

6. BILLS OF QUANTITIES HOUSING BUILDINGS

Item No.	Item Description	Unit Measu	Number of Units	Unit Price	Total
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General note:

	This BoQ shall include the delivery of materials stated under the individual items and all miscellaneous unspecified material necessary for complete making, installation, as stated under individual items, testing and putting in operation, as well as recovering everything that has been damaged during the works and returning it to its original state. All the materials used shall be of first class quality in accordance with the regulations.				
	All the works shall be performed by skilled work force, fully in accordance with the regulations in power for the relevant works.				
	The price shall include all the materials included under the items including all unspecified miscellaneous material, cost of work force, all related taxes and contributions for the material and works.				

SOCIAL HOUSING BUILDINGS - BUILDING ON CADASTRAL LOT 712 CM MISLOĐIN

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
I					
POWER SUPPLY					
1	Purchase, deliver and mount two empty PVC pipes Ø 110 mm from cable connection box (KPK) to the green surface or pavement, to later lay the power supply line. All together with bends 45°, joints and rubber washers. The item shall include two pipes of 5 m each in length.	m	10		
2	Purchase, deliver and install typical KPK 2 (EDB type 1), in the building facade, at h=1 m measured from the ground level to the fuse axis. 3 pcs of highly efficient fuses with nominal value current of 125 A shall be built in the box. All completely wired, tested and put in operation.	psc	1		
3	Purchase, deliver and lay the cable from cable connection box KPK 1 to the measurement and distribution cabinet MRO 1 using cable type PP00, complete with making all the necessary wiring and installation material. The following cable shall be laid in the PVC pipes under the pavement and in the floor:				
	- PP00 4x50mm ²	m	6		
4	Purchase, deliver and lay cable PP00-Y 1x25 mm ² . The cable shall connect equipotential bus bar (SIP) and the distribution cabinet (MRO) protection bus bar. Calculation and payment per meter of length.	m	10		
	MRO 1.1				

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
5	Distribution cabinet made using two times pickled steel sheets 2-mm thick, under mechanical protection IP-44. Include base colour and stoving varnish for anti-corrosion protection. The cabinets shall be factory produced, certified by the relevant Power Distribution Company. The cabinets shall be built in the wall in such a way that the doors shall be in the level of finished wall. The cabinets shall be horizontally divided into three sections. In the lower section the rail distribution shall be placed, in the middle section boards with meters, and in the upper section protection cables' bus bars, control-signalling bus bars (or screw terminals) and connection screw terminals for power supply lines of the installation distribution boards.				
	Include cover for bus distribution section with optional sealing. Include door to close the middle section of the cabinet that is locked using locks or padlock, which must be of serial EDB production, and fit the master key system. Place unipolar schematic on the cabinet door (on the inside), as well as all other markings as required by the Power Distribution Company. The distribution cabinets shall be done completely and mounted with all wiring connected and tested according to the unipolar schematic, also including all the following necessary miscellaneous material:				
	Sheet metal casing 1200x1850x220mm	pcs	1		
	Three-pole circuit breaker KC-100A, 500V, 1-0	pcs	1		
	Three-phase double tariff meter for active energy with remote reading and control option 1x230V, 10-40A	psc	11		
	Single-phase double tariff meter for active energy with remote reading and control option 1x230V, 10-40A	psc	1		
	MTK device, 230V, 50Hz	psc	1		
	Spare space for mounting the meter	psc	2		
	Automatic single-pole (limit) switch 25A, type C	psc	34		
	Automatic single-pole switch 6A	psc	2		
	Copper bus bars 25x4mm	psc	4		
	Copper bus bars 20x3mm	psc	5		
	Copper bus bars 15x3mm	psc	1		

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
	Pg inlets, serial screw terminals, support insulators, wiring conductors, schematics, warning plates, label plates and all miscellaneous installation material.	lumps			
	All completely connected, tested and put into operation.	set	1		

TOTAL I:

