ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** I) PREPARATORY AND DEMOLITION WORK *****				
I.01				
Mounting the 200x100cm construction site notice board with data on the Investor, Designer and Contractor as well as the contracted amount and the deadline for work completion.				
Calculated per piece.	1.00	kom		
I.02				
Organizing the construction site. Development of the construction site layout; temporary construction site electricity connection with all required certificates of compliance, cabinet and equipment to be used until the end of building construction; temporary construction site water line with all required material and certificates of compliance. The price shall include the construction site guard and a toilet for the entire duration of building refurbishment.				
Calculated in lump..	1.00	paus.		
I.03				
Procurement and mounting of protective PVC foil over the façade openings. The foil shall be fixed to door posts taking care not to damage them. Any possible damage shall be at the Contractor's expense.				
Calculated per m2.	73.00	m2		
I.04				
Taking out existing furniture from rooms 1 and 7. The price shall include loading and transportation to the town landfill.				
Calculated per m2 of room surface area.	100.00	m2		
I.05				
Stripping the existing vinyl panel floor from rooms 4 and 5. The price shall include loading and transportation of the rubble to the town landfill.				
Calculated per m2	26.00	m2		
I.06				
Demolishing the 10cm thick floor concrete slab and all layers of floor together with the screed, thermal insulation and waterproofing in rooms 1, 2 and 3 and under the walls designated for demolishing. The price shall include loading and transportation of the rubble to the town landfill.				
Calculated per m2	134.00	m2		
I.07				
loading and transportation of the rubble to the town landfill. Calculated per m2.				
rooms 7,8	144.00	m2		
I.08				
Dismounting suspended ceiling gypsum panels and substructure. The price shall include loading and transportation of the rubble to the town landfill. Calculated per m2.				
rooms 1,2,3	131.00	m2		
I.09				
Demolishing walls made of brick set in lime plaster. Demolition shall be performed together with ring beams, lintel beams and all wall cladding (fully according to the design). The price shall include taking the rubble out of the building, loading and transportation to the town landfill. Calculated per m2 of wall, all openings shall be deducted.				
3,6*(5,35+4,78)-1,4*2,95=32 (d=25cm)	32.00	m2		

ITEM DESCRIPTION	quantity	UoM	Unit price	total
I.10				
carefully be demolished, so as not to weaken the wall. The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. The price shall include strutting and treatment of jambs after breaking the hole. The wall shall be broken into after the manufacture of the lintel beam. Calculated per m3.				
0,9*2,05*0,35=0,65 (old size brick d=30 cm)	0.65	m3		
I.11				
Careful dismounting of wall tiles. The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. Calculated per m2 of chiselled surface area.				
0,7*1,5+2*1,6=4,25 (rooms 3 and 4)	4.25	m2		
I.12				
Partial chiselling of lime plaster from indoor walls to the height of 1m. The plaster shall be chiselled and joints shall be cleaned with clamps to the depth of 2cm. Brick surfaces shall be cleaned with steel brushes and the walls shall be washed with water. The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. 15,2/2+40,28-2,65-4,05-1,4*9+28,7/2+16*2-1,4*2+14,78-1,4*2+34*2-1,4*2+20,4+16,58+18,3+25,3-1,4*4-0,9*4				
Calculated per m2 of chiselled area, all openings deducted.	220.70	m2		
I.13				
Careful dismounting of wooden doors together with door posts (rooms 1 and 3). The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill.				
Calculated per door of surface area up to 5m2	2.00	kom		
I.14				
Careful dismounting of sanitary ware (rooms 3 and 4). The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. Calculated per piece				
Pressurized water heater	2.00	kom		
water tap	2.00	kom		
I) PREPARATORY AND DEMOLITION WORK TOTAL:				
***** II) GROUND WORK *****				
II.01				
Soil compacting under the demolished floor slab. Compacting shall be executed mechanically.				
Calculated per m2.	134.00	m2		
II.02				
Procurement and spreading of gravel under the new floor slab. The gravel buffer shall be poured in layers, mechanically compacted and finely levelled with a height tolerance of ±1cm. Assumed maximum thickness of the gravel buffer shall be 45cm.				
Calculated per m3.	60.00	m3		
II) GROUND WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** III) CONCRETE WORK *****				
III.01 Manufacture of the 7cm thick MB15 concrete waterproofing base coat. The top of the concrete shall be flattened and the concrete cared for.				
Calculated per m2	134.00	m2		
III.01 Manufacture of 5cm thick MB15 concrete waterproofing protection coat. The top of the concrete shall be flattened and the concrete cared for.				
Calculated per m2	134.00	m2		
III.03 Manufacture of the floor slab made of light reinforced concrete, thickness 15cm, concrete mark MB30. The base coat shall be reinforced with ±Q131 mesh and concreted. The top of the concrete shall be flattened and the concrete cared for.				
Calculated per m2	134.00	m2		
III.04 Manufacture of the lintel beam made of reinforced girders in a 30cm thick brick wall. A 20cm high opening shall be cut above the future hole inside half of the wall to secure a 20cm support for the lintel beam from both sides of the hole (130cm). The girder shall be inserted and concreted. Three days later repeat the procedure from the other side of the wall. The concrete shall be poured and cared for according to regulations. The price shall include reinforcement bars according to the				
Calculated per piece.	1.00	kom		
III) CONCRETE WORK TOTAL:				
***** V) BRICK WORK *****				
V.01 Procurement and placement of polyurethane thermal insulating panels in 6cm thick blocks. Calculated per m2.				
rooms 1, 2 and 3	134.00	m2		
V.02 Manufacture of a 4 cm thick cement screed as the subfloor coat. The mortar for the screed shall be made from one part rapid drying cement UZIN NC 190 (or equivalent) and 4 parts grain size 0/8 sand. The base shall be dry, hard and free of cracks. All irregularities shall be repaired. Dust and small impurities shall be removed with an adequate vacuum cleaner. The admixture shall be installed within 60 minutes max. The screed bed shall be ready for coating after 24 hours. Manufacturer's instructions shall be adhered to. 1cm thick styrofoam shall be inserted along the perimeter of the rooms. Calculated per m2.				
rooms 1, 2 and 3	134.00	m2		
V.03 walls shall be cleaned and sprayed with grout. The first coat shall be delivered in lime mortar made of very coarse sand. The base shall be wetted, the first coat of plaster applied and cut. The second coat shall be made with small-grain clean sand, with no presence of sludge and organic matter and applied over the first coat. Floating shall be done with wetting and small floats. Plastered surfaces shall be flat, with no waves and cracks and the edges shall be sharp and straight. Any connections with existing plastered surfaces shall be bandaged so that the connecitons are not visible. The plaster shall be wetted to avoid quick drying and dusting. The price shall include scaffolding. Calculated per m2.				
walls from which the plaster was chiselled off due to traces of mildew	220.70	m2		
V) BRICK WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** VI) WATERPROOFING WORK *****				
VI.01				
shall be made over a clean and dry base, raised up the walls by 15cm and connected with existing waterproofing. Waterproofing shall be delivered in the following layers: 1x cold bitulit coat 2x kondorfleks T+, d=4 mm, entirely welded to the base and entirely welded on overlaps by a minimum of 10cm. Calculated per m2.				
rooms 1, 2 and 3	134.00	m2		
VI) WATERPROOFING WORK TOTAL:				
***** VII) DRY MOUNT WORK *****				
VII.01				
Manufacture of a suspended ceiling made of 60/60 gypsum raster panels on the existing steel substructure. The price shall include scaffolding. Calculated per m2.				
rooms 7,8	144.00	m2		-
VII.02				
Manufacture of a suspended ceiling filled by 1cm thick 60/60cm acoustic gypsum raster panels on the existing steel substructure. The substructure shall be made of loadbearing prefabricated galvanized profiles attached to the existing ceiling by hangers. The ceiling shall be suspended by 30cm. The price shall include scaffolding. Calculated per m2.				
rooms 1,2,3	131.00	m2		-
VII) DRY MOUNT WORK TOTAL:				
***** VIII) METAL WORK *****				
VIII.01				
resistance. The door shall be made of steel box profiles. The door pane shall be coated on both sides with fireproof steel sheet metal and filled with fireproof Tervol panels. The pane shall be fitted with three hinges, fittings, lock and cylinder with three keys and a self-closing device. Prior to painting the metal shall be cleaned of corrosion and dust, sanded and dusted. Impregnation and primer shall be applied, then puttied and sanded down. The first coat of fireproof metal paint shall then be applied, puttied and sanded, and then the second coat shall be applied. The door shall be certified. Calculated per piece				
Item 1 140/230	1.00	kom		-
VIII) METAL WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** IX) DOORS AND WINDOWS *****				
IX.01				
shall carefully be stripped of all layer of paint down to solid wood. Cleaning shall be done by chemical and physical means, careful not to damage the wood and profiling and so that the wood does not change colour. Complete windows/doors shall be carefully examined and refitted; all damaged parts shall carefully be replaced by new ones from the same type of wood (fir) after the model of the existing wood. The fittings shall be checked, cleaned and repaired, parts that are missing shall be made like the originals and fixed into place. All wooden parts shall be sanded with fine sanding paper and painted with translucent paint with added varnish, according to the Supervisor's choice and instructions.				
Clear width window 130/250cm (fir sills shall be added)	21.00	kom		
Clear span doors 81/201cm (door post equivalent to wall width)	1.00	kom		
Clear span doors 120/225+75cm (door post equivalent to wall width and wide finishing strips)	1.00	kom		
Clear span doors 120/225+60cm (door post equivalent to wall width and wide finishing strips)	9.00	kom		
IX.02				
Manufacture and mounting of single, plywood coated door made of 1st class dry fir wood, and the frame structure with cardboard honeycomb shall be coated on both sides with 4mm thick plywood. The doorpost shall be made as wide as the wall and finished with casing. The door shall be fitted with anodized aluminium fittings, mortise lock with two keys, three mortise hinges per pane. All wooden parts shall be sanded with fine sanding paper and painted in three coats of translucent paint with added varnish, according to the Supervisor's selection and instructions. Calculated per piece.				
Clear span doors 81/201cm (door post equivalent to wall width)	1.00	kom		
IX) DOORS AND WINDOWS TOTAL:				
***** X) FLOORING WORK *****				
X.01				
Sanding the cement screed subfloor followed by primer UZIN PE 370 or equivalent application. The subfloor shall be cleaned prior to application of the compound. The subfloor shall finally be levelled prior to placement of the PVC flooring with UZIN NC 160 min 2mm levelling compound or equivalent, so that the surface is ideally flat. Applied compound shall be pressure resistant.				
419,08+1,2*0,35*9+0,8*0,35*2=424				
Calculated per m2.	424.00	m2		
X.02				
Procurement and mounting of felt and PVC flooring in 2m wide strips, premium quality, manufactured by TARKETT or equivalent. Prior to mounting the strips shall be unrolled, spread out and left at room temperature above 15□ for 24h and then glued together with special adhesive also delivered by the Manufacturer. The strips shall be laid out in the direction of the light source and shall be mounted by tailoring and double cutting procedure. Joints shall be welded together by hot air, with soft PVC electrodes. 8cm tall skirting strips shall be placed on walls.				
Calculated per m2.	424.00	m2		
X) FLOORING WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** XI) TILING WORK *****				
XI.01				
Procurement and mounting of 20x20cm A-class wall ceramic tiles; the pattern shall be selected by the Investor. Tiles shall be put up over existing tilework with adhesive and in a straight bond. The sublayer shall be prepared and tiles shall be set straight. Set tiles shall be grouted and cleaned with sawdust. Calculated per m2.				
3*1,4=4,2 (kitchenette)	4.20	m2		
XI) TILING WORK TOTAL:				
***** XII) PAINT WORK *****				
XII.01				
Painting all indoor walls of the administrative section with emulsion paint (in tone as selected by the Investor) until an even tone is achieved. The walls shall previously be skim coated twice. 3,5*(15,2/2+40,28-2,65- 4,05+28,7/2+16*2+14,78+34*2+20,4+16,58+18,3+25,3)-1,4*2,95*18- 1,4*3,1-1,3*2,5*21-1,4*2,35				
Calculated per m2.	728.00	m2		
XII) PAINT WORK TOTAL:				
***** XV) OTHER WORK *****				
XV.01				
Dismounting gutters, spouts and sheet metal window flashings. The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. 4*5,5+4*3,5+28,48*2+1,3*21=				
Calculated per m1 of sheet metal	120.00	m1		
XV.02				
collected, taken out, loaded onto a lorry and transported to the town landfill. 2*3*28,48=				
Calculated per m2	171.00	m2		
XV.03				
Procurement and mounting of board cladding over the existing roof structure. 24mm thick boards made of dry, straight and quality fir shall be contact placed and nailed in. The price shall include dismounting of damaged boards with transportation to the landfill.				
Calculated per m2	171.00	m2		
XV.04				
Covering roof surfaces with 0.6mm thick galvanized sheet metal. Covering shall be done in strips interconnected with double standing seams in the direction of the roof pitch and staggered double laid down seam horizontally. A layer of tar paper included in the price shall be placed under the sheet metal.				
Calculated per m2	171.00	m2		

