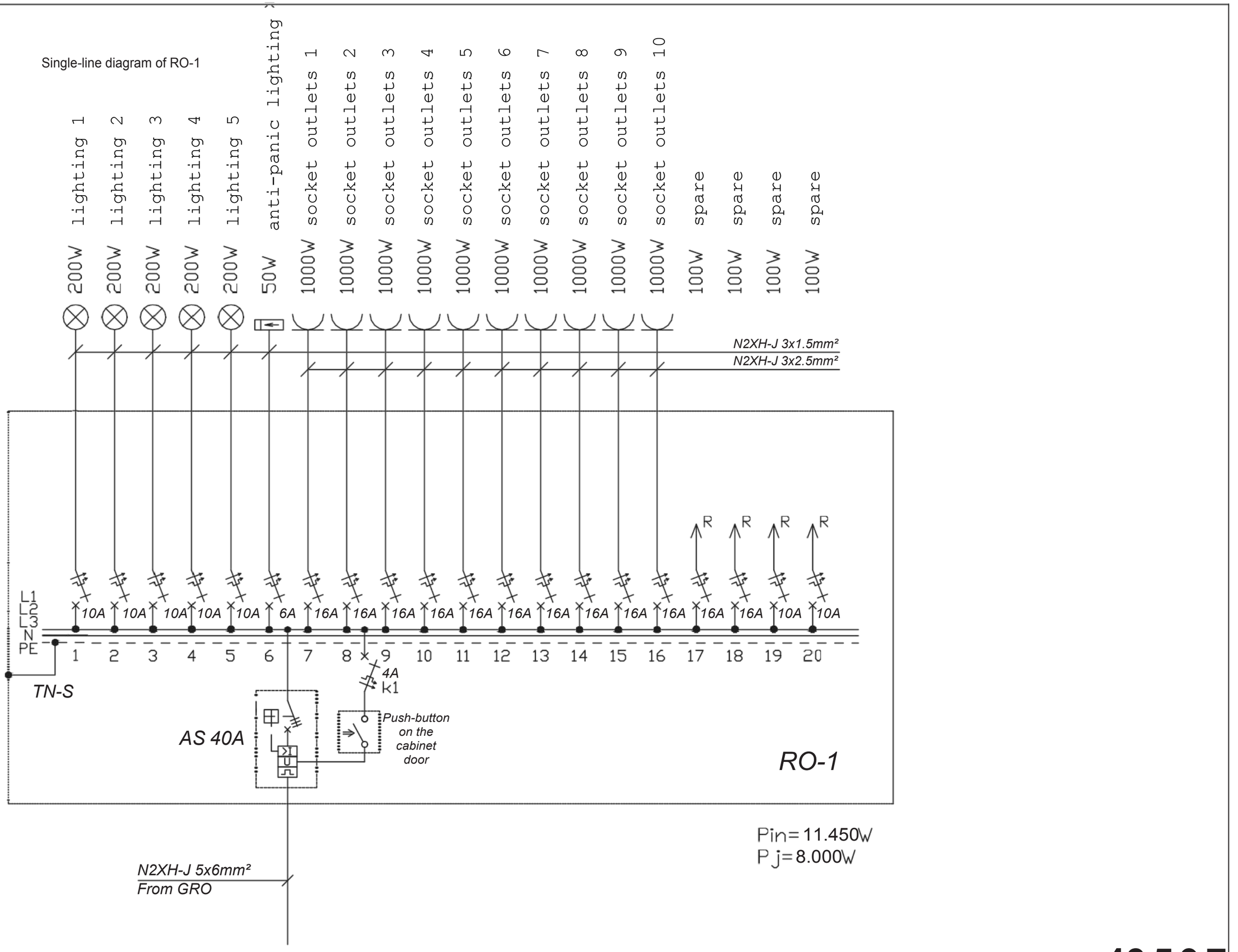
Single-line diagram of RO-1



Pin= 11.450W
P j= 8.000W

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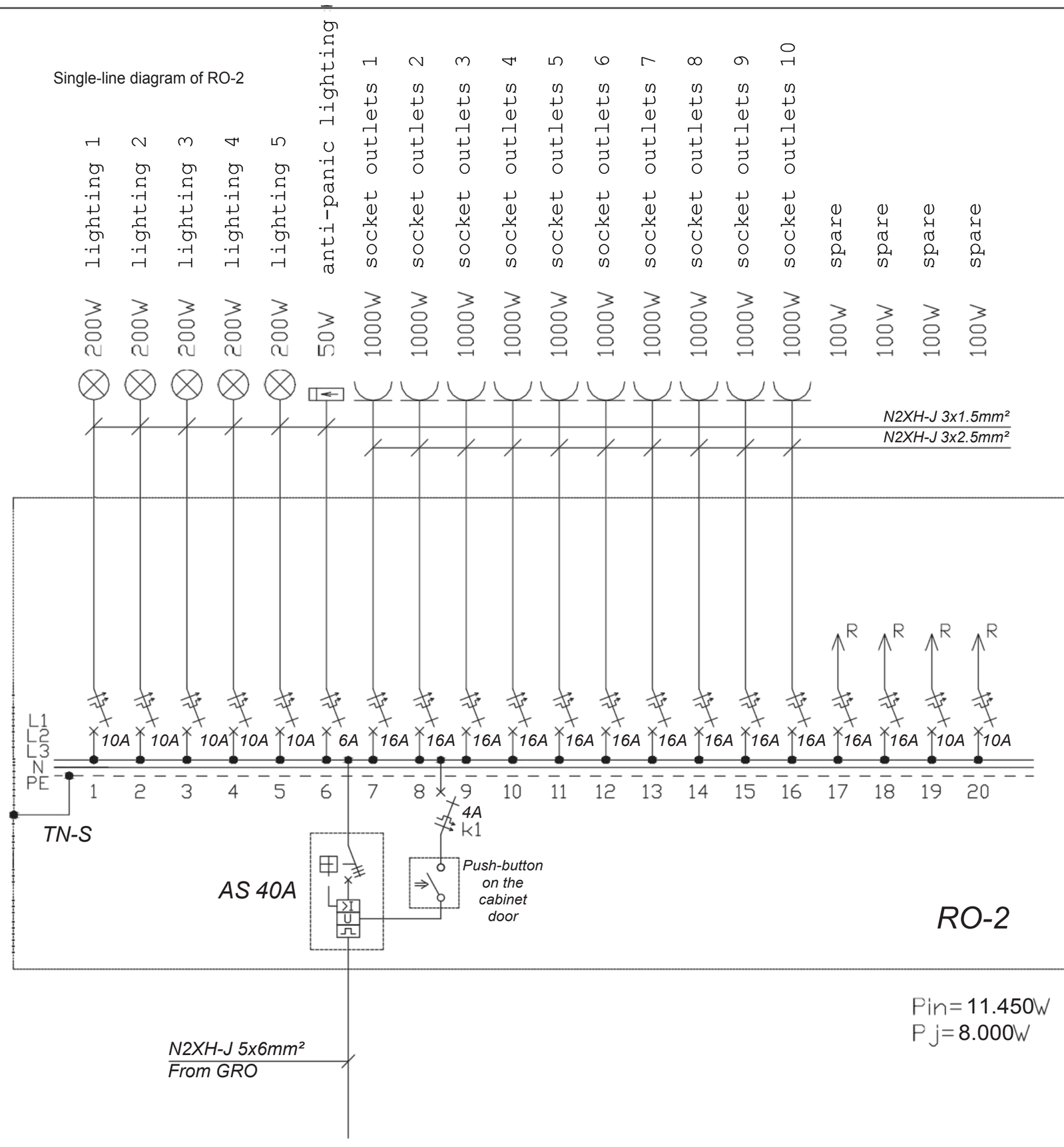
Single-line diagram of RO-2



Pin = 11.450W
P j = 8.000W

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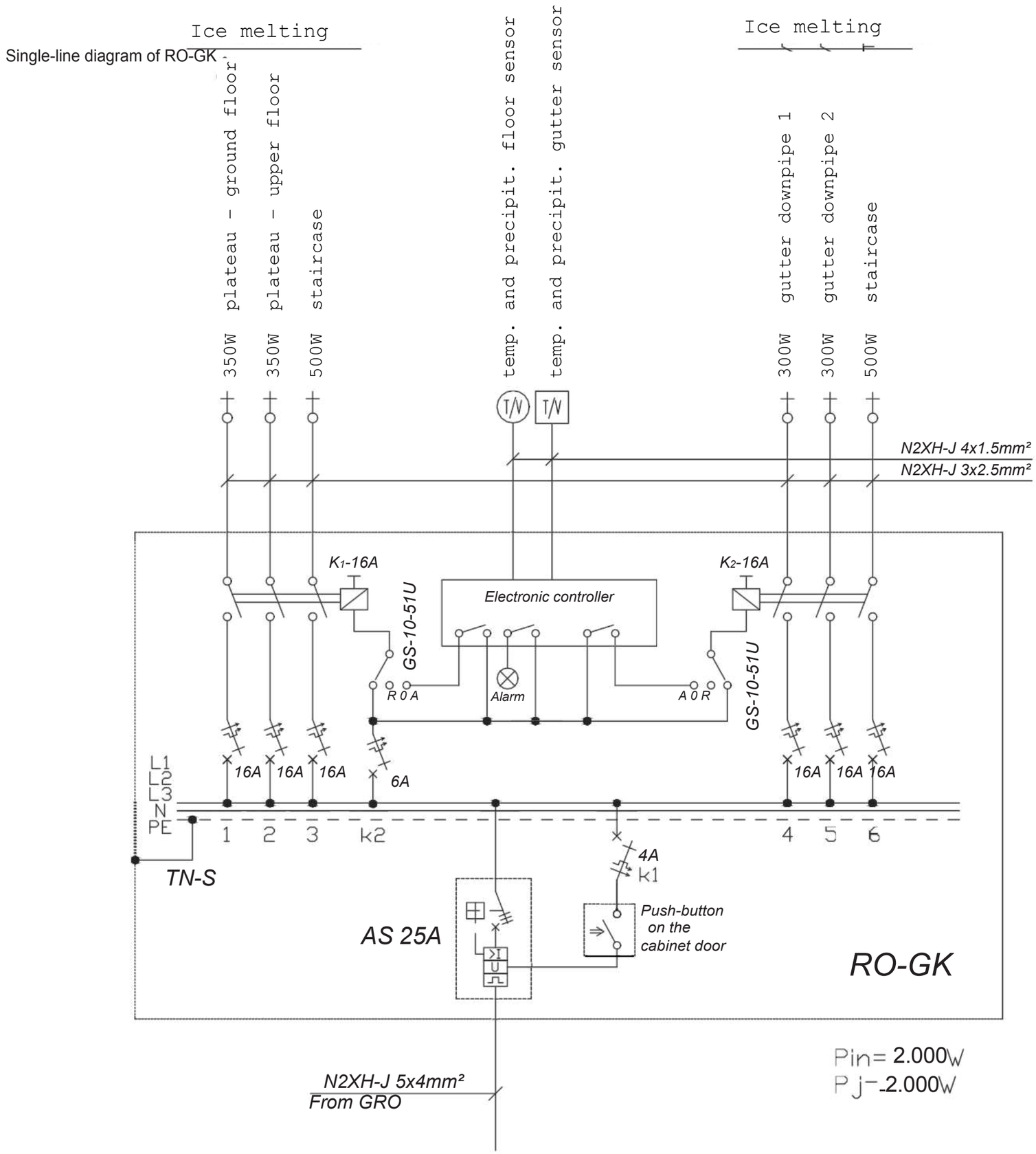
Single-line diagram of RO-GK