II	CABLES FOR POWER SUPPLY, CONTROL AND SIGNALLING AND FOR DISTRIBUTION BOARDS
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1	Purchase, deliver and lay power supply cables to apartment and common consumption boards, partly laying them in installation tubes, partly under the mortar, introduce cables in distribution boards and complete the wiring inside and all other necessary material.				
	Cable PP00-Y 5x6mm ² from MRO to apartment boards	m	190		
	Cable PP00 5x1,5mm ² from MRO to apartment boards for tariff signalization	m	190		
2	Purchase, deliver and lay installation, control and signalization cables. The cables shall be laid partly in the wall under the mortar and partly in halogen-free pipes. All together with connections on both ends, paid per meter of length for:				
	Cable PP-Y 4x1.5mm ²	m	70		
	Cable PP-Y 3x1.5mm ²	m	900		
	Cable PP-Y 2x1.5mm ²	m	230		
	Cable PP-Y 3x2.5mm ²	m	1320		
	Cable PP-Y 5x2.5mm ²	m	110		
3	Purchase, deliver and lay the following installation pipes for installation cables:				
	Pipe Ø 50	m	100		
	Pipe Ø 25	m	250		
	Pipe Ø 16	m	400		
4	Purchase, deliver and mount floor distribution board RT1 for apartments C2, C3, C8, C9, C6. Distribution boards shall be mounted above entrance doors. All equipment built in the distribution board shall be rated for 6kA short circuit current. The following equipment shall be built in the board:				
	Signal light indicating second tariff 230V, 3W	psc	1		
	Space for building in the contactor	psc	1		

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
	Electrical bell	psc	1		
	Automatic single-pole fuse 6A	psc	1		
	Automatic single-pole fuse 10A	psc	1		
	Automatic single-pole fuse 16A	psc	3		
	Automatic three-pole fuse 16A	psc	1		
	Combined two-pole protection switch 16A/30mA	psc	1		
	Other miscellaneous material				
	<i>TOTAL RT1</i>	psc	5		
5	Purchase, deliver and mount floor distribution board RT 2 for apartments C1, C7, C5 и C11. Distribution boards shall be placed above entrance doors. All equipment built in the distribution board shall be rated for 6kA short circuit current. The following equipment shall be built in the board:				
	Signal light indicating second tariff 230V, 3W	psc	1		
	Space for building in the contactor	psc	1		
	Electrical bell	psc	1		
	Automatic single-pole fuse 6A	psc	1		
	Automatic single-pole fuse 10A	psc	2		
	Automatic single-pole fuse 16A	psc	6		
	Automatic three-pole fuse 16A	psc	1		
	Combined two-pole protection switch 16A/30mA	psc	1		
	Other miscellaneous material				
	<i>TOTAL RT2</i>	psc	4		
6	Purchase, deliver and mount floor distribution board RT 3 for apartments C4, C10. Distribution boards shall be placed above entrance doors. All equipment built in the distribution board shall be rated for 6kA short circuit current. The following equipment shall be built in the board:				
	Signal light indicating second tariff 230V, 3W	psc	1		
	Space for building in the contactor	psc	1		
	Electrical bell	psc	1		
	Automatic single-pole fuse 6A	psc	1		
	Automatic single-pole fuse 10A	psc	2		
	Automatic single-pole fuse 16A	psc	5		
	Automatic three-pole fuse 16A	psc	1		
	Combined two-pole protection switch 16A/30mA	psc	1		
	Other miscellaneous material				
	<i>TOTAL RT3</i>	psc	2		

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
7	Purchase, deliver and mount common consumption distribution cabinet RO OP. The cabinet shall be made of twice pickled sheet that shall be first coated with protective paint on the inside and outside and then lacquered in two layers. The cabinet shall be equipped with a door with lock and key. The size of the cabinet shall be determined according to the equipment in the unipolar schematic. Measurements for the cabinet shall be taken on the spot. On the inside put up unipolar distribution schematic and mark "TN-C/S". All equipment built in must be inspected and marked and rated for 6 kA short circuit current. Use P/F conductors of specific cross-section, laid through reinforced pipes for the wiring of the distribution cabinet. Build the following equipment into the cabinet:				
	Rotary cam switch 25A/1p	psc	1		
	Rotary cam selector switch (R-0-A) 10A/1p	psc	1		
	Stairway automatic switch	psc	1		
	Photo relay with sensor in waterproof casing	psc	1		
	Automatic single-pole fuse 10A	psc	3		
	Automatic single-pole fuse 16A	psc	6		
	Socket for installation on DIN rail	psc	1		
	Other miscellaneous material		1		
	<i>TOTAL RO OP</i>	psc	1		