ITEM DESCRIPTION	quantity	UoM	Unit price	total
XV.05				
Manufacture and mounting of galvanized sheet metal gutters with spread width up to 50cm, 0.6mm thick. The gutters shall be connected by a single row of rivets with maximum spacing up to 3 cm and soldered using minimum 40% lead solder bar. Gutter clamps shall be made of 25x5mm galvanized flat iron bars and riveted from the front of the gutter with Ø4mm rivets spaced at up to 80cm.				
Calculated per m1	57.00	m1		
XV.06				
Manufacture and mounting of galvanized spout pipes, spread width up to 33cm, Ø10cm, 0.6mm thick. Spout sections shall overlap by not less than 50mm and shall be soldered with minimum 40% lead solder bar. Galvanized clamps with carriers shall be spaced at 200cm. Clamps shall be fitted with decorative strips. The spouts shall be removed from the wall by a minimum of 2cm.				
Calculated per m1	36.00	m1		
XV.07				
Manufacture and mounting of a window sill, spread width up to 20cm, 0.6mm thick. The sides of the sill against the wall and window frame shall be raised by 25mm and riveted into the window post at a spacing of 50-80mm. The front side of the sill shall be fixed by wooden bits or the base shall be drilled into, plastic anchors placed and the sill screwed in with galvanized screws. A layer of tar paper included in the price shall be placed under the sheet metal.				
Calculated per m1	27.30	m1		
XV.08				
Battening parts of the roof with 24/48mm battens spaced at 15cm, for royal beaver tail tile cover. Battening shall be done with dry, straight and quality fir battens. The price shall include dismounting of damaged battens with transportation to the landfill.				
Calculated per m2 measured along the roof inclination	12.00	m2		
XV.09				
Replacement of old and worn roof structure elements. Purlins shall be replaced together with struts and collar ties, in the following manner: - tiles shall be removed from a section between two connectors. - the purlin, struts and collar ties shall be removed and new ones (15/15 l=4m) shall be placed. When placing the purlin the roof level i.e. position of the battens shall be checked. When the purlin is in its designed position, a new 15/10 l=0.6m strut shall be placed and another one towards the binder (l=2.0m) and the collar tie (10/12 l=2.2 m). All new elements shall be cut on site after taking accurate measurements; all elements shall be made of dry fir wood. - the roof shall be retiled. The procedure shall be repeated in a new section etc. The total number of sections shall be seven on each side. The price shall also include transportation of the rubble to the landfill.				
Calculated per m2 of horizontal roof projection	495.00	m2		

ITEM DESCRIPTION	quantity	UoM	Unit price	total
XV.10				
Dismounting and remounting of the beaver tail tile roof cover in royal bond. The tiles shall be carefully dismounted, cleaned and prepared to be retiled. Damaged or warped tiles shall be discarded. The rubble shall be collected, loaded onto a lorry and transported to the town landfill. Tile shall be mounted in a royal bond with added 20% new tiles after the model of the existing ones. Top two tile rows shall be placed over 2*7,4*28,48=422				
Calculated per m2 measured along the roof inclination	422.00	m2		
XV.11				
Placing thermal insulation made of 5cm thick hard mineral wool boards with a layer of vapour permeable waterproof foil over the *karatavan* ceiling.				
Calculated per m2.	448.60	m2		
XV.12				
Chiselling lime mortar from facade walls to the height of the first ring beam above the windows (4m). The mortar shall be chiselled off and joints cleaned using clamps down to 2cm. Brick surfaces shall be cleaned using steel brushes and the walls shall be washed with water. The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. 4*(28,48*2+17,39+4,32)-21*1,3*2,5-1,4*3,1+0,06*2*(1,3+2,5)				
Calculated per m2 of chiselled surface area	243.00	m2		
XV.13				
Thermal insulation of the facade up to the first ring beam above the windows, made of hard mineral wool panels, finishing plaster and paint, in the following layers (from the loadbearing wall): - 1x 5cm thick mineral wool panels with tongue and groove mechanisms for perimeter overlapping; the panels shall be fixed to the wall using toggle bolts. - 1x wire lath reinforcement - 1x two coats of lime mortar over the reinforcing mesh, 3cm thick; finishing by acrylic paint in a tone selected by the Investor				
Calculated per m2.	243.00	m2		
XV.14				
Cleaning the building during work and prior to technical acceptance and official handover of the building to the Investor.				
Calculated per m2 of net calculated building surface	419.00	m2		
XV.15				
Procurement of dry powder extinguishers mark **S-9** aligned with the SRPS Z.C2.035 standard ('Official Gazette of the RS No 68/80)				
Calculated per piece	4.00	kom		
XV.16				
Procurement of carbon dioxide extinguishers mark **CO_2-5** aligned with the Z.C2.040 standard ('Official Gazette of the RS No 68/80)				
Calculated per piece	1.00	kom		
XV) OTHER WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total

SUMMARY
of the construction and finishing work

I) DEMOLITION WORK TOTAL:	
II) PREPARATORY AND GROUND TOTAL:	
III) CONCRETE WORK TOTAL:	
V) BRICK WORK TOTAL:	
VI) WATERPROOFING WORK TOTAL:	
VII) DRY MOUNT WORK TOTAL:	
VIII) METAL WORK TOTAL:	
IX) DOORS AND WINDOWS TOTAL:	
X) FLOORING WORK TOTAL:	
XI) TILING WORK TOTAL:	
XII) PAINT WORK TOTAL:	
XV) OTHER WORK TOTAL:	
GRAND TOTAL (RSD):	

4.1. PRICED BILL OF QUANTITIES FOR THE HIGH VOLTAGE ELECTRICITY INSTALLATION FOR THE ADMINISTRATIVE PART OF THE OBRENOVAC TECHNICAL SCHOOL BUILDING IN 12, KRALJA PETRA I ST