SINGLE-LINE DIAGRAM OF RO-GK

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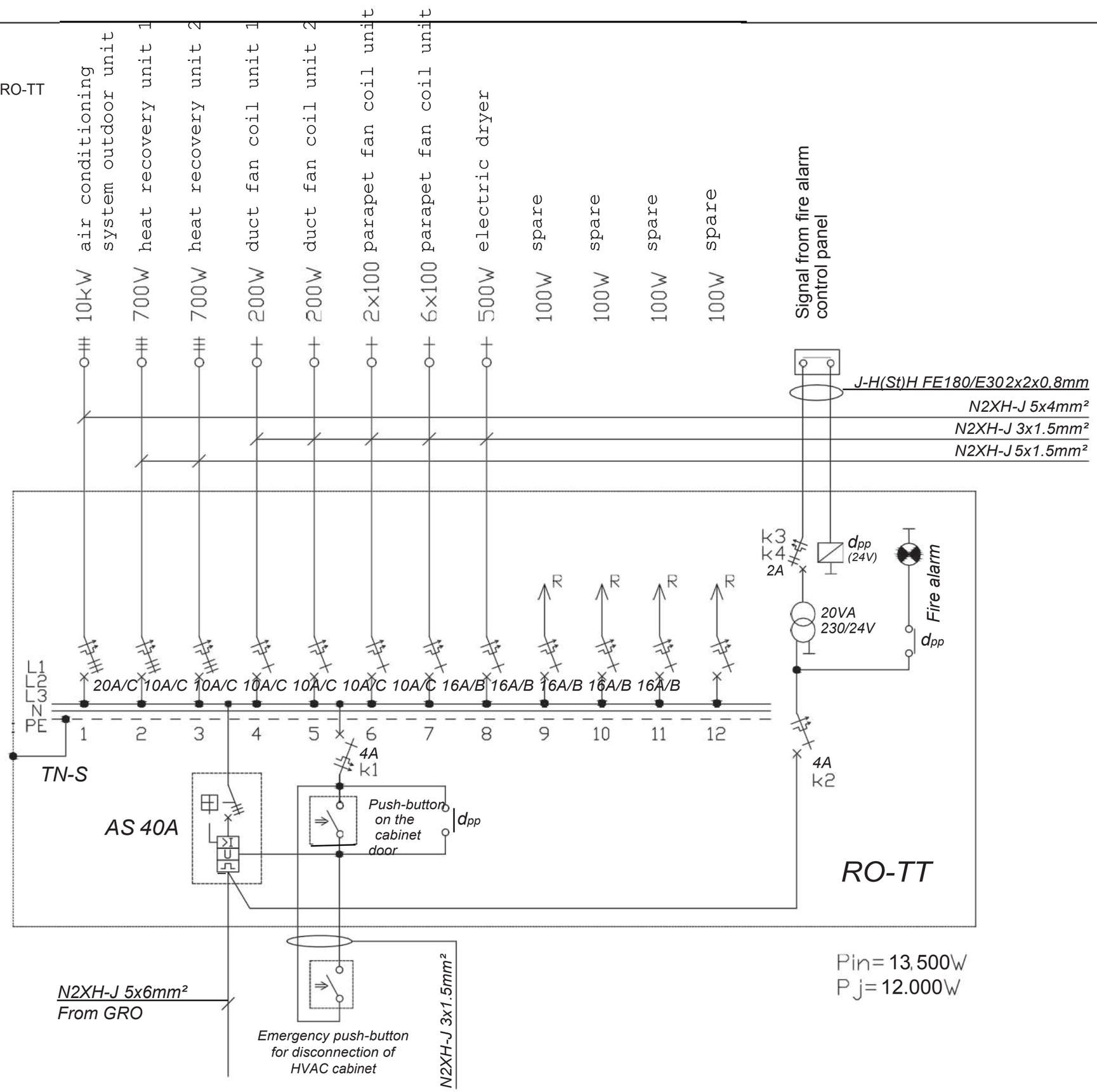
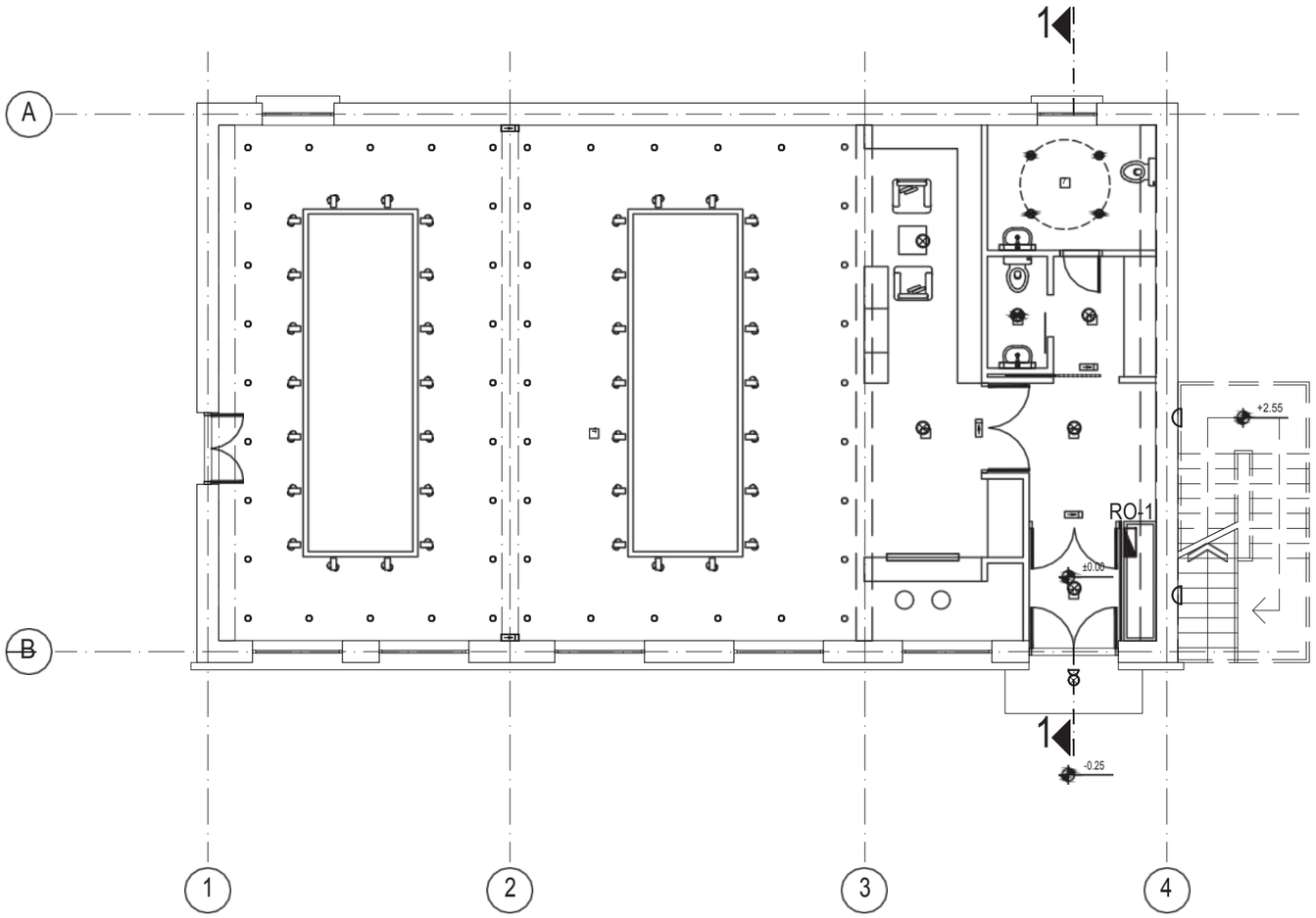
Single-line diagram of RO-TT



Ground floor plan
LIGHTING
Scale 1:100

Upper floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information zone
4	Exhibition zone
5	Toilet lobby
6	Toilet
7	Toilet



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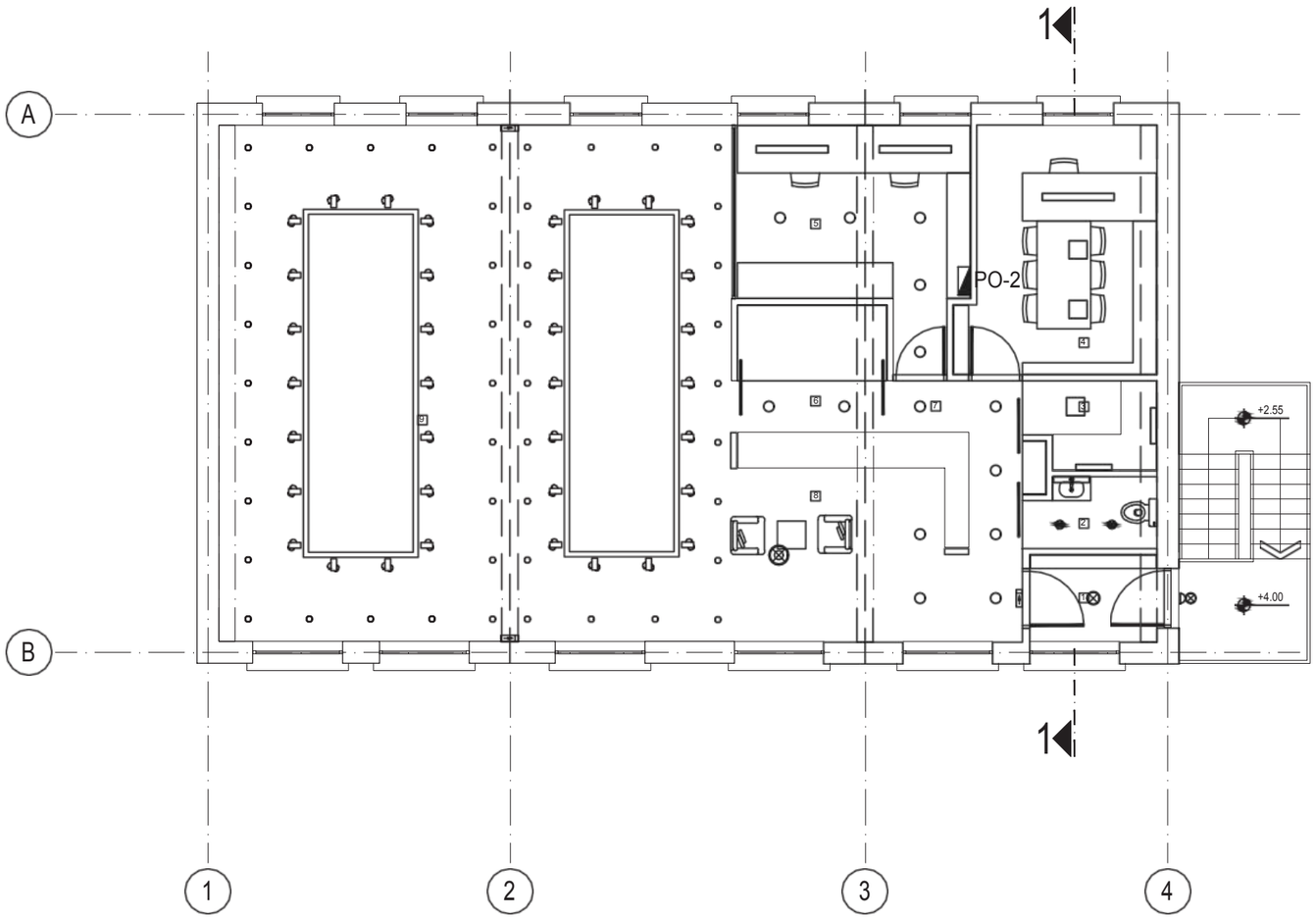
Upper floor plan
LIGHTING
Scale 1:100

Upper floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Toilet
3	Kitchenette
4	Director's office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition zone



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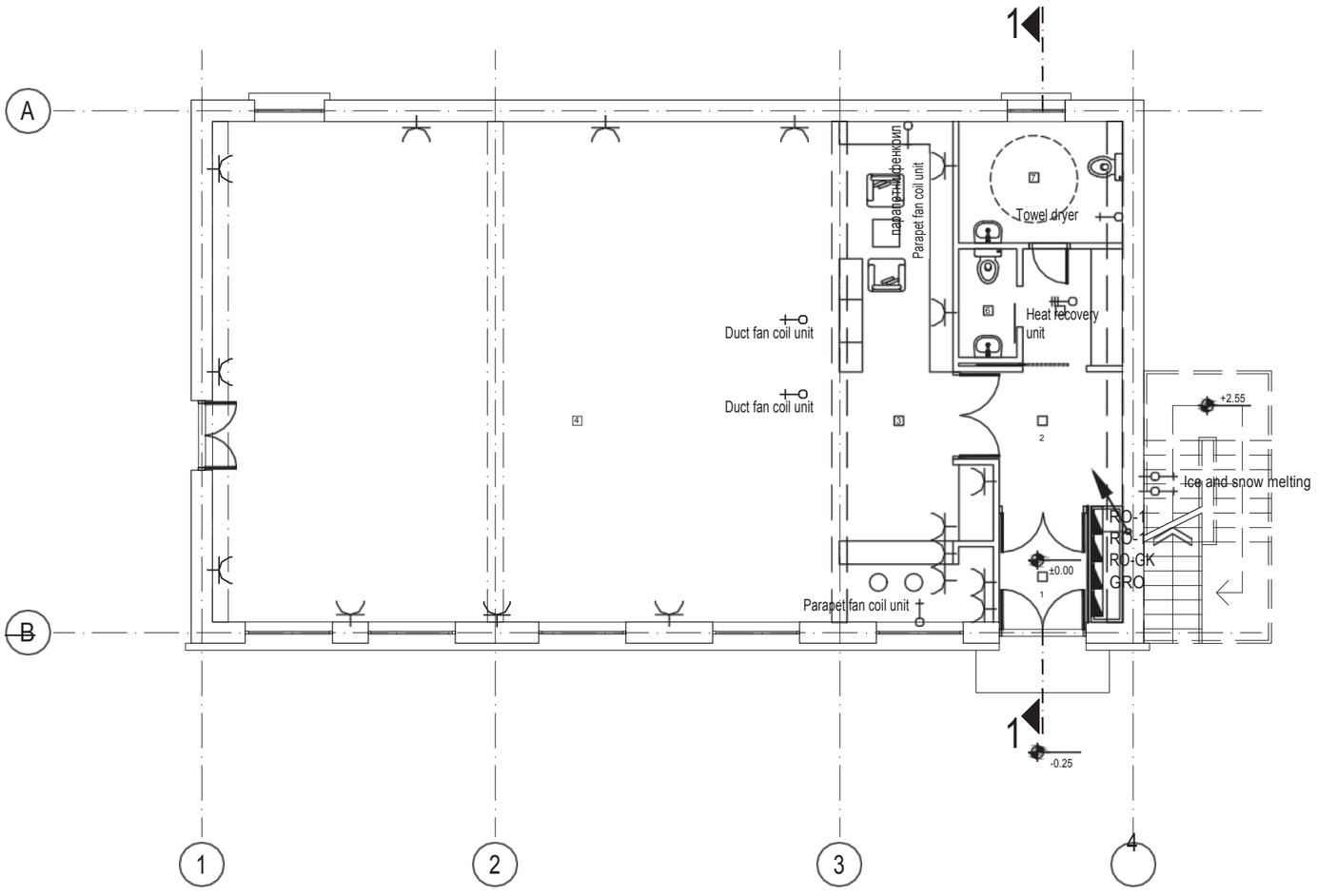
Ground floor plan
SOCET OUTLETS AND HVAC LOADS
Scale 1:100

Ground floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information zone
4	Exhibition zone
5	Toilet lobby
6	Toilet
7	Toilet



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Sheet 45

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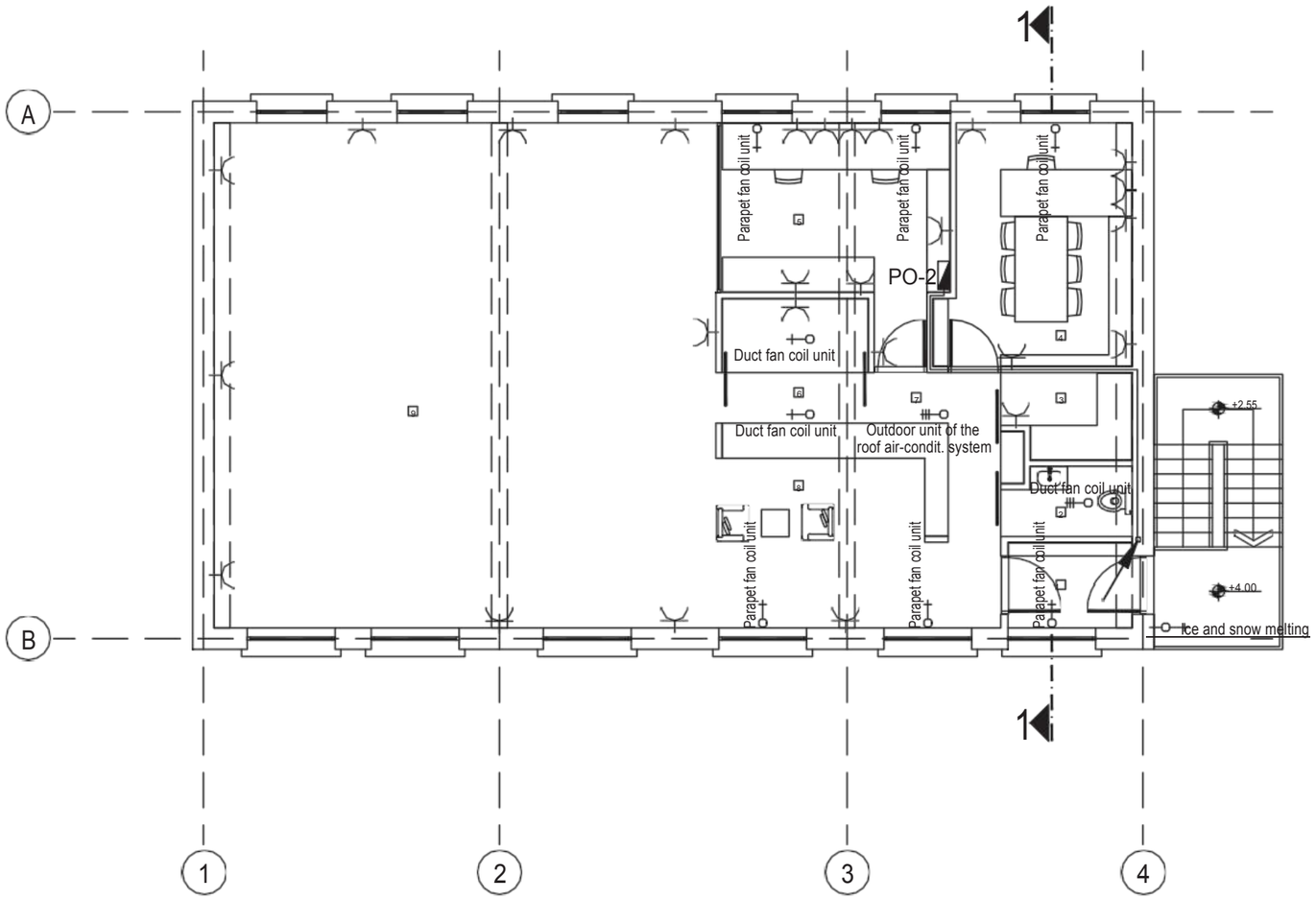
Upper floor plan
SOCKET OUTLETS AND HVAC LOADS
Scale 1:100