TOTAL II:

III	LIGHTING AND OUTLETS
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	Purchase, deliver and mount lights with electrical wiring. Deliver the following lights, mount them and perform electrical wiring using adequate accessories. The price per piece of light shall include: purchase and mounting of the light, works, wiring, equipping lights with incandescent light bulbs and standard installation accessories				
1	Light type 1 - Ceiling incandescent light with opaline bowl, for light bulb up to 100W, protection level IP20. Delivered complete and pre-wired light for installation, paid per piece	psc	45		
2	Light type 2 - Ceiling incandescent light with opaline bowl for wet rooms, for light bulb up to 60W, protection level IP43. Delivered complete and pre-wired light for installation, paid per piece	psc	32		

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
3	Light type 3 - Ceiling incandescent outdoor light for light bulb up to 60W, protection level IP43. Delivered complete and pre-wired for installation, paid per piece	psc	8		
4	Light type 4 - Incandescent light with protective grid for light bulb up to 100W, level of protection IP54. Delivered complete and wired light for installation, paid per piece	psc	4		
5	Light type 5 - Outdoor spotlight with high pressure sodium light bulb power 150W. Delivered and pre-wired light for installation, paid per piece	psc	2		
6	Light type 6 - Outdoor spotlight with metal halide light bulb 70W, with integrated motion detector. Delivered complete and wired light for installation, paid per piece	psc	2		
7	Anti-panic light, surface mounted, 8W with NiCd battery with 1h autonomy and the sign EXIT	psc	3		
8	Anti-panic light, surface mounted, 8W with NiCd battery with 1h autonomy and the sign DIRECTION	psc	5		
9	Purchase, deliver and install the following installation switches 10A/230V, level of protection IP20:				
	Single pole switch	psc	53		
	Alternating switch	psc	16		
	Serial switch	psc	1		
	KIP switvh 16A with glow light	psc	1		
	Single-pole switch with indicator	psc	2		
	Set of switches for bathroom, light, water heater and bathroom heater	psc	11		
	Electrical bell push button	psc	11		
	Push button for the staircase with glow light	psc	7		
10	Purchase, deliver and install the following installation sockets 16A/250V, level of protection IP20:				
	Single-phase shuko socket with protective contact	psc	65		
	Double single-phase shuko socket with protective contact	psc	20		
11	Purchase, deliver and install installation sockets 16A/250V with protection lid for the bathroom (washing machine)	psc	11		
12	Purchase, deliver and install three-phase installation sockets 16A/400V	psc	11		

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
13	Purchase, deliver material and perform installation of single-phase direct electric outlet for the water heater in the sanitary facilities, using cable type PP-Y 3x2.5 mm ² . The cable is included in separate item.	psc	12		
14	Purchase, deliver materials and perform installation for axial fan for air extraction with irreversible butterfly flap and time switch (1-30 min) DECOR-100 CP type S&P product or equivalent with the following characteristics: - Speed: 2500 rpm - Power: 13W - Connection: Ø100 mm - Maximum airflow: 100 m ³ /h - Noise: 40 dB				
	The fan is installed in sanitary facilities on ventilation ducts. Cable type PP-Y 3x1.5 is included in separate item.	psc	12		
TOTAL III:					