N^0	WORK DESCRIPTION AND TYPE	UoM	QUANT	UNIT PRICE	TOTAL (RSD)
	This priced bill of quantities shall include mounting, connection, testing, commissioning, trial operation and handover of all material and equipment listed in individual items. The prices shall include the cost of transportation, labour, transportation, taxes and contributions calculated on material and possible insurance costs. Furthermore, the prices shall include delivery and mounting of all petty unspecified materials required to finish equipment and work, as well as to reinstate the parts damaged when mounting installations from this design into their original situation. The prices shall include the development of all required workshop documents needed for manufacturing, mounting, testing, commissioning and maintenance of equipment. All materials used shall be of 1st class quality and shall comply with standards. All work shall be performed by qualified manpower, fully in accordance with standing technical regulations in Serbia for the type of work in question. Listed manufacturers shall not be exclusive! The Contractor can mount other equipment and/or materials, provided that said equipment and/or materials possess identical or better electro-technical and structural characteristics as those listed, which shall be confirmed by a competent authority (Supervisor).				
I	**ELECTRICITY DISMOUNTING WORK**				
1.	The existing building of the old grammar school has a high voltage electricity installation which was functional until the floods of May 2014. The floods did not destroy all equipment – such as a portion of lighting fixtures, distribution cabinets, a portion of sockets and switches, which are reusable. Since the building in question is a school, according to new regulations the cables shall be non-flammable type N2XH and therefore existing cables must be dismounted if they are not N2XH.				
2	Careful dismounting of fluorescent lights type 4x18W mounted in the suspended ceiling. The lights shall be checked, cleaned and a number of them shall be reused in agreement with the Supervisor and Investor, whereas the rest shall be officially handed over to school administration.	pcs.	20		
3	Careful dismounting of switches. The switches shall be checked, cleaned and a number of them shall be reused in agreement with the Supervisor and Investor, whereas the rest shall be officially handed over to school administration.	pcs.	20		
4	Careful dismounting of single-phase schuko sockets. The sockets shall be checked, cleaned and a number of them shall be reused in agreement with the Supervisor and Investor, whereas the rest shall be officially handed over to school administration.	pcs.	20		
	DISMOUNTING WORK TOTAL				
IA	**BUILDINNG POWER CABLE**				
1	To design electricity installations EDB has provided TC No. 3200, RR v EO-37/15 as of 20/02/15 that among other things provide for the replacement of the existing stay wire with a descending cable type PPOO-A 4x50mm2.				
2	Dismounting of existing stay wire from the existing cable post to the existing metering point. Dismounting of the existing meter which is not functional with EZ fuses and metering transformers, as well as the dismounting of the existing metering cabinet. Paid per EDB invoice.	compl.	1.00		
3	Dismounting of the existing electricity meter from the cabinet in the building hallway and remounting it in the new standalone cabinet. Paid per EDB invoice.	compl.	1.00		
4	Delivery and mounting of typical standalone cabinet with KPK and MO integration and its installation next to the school facade, according to the graphic documents. Mounting shall include excavation of soil and all construction work required to mount said cabinet.	compl.	1.00		
5	Manual excavation of a ditch in 3rd category soil with no barriers; the ditch shall be 60cm deep, 40cm wide at the bottom. Delivery and pouring of sand in two layers under and over the laid cable, with laying of protective tape over the laid cable. Boring into the wall and treatment after laying the cable. Filling the ditch with compacting and removal of any surplus soil.	m	30.00		

N⁰	WORK DESCRIPTION AND TYPE	UoM	QUANT	UNIT PRICE	TOTAL (RSD)
6	Delivery and mounting of main switch MS- 100A, 400V, automatic switches type B, 50A, 25KVA, as well as their connection inside the standalone cabinet. Paid per EDB invoice.	compl.	1.00		
7	Delivery and laying of descending power cable type PPOO-A 4x50mm2 from the existing electric pole into the excavated ditch to the standalone cabinet and to the KPK, with all required safeguards on the pole.	m	45.00		
8	Delivery and laying of type N2XH-J 5x25mm2 and partial laying of said cable in the wall under the plaster, partially along the PNK canal, and its end at the DC-SG cabinet and the metering cabinet.	m	45.00		
9	Delivery and laying of cable type N2XH-J 1 x 25mm2 and partial laying of said cable in the wall under the plaster, partially along the PNK canal, and its end at the metering cabinet and at MPER.	m	45.00		
10	Final power cable testing, placement of marks, sealing of all holes, removal of surplus materials. Paid per EDB invoice.	compl.	1.00		
11	According to EDB TC it is required to cancel existing 4 meters whose record numbers are stated in the EDB TC. Paid per EDB invoice.	compl.	1.00		
	BUILDING POWER CABLE TOTAL				
II	**DISTRIBUTION CABINETS AND POWER LINES**				
1	Existing wall-mount metering mark MC shall remain in function apart from changing the 40A cartridge fuses.	pcs.	3		
2	The existing distribution cabinet mark DC-SG (metal, wall-mount, with two doors, lock and key, 82 automatic circuit breakers, main switch), which is in highly solid state, shall remain in function. The only thing needed to do according to the single-pole scheme from this design shall be to change the provided automatic circuit breakers. The single-pole scheme of the as-built situation must be developed and left inside the cabinet pocket encased in plastic foil. Complete with connection and power testing of cables and commissioning.	pcs.	1		
3	MPER (Main Potential Equalisation Rail) must be checked and replaced with a new one if it is not completely functional. Grounding resistance shall be measured at said rail. Connections and joints with MC-SG shall also be checked.	compl.	1		
4	In case the MPER (Main Potential Equalisation Rail) is not completely functional it shall be replaced with a new one. Connections and joints with MC-SG shall also be checked.	compl.	1		
5	Delivery and laying of non-flammable PNK canal dim 100 x 50mm for high voltage cables in the hallways of the existing and newly designed buildings with all necessary fittings, carriers and grounding equipment.	m	55		
6	Cladding all distribution cabinets placed in evacuation routes in fire-resistant material with 90min fire resistance properties. Panels shall be mounted onto a metal substructure that shall be manufactured on site so as to possess a door for cabinet access, diagonal holes for cabinet ventilation and a lock with key. The cladding shall be skim coated and painted according to the Investor's choice. Average price per cabinet shall apply.	pcs.	2		
7	Surge arresters class B+C, 25kA (10/350us), 40kA (8/20us), N/PE 100kA (10/350 i 8/20us), nominal voltage 275 V, similar to type PROTEC manufactured by SCHRACK; 3 phase and a neutral conductor set	pcs.	1		
	DISTRIBUTION CABINETS AND POWER LINES TOTAL				

N⁰	WORK DESCRIPTION AND TYPE	UoM	QUANT	UNIT PRICE	TOTAL (RSD)
III	**EL. INSTALLATION OF LIGHTING FIXTURES, SOCKETS AND TECHNOLOGIAL CONSUMERS**				
	Delivery of all required material and development of complete installation for lighting, sockets, electrical clock connection, PA system cabinet. The installation shall be made with cables laid in the wall under the plaster and in concrete walls inside PVC hoses as well as in PNK canals provided for high voltage ducts. Protection against unpermitted touch voltage shall be provided by way of special protection of the yellow and green Y wire in the cable; one end shall be connected to the safety rail in the distribution cabinet and the other to the consumer line safety contact or metal cladding. In breaches through fire walls the cables and holes shall be protected with certified fireproof compounds. Paid per longitudinal metre of delivered, laid and electrically connected cable at both ends.				
1.	Distribution for lighting points with cables type N2XH/J 3,4,5x1.5mm2. Calculated and paid per cable line of average length up to 8m, complete with connection in junction boxes.	pcs.	94		
2	Distribution for panic lights delivered with cables type N2XH/J 3x1.5mm2. Calculated and paid per cable line of average length up to 18m, complete with connection in junction boxes.	pcs.	14		
3	Fixed cable line delivered with cables type N2XH/J 3x1.5mm2 for: - Electrical clock connection to the existing installation, - PA system connection, - KDS cabinet connection, - Rack cabinet connection Calculated and paid per cable line of average length up to 20m, complete.	pcs.	4		
4	Distribution for single phase socket points delivered with cables type N2XH/J 3x2.5mm2. Calculated and paid per cable line of average length up to 16m, complete with connection in junction boxes.	pcs.	83		
5	Distribution for electrical water heaters delivered with cables type N2XH/J 3x2.5mm2. Calculated and paid per cable line of average length up to 20m.	pcs.	1		
6	Potential equalisation installation in the kitchen, delivered inside the wall under the plaster and ceramic tiles, with conductors type N2XH/J 1x6mm and 1x4mm inserted in safeguarding Ø20mm diameter PVC hoses. All metal parts in changing rooms (shower bases, washbasin siphons, toilet tanks, CH and water and sewer lines). Calculated and paid per completed item for one changing room, including the total length of this installation up to 20m, complete with all connections and delivery, installation and connecting the PS-49 potential equalisation box.	compl.	8		
7	Testing the installation. Calculated and paid as completed.	compl.	1		
8	Fire protection by way of cable insulation in cable breaches through fire walls and ceilings (according to SRPS U.J.1.160/86). Closing the caps after laying the cables shall be done with a 120min fire resistance fireproof compound. Furthermore, cables shall also be coated with said protective fireproof compound in not less than two coats to the length of 2m from each side of the fire wall and at each 5m during the route to the length of 2m. The material applied as fire protection by way of cable insulation shall be certified by a competent authorised local institution to verify its fireproof properties. Calculated per lumpsum	lump	1.00		
	EL. INSTALLATION OF LIGHTING FIXTURES, SOCKETS AND TECHNOLOGIAL CONSUMERS TOTAL				
IV	**LIGHTING FIXTURES AND INSTALLLATION KITS**				

N⁰	WORK DESCRIPTION AND TYPE	UoM	QUANT	UNIT PRICE	TOTAL (RSD)
	Since the entire building to be refurbished has suspended ceilings, all lighting fixtures are recessed interior lighting fixtures and are marked with letters and numerals on the sketches attached to the design. The lights shall be selected according to the operational and technical conditions of use and equipped with adequate light sources. The item shall include delivery and mounting of complete lighting fixtures with light sources, ballasts and all other required auxiliary materials to mount the lights. The following types of lights were planned:				
	Since a number of the lights shall be refitted (item 2 of this bill of quantities), it shall be required to define a precise number of lights to be refitted with the Supervisor and school administration.				
1	**Light Mark "L-2".** Delivery and mounting of suspended ceiling mount lighting fixture with 4x14W fluorescent light sources, an electronic ballast, parabolic louver in IP20 protection, similar to type 201 DP 4 x 14 W,T16, G5,EB, dim:600x600x55 cm manufactured by Intra Lighting or similar.	pcs.	94		
2	**Light Mark "L-1".** Ceiling mount safety light in standby connection made of injection moulded, UV stabilised, V2, self-extinguishing, halogen-free polycarbonate with a transparent diffuser, similar to type BUCK, Belgrade, AESTETICA BSE3N-40, (BEGHELL), 1xT16 8W,230V, GS, IP40; 3h autonomous operation, electronic ballast, including a battery, inverter, light source and appropriate writing on self-adhesive foil.	pcs.	14		
3	Intallation switch, serial 10A/250V	pcs.	14		
3A	Intallation switch, serial 10A/250V, with dimmers in room No 7	pcs.	2		
4	Intallation switch, multi-way 10A/250V	pcs.	4		
5	Delivery, mounting and connection of the following installation wall mount kit complete with mounting boxes, provided for IP54 level of protection, as follows:				
6	Delivery and laying of cable type N2XH-J 3x2,5mm2, partially in PVC hoses under the plaster and partially in PNK canals in the suspended ceiling with delivery and mounting of single-phase 16A/250V, 2P+PE, ‘schuko’ sockets (Legrand, ABB or similar), with delivery and wall mounting of PVC hoses under the plaster. Average cable length per socket shall be 20m.	pcs.	50		
7	Delivery and laying of cable type N2XH-J 3x2,5mm2 , partially in PVC hoses under the plaster and partially in PNK canals in the suspended ceiling with delivery and mounting of double single-phase 16A/250V, 2P+PE, ‘schuko’ sockets (Legrand, ABB or similar), with delivery and wall mounting of PVC hoses under the plaster. Average cable length per socket shall be 20m.	pcs.	8		
8	Delivery and laying of cable type N2XH-J 3x2,5mm2 , partially in PVC hoses under the plaster and partially in PNK canals in the suspended ceiling with isporupcs. i montažom modularnih trostrukih monofaznih priključnica 16A/250V, 2P+PE, ‘schuko’ sockets (Legrand, ABB or similar), with delivery and wall mounting of PVC hoses under the plaster. Average cable length per socket shall be 20m.	pcs.	14		
9	Delivery and laying of cable type N2XH-J 3x2,5mm2 , partially in PVC hoses under the plaster and partially in PNK canals in the suspended ceiling with delivery and mounting of floor socket boxes with 4 pcs schuko sockets and 2x(2xRJ-45) computer sockets (Legrand, ABB or similar), with delivery and mounting of PVC hoses in and under the wall as well as under the plaster. Average cable length per socket shall be 20m.	pcs.	4		
10	Delivery and mounting of floor canal for floor socket box installation, type Legrand or similar, with treatment.	m	5		