Upper floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Toilet
3	Kitchenette
4	Director's office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition zone



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PRELIMINARY DESIGN OF TELECOMMUNICATIONS

43597

TECHNICAL DESCRIPTION

PRELIMINARY DESIGN OF TELECOMMUNICATIONS

FOR THE BUILDING FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

The Design provides for precast cable ducting for the purpose of connecting the building to the public telecommunications (TC) network in the form of 3xPE pipes Ø50mm, laid to the RACK cabinet on the ground floor. Access telecommunications cable is not subject to this Design.

According to the Design, the transmission of telephone and computer signals shall be carried out via a common communication network consisting of internal network, active and passive network equipment. It is implemented as a structured cabling system. This means that computer and telephone sockets belong to the same type and category (RJ45 cat.6), horizontal distribution from the structured cabling distribution cabinet to the sockets is universal, and the purpose of terminals (telephone or computer) is determined by appropriate patching within the structured cabling distribution cabinet - RACK, which is planned as a wall cabinet for installation on the ground floor, as shown in the Design drawings.

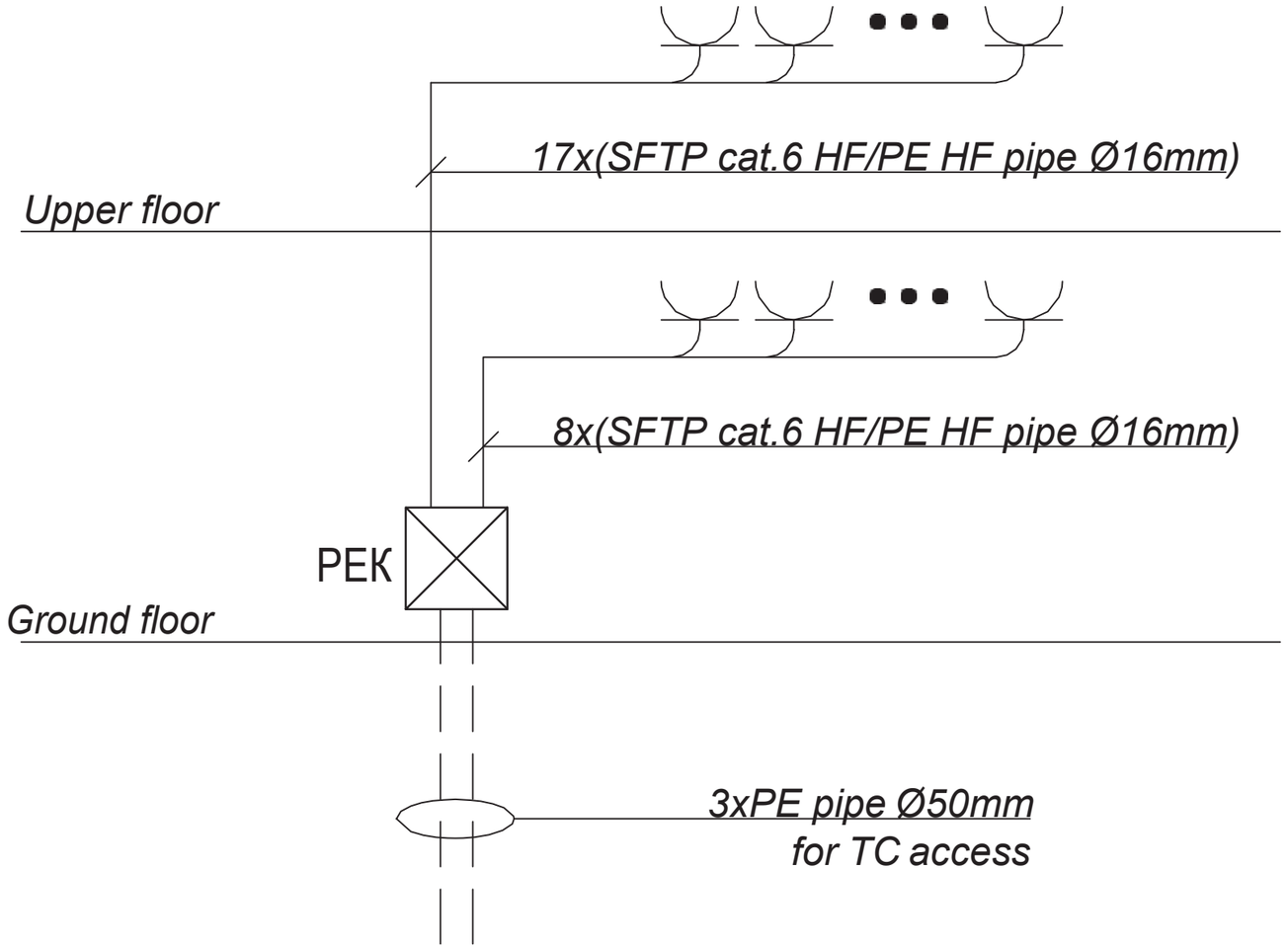
RJ45 sockets for telephone and computer system shall be installed in a wall, at a height of 30-40cm from the floor level or above the working counter. From each RJ45 socket to the RACK cabinet on the ground floor, it is necessary to install the cable SFTP cat.6 HF (halogen-free), laid in PE HF pipes Ø16mm in the wall under plaster minimum 3cm thick, where care should be taken to observe the regulation on maximum distance of 90m between the socket and the connectors on the RACK cabinet distribution panel.

INVESTMENT VALUE ASSESSMENT

- INSTALLATION .....CNY
- PASSIVE EQUIPMENT .....CNY
- ACTIVE EQUIPMENT .....CNY

- TOTAL .....CNY

DISTRIBUTION BLOCK DIAGRAM OF THE
STRUCTURED CABLING SYSTEM



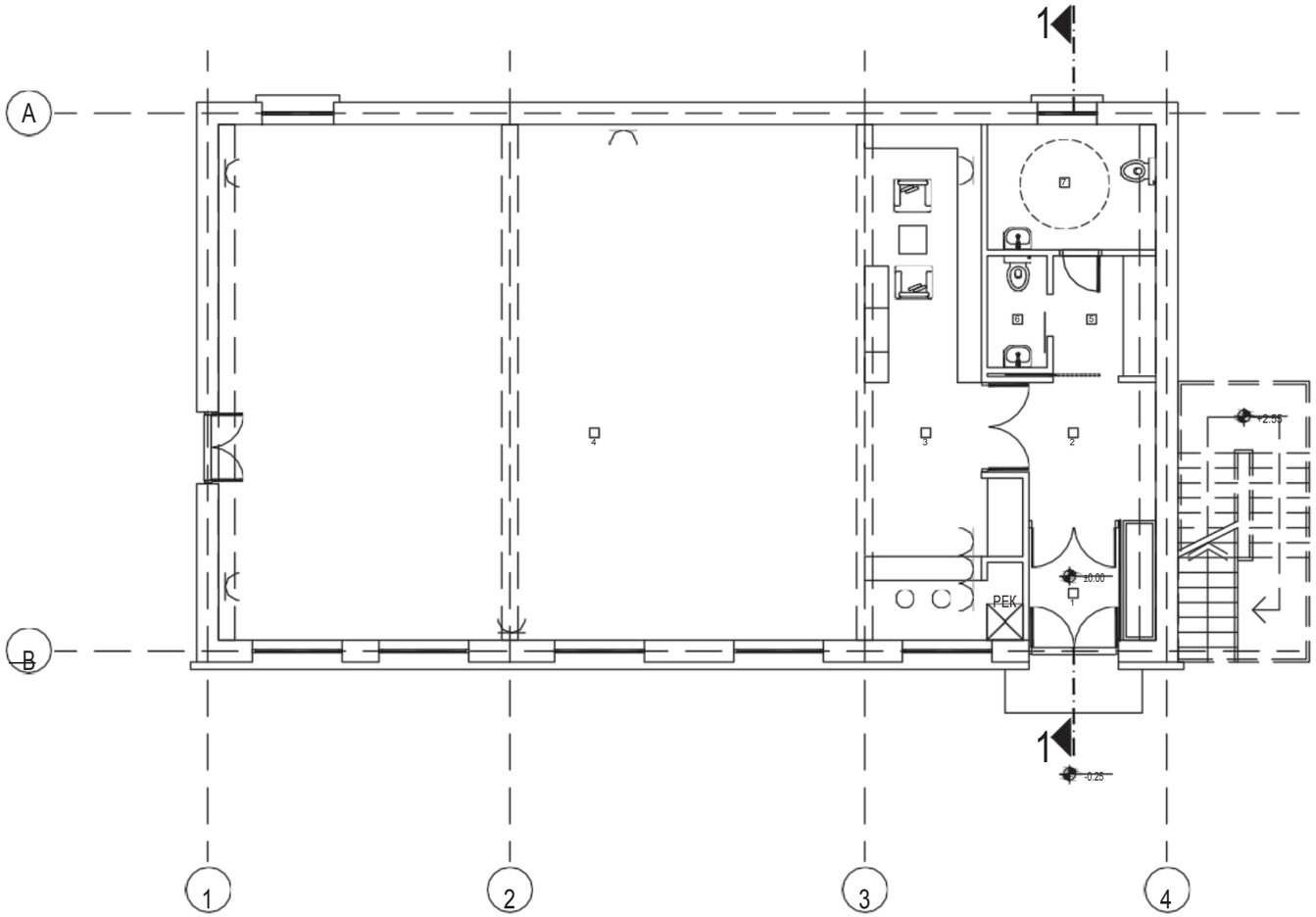
LEGEND:

RACK - wall surface mounted concentration point cabinet of the structured cable system

- computer/telephone socket RJ-45 cat. 6

Ground floor plan
STRUCTURED CABLING SYSTEM
Scale 1:100

Ground floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information zone
4	Exhibition zone
5	Toilet lobby
6	Toilet
7	Toilet



LEGEND:

RACK - wall surface mounted concentration point cabinet of the structured cable system

- computer/telephone socket RJ-45 cat. 6

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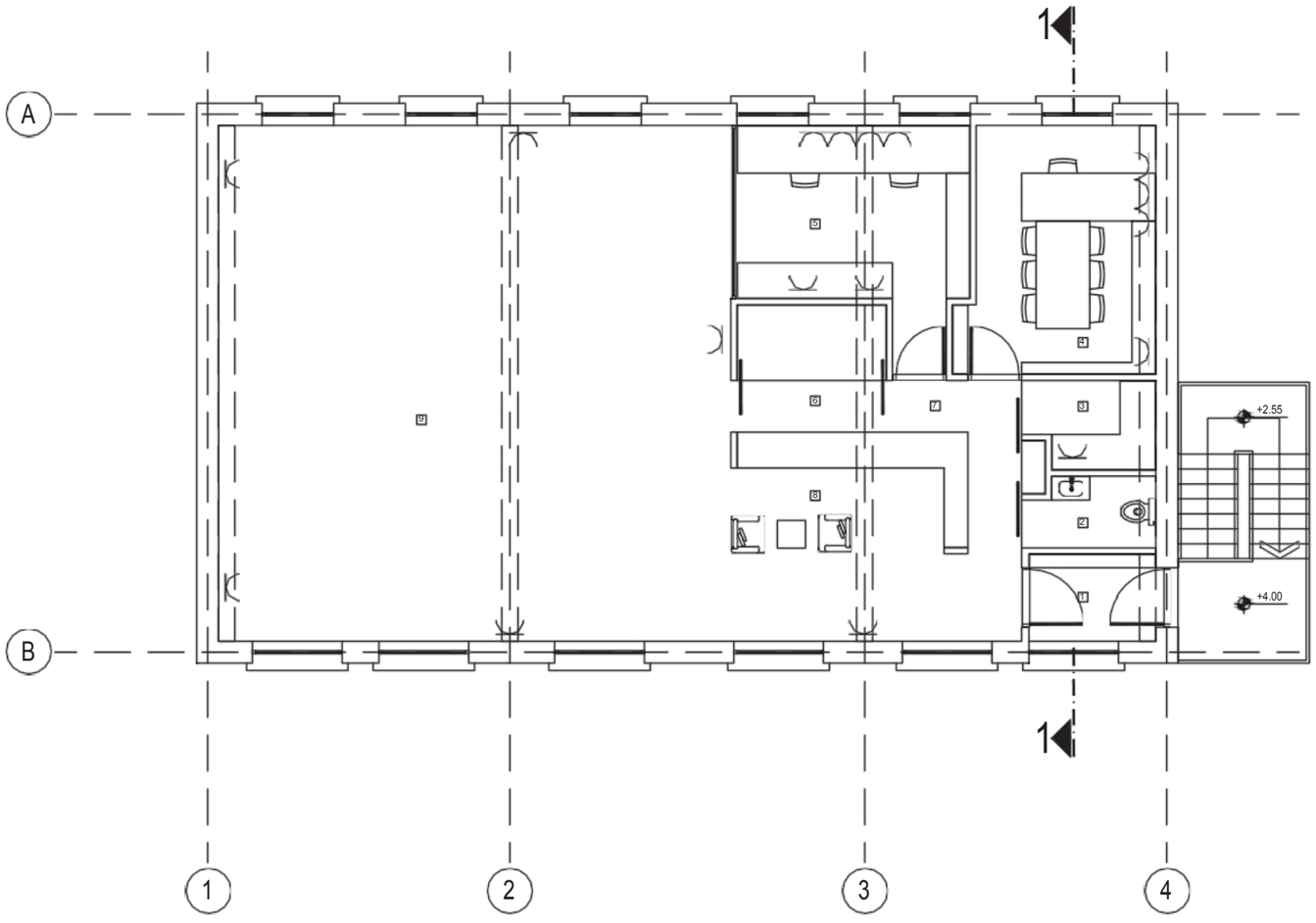
Upper floor plan
STRUCTURED CABLING SYSTEM
Scale 1 :100



Upper floor plan

NO.	ROOM/SPACE
1	Vestibule
2	Toilet
3	Kitchenette
4	Director's office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition zone

LEGEND:

RACK - wall surface mounted concentration point cabinet of the structured cable system

- computer/telephone socket RJ-45 cat. 6

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43597

PRELIMINARY DESIGN OF HEATING AND AIR CONDITIONING SYSTEM

43597

TECHNICAL DESCRIPTION

PRELIMINARY DESIGN OF HEATING SYSTEM AND AIR CONDITIONING SYSTEM

FOR THE BUILDING FOR THE CULTURAL CENTER OF THE REPUBLIC OF SERBIA IN BEIJING

The building for the Cultural Center of the Republic of Serbia in Beijing, which is subject to the Preliminary Design of HVAC systems, has the following levels:

- **Ground floor** – floor at level 0.0. total net area of 137.68m^2, with vestibule, lobby, basic information area, exhibition area and toilets.