IV	EQUIPOTENTIAL BONDING INSTALLATION
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1	Perform galvanic connections of the installations in the sanitary facilities using cable line P-Y 1x4mm ² in flexible installation tubes Ø13mm underneath the tiling. Complete with all the connections, all the necessary accessories, average cable length 20 m, paid per sanitary facility in apartments.	psc	12		
2	Equipotential bonding box (PS 49). Equipotential bonding box shall be equipped with multi-pole screw terminals for the connection of protection lines.	psc	12		
3	Perform earthing of metal masses in the building (water supply and sewerage pipes, etc.) using conductor PP00-Y 1x10mm ² laid partly in the wall under the mortar and partly in flexible PVC tube Ø16 mm cast in the concrete, leading to earthing summing box (SIP). All together with all the connections, paid per meter of length of the conductor.	m	50		
4	Deliver the necessary material and connect the equipotential bonding box using cable PP-Y 1x6 mm ² with protection rail in distribution boards, laid partly in the wall and partly in non-halogen pipes Ø16 mm. Complete with all the connections, all the necessary accessories, average cable length 10 m, paid per piece.	psc	12		

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
5	Deliver and install earthing summing boxes SIP under the MRO. The box shall be equipped with summing copper screw terminal 50x4 mm. Complete with all the connections, paid per piece.	psc	1		

TOTAL IV:

V	EARTHING AND LIGHTNING PROTECTION INSTALLATION
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1	Purchase, deliver materials and assemble building foundation earthing, lay FeZn 25x4 mm strip in the building foundation, complete with welding the strip to connect it to the foundation reinforcement spaced at 1.5 m. The strip shall be placed simultaneously with concrete reinforcement iron in the foundation underneath waterproofing.	m	140		
2	Purchase, deliver materials and assemble FeZn 25x4 mm strip outlet for connecting: lightning protection outlets as well as the main equipotential screw terminal SIP, gutter earthing, staircase railing, and similar.	m	40		
3	Purchase, deliver the necessary material and assemble lightning protection outlets using FeZn strip 20x3 mm by laying the strip in concrete walls-columns of the building.	m	45		

Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
4	Purchase, deliver the necessary material and assemble galvanic connection of main downward conductors with sheet metal horizontal roof gutters using the suitable clamps for sheet metal.	psc	6		
5	Purchase, deliver the necessary material and assemble the lightning receiving system using FeZn 20x3 mm strip for the protection of protruding parts on the roof (chimneys) using piece of strip of average length of 3 m, laid on supports. Complete with assembling of the galvanic connection with roof cover using suitable clamps for sheet metal.	psc	3		
6	Deliver and build test joint box (15x20x5 cm) in the concrete pillar and make the test joint.	psc	6		
7	Purchase, deliver material and assemble the building lightning receiving system by laying FeZn 20x3mm strip on the roof tile holders.	m	120		
8	Purchase, deliver and install pieces of crossed strip 60x60 mm with three plates for splicing and splitting the galvanized strip.	psc	50		
9	Purchase, deliver and install roof ridge supports for fastening the receiving system, FeZn 20x3 mm strips on the ridge.	psc	60		
10	Mark with permanent marks measuring insulating connector according to the design numeration.	psc	6		
11	Purchase, deliver and mount clamps for the drain. Connect clamps with the building earthing installation.	psc	4		

TOTAL V:

VI	OTHER WORKS
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1	Purchase, deliver and mount on the ceilings the independent optical detectors with its own batteries, the alarm indicator (red), button to verify the detector's accuracy and the siren. Detector type GB-2188 Imako or equivalent. The detectors should be installed in each room (sleeping) in the flats, and the living space in the kitchen zone. One should be placed in the tenant's common room.	pcs	29		
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Item No.	Item Description	Unit of Measure	No. Of Units	Unit Price	Total
2	Perform all the necessary required inspections, tests and measurements and issue certificate about the recorded values, warranties and put in operation (measure earthing resistance, measure loop resistance for the farmost load, etc.)	lumps um	1		

TOTAL VI:

RECAPITULATION	
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I	POWER SUPPLY	
II	CABLES FOR POWER SUPPLY, CONTROL AND SIGNALLING AND FOR DISTRIBUTION BOARDS	
III	LIGHTING AND OUTLETS	
IV	EQUIPOTENTIAL BONDING INSTALLATION	
V	EARTHING AND LIGHTNING PROTECTION INSTALLATION	
VI	OTHER WORKS	
	TOTAL BUILDING :	