N^0	WORK DESCRIPTION AND TYPE	UoM	QUANT	UNIT PRICE	TOTAL (RSD)
12	Delivery and mounting of ceiling mount lighting fixture in the workshop area, complete with 2x36W fluorescent light sources, with an electronic ballast, parabolic louver in IP20 protection, similar to type 201 DP 2 x 36 W,T16, G5,EB, dim:125x300x55 cm manufactured by Intra Lighting or similar.	pcs.	14		
13	Delivery and mounting of ceiling mount lighting fixture in the workshop office, complete with 2x36W fluorescent light sources, with an electronic ballast, parabolic louver in IP20 protection, similar to type 201 DP 2 x 36 W,T16, G5,EB, dim:125x300x55 cm, manufactured by Intra Lighting or similar.	pcs.	17		
	LIGHTING FIXTURES AND INSTALLLATION KITS TOTAL				

N^0	WORK DESCRIPTION AND TYPE	UoM	QUANT	UNIT PRICE	TOTAL (RSD)
V	**LIGHTNING ROD INSTALLATION**				
1	The existing roof of the building being refurbished is disassembled and repaired as is the existing facade, the existing lightning rod installation needs to be disassembled down to the level of grounding rods and a completely new lightning rod installation needs to be fitted.	compl.	1		
2	Since this is an older building, the classic foundation grounding was probably not installed but the building grounding was rather developed by way of grounding rods. Prior to any work on the grounding it is needed to test the total grounding rod resistance and the resistance of any individual grounding rod and if the resistance meters are not within certain prescribed limits, measures of improving grounding rod resistance need to be taken, with approval from the Investor and the school administration.	compl.	1		
3	All material shall be delivered and transported and the lightning rod installation shall be made fully according to attached sketches and paperwork, existing regulations for this type of installation, qualified workforce, 1st class materials, as follows:				
4	Deliver and place a 25x3mm Fe/Zn strip on the building roof carriers, according to sketches, complete with strip connections.	m	180		
5	Placement of a control metering connection SRPS N.B4 947	pcs.	6		
6	Excavation of a ditch to locate the grounding rod and manufacture a new connection with new earthing strip lines; filling the ditch, complete with compaction.	lump	1		
7	Delivery and placement of lines from the newly designed foundation grounding to the MS, MPER, spout ends etc with 25x3mm Fe/Zn strips. Installation of mechanical protection of earthing strip lines. Paid per line.	pcs.	24		
8	Delivery and placement of 25x4mm Fe/Zn strip as descending lines and connecting the strips to connections and grounding rods. After making the connection with the grounding rods the connections shall be properly executed and poured over with bitumen. Lines shall be delivered according to sketches, complete with strip connections.	m	30		
9	It was noticed in two places that interconnection of grounding rods was done with 25x4mm FeZn strip on the ground, so that the existing strips were visible. The existing strips shall be disassembled; a ditch shall be excavated to the grounding rods (2pcs) and another ditch, minimum 60cm deep and 40cm wide shall be excavated to lay new strips; new 25x4mm FeZn strips shall be delivered and laid and properly connected to the grounding rod and poured over with bitumen.	compl.	1		
10	Delivery of material and placement of gutter carriers SRPS.N.B4.914 and spout clamps SRPS.N.B4. 908 as well as connecting spouts to the lightning rod installation from the top and bottom sides.	pcs.	6		
11	Finishing work, all required measurements and testing with an issue of a CERTIFICATE OF COMPLIANCE.	LUMP	1		
	LIGHTNING ROD INSTALLATION TOTAL				

N^0	WORK DESCRIPTION AND TYPE	UoM	QUANT	UNIT PRICE	TOTAL (RSD)
VI	**FINISHING WORK AND INSTALLATION HANDOVER**				
	After completing the work on manufacturing said installations the Contractor shall be obligated to perform the following: - patch the walls in places of breach for installations - remove any technical and aesthetic faults of manufactured installations - cleaning the rooms of rubble and taking said rubble out of the building. After completing the examination of all work performed, all tests provided for int the regulations shall be performed, as follows: - measuring resistance in cable insulation, electrical equipment and the entire installation - testing the functionality of individual devices and pieces of equipment, as well as the functionality of the entire installation - testing touch voltage protection within the installation - measuring voltage drops at the consumer unit - measuring current grounding resistance etc. After performing all measurements the Contractor shall put together a protocol and submit all required certificates of compliance to the Investor with validation of obtained values according to JUS Articles 189 to 198. For all executed work and installed material that the Contractor procured for the needs of manufacturing the installation the Contractor shall be obligated to provide a written guarantee in accordance with standing SRPS regulations and existing contractual duties.				
1	After performing all measurements the Contractor shall put together a protocol and submit all required certificates of compliance to the Investor with validation of obtained values For all executed work and installed material that the Contractor procured for the needs of manufacturing the installation the Contractor shall be obligated to provide a written guarantee in accordance with standing SRPS regulations and existing contractual duties. An as-built study shall be developed based on a certified copy surveyed during the making of the installation. The study shall contain all changes that have occurred during execution and shall be certified with an official seal from the company that performed the survey as well as by the Investor. During the mounting stage, all changes made shall be entered in red colour in one copy of the study. All changes shall be approved by the Contractor and Supervisor.				
2		lump	1		
	FINISHING WORK AND INSTALLATION HANDOVER TOTAL				

SUMMARY

I	**DISMOUNTING WORK TOTAL**	
IA	**BUILDING POWER CABLE TOTAL**	
II	**DISTRIBUTION CABINETS AND POWER LINES TOTAL**	
III	**EL. INSTALLATION OF LIGHTING FIXTURES, SOCKETS AND TECHNOLOGIAL CONSUMERS TOTAL**	
IV	**LIGHTING FIXTURES AND INSTALLLATION KITS TOTAL**	
V	**LIGHTNING ROD INSTALLATION TOTAL**	
VI	**FINISHING WORK AND INSTALLATION HANDOVER TOTAL**	
	TOTAL	

4.1 PRICED BILL OF QUANTITIES FOR THE ADAPTATION OF TELECOMMUNICATIONS AND SIGNALLING FOR THE ADMINISTRATIVE BUILDING OF THE OBRENOVAC TECHNICAL SCHOOL

This priced bill of quantities shall include mounting, connection, testing, commissioning, trial operation and handover of all material and equipment listed in individual items.
The prices shall include the cost of transportation, labour, transportation, taxes and contributions calculated on material and possible insurance costs. Furthermore, the prices shall include delivery and mounting of all petty unspecified materials required to finish equipment and work, as well as to reinstate the parts damaged when mounting installations from this design into their original situation.
The prices shall include the development of all required workshop documents needed for manufacturing, mounting, testing, commissioning and maintenance of equipment.
All materials used shall be of 1st class quality and shall comply with standards. All work shall be performed by qualified manpower, fully in accordance with standing technical regulations in Serbia for the type of work in question. Listed manufacturers shall not be exclusive! The Contractor can mount other equipment and/or materials, provided that said equipment and/or materials possess identical or better electro-technical and structural characteristics as those listed, which shall be confirmed by a competent authority (Supervisor).

N^0	Work Item Description	UoM	Quantity	UNIT PRICE	Total
1	2	3	4	5	6
	4.1.1. TELEPHONE AND COMPUTER INSTALLATIONS				
	A telephone cabinet fitted with a functional ‘Telepcs. ’ cable is located in the entrance hallway of the ground floor of the existing building intended for refurbishment. Unit price shall include any cutting of grooves and subsequent patching.				