- **Upper floor** – floor at level 4.0. total net area of 81.23m^2, with vestibule, kitchenette, offices, storage area, library, exhibition area and toilet.

The building is equipped with a VRF air-conditioning system with a direct-expansion air-source heat pump, which covers heat gains and losses. The system consists of one outdoor unit and several indoor units. VRF system is manufactured by Midea.

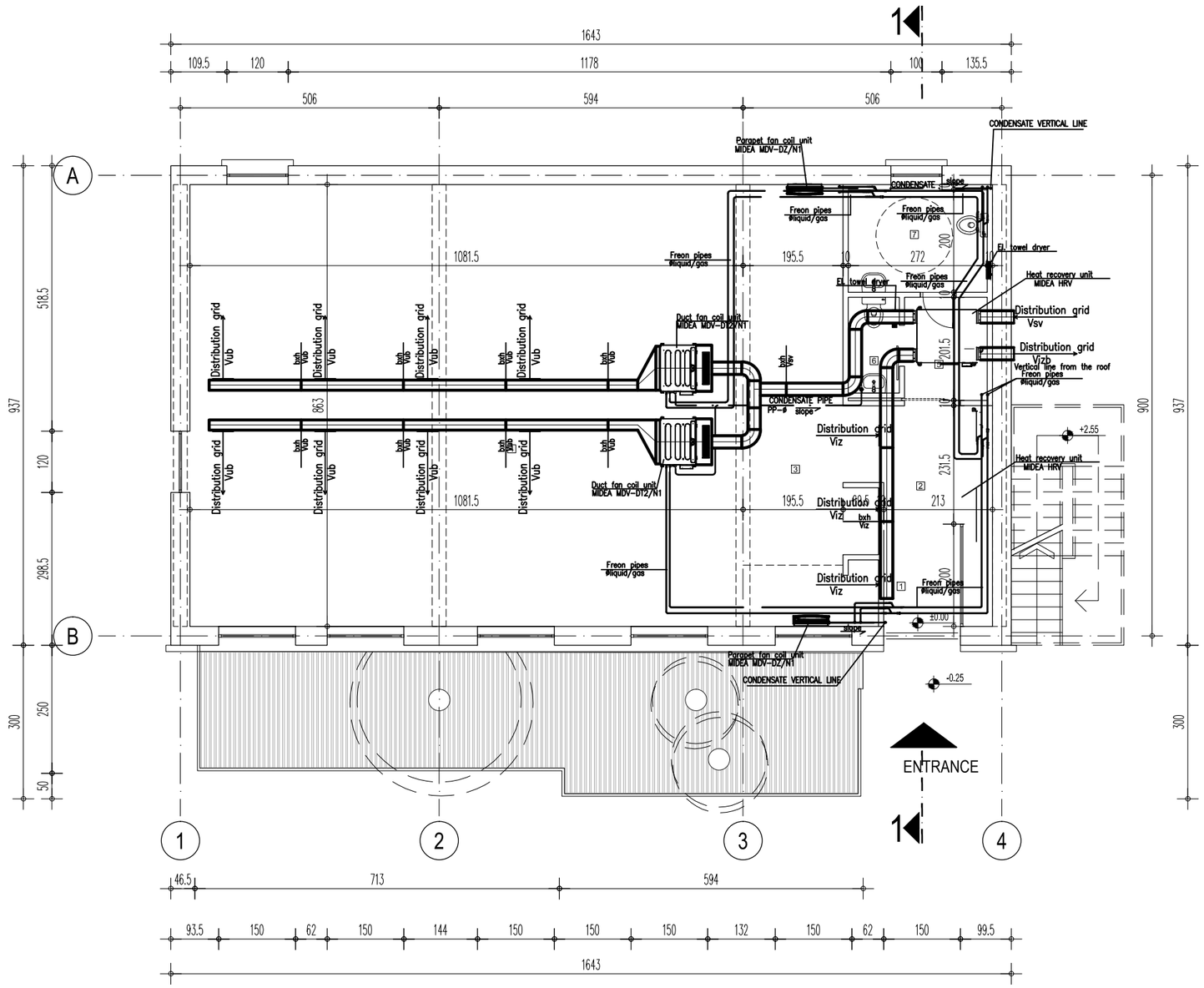
Parapet/console units are adopted as the system indoor units for offices, lobbies, vestibules, library, and for the exhibition areas medium-pressure duct units are planned which operate with a certain amount of fresh air necessary for the comfort conditions in the exhibition areas. Fresh air is prepared through a horizontal heat recovery unit, which uses the energy of exhaust air discharged from the building for the preparation of fresh air.

Outdoor unit of the system is located on a stand, on a flat roof. Copper pipeline for liquid and gaseous phases of freon starts from this unit. It enters vertical line in the axis 4, and branches across floors/levels up to the indoor units of the system. The parapet/console units are located on the parapet walls under the windows. In the central parts of the exhibition areas, two duct units are installed, which inject air into the space through the duct distribution system and distribution grids. These units are supplied with fresh air prepared in heat recovery units located in sanitary blocks, which take in and discharge the air through rain louvers on the façade wall in axis 4. Condensate from the parapet units is brought to vertical condensation lines, and from the duct units it is brought horizontally under the ceiling with an inclination towards the drain in the toilets. Control of the system operation is achieved through the controller of the operation of each indoor unit.

Towel dryers with electric heaters with thermostats shall be used as heating elements in toilets. The designed heating and cooling system of the building provides a rational solution covering both summer and winter periods, with maximum energy savings and comfort conditions.

The estimated investment value of the HVAC systems is CNY .....

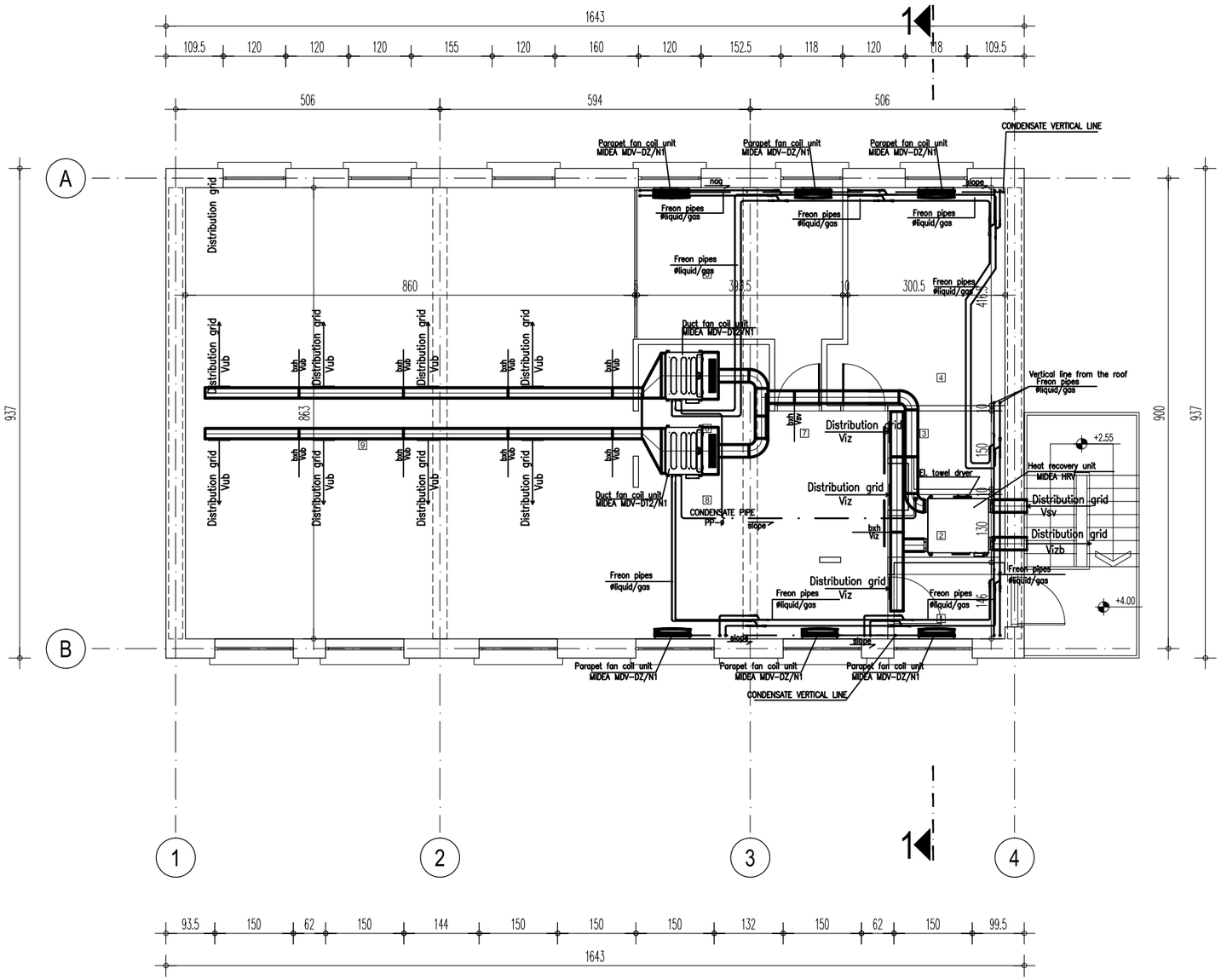
Ground floor plan
HVAC equipment arrangement
Scale 1:100



Ground floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information zone
4	Exhibition area
5	Toilet lobby
6	Toilet
7	Toilet

43597

Upper floor plan
HVAC equipment arrangement
Scale 1:100



Ground floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Toilet
3	Kitchenette
4	Director's office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition area

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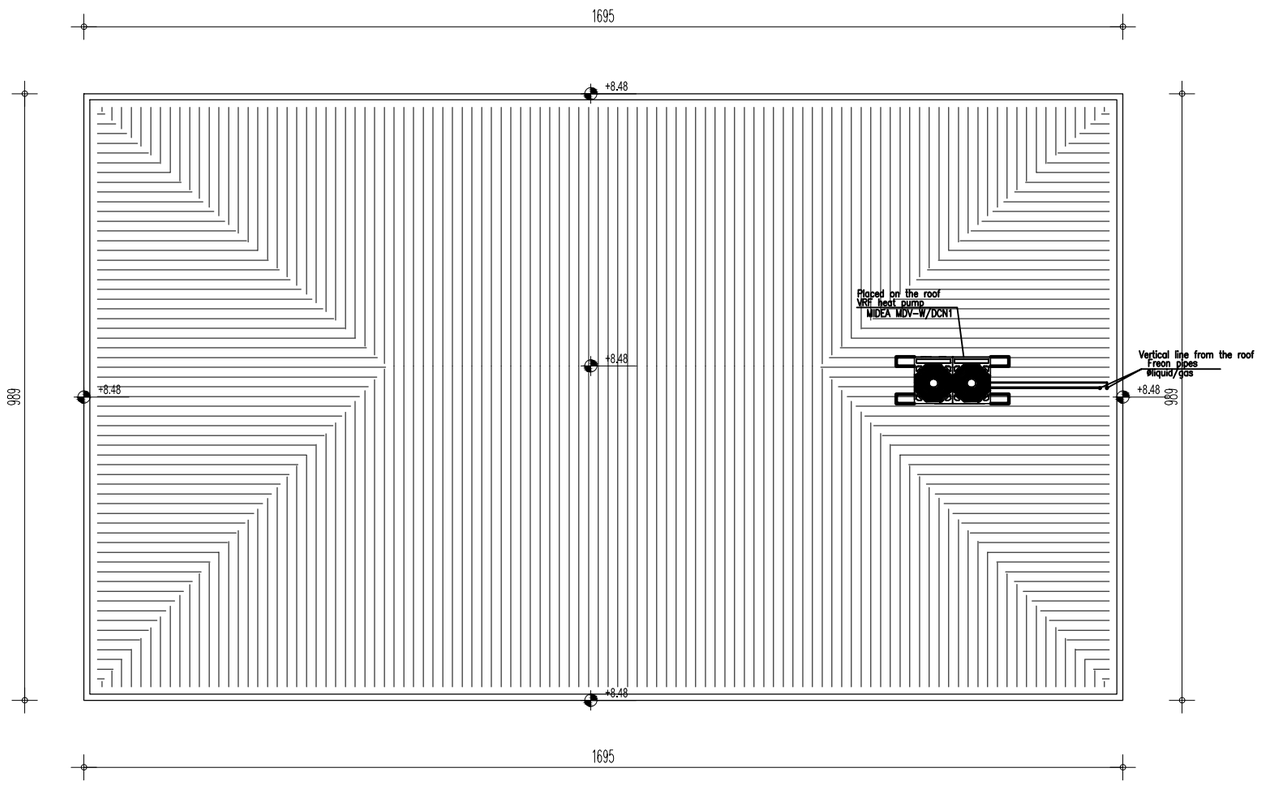
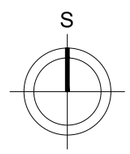
Roof plan
HVAC equipment arrangement
Scale 1 :100





43597

PRELIMINARY SOLUTION OF FIRE AND BURGLAR ALARM SECURITY SYSTEMS

43597

TECHNICAL DESCRIPTION OF THE FIRE ALARM SYSTEM

FIRE ALARM SYSTEM

The building is designed as a unique structure consisting of a ground floor and the upper floor, with a total area (A) of about 269.55m^2.