4.1.1.	Wall mount rack cabinet height 15HU, dim. 600x600mm, foil protected glass door, lock and key, equipped with 19" carrying frame and 19" cable fixing sides, a set of 4 cable clamps, grounding rail, with 1 power unit of 8 1HU sockets, ribbed roof for ventilation, fan panel with thermostat similar to type *RITTAL Quickbox. The rack cabinet shall be marked BDR in sketches. The cabinet shall be placed in room 13, next to the existing cabinet intended for video surveillance.*	pcs. .	1		
4.1.2.	Dismounting of all unnecessary cables and telecommunications equipment in the existing building and their handover to the Investor. Development of a record of dismounted equipment.	lump	1		
4.1.3.	Delivery and fitting into PVC hoses ∅16 mm, ∅13 mm, ∅16mm, previously laid in walls and the ceiling under the plaster, of cables type 'wall' FTP 4x2x0,5/24AWG, cat. 6. Average cable length per socket and camera shall be 25m.	pcs.	80		
4.1.4.	Delivery and placement of PVC hose ∅16mm, ∅19mm, ∅23mm, with a sufficient number of junction boxes, inside the wall, complete with skim coating the walls. Average length of PVC hose per cable shall be 12m, considering the cables shall also be laid in PNK canals provided for telecommunications.	pcs	80		
4.1.5.	Delivery and mounting of fireproof PNK canals dim: 100x50mm for telecommunications purposes with all required mounting, connection and grounding kits. PNK canals shall be placed in the hallway in the suspended ceiling in the recessed floor section. Mounted over PNK canals for high voltage purposes.	m	55		
4.1.6.	Delivery of 19" shelves for active equipment into the rack cabinet.	pcs.	2		
4.1.7.	Delivery and mounting of double modular sockets type RJ-45, cat. 6, manucatured by Panduit or similar.	pcs.	30		
4.1.8.	Delivery and mounting of single modular sockets type RJ-45, cat. 6, manucatured by Panduit or similar.	pcs.	4		

4.1.9.	Delivery and mounting of a cable carrier patch guide, 1HU, into the rack cabinet.	pcs.	2		
4.1.10.	Power unit 220V, 8 sockets	pcs. .	1		
4.1.11.	Delivery and laying with connection at both ends of rack cabinet grounding cable type N2XH-J 1x16 mm2. The cable shall be distributed separately for the telephone cabinet and PNK canals in the suspended ceiling. The cable shall be distributed with MPER. PNK canals shall be reconnected at each end using P/Y 1x6mm2 cables.	m	25		
4.1.13.	Power cable N2HX-Y 3x2,5 mm2, rack cabinet power supply, provided in the electrical installation design.	m			
4.1.14.	Delivery of 1m patch cables FTP 4x2x0,5/24AWG cat.6, with RJ-45 connectors at both ends, similar to type Panduit.	pcs.	40		
4.1.15.	Delivery and mounting of 1HU voice panel with 25 ports (25 x RJ-45), cat. 5 and its connection to cables J-H(St)H 25x2x0,6mm, similar to type Panduit.	pcs.	1		
4.1.16.	Delivery and mounting of 1HU patch panel into the rack cabinet; 24 ports (24xRJ-45), 19", cat.6 and its connection to FTP cables similar to type Panduit.	pcs.	3		
4.1.17.	Delivery and partial fitting of cable type J - H(St)H 10x2x0.6 into PVC hoses ∅ ∅23mm. Laying in PNK cable tray and its finishing at both ends (at the multiple connector end and at the patch voice panel) with complete testing and development of a protocol. The cable shall serve to connect the BD rack to the TO.	m	30		
4.1.18.	Marking cables, sockets and patch panels – according to line, complete with materials, at both ends.	pcs.	40		
4.1.19.	Delivery and mounting of a 600W UPS device to be placed inside the rack cabinet and to serve to power active equipment in the cabinet and the cameras.	pcs.	1		
	4.1. telephone and computer installations TOTAL				
	4.2. FIRE ALARM INSTALLATION				

4.2.1.	Addressable microprocessor fire alarm central with built in modules and memory cards to connect 4 loops and 6 relay lines. Click & Go modules. Total number of addresses shall be 504. Maximum number of alarms in a loop shall be 126. Maximum loop length shall be 300m. Centralised management via a touchscreen LCD display (5.7“, 1/4 VGA, 320x240 dots). Possibility of flexible connection with the fire information system (EVAC). The central shall be equipped with 24 Ah/24V batteries (normal operation 72h in standby mode and 30mins under alarm). The central shall be similar to type BOSCH, FPA5000.				
	Procurement, delivery, mounting, connecting to the installation and programming.	compl.	1		
4.2.2.	Addressable optical fire detector. Digital signal processing method. LED alarm indicator. Automatic malfunction indication. Two alarm levels concerning contamination levels. LSN network safeguard in case of wire interruption and short-circuit of the installation via integrated insulators. High level of protection against dust particle contamination, similar to type BOSCH, FAP O420.				
	Software programmed to work as an optical alarm	pcs.	18		
4.2.3.	Addressable heat detector. Possibility of operation in thermo-maximum and thermal differential modes. Programmable maximum temperature setting (54º and 69ºC). Digital signal processing method. LED alarm indicator. Automatic malfunction indication. Two alarm levels concerning contamination levels. LSN network safeguard in case of wire interruption and short-circuit of the installation via integrated insulators. High level of protection against dust particle contamination, similar to type BOSCH, FAH T420.				
	Software programmed to work as a heat detector.	pcs.	1		
4.2.4.	Standard fire alarm base similar to type BOSCH, MS400.				
	Procurement, delivery, mounting and connection	pcs.	18		
4.2.5.	Addressable indoor mount manual fire alarm, complete with base, LED alarm indicator, indoor mount, similar to type BOSCH, FMC-210-DM-G.				

	Procurement, delivery, mounting and connection	pcs.	2		
4.2.6.	Conventional indoor mount alarm sounder with base. Integrated electronic tone generator (28 options). Possibility of connecting to 12V or 24V. Integrated level meter. Sound level range from 93 dB(A) to 114 bB(A). Protection categories IP54/65, similar to type BOSCH, FNM-320-SRD.				
	Procurement, delivery, mounting and connection	pcs.	2		
4.2.7.	Remote indicator for detectors in the suspended ceiling, similar to type BOSCH, FAA-420-RI.				
	Procurement, delivery, mounting and connection	pcs.	3		
4.2.8.	Automatic telephone line for remote alarm and malfunction sounding according to PSTN, two independent voice messages, up to 8 telephone numbers, similar to type PUNTO+.				
	Procurement, delivery, mounting and connection	pcs.	1		
4.2.9.	Delivery and mounting of cable type JH(St)H 2x2x0.8mm/FE180/E30 to connect elements of the system inbetween and with the central. To be laid mostly inside PNK canals and in □13mm PVC hoses. Average cable length per alarm shall be 10m.				
	Procurement, delivery, mounting and connection	pcs.	18		
4.2.10.	Delivery and mounting of cable type JH(St)H 2x2x0.8mm to connect elements of the system inbetween and with the central. To be laid mostly inside PNK canals and in □13mm PVC hoses. Average cable length per alarm shall be 10m.				
	Procurement, delivery, mounting and connection	pcs.	1		
4.2.11.	Delivery and mounting of cable type N2XH -Y 3x1.5 mm2 to power the central from the nearest generator type cabinet, from a separate power circuit, to be laid inside PVC hoses.	m	30		

4.2.12.	Procurement, delivery, laying inside distribution canals (plastic flexible hoses, PVC flexible hoses, cable trays, clamps etc) and under the ceiling/wall finishing and marking of the halogen-free signal cable, complete with all required labour and auxiliary materials: For sounders cable type JB-H(St)H 2x2x0.8mm FE180/E30 was planned. Average cable length for sounders shall be 15m.	pcs.	1		
4.2.13.	FINISHING WORK AND INSTALLATION HANDOVER				
	Testing the fire alarm system installation with developing a record on functional testing. Programming alarm central operating parameters and visualisation software with user data input (PC computer of required characteristics/configuration provided by Client). Development and handover of complete fire alarm and extinguishing system operation and maintenance instructions (user manual) and complete service instructions (service manual) in the Serbian language, in hard copy and electronic form. User training for handling the fire alarm systems. Training the Client's responsible person for completely independent use of software to program the central in the post-warranty period (holding of said training shall also be proven by the Client's verification). Delivery of technical documents and the certificated of compliance. Delivery of Service Log. Technical assistance in the initial period of accustomisation to the fire alarm system. Issuance of a system functionality certificate of compliance (Record/Report on professional findings) for said stable automatic fire detection and alarm, issued by a competent authority. Development of an as-built design. Said design shall be made and delivered in 4 (four) copies and on a CD in an electronic editable form. During the warranty period the Supplier shall offer maintenance, as well as regular (bi-monthly) and periodical half-year examinations with issuing and delivering a Record/Report on professional findings issued by a competent authority (in accordance with the actual Law on	lump	1		
	4.2. FIRE ALARM TOTAL:				

4.3. VIDEO SURVEILLANCE SYSTEM

4.3.1.	Delivery of IP outdoor mount surveillance camera JVC or symilar - symilar to type Japan – complete. JVC VN-C20U(A). Day/night mode IP camera, 1/3" CCD resolution 640x480, sensistivity 0.4lx, maximum transmission speed 30 images per second, with 24VAC/50VA power source, with COPPUTAR TG4Z2813FCS 1/3", lense Autoiris F1.3, adjustable angle of observation 80-22 (focus distance 2.8-12mm), with a VIDEOTACK HPV 36/WBJ airconditioned housing with base, ABS, IP 66, complete with all mounting and installation material and kits.	pcs.	6		
4.3.2.	Delivery of IP outdoor mount surveillance camera JVC Japan – complete. symilar to type JVC VN-C215V4U(A), Day/night mode IP camera in dome housing, 1/4" CCD resolution 640x480, sensistivity 0.4lx, integrated Autoiris lense 2.8/10mm, maximum transmission speed 30 images per second, with 12VDC/1000 mA power source, complete with all mounting and installation material and kits.	pcs.	3		
4.3.3.	Delivery and mounting of LAN POWER SWITCH 10/100/1000 Mbs, with 16 ports, for the rack variant, 19”	pcs.	1		
4.3.4.	Surveillance and recording equipment – complete with a PC computer HP DC7600 P4HT 3,6GHy, 1 GB ram, SVGA 128 MB, Dual DVI Out, 750Gb HDD, DVD-RW, USB, 5 card reader, Monitor LCD Wide 24" DVI, mouse, keyboard, 16-port LAN switch 10/100/1000Mbs, with Windows XP Pro SP2 operating system, with Melestone XProtect Enterprice Camera Licence for 11 cameras, complete with all mounting and installation material and kits.	pcs.	1		
4.3.5.	Delivery and mounting of outdoor mount housing for the DCC-500F camera, with heater and thermostat, aluminium beige, IP 66, 24 VAC – complete with a wall mount carrier type TS-806B+TS-609, for 220V power.	pcs.	6		
4.3.6.	Delivery and laying of cable type FTP 4x2x0,51 AWG, partly inside PVC hoses ∅13mm, partly slong OG clamps, partly in PNK canals, from each camera. Average cable length per camera shall be 25m.	pcs.	6		