This Design covers all rooms within the building. In terms of emergency evacuation, the building belongs to class BD2.

To protect the building from fire, an addressable fire alarm system SecuriFire shall be installed, which consists of:

- fire alarm control panel B7-SCP520,
- automatic fire detectors and manual call points,
- alerting elements, and
- cabling.

Fire alarm control panel B7-SCP520 with an integrated keypad or similar control panel will be located in a niche on the ground floor, as shown in the drawings.

Automatic fire detectors will be installed in all rooms (except in sanitary units).

For the main type of detector, an optical smoke detector has been selected since it reacts in the initial phase of fire. In the vicinity of the entrance to/exit from the building and in communication areas, manual call points shall be installed.

Alerting the people present in the building of the occurrence of fire in a particular facility will be carried out by acoustic signals through alarm sirens.

Signaling of the status and operation of each detector/call point and control of the fire alarm system operation shall be possible only from the control and operation keypad, which is an integral part of the fire alarm control panel itself.

The designed SecuriFire fire alarm system is fully expandable, i.e. it is possible to subsequently connect new SecuriFire control panels, MIC 711 control and operation keypads, etc. as required.

All the elements of a fixed fire alarm system (alarm control panel, automatic fire detectors and manual call points, fire alarm horns, etc.) shall comply with SRPS EN54.XX standards and shall have VdS certificates.

ALARM PLAN

Automatic detectors can detect a fire at an early stage, but it is also necessary to include a human factor in the process of fire detection.

In order to achieve full efficiency of the fire alarm system, it is necessary to ensure permanent presence i.e. attendance of a person in charge of the fire alarm control panel. The person's task is to verify the information received from detectors and make necessary decisions.

There is always a possibility of the person's confusion, irregular actions or a panic factor. It is necessary to overcome such situations with technical means, which is why two alarm paths shall be planned:

- alarm from automatic detectors, and
- alarm from manual call points.

In the event of fire, the designed alarms provide for a timely fire detection and response of the person on duty.

In order to eliminate human error, third monitoring i.e. control has been introduced, which shall be applied as:

- presence (attendance) control, and
- investigation control.

This third control, which takes place at the same time as the first two, is divided into two channels, where in case of each automatic detector's alarm, we have two time delays. These delays are set to different times.

Short delay (30 seconds) is called presence or attendance control. It is a way to check the person on duty and the manner of his/her response to an alarm. In case that the person on duty does not respond within 30 seconds, general alarm shall be automatically activated.

When the person on duty of the fire alarm control panel deactivates the acoustic alarm, second delay time - alarm investigation control begins. This delay is set to a longer time, depending on the distance of the endangered area from the room where the fire alarm control panel is located, in this case 5 minutes.

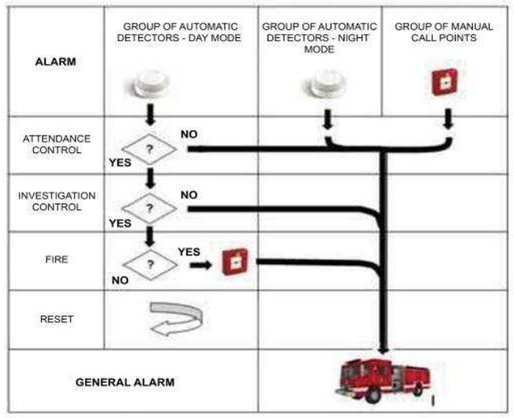
During this time, the person on duty must inspect the fire, and if possible extinguish it, and restore the control panel to its initial position (reset). If within the specified time, the control panel fails to reset to its initial position, the alarm is automatically transmitted as a general alarm.

The person on duty may reduce this 5-minute delay in case he/she establishes that a higher intensity fire has occurred by pressing the push-button of a manual call point. By activating a manual call point, general alarm will be automatically activated. The person on duty further acts according to the prescribed procedures in case of fire: calling the fire brigade, helping in firefighting, evacuation, etc.

This second principle of control excludes the possibility of an alarm failure as a consequence of an accident involving the person on duty or his/her improper action in the alarming procedure.

Fire alarm control panel is operating in two modes: DAY mode and NIGHT mode. In the DAY mode, which means during working hours, alarms are treated in two ways, namely: alarms of automatic fire detectors and alarms of manual call points. During the NIGHT mode, which is out of working hours, delay time is omitted, i.e. all alarms are treated as alarms of manual call points.

ALARMING DIAGRAM



FIRE ALARM CONTROL PANEL

An automatic fire alarm system shall be installed, including a microprocessor-based addressable control panel, type B7-SCP520 Securiton Switzerland, with the capacity of one addressable loop, with an integrated control and operation keypad (designation on the drawings - PPC).

Addressable automatic fire detectors and manual call points shall be connected to the control panel through the loops. Control panel provides power supply and continuous monitoring of signal lines - alarm lines, indication of the activation of signal lines or occurrence of a fault on them, sending alarm signals to acoustic sources, as well as control and some interventions according to two-stage fire alarm plan. It also provides signals necessary to connect the fire alarm system to other systems (actuation functions of the control panel).

The control panel has an integrated operating control keypad for handling the system with a 5.7" TFT display and SecuriWheel for menu navigation. All system states are displayed in a text form at on the display. It is possible to choose prints in 4 languages, one of which is Serbian. It is possible to change the language during the control panel operation. There are 3 function keys and 7 LEDs
indicating priority states on the keypad.

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Control panel shall be supplied with voltage of 220V, 50 Hz from a special circuit in the existing distribution cabinet. The control panel shall include 24V, 3A power supply, with 2x12 V,9 Ah storage battery for backup power supply in the event of power failure.

Control panel will be capable of software selection of the sensitivity and criteria for the operation of fire detectors (smoke, temperature/temperature-rise rate or combined). The control panel will be

equipped with programmable relay outputs for the purpose of switching alarm devices on, loudspeaker system, disconnection of fire dampers, power supply, fire doors or the like in the event of a fire.

Technical characteristics of the control panel:

Mains power supply: 230 VAC (50 Hz)
Operating voltage: 10 to 30 VDC
Operating temperature: -5 to +50^{o}C
Protection degree: IP 30
Dimensions WxHxD: 360x300x80 mm
The control panel meets the standard SRPS EN 54-2 and has VdS certificate, as well as the certificates of conformity with EMC and LVD, issued by a domestic certified-notified body.
Fire alarm control panel (PPC) shall be mounted on the ground floor, as shown in the drawings.

FIRE DETECTORS

AUTOMATIC FIRE DETECTORS

Considering the purpose of the building, possible causes of fire, fire development rate, and conditions in the rooms, an addressable multi-criteria optical-smoke and temperature detector with a base, type MCD573X / USB502-1 Securiton, shall be installed for automatic fire detection. It is programmed to operate as an optical smoke detector or as a thermal fire detector.
An optical detector is adopted as a basic detector type of the automatic fire alarm system, since it detects the occurrence of a fire at an early stage of its development. Installation density of the detectors has been determined based on the analysis, taking into account the following parameters:
- monitoring principle of the of premises,
- room geometry,
- interference conditions,
- data from the equipment manufacturers etc.

Maximum coverage area of the smoke detector is 50m^2. Accordingly, maximum distance between two detectors is 8m, and maximum distance between a detector and the wall is 4m. In the passages and corridors less than 3m wide, the spacing between the detectors shall not exceed 15m.
Addressable multi-criteria smoke and temperature detector, MCD573X/USB502-1 Securiton with software setting of operating mode and parameters is capable of operating as a smoke detector, temperature sensor as a combined smoke detector/temperature detector.
Smoke detection is based on Tyndall's effect, while NTC sensor principle is used for heat detection.
Design of the smoke detection chamber allows for unobstructed entry of smoke into the chamber, which together with setting of the sensitivity level increases the resistance to false alarms.
The detector is of multi-criteria type since the detector's sensitivity when it operates as a smoke sensor is temperature-dependent according to the so-called. "CUBUS leveling", i.e. when the temperature increases, the detector sensitivity also increases. When the temperature in the protected area decreases, the sensitivity also decreases.

In this process, sensitivity remains within the scope defined by EN 54-7 standard. This characteristic is very important since in the event of fire, the spread of smoke towards the top of the room slows down due to the increase in temperature.
The detector's sensitivity, when it operates as a temperature sensor, can be selected between the classes A1, A2, B, all in accordance with EN 54-5.
The detector has an incorporated loop isolator which allows smooth operation of the detector in the event of a short circuit or line break. The detector is installed on a standard base for mounting on a ceiling or a suspended ceiling.
The detector can generate the following messages to the fire alarm control panel:
Fire alarm: smoke or temperature
Smoke pre-alarm: PA 1 to 50%, PA 2 to 75% alarm threshold Pollution:
Levels 1 and 2
Temperature pre-alarm Smoke and
heat verification alarm
Error message: aging, optical error (soiling), supply voltage error, NTC
short circuit, EEProm memory error.
Technical characteristics:
Operating voltage: 16 do 30
VDC Operating current: 250 μA
Alarm current: 5 mA
Operating temperature: -25 to +60^{o}C
Protection degree (complete with base): IP 44
Relative humidity (no condensation, temp ≤ 34^{o}C): 10 to 95% rel/H
Dimensions Øxx (complete with base): 112x60 mm
The detector has a VdS certificate and meets EN 54-7 and EN 54-5. The detector is programmed to operate as an optical smoke detector or as a thermal fire detector.

MANUAL CALL POINTS
Addressable manual call point is used to manually activate an alarm in case of fire, with no verification time, and therefore it has a role in fire protection for direct alarming. It is installed at a height of 1.5m above the floor level.
Manual call point consists of a wall mounting housing with a safety plastic cover, micro switch protected by front glass, connection terminals and addressable module, type MCP521-1N/SDI 82X Securiton Switzerland.
The addressable module has an incorporated loop isolator which allows smooth operation of manual call point in the event of a short circuit or line break.
In case of an alarm, it is necessary to lift the protective plastic cover and press the front glass. In this way, electrical contact is established, which transmits an electrical signal to the fire alarm control panel through the addressable module.
The front glass is coated with plastic foil protecting fingers from injury during
breaking. Electrical contact can only be unlocked after removing the broken front glass.
The call point has VdS certificate and meets EN 54-11.
Technical characteristics:
Operating voltage: 9 to 30
VDC Alarm current: 10 mA
Protection degree: IP 24
Dimensions WxHxD: 89x93x61.5 mm

ALARMING ELEMENTS

Personnel in the building is informed about the occurrence of fire by means of acoustic signals emitted via alarm sirens. Alarm siren Sonos PSS-0003 Klaxon, Great Britain, shall be installed.
Technical characteristics:

Operating voltage:	24 VDC
Operating current:	35 mA
Protection degree:	IP21
Operating temperature:	-40 to +80^{o}C
Dimensions Øxx (with a base):	101x81 mm

Alarm sirens shall be installed at a height of min 2.2 m above the upper floor layer and supplied with power from the control panel.
The alarm siren has a certificate of conformity with the Rulebook on Electromagnetic
Compatibility issued by a domestic certified body, has a VdS certificate and meets EN 54-3 standard.

FIRE ALARM SYSTEM

In accordance with the regulations on the possibility of evacuation in case of emergency, the whole newly-installed fire alarm system in the building is halogen-free.
In the facilities, the detectors shall be connected to other and to the control panel with a new JH (St) H 2x2x0.8mm cable. Connection of sound horns - alarm sirens to the control panel is provided with halogen-free cables NHXXX FE 180/E30 2x2x0.8mm, with fire resistance rating of 30 minutes.
Connection of other actuation elements between each other and with the control panel will be carried out with the cable NHXHX FE180/E90 3x1.5mm^2.

The control panel shall be supplied with power from a special circuit, visibly marked, from the closest switchboard (power supply cabinet) in the building. NHXHX cable is 3x1.5mm^2 shall be used for this.
Fire alarm system wiring shall be installed through:

- halogen-free PVC ducts,
- halogen-free ribbed hose,
- non-combustible clips,
- existing cable trays

The cables shall have a certificate of conformity with EN 60332-2-24, EN 50267-2-2 and SRPS EN 61034-2.

Installation cables in the locations of passage from one fire compartment to another should be protected at the point of penetration through the fire compartment by a compound having the same fireproofing properties as the wall and appropriate certificates according to SRPS EN 1366-3.

All systems and wiring shall be installed by professional staff and fully in accordance with applicable regulations and SRPS standards. All penetrations of low- and high- current electrical cables should be processed so that the same fire resistance rating of the walls through which they pass is achieved as the fire resistance of the wall through which cables and cable trays penetrate, and this is done by closing the penetrations with materials –
compounds that prevent spread of fire from one compartment to another. The applied materials shall have a proof of
quality, certificate, approval, document etc. issued by an accredited body, manufacturer or notified body.

ACTUATION FUNCTIONS OF THE FIRE ALARM CONTROL PANEL

In the event of a fire alarm sent by any automatic detector or manual call point in the building, the control panel operates in accordance with the enclosed alarm plan, i.e. via relay outputs it provides for:

- activating alarm sirens in the building,
- activating an automatic voice dialer,

TECHNICAL DESCRIPTION OF THE FIRE ALARM SYSTEM

Burglar security alarm system is provided in the building. In order to perform the necessary functions, the burglar alarm system consists of:
Burglar alarm control panel, Cipher
keypad,
Alarm detectors and sirens, Telephone
(voice) dialer,
Wiring.
The role of the burglar alarm control panel is to constantly monitor and power all signal lines and to generate alarms in the event of an incident situation.
The control panel shall be located on the ground floor. Digital burglar alarm control panel, capacity of 8 on-board zones
(with 8/16 zone duplication) is planned.
The power supply of the control panel shall be provided from the switchboard, from a separate circuit and through standby storage batteries of the appropriate capacity (in the event of the mains power failure).
At the entrance to the building, a cipher keypad is planned.
Detection of intrusion to protected areas will be achieved by:
- IC Detector 360O and
- combined (IC and microwave) detector.

In order to alert personnel that an incident situation has occurred in the building, internal and external alarm sirens shall be installed.
In the event of an incident situation, automatic telephone dialing of the programmed telephone numbers via a voice auto dialer will be provided.
All detectors, sirens and cipher keypad in the system are connected directly to the burglar alarm control panel. These connections are implemented by telecommunication cables, capacity 3x2x0.8mm.
Wiring of the burglar alarm system shall be installed in halogen-free pipes of adequate capacity.

TECHNICAL DESCRIPTION OF THE VIDEO SURVEILLANCE SYSTEM

The Design provides for an IP color video surveillance system.
The cameras shall be arranged in the exhibition area, corridors, storage area and entrance to the building.
The cameras are equipped with appropriate optics and brackets for mounting on the wall or ceiling.
The Design provides for the positioning of cameras to cover communication areas, storage area and exhibition area.
On the ground floor, there shall be a PC for controlling the system.
The system and wiring shall be constructed with cat 7 STP cables, halogen-free.
Wiring of the burglar alarm system shall be installed in halogen-free pipes of adequate capacity.

SPECIFICATION WITH PRICED BILL OF QUANTITIES

Item	Description	UoM	Qty.	Unit Price	Amount (SD)
1.	**FIRE ALARM SYSTEM**				
	Equipment				
1.1.	Microprocessor addressable fire alarm control panel for the construction of an interactive, completely redundant SecuriFire fire alarm system, with the capacity of one addressable loop with an integrated control and operation keypad (designation on the drawings as PPC). All system states are displayed in a text format on the display. It is possible to choose prints in 4 languages, one of which is Serbian. It is possible to change the language during the control panel operation. There are 3 function keys and 7 LEDs indicating priority states on the keypad. The control panel includes 24V, 3A power supply, with 2x12 V, 9 Ah storage batteries for backup power supply in the event of a power failure. The control panel shall be capable of software selection of the sensitivity and criteria for the operation of fire detectors (smoke, temperature or combined). The control panel shall be equipped with relay modules with programmable outputs for the purpose of disconnection of fire dampers, power supply, fire doors or the like in the event of a fire. Control panel has a VdS certificate and meets EI 54-2 standard. The control panel should have a Certificate of Conformity pursuant to the Rulebook on Electromagnetic Compatibility, as well as a Certificate of Conformity pursuant to the Rulebook on Electrical Equipment intended for use within certain voltage limits. Type B7-5SR520 Securiton Switzerland, or equivalent.	set			
1.2.	Interactive addressable combined fire detector (multi-criteria smoke and temperature detector), which combines the benefits of temperature and smoke detection in one detector. Intelligent logic guarantees reliable alarming with the minimum possibility of false alarms, sensitivity of detector automatically adapts to the ambient temperature, with the possibility of checking the state of soiling, software setting of operating mode (smoke, temperature or combined mode), with incorporated loop isolator which allows smooth detector operation				
	in the event of a short circuit or line break, with a universal base for mounting on a suspended ceiling or on a ceiling. The detector has a VdS certificate and meets the standards SRPS EN54-7 and SRPS EN54- 5. Tip MCD573X/USB502-1 Securiton Switzerland or equivalent. Software-programmed to operate as an optical smoke detector.	pcs	14		
1.3.	Addressable manual call point for indoor mounting, protection IP24, with built-in loop isolator which allows smooth operation of all detectors/manual call points in the case of short circuit or loop interruption. The detector meets the standard SRPS EN54-11. Type MCP521/SDI 82X Securiton Switzerland, or equivalent.	pcs	2		
1.4.	Conventional alarm siren for indoor installation, with a choice of 32 different tones, 06dB, 4-41mA, 24V. Type Sonos PSS-0003 Klaxon, Great Britain, or equivalent.	pcs	2		
1.5.	Voice dialer with three input zones, for sending three independent alarm voice messages or unique messages to 3 groups, each with 4 programmed telephone numbers, type **P-VOX.** The module shall be installed in the fire alarm control panel.	pcs	1		
1.6.	Distribution metal cabinet RO-DP in IP 54 protection, for the connection of cables, activation of alarm sirens and flashers and backup storage batteries. The cabinet is surface wall mounted, made of double-pickled sheet metal, dimensions (WxHxD) (400x400x210) mm, with a door and key, with metal mounting plate, with 5 openings for cable entry from the top and bottom side. The cabinet shall accommodate: 1 pc. toroidal transformer 220Vac /24Vdc, 1 pc. power supply unit 24V, 5A, 1 pc. storage battery 2x12V,12Ah, 1 pc. miniature circuit breaker 6A, relay card with three relays 24V/2A 25 pcs. VS clamps 1.5mm^2, installation place for input/output modules 1 pc. DIN rail, perforated cable ducts with cover other unspecified sundry material. Accessory kit for wiring the equipment and	pcs	1		

	installation on the wall next to the PPC.				
				Total equipment :	
	Installation material				
1.7	Supply and installation of halogen-free cable, type JH(St)H 2x2x0.8mm, for connecting the system elements to each other and to the control panel. The cable shall be laid mostly in self-extinguishing halogen-free cable ducts, and partly through halogen-free PVC pipes.	m	170		
1.8	Supply and installation of halogen-free cable, type JH(St)H FE180/E30 2x2x0.8mm, for the connection of actuation/operation elements (sirens) to each other and to the control panel. It shall be laid partly in the appropriate non-combustible clips which are tested according to DIN 4102, Part 12. The item also includes non-combustible clips and accessories for their assembly.	m	30		
1.9	Construction of the system/wiring with the cable NHXHX 3x1.5mm^2 for the power supply of the control panel from the closest power distribution cabinet that allows for connection. It shall be partly installed in halogen-free cable ducts on the wall, and partly on spacer clips on the wall or ceiling.	m.	20		
1.10	Halogen-free cable NHXHX 1x16 mm^2, for the grounding of distribution cabinets. It shall be laid partly in halogen-free cable ducts along the wall, and partly in halogen-free installation pipes.	m	20		
1.11	Supply and installation of halogen-free pipes, complete with mounting brackets for wall or ceiling mounting.	m	0		
1.12	Small sundry installation material (screws, bolts, expansion shields, ties)	lump sum	1		
				Total installation material:	
				Total installation material and equipment:	

2.	**BURGLAR ALARM SYSTEM**				
	Equipment				
2.1	Supply, installation, connection of the Central Unit 16 partitions; On the base plate there are 16 detection zones, 8 collector outputs and 3 relay outputs; Supplied together with a transformer and a battery charging module; In a metal housing for surface-wall mounting; protection degree IP30, operating temperature from -10^{0}C to +55^{0}C set	pcs	1		
2.2	Supply, installation, connection of IC motion detector, 360 degrees, temperature compensation,	pcs	1		
2.3	Supply, installation, connection of a combined (IC and microwave) motion detector,	pcs	9		
2.4	Supply, installation, connection of alphanumeric LCD cipher keypad.	pcs	1		
2.5	Supply, installation, connection of internal alarm siren together with a base,	pcs	3		
2.6	Supply, pulling through pre-installed installation pipes and connection on both ends, of installation cables similar to type: J-H(St)H 3x2x0.8 mm	m	300		
2.7	Supply, laying on clips, of installation of halogen-free plastic pipes: 16 mm	m	300		
2.8	Final measurements, issuance of certificates, commissioning of the system, training of users.	pcs	1		
				Total :	

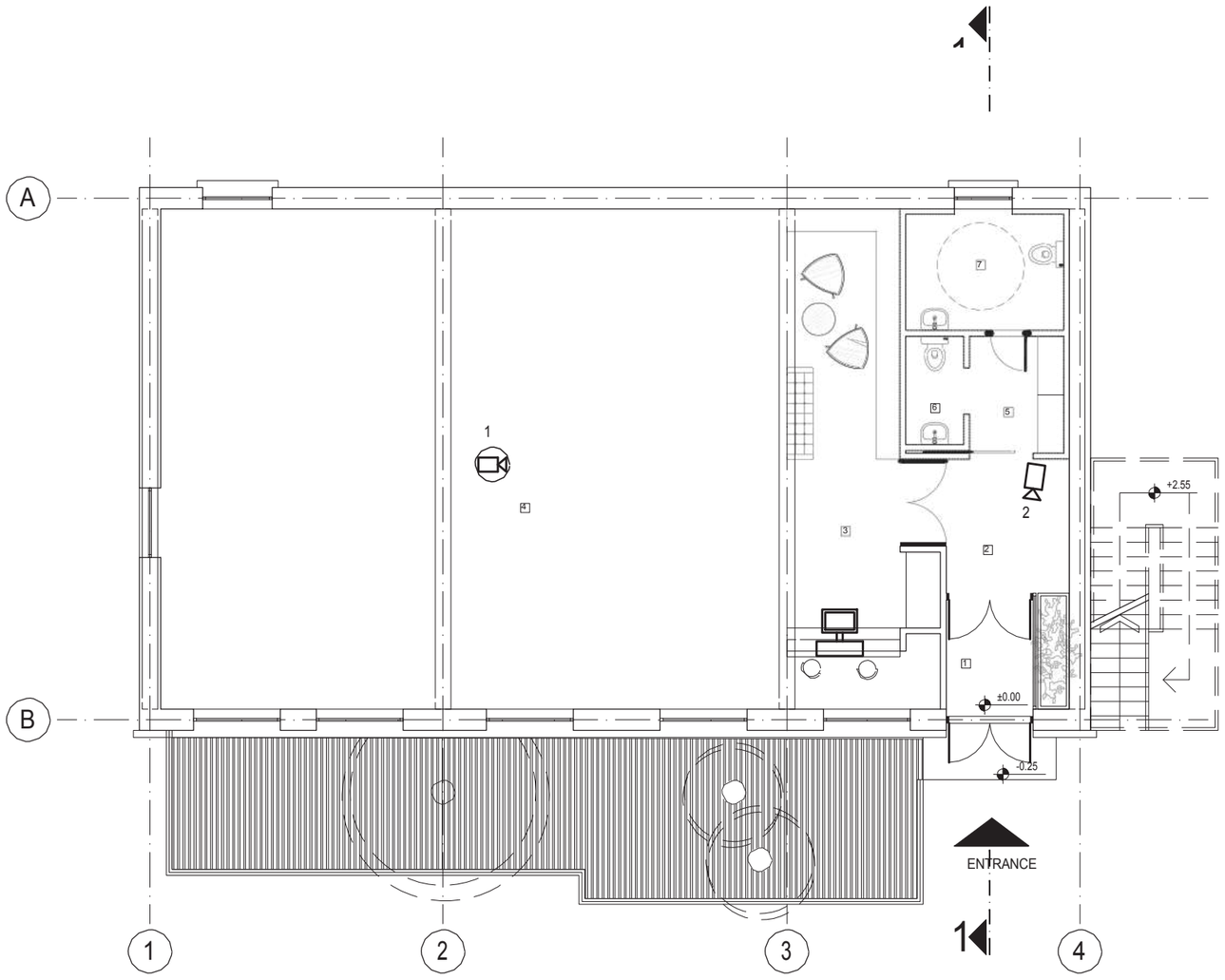
3.	**VIDEO SURVEILLANCE SYSTEM**				
	Equipment				
3.1	Supply, installation and connection of hemispheric cameras for indoor mounting on the ceiling, with 360° view for complete monitoring of the space, with OuadView for displaying 4 different angles simultaneously, resolution 3.1 Mpx, sensitivity up to 0.05 lux, 30 fps (VGA), 30 fps (1 Mpx), 20 fps (3 Mpx) MxPEG, power supply POE, consumption 3W, possible power supply 12V from UPS/storage battery, IP65, -30°/+ 60°C, without heating and cooling, without external housing.	pcs	2		
3.2	Supply, installation and connection of a fixed, megapixel IP camera for indoor mounting in DOME housing, resolution 2 Mpx, with varifocal lens, sensitivity 0.1 lux, PoE power supply.	pcs	2		
3.3	Supply, installation and connection of a storage, 2TB,	pcs	1		
3.4	Supply, installation and connection of 8-port switch, with POE, 15.4 W per port, total 65 W, with 2 Gigabit ports.	pcs	1		
3.5	Supply, installation and connection of the video surveillance system operator's workstation. Operating System: Windows 7.	pcs	1		
3.6	Supply, pulling through already installed installation pipes,		90		

	connection on both ends, of installation cables similar to type: STP cat. 7 4x2x0.5	M			
3.7	Supply, laying on clips, of installation of halogen-free plastic pipes: 16 mm	M	90		
3.8	Final measurements, issuance of certificates, commissioning of the system, training of users.	pcs	1		
				Total:	

	SUMMARY	
1.	**FIRE ALARM SYSTEM**	
2.	**BURGLAR ALARM SYSTEM**	
3.	**VIDEO SURVEILLANCE SYSTEM**	
	TOTAL CNY:	

Ground floor plan Scale 1:100

VIDEO SURVEILLANCE SYSTEM



Ground floor plan

NO.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information zone
4	Exhibition zone
5	Toilet lobby
6	Toilet
7	Toilet

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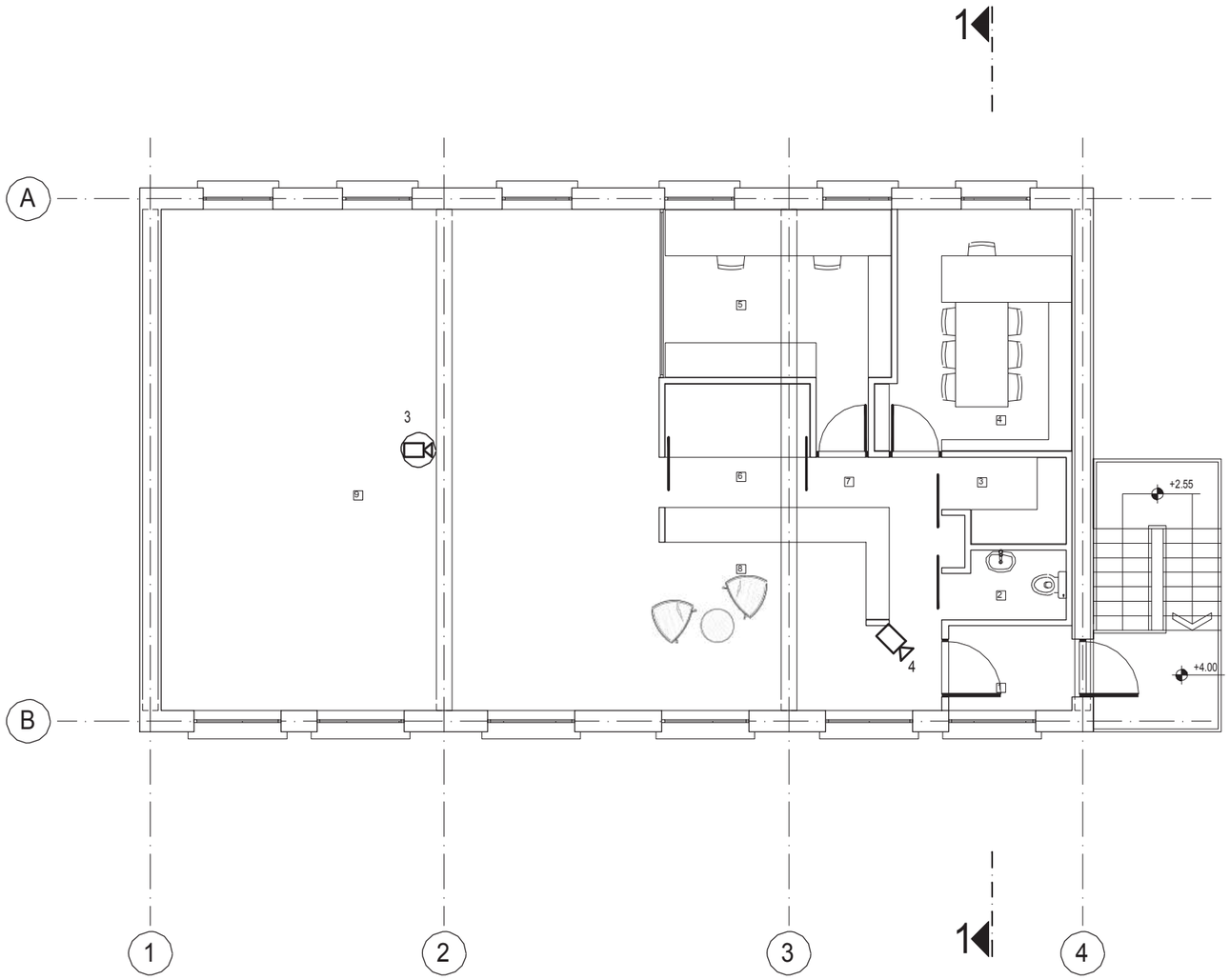
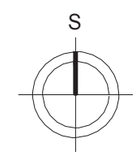
Upper floor plan Scale 1:100