4.3.7.	Delivery and laying of PVC hoses in the wall under the plaster, diameter 19mm, with wall finishing. Average length per camera shall be 15m.	m	6		
4.3.8.	Delivery and mounting of adapters 220V/24VAC . 300VA, for heaters inside the outdoor mount camera housing.	pcs.	1		
4.3.9.	Delivery and laying of cable type N2XH 3x1,5mm from the adapter to the camera housing.	m	210		
4.3.10.	Delivery and mounting inside the rack cabinet of a 6-channel power device for camera heaters with a safeguard for each camera.	pcs.	1		
4.3.11.	Setting up the entire system, with transportation, equipment mounting, connection, adjustmentsfine tuning, commissioning, functional testing and user training, development of all accompanying documents and manuals, complete with all mounting and installation material and kits.	compl.	1		
4.3.12.	Delivery and mounting of a server device, capacity up to 2TB for installation inside the rack cabinet, manufactured by JVC or equivalent.	pcs.	1		
4.3.13.	Delivery of adequate software and obtaining a licence to use on said cameras.	compl.	1		
4.3.15.	The existing rack cabinet intended for analogue video surveillance does not have a UPS unit to power analogue cameras and therefore in case of a power failure video surveillance will also fail. Considering an option to install a UPS device exists (there is room to spare), 400W UPS shall be installed.	pcs.	1		
4.3.16.	It was noticed that 4 cameras within the existing video surveillance system are malfunctioning. The Contractor shall be obligated to examine the malfunction and if he establishes the cameras are out of commission and can not be repaired, replace said cameras with new ones. Paid per invoice and with previous approval from the Investor.	pcs.	4		
	4.3.VIDEO SURVEILLANCE SYSTEM TOTAL				

4.4. PA SYSTEM

4.4.1.	Wall mount rack cabinet height 9HU, dim. 600x600mm, foil protected glass door, lock and key, equipped with 19" carrying frame and 19" cable fixing sides, a set of 4 cable clamps, grounding rail, with 1 power unit of 8 1HU sockets with switches, ribbed roof for ventilation, fan panel with thermostat similar to type *RITTAL Quickbox*. The rack cabinet shall be marked OR in sketches. The cabinet shall be placed in room 7.	pcs.	1		
4.4.2.	Delivery and mounting of mixer and amplifier equivalent to type PLE-2MA120-EU, manufactured by BOSCH inside the rack cabinet.	pcs.	1		
4.4.3.	Delivery and mounting in the suspended ceiling of speakers equivalent to type LBC 3086/41, Bosch, CELING LSP 9/6 W	pcs.	6		
4.4.4.	Delivery and mounting of an intercom panel cabled with a FTP 4x2x0.5 cable, daisy chain wiring, in order, via cable from one station to the next.	pcs.	4		
4.4.5.	Delivery and mounting of wireless microphone set equivalent to type MW1-RX-F4, Bosch.	pcs.	4		
4.4.6.	Delivery and mounting of wireless microphone set equivalent to type MW1-HTX-F4, Bosch.	pcs.	4		
4.4.7.	Delivery and laying of cable to interconnect speakers, type LIYCY 3x1.5mm.	m	35		
4.4.8.	Delivery and fitting into PVC hoses ∅16 mm, ∅13 mm, ∅16mm, previously laid in walls and the ceiling under the plaster, of cables type ‘wall’ FTP 4x2x0,5/24AWG, cat. 6.	m	36		
4.4.9.	Delivery and mounting of single modular sockets type RJ-45, cat. 6, manucatured by Panduit or equivalent. Sockets shall serve to connect the intercom via FTP 4x2x0.5 cable.	pcs.	3		
4.4.10.	Delivery of a patch cable (stranded wire cable) type FTP 4x2x0.5, stranded RJ-45 cat.6. connector at both ends, manufactured by Panduit or equivalent. The cable shall serve to directly connect the RJ-45 socket to the intercom station, as well as between intercoms.	pcs.	3		
4.4.11.	NOTE: Power source and grounding of rack cabinet, mark OZ, was provided for in the electricity installation design.				

4.4.12.	Delivery and mounting of wall mount projection screen, dimensions 3.5x1.5m. Xstand projection screen equivalent to type PEBB-112 Auto-lock projection screen with possibility for wall mounting, possibility of watching clear picture in a circle of 160°.	pcs.	1		
4.4.13.	Delivery and mounting of ceiling mount projector with carrier in room No 7, manufactured by Canon, equivalen to type "Canon installed XEED WUX6000". Projector power source shall be provided from the nearest room socket with cable N2XH-j 3x1.5mm2 laid in the suspended ceiling. Note: ceiling mount projector shall have its own carrier included.	pcs.	1		
4.4.14.	Testing the installation and commissioning the system with user training and provision of the manual in Serbian.	compl.	1		
4.4.15.	Delivery and mounting of connector cable between the ceiling mount projector and wall socket. The cable shall finish at both ends with connector type VGA or HDMI. Cable length shall be determined on the spot and it should be approximately 10m. The cable shall partially be inserted into PVC hoses ∅13mm in the suspended ceiling and partially in the wall under the plaster.	compl.	1		
4.4.16.	Delivery and mounting of (stranded wire) patch connector cable between the VGA or HDMI connector fitted wall socket and laptop. The cable shall finish at both ends with a connector type VGA or HDMI (one spare cable). Cable length shall be determined on the spot and it should be approximately 4m.	compl.	2		
	4.4. PA SYSTEM TOTAL				

4.5. KDS INSTALLATION

4.5.1.	The telecommunications room is fitted with a coaxial cable from the local provider, KDS, with wall mount box and TV splitter type 1/6. The installation is not functional due to unpaid bills. An installation for the reception of KDS in three sockets was planned.				
4.5.2.	Delivery and mounting of finishing TV sockets ref. 5267, equivalent to type Televes	pcs.	3		
4.5.3.	Delivery and mounting of connector to the coaxial cable, ref 4171.	pcs.	3		

4.5.4.	Delivery and laying of coaxial cable type T100 plus 2141, manufactured by Televes or equivalent, through PVC hoses & its finish at both ends	m	80		
4.5.5.	Testing the entire system, measurements, fine tuning and commissioning. Development of a protocol for all measurements taken and certificate issue; delivery of the as-built design.	compl.	1		
	4.5.KDS INSTALLATION TOTAL				

4.6. CLOCK INSTALLATION

4.6.1.	Since there is a ceiling mount clock in the hallway (rooms 1 and 2) connected to the joint clocks system placed in school. The existing clock needs to be carefully dismounted and – after finishing treatment of the suspended ceiling – cleaned and mounted again to its original position.	compl.	1		
	4.6. CLOCK INSTALLATION TOTAL				

SUMMARY

4.1.	**TELEPHONE AND COMPUTER INSTALLATION**			
4.2.	**FIRE ALARM SYSTEM**			
4.3.	**VIDEO SURVEILLANCE SYSTEM**			
4.3.	**PA SYSTEM**			
4.4.	**KDS INSTALLATION**			
4.5.	**CLOCK INSTALLATION**			
	TOTAL			

BILL OF QUANTITIES
DESIGN: Heating Installations Main Design
BUILDING: Obrenovac Technical School

Item No	DESCRIPTION	UoM	quantity	UNIT PRICE	TOTAL

NOTE: All items within this bill of quantities shall include procurement, transportation with loading and unloading, delivery to the construction site, manufacture and mounting of all required material and equipment that must be new, certified, with a valid manufacturer's warranty at the time of installation and a time limited warranty until the end of the specified period as provided for in the Contract..

A. DISMOUNTING AND REMOUNTING OF THE RADIATOR GRID

A. 01	Dismounting of all existing radiators. The price shall include dismouting of radiators. The radiators shall be flushed and cleaned. The price shall include repainting the radiators in two coats of paint. The price shall include remounting. The price shall include dismounting of all valves and screws. The price is provided per one radiator.	compl.	32		
A. 02	Perform hydrotesting of the pipeline with the development of a record. The water and electricity for he hydrotest shall be provided by the Investor and all devices and professional workforce shall be provided by the Contractor. Flushing the installation shall also be provided for.	pausal	1		

TOTAL: A. DISMOUNTING AND REMOUNTING OF THE RADIATOR GRID

B. RADIATOR HEATING INSTALLATION

B. 01	Delivery and mounting of radiator consoles and holders for radiator mounting purposes.	compl.	32		
B. 02	Delivery and mounting of straight valves without thermo heads for radiators and towel warmers, R 1/2", manufactured by HERZ or similar				
1	3/8"		24		
2	1/2"	pcs.	8		
B. 03	Delivery and mounting of straight radiator bleed valves				
	3/8"	pcs.	24		
	1/2"	pcs.	3		
B. 04	Delivery and mounting of EK radiator bleed valves				
	1/2"	pcs.	5		
B 05	Delivery and mounting of drain taps.				
	DN10	pcs.	10		
	DN15	pcs.	10		
B 06	Delivery and mounting of automatic air bleed valves	pcs.	4		

TOTAL: B. RADIATOR HEATING INSTALLATION

S U M M A R Y

TOTAL: A. DISMOUNTING AND REMOUNTING OF THE RADIATOR GRID _____

TOTAL: B. RADIATOR HEATING INSTALLATION _____

HEATING INSTALLATIONS TOTAL

SUMMARY - ADMINISTRATIVE BUILDING

I	ARCHITECTURE AND CONSTRUCTION WORK
III	ELECTRICITY INSTALLATION
IV	TELECOMMUNICATIONS AND SIGNALLING
V	MECHANICAL INSTALLATION

TOTAL:

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** I) PREPARATORY AND DEMOLITION WORK *****				
I.07				
Dismounting of gypsum boards for the suspended ceiling. The price shall include loading and transportation of the rubble to the town landfill. Calculated per m2.				
rooms 16 and 17	32.00	m2		
I.08				
Demolition of brick walls in lime mortar. Demolition shall be complete with ring beams, lintel beams and all wall cladding (everything according to the design). The price shall include taking the rubble out of the building, loading and transportation to the town landfill. Calculated per m2, all holes shall be deducted.				
3,2*1,67=5,5 (d=12cm)	5.50	m2		
I.09				
Demolition of the wall to form a door opening. Parts of the wall shall be carefully demolished, so as not to compromise the wall mass. The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. The price shall include strutting and treatment of jambs after the opening has been formed. Calculated per m3.				
2,05*0,24=0,55 (hollow clay block d=19 cm)	0.50	m3		
I.10				
Careful dismounting of wall tiles. The rubble shall be collected, taken out, loaded onto a lorry and transported to the town landfill. Calculated per m2 of the chiselled surface area.				
2,25*(2,94*4+3*4-0,7*2,05*6+1,18*2+1,36*2-0,9*2,05*2+6*2*2,3-6*0,7*2,05+2,7*2-0,9*2,05*2+2,88*2-0,9*2,05*2=90 (rooms 16 and 17)	90.00	m2		
I.12				
Demolition of floor tiles together with the screed, thermal insulation and waterproofing in rooms 16 and 17. The price shall include loading and transportation of the rubble to the town landfill..				
Calculated per m2	32.00	m2		
I.14				
Demolishing a part of the 10cm thick concrete pavement in the area where the ramp was planned (as marked out in the design). The price shall include loading and transportation of the rubble to the town landfill.				
Calculated per m2	7.20	m2		
I) PREPARATORY AND DEMOLITION WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** II) A55*****				
II.03				
Manual excavation of 3rd category soil for the ramp foundations. The excavation shall be performed as designed and the bottom shall be levelled. Excavated soil shall be used for filling under the ramp slab.				
0,15*0,4*(6*2+1)				
Calculated per m3.	0.80	m3		
II.04				
Procurement and spreading of gravel under the ramp slab and foundations. The gravel buffer shall be poured in layers, compacted and finely leveled with a height tolerance of ±1cm.				
0,1*0,15*(6*2+1)+0,1*0,9*6				
Calculated per m3.	0.75	m3		
II)GROUND WORK TOTAL:				
***** III) CONCRETE WORK *****				
III.05				
Manufacture of concrete ramp 15cm thick foundations and lateral walls made of concrete mark MB20. The concrete shall be poured and cared for according to regulations. The price shall include formwork.				
0,15*0,3*0,9+0,15*0,35*6*2				
Calculated per m3	1.00	m3		
III.06				
Manufacture of the ramp inclined slab made of MB20 compressed concrete. The slab shall be poured over a buffer of gravel. The concrete shall be poured and cared for according to regulations.				
0,1*0,9*6				
Calculated per m3	0.54	m3		
III.07				
Manufacture of the reinforced girders lintel beam in a 19cm thick brick wall. A 20cm high opening shall be cut above the future hole inside half of the wall to secure a 20cm support for the lintel beam from both sides of the opening (140cm). The girder shall be inserted and concreted. The concrete shall be poured and cared for according to regulations.				
Calculated per piece.	1.00	kom		
III) CONCRETE WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** V) BRICK WORK *****				
V.01				
Procurement and mounting of thermal insulation polyurethane panels in 6cm thick blocks. Calculated per m2.				
rooms 16, 17 and 18	32.00	m2		
V.02				
Manufacture of a 4 cm thick cement screed as the subfloor coat. The mortar for the screed shall be made from one part rapid drying cement UZIN NC 190 (or equivalent) and 4 parts grain size 0/8 sand. The base shall be dry, hard and free of cracks. All irregularities shall be repaired. The subcoat shall be sanded down or sandblasted. Dust and small impurities shall be removed with an adequate vacuum cleaner. The admixture shall be installed within 60 minutes max. The screed bed shall be ready for coating after 24 hours. Manufacturer's instructions shall be adhered to. 1cm thick styrofoam shall be inserted along the perimeter of the rooms. Calculated per m2.				
rooms 16, 17 and 18	32.00	m2		
V.03				
Building solid brick 12cm walls in lime mortar (bathroom for the disabled). The bricks shall be wetted prior to installation. The walls shall be built in a running bond. Joints shall be cleaned down to 2cm. The price shall include scaffolding. Calculated per m2.				
3,2*(1,67*2+2,25)=18	18.00	m2		
V.04				
Plastering brick walls in 2 coats of lime plaster. Prior to plastering the walls shall be cleaned and sprayed with grout. The first coat shall be delivered in lime mortar made of very coarse sand. The base shall be wetted, the first coat of plaster applied and cut. The second coat shall be made with small-grain clean sand, with no presence of sludge and organic matter and applied over the first coat. Floating shall be done with wetting and small floats. Plastered surfaces shall be flat, with no waves and cracks and the edges shall be sharp and straight. Any connections with existing plastered surfaces shall be bandaged so that the connecitons are not visible. The plaster shall be wetted to avoid quick drying and dusting. The price shall include scaffolding. Calculated per m2.				
bathroom for the disabled	36.00	m2		
V) BRICK WORK TOTAL:				
***** VI) WATERPROOFING WORK *****				
VI.01				
waterproofing shall be made over a clean and dry base. Waterproofing shall be delivered in the following layers: 1x cold bitulit coat, entirely welded on overlaps by a minimum of 10cm. Calculated per m2.				
rooms 1, 2 and 3	134.00	m2		
rooms 16, 17 and 18	32.00	m2		
VI) WATERPROOFING WORK TOTAL:				
***** VII) DRY MOUNT WORK *****				
VII.01				
Manufacture of a suspended ceiling made of 60/60 gypsum raster panels on the existing steel substructure. The price shall include scaffolding. Calculated per m2.				
At the height of 300cm from floor level, in rooms 16, 17 and 18	32.00	m2		-
VII) DRY MOUNT WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total
***** VIII) METAL WORK *****				
VIII.02				
Manufacture and mounting of a steel profile fence. The fence shall be made according to the sketch. Joints and welds shall be made ideal, cleaned and ground down. Prior to mounting the fence shall be cleaned of any corrosion and dust, ground down and dusted. A coat of impregnation and primer shall be applied and the fence mounted. After mounting another coat of promer shall be applied, the fence shall be puttied, ground down and painted twice in a tone selected by the Investor. Handgrips Ø40 in two rows, connected with vertical lines over 20/20/2 box profiles, 40/40/3 vertical lines anchored at every 1m into the ramp concrete wall via anchor plates. Calculated per kg				
1,874*7*4+3,29*0,9*12+1,05*0,04*24+7,8*0,1*0,1*12=90	90.00	kg		-
VIII) METAL WORK TOTAL:				
***** IX) DOORS AND WINDOWS *****				
IX.04				
Manufacture and mounting of single PVC door modelled after the surrounding doors, made of highly durable hard PVC with a multi-chamber profile system, reinforced with stainless steel profiles, filling and EPDM rubber sealing system, according to joinery sketches. The fitting, lock with two keys, three hinges and the door itself shall be white. Calculated per piece.				
Clear span doors 90/200cm	1.00	kom		
IX) DOORS AND WINDOWS TOTAL:				
***** XI) TILING WORK *****				
XI.01				
Procurement and mounting of class A 20x20cm ceramic wall tiles with the pattern as selected by the Investor. Tiles shall be put up using tile adhesive, in a straight joint bond. The sublayer shall previously be prepared and tilish shall be done as flat as possible. Placed tiles shall be grouted and cleaned with sawdust. Calculated per m2.				
90+ 2,25*(4*1,67+3*2,25)--2,05=118 (sanitation block)	118.00	m2		
XI.02				
Procurement and mounting of class A 20x20cm ceramic floor tiles with the pattern as selected by the Investor. Tiles shall be put up using tile adhesive, in a straight joint bond. The sublayer shall previously be prepared and tilish shall be done as flat as possible. Placed tiles shall be grouted and cleaned with sawdust. Calculated per m2.				
sanitation block	32.00	m2		
XI) TILING WORK TOTAL:				

ITEM DESCRIPTION	quantity	UoM	Unit price	total

***** XII) PAINT WORK RADOVI *****

XII.02

Painting the sanitation block walls with white emulsion paint until reaching an even tone; the walls shall previouslybe flattened by two coats of skim coating.
0,75*(2,94*4+3*4+1,55*2+2,7*4+2,88*4+2,25*2)=40

Calculated per m2.	50.00	m2		

XII) PAINT WORK TOTAL:

***** XV) OTHER WORK *****

XV.14

Cleaning the building during work and prior to technical acceptance and official handover of the building to the Investor.

Calculated per m2 net calculated building surface area	32.00	m2		

XV) OTHER WORK TOTAL:

ITEM DESCRIPTION	quantity	UoM	Unit price	total

SUMMARY
of the construction and finishing work

I) DEMOLITION WORK TOTAL:	
II) PREPARATORY AND GROUND TOTAL:	
III) CONCRETE WORK TOTAL:	
V) BRICK WORK TOTAL:	
VI) WATERPROOFING WORK TOTAL:	
VII) DRY MOUNT WORK TOTAL:	
VIII) METAL WORK TOTAL:	
IX) DOORS AND WINDOWS TOTAL:	
XI) KERAMICARSKI RADOVI TOTAL:	
XI) TILING WORK TOTAL:	
XV) OTHER WORK TOTAL:	
GRAND TOTAL (RSD):	

Bill of quantity - plumbing and sewage
Design for rehabilitation of toilets in technical school in Obrenovas, number 12 Kralja Petra Street

N^0	Item Description	UoM	quantity	unit price	total
1.	CONSTRUCTION WORK				
1.1.	Ditch excavation Excavation of a ditch to lay the pipeline in the sanitation block area, complete with strutting and planking, levelling and delivering the bottom of the ditch according to the designed elevation points. The ditch shall be 80cm wide. Excavated soil shall be disposed of at 1m from the edge of the ditch to prevent soil seeping in. Ditch strutting and planking shall be done according to PT regulations. The item shall include possible draining and pumping of underground and				
	0 - 2 m	m3	21		
1.2.	Chiselling The walls and floor shall be chiselled for connections to the water and sewer grids in an adequate inclination for pipe laying, fully according to the design. This item shall include patching and plastering around pipes in wall or floor breaches; dismounting of existing water and sewer pipes, dismounting of sanitary ware, urinals, washbasins, drains and squat toilets; dismounting of valves, taps, water tanks. Furthermore, the Contractor shall be obligated to perform necessary drainage of any water. Everything completed according to this and general description shall be paid in lump.				
	ground floor				
	Dismounting of wat. pipe Ø15 - ground floor	m	23		
	Dismounting of wat. pipe Ø20 - ground floor	m	7		
	Dismounting of sew. pipe Ø50 - ground floor	m	15		
	Dismounting of sew. pipe Ø75 - ground floor	m	12		
	Dismounting of sew. pipe Ø110 - ground floor	m	15		
	Dismounting of sew. pipe Ø160 - ground floor	m	11		
	Dismounting of ground floor urinals	kom	3		
	Dismounting of ground floor washbasins	kom	6		
	Dismounting of ground floor squat toilets	kom	6		
	1st floor				
	Wall chiselling				
	Dismounting of taps	kom	3		
	Dismounting of sew. pipe – 1st floor	m	12		
	2nd floor				
	Dismounting of sew. pipe – 2nd floor	m	12		
	Total:	**lump**	1		
1.3.	Sand Manufacture of a sand base and coat around the pipeline. The thickness of the sand layer under the pipes shall be 5cm under water and 10cm under sewer pipes and 10cm above the top of the pipes. The price shall include procurement, transportation along the ditch and pouring of the sand with compacting until required compaction. Grain size shall not exceed 3-4mm. Calculated per m3 of installed sand.	m3	7		