VIDEO SURVEILLANCE SYSTEM



Upper floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Toilet
3	Kitchenette
4	Director’s office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition zone



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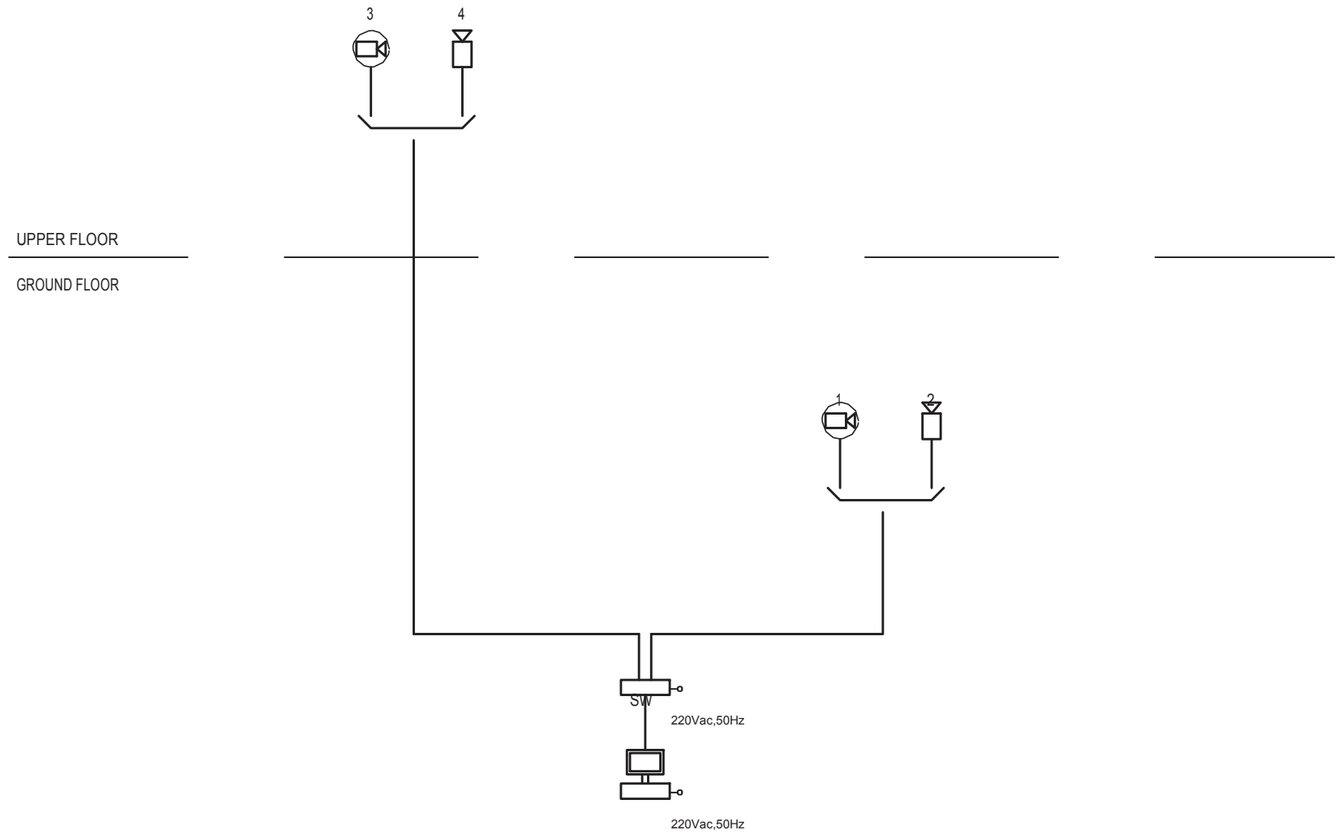
VIDEO SURVEILLANCE SYSTEM DIAGRAM



LEGEND:

NDOOR MOUNTED FIXED CAMERA WITH 360° LENS

INDOOR MOUNTED FIXED CAMERA

SW SWITCH

PC

STP cable cat. 7

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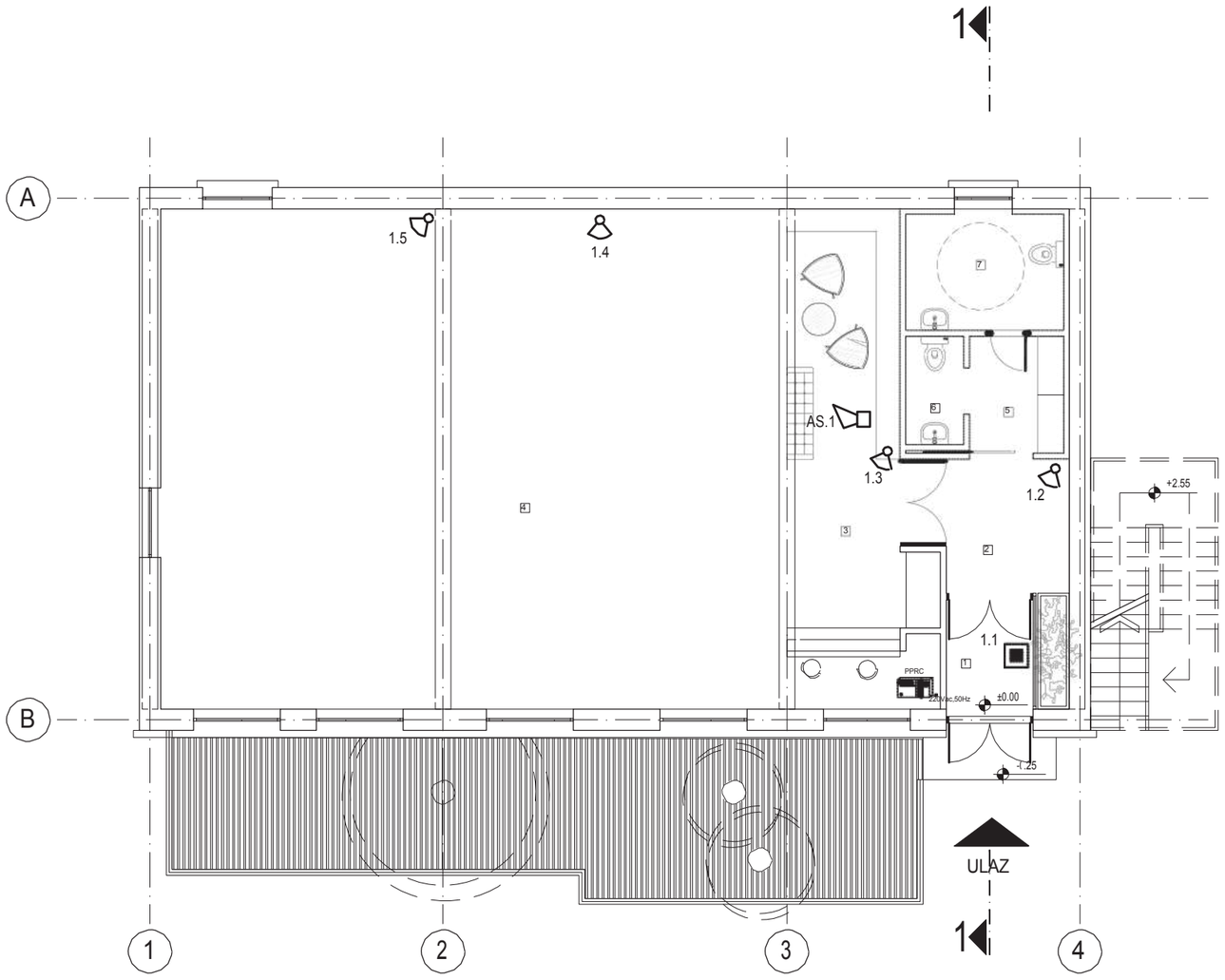
Ground floor plan Scale1:100
BURGLAR ALARM SYSTEM



Ground floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information zone
4	Exhibition zone
5	Toilet lobby
6	Toilet
7	Toilet

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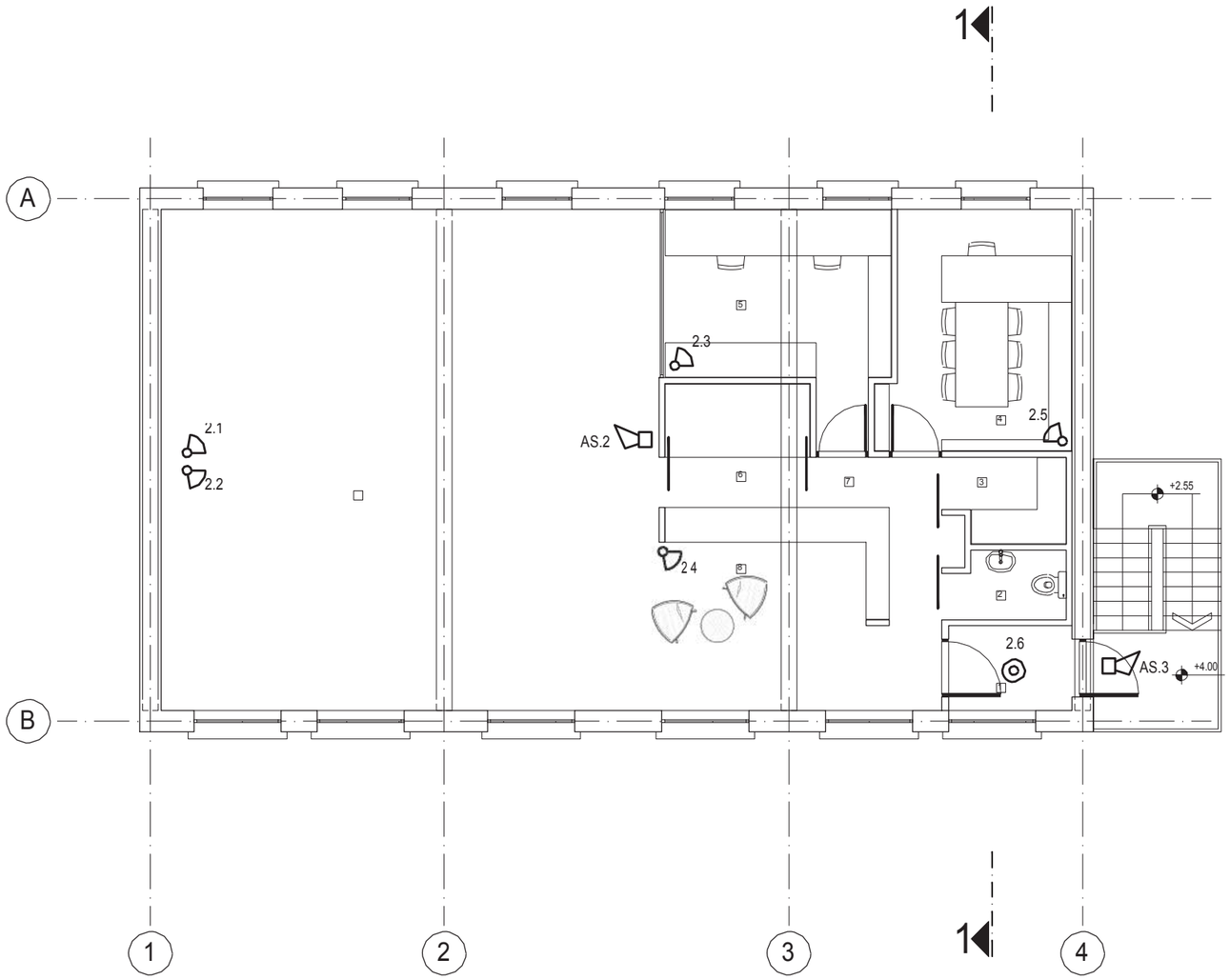
Upper floor plan Scale 1:100

BURGLAR ALARM SYSTEM



Upper floor plan

NO.	ROOM/SPACE
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2	Toilet
3	Kitchenette
4	Director’s office
5	Office
6	Storage area
7	Library
8	Corridor
9	Flexible exhibition zone

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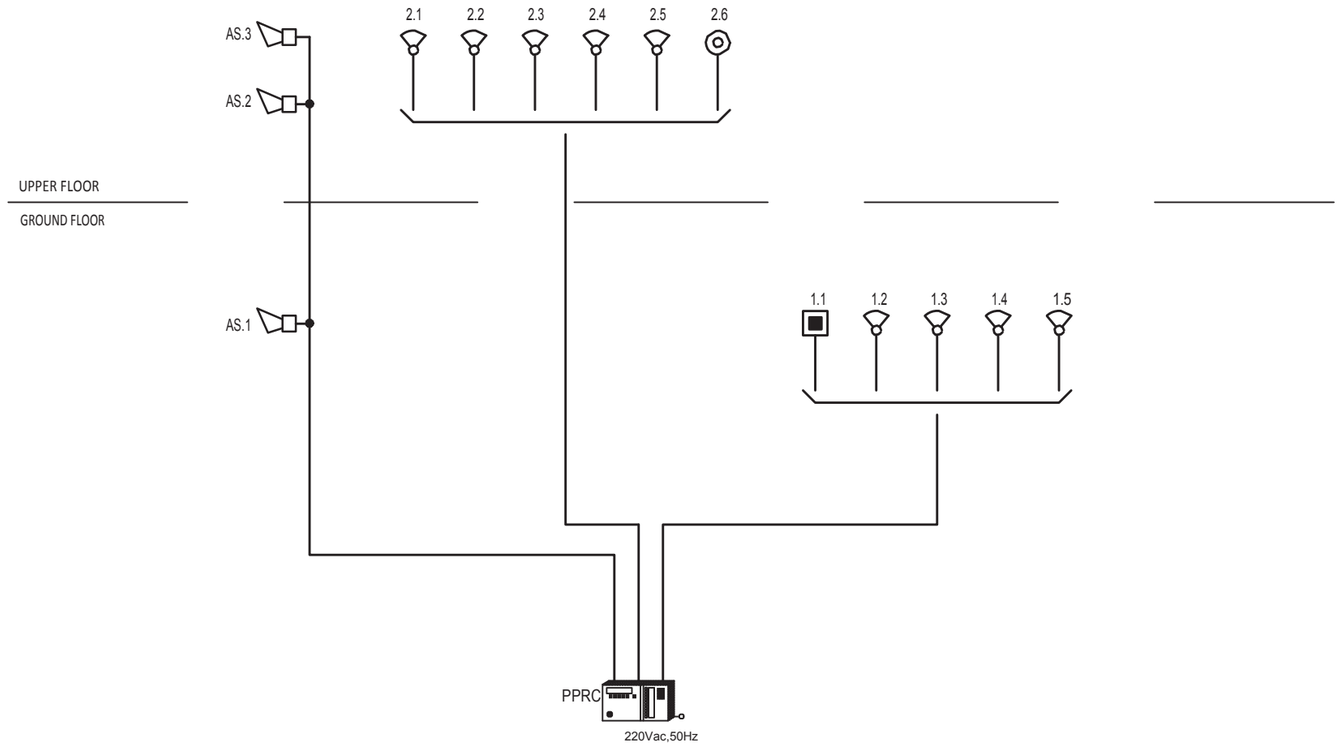
BURGLAR ALARM SYSTEM DIAGRAM



LEGEND:

- PASSIVE IC DETECTOR - 360°
- PASSIVE DETECTOR - COMBINED (IC+MW)
- CIPHER KEYPAD
- ALARM SIREN
- PPRC — BURGLAR ALARM CONTROL PANEL — 220Vac,50Hz
- JH(St)H 3x2x0.6mm

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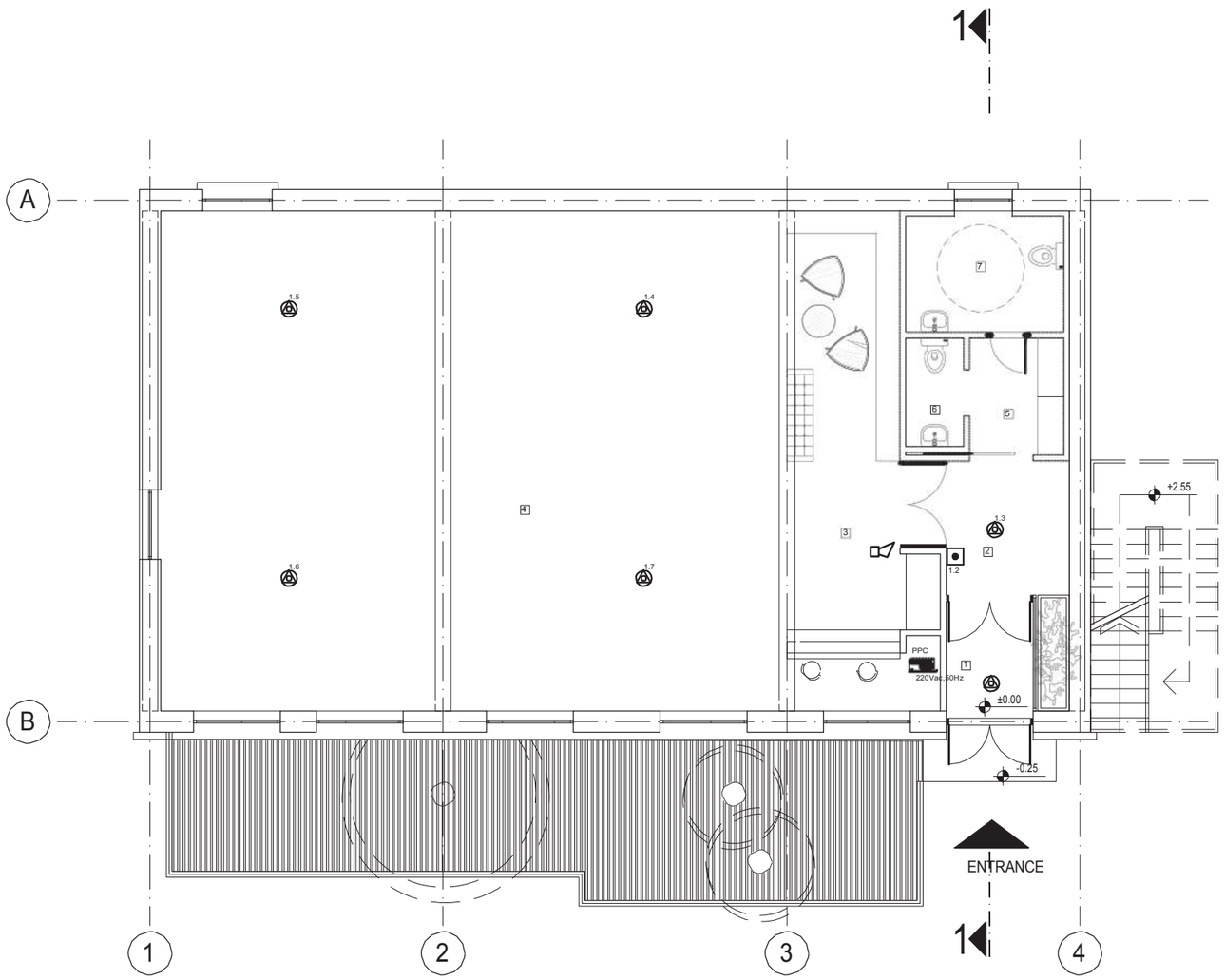
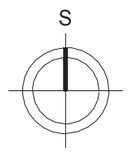
Ground floor plan Scale1:100
FIRE ALARM SYSTEM



Ground floor plan	
NO.	ROOM/SPACE
1	Vestibule
2	Lobby
3	Basic information zone
4	Exhibition zone
5	Toilet lobby
6	Toilet
7	Toilet



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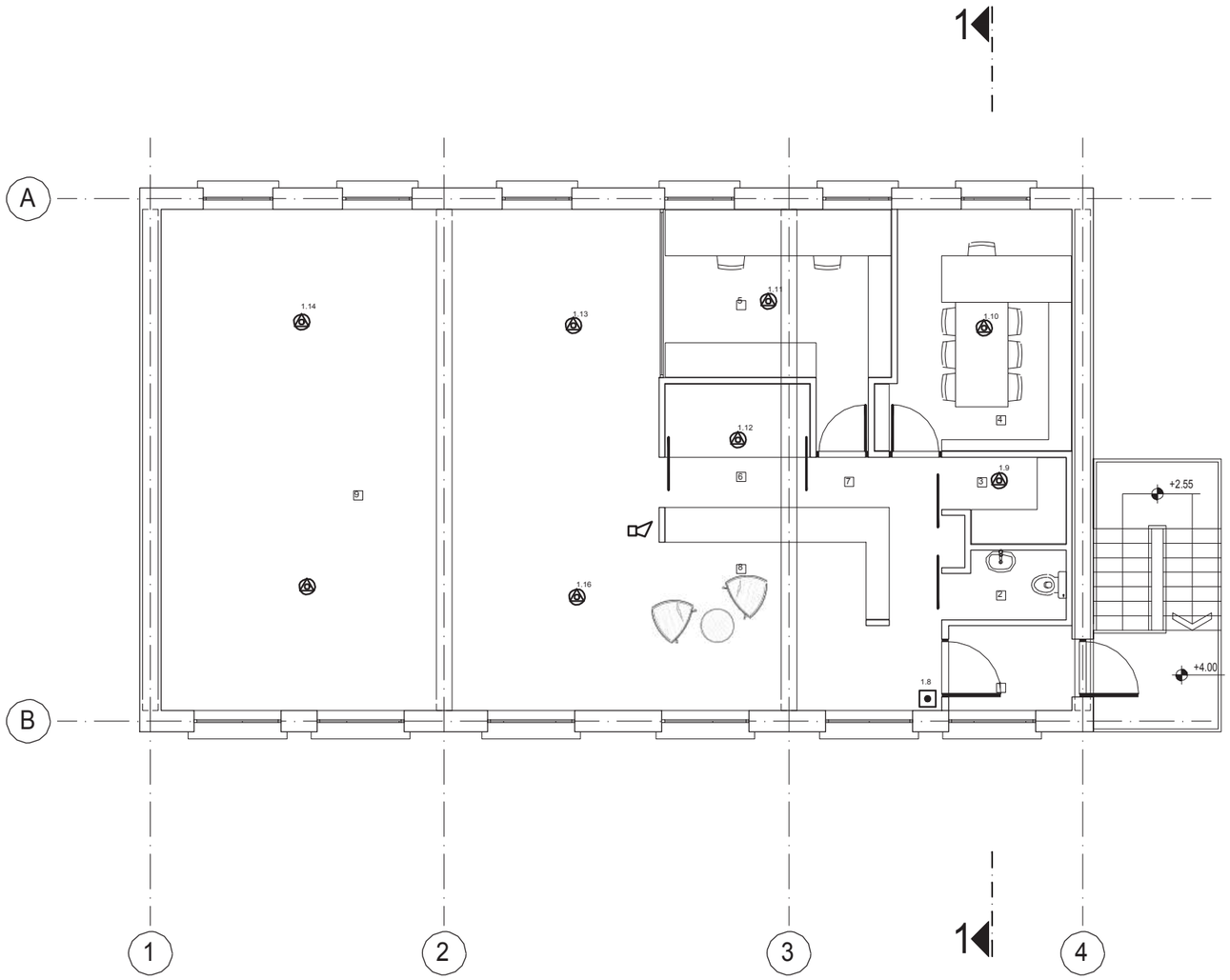
Upper floor plan Scale1:100
FIRE ALARM SYSTEM



Upper floor plan

NO.	ROOM/SPACE
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2	Toilet
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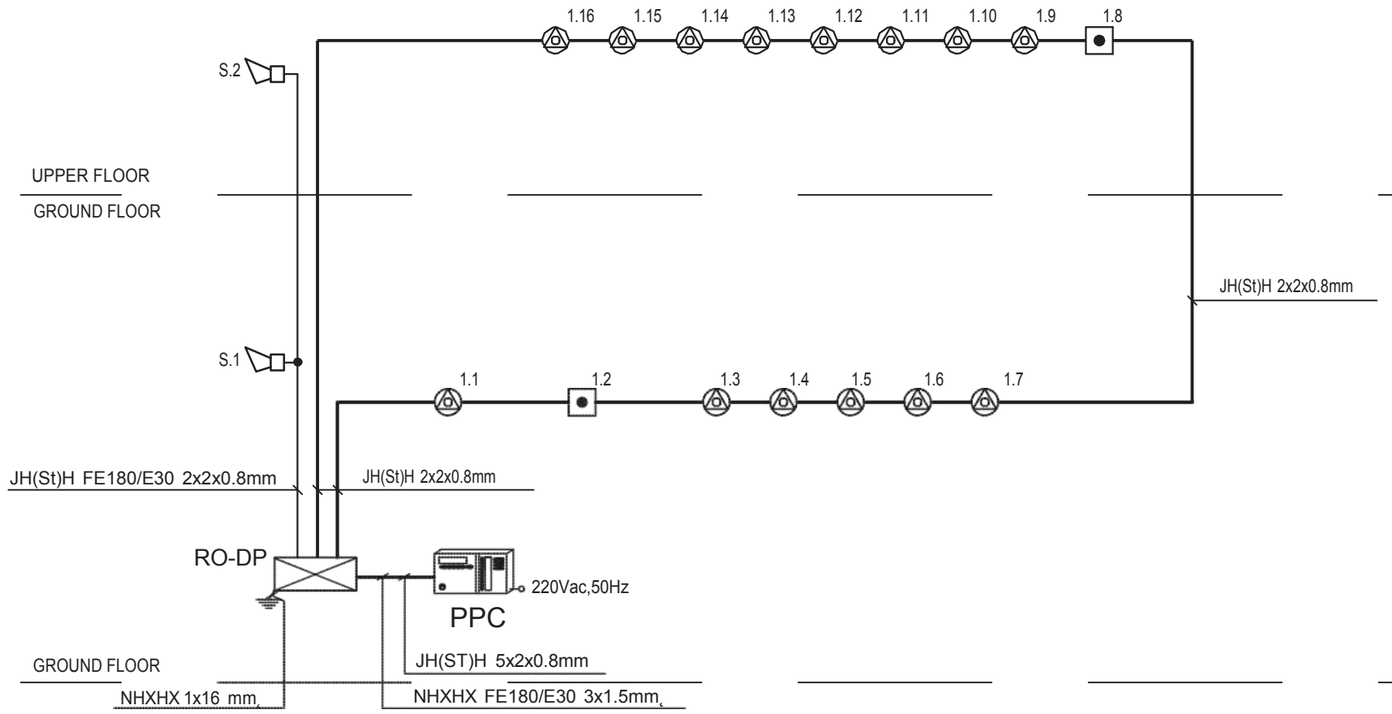
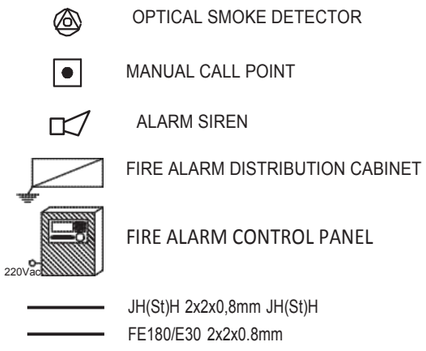
FIRE ALARM SYSTEM DIAGRAM

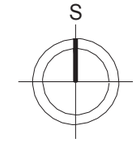


LEGEND:



LABELING OF ADDRESABLE DETECTORS:

FIRE ALARM SYSTEM DIAGRAM



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