N^0	Item Description	UoM	quantity	unit price	total
	Rubble transportation				
1.4.	with laoding, transportation, unloading and levelling of said material at a distance designated by the Supervisor. Everything completed according to this and general description shall be paid per m3.	m3	7		
1.5.	Trench filling Filling he trench with soil in 30cm layers with compacting up to required compaction. The soil used for filling shall not contain large pieces of rubble or stones. Filling shall be done after mounting and testing the pipeline and upon approval from the Supervisor, careful not to damage the pipes. Calculated per m3 of filled trench.				
		m3	14		
	CONSTRUCTION WORK TOTAL				
2.	INDOOR WATER GRID				
2.1.	PPR water pipes Procurement, transportation and mounting of plastic water pipes type PPR for operating pressure of 16bar, compete with connectors and all mounting material. Calculated and paid per longitudinal metre of pipeline according to diameter. Piipes listed per nominal diameter.				
	DN20mm(Ø15) prizemlje	m	31		
	DN20mm(Ø15) I sprat	m	2		
	DN25mm(Ø20)	m	3		
	DN32mm(Ø25)	m	5		
	Galvanized steel water pipes Procurement, transportation and mounting of galvanized steel water pipes for 10bar operating pressure. Calculated and paid per longitudinal metre of pipeline according to diameter.				
2.2.	Ø50	m	20		

N^0	Item Description	UoM	quantity	unit price	total
2.3.	Grid thermal insulation Coating the pipelines specified in the design with 13mm thermal insulation with aluminium coating. Insulation shall be broken in valve locations. Calculated per longitudinal metre of insulated pipeline according to diameter.				
	Ø15 - ground floor	m	31		
	Ø15 - 1st floor	m	2		
	Ø20	m	3		
	Ø25	m	5		
	Ø50	m	20		
2.4.	Angle valve Procurement and mounting of 15/15mm angle gate valve with chrome plated cap and fixing bracket, to connect the toilet flusher and sanitary ware. Calculated per piece.				
	Ground floor valves	kom	20		
	1st floor valves	kom	6		
2.5.	Valve with cap Procurement and mounting of straight gate valves with square heads, chrome plated caps and fixing brackets. Calculated per piece of installed valve.				
	Ø15	kom	7		
	Ø20	kom	1		
2.6.	Wall fire hydrant Procurement and mounting of 52mm wall mount fire hydrant with a valve, 15m fire hose and nozzle, placed in a metal cabinet labelled with **H** on the door. Calculated per piece.	pcs.	1		
2.7.	Flushing and disinfection After work execution and testing has been performed the entire water grid shall be flushed and disinfected according to sanitary conditions. Calculated per longitudinal metre of pipeline.	m	61		
2.8.	Connection Connecting the newly designed pipelines to the existing grid. This item shall also include all and any unplanned work. Calculated in lump.	lump	1		
	INDOOR WATER GRID TOTAL				

N^0	Item Description	UoM	quantity	unit price	total
3.	SEWER				
3.1.	PVC sewer pipes Procurement and mounting of PVC household sewer pipes and fittings with rubber ring sleeve couplings. The pipes shall be fixed to the supporting structure under each sleeve, using adequate clamps and at the distance not larger than 75cm horizontally and 1m vertically apart. After completing the mounting stage, all holes/connections shall be closed or capped using adequate lids/caps. After completing the mounting stage the watertighness of the installation shall be tested according to instructions and withthe presence of the Supervisor. The item shall include all necessary chiselling, groove patching and breach sealing. Calculated per longitudinal metre of measured along the axis and according to diameter.				
	Ø50mm - ground floor	m	13		
	Ø50mm - 1st floor	m	3		
	Ø50mm - 2nd floor	m	3		
	Ø75mm - ground floor	m	12		
	Ø75mm – 1st floor	m	4		
	Ø75mm - 2nd floor	m	4		
	Ø110mm - ground floor	m	23		
	Ø110mm – 1st floor	m	5		
	Ø110mm - 2nd floor	m	5		
	Ø160mm	m	11		
3.2.	Floor gutters Procurement and mounting of cast iron gutters with siphons and grilles. Gutter grilles in sanitation blocks shall be made of stainless steel or chrome plated. The waterproofing layer shall be connected to the gutter. Care shall be taken that the mounted grille is flush with the finished floor. Calculated per piece of mounted gutter depending on the size.				
	Ø70mm - tankless, vertical	kom	5		
3.3.	Testing and flushing Testing the functionality of the newly designed sewer grid. Cleaning and flushing after fitting new lines. Calculated per longitudinal metre of duct.				
		m	59		
3.4.	Connection Connecting the newly designed pipelines to the existing sewer grid. This item shall also include any unplanned work. Calculated in lump.	lump	1		
	SEWER INSTALLATIONS TOTAL				

N^0	Item Description	UoM	quantity	unit price	total
4.	SANITARY WARE The Contractor shall mount all sanitation facilities, fittings and equipment on the basis of samples that have been approved and selected by the Supervisor. All elements to be mounted shall be functional, of the finest quality, compliant with JUS standard, carefully and professionally mounted and connected to the installations without damage. The Contractor shall be obligated to dismount all damaged facilities, fittings and ware and replace them with new ones at own expense. The item shall include all required chiselling and building in wood bits and anchors with required patching and plastering. All screws used for mounting of sanitary ware shall be nickel plated.				
4.1.	Procurement and mounting of the complete toilet Ceramic toilet bowl with a rubber mat for floor mounting and PVC seat with lid. PVC low-mount water tank with flushing pipe and reinforced flexible hose connecting it with the EK valve. Calculated per completely mounted toilet.				
	SIMPLON with low-mount flush device	kom	7		
4.2.	Washbasin Procurement and mounting of ceramic washbasin with siphon. Calculated per completely mounted washbasin.				
	50/40 cm	kom	5		
4.3.	HCW washbasin tap Procurement and mounting of chrome plated standalone HCW washbasin tap with a movable spout. Calculated per completely mounted tap.				
	Ground floor taps	kom	5		
	1st floor taps	kom	3		
4.4.	Procurement and mounting of wall mount single lever hot and cold water sink tap with a movable spout. Fixing brackets shall be placed between the wall and tap.	pcs.	1		
4.5.	Procurement and mounting of a kitchenette with a single sink, two express hot plates (1500W+2000W) and a 123l refrigerator.	pcs.	1		
4.6.	Urinal Procurement and mounting of a ceramic urinal with siphon. Calculated per completely mounted urinal.	kom	3		
4.7.	Procurement and mounting of 10l and 50l electric water heaters. The Designer's selection for the smaller water heater is Gorenje type GT10U with the ability to supply several outlets. The water heater shall be delivered and mounted with				
	10 l - pressurized – ground floor	kom	1		
	10 l - pressurized – 1st floor	kom	1		
	50 l - ground floor	kom	1		
	SANITARY WARE TOTAL				

N^0	Item Description	UoM	quantity	unit price	total

SUMMARY

1. CONSTRUCTION WORK TOTAL
2. INDOOR WATER GRID TOTAL
3. SEWER INSTALLATIONS TOTAL
4. SANITARY WARE TOTAL

WATER AND SEWER TOTAL

4.1. 4.1. PRICED BILL OF QUANTITIES FOR THE REHABILITATION OF HIGH VOLTAGE LIGHTING FIXTURE ELECTRICITY INSTALLATIONS IN SANITATION BLOCKS IN THE ADMINISTRATIVE PART OF THE OBRENOVAC TECHNICAL SCHOOL BUILDING, 12, Kralja Petra I St – SEPARATE

N^{O}	WORK DESCRIPTION AND TYPE	UoM	quantity	unit price	TOTAL
1	**NOTE:** It is necessary to perform additional work on the installation and connection of lighting fixtures in toilets, as well as to connect two new boilers, according to graphic sketches. The newly designed lighting scheme shall be connected to the existing power cable that was used to power the toilets before. In the case of connecting thewater heaters, the nearest cable of minimum diameter 2.5mm2 shall be found and the newly designed water heaters can be connected to it.				
2	**Light Mark "L-3".** Delivery and mounting of suspended ceiling recessed ceiling mount lighting fixture complete with light sources 1X22W in IP65 protection, similar to type ETEA DIRECT 1X22W intended for sanitation blocks, similar to manufacturer Intra Lighting.	kom	7		
3	Delivery and mounting of common wall mount switch in a mounting box	kom	3		
4	Delivery and mounting of rocker wall mount switch in a mounting box to turn on the newly designed water heater	kom	2		
5	Delivery and mounting of ZUDS 16/0,03mA, for the water heater	kom	1		
6	Electric water heater lines made with cables type N2XH/J 3x2.5mm2. Calculated and paid per cable line of average length up to 20m.	kom.	2		
7	Cable lines for the newly designed lighting fixtures made qith cables type N2XH/J 3x1.5mm2.	m	20		
8	Electrical installation work Contractor shall be obligated to check whether existing toilets have PS-49 potential equalisation box, test its functionality and connection to all metal parts of the toilets. In case that PS-49 boxes are not present in toilets, new ones shall be installed, connected to all metal parts inside the toilets with cable type N2XH-J 1x4mm2 and also connected with the closes grounding line with cable type N2XH-J 1x6mm2. Required cable length of cable N2XH-J 1x4mm2 shall be 15m, and cable N2XH-J 1x6mm2 shall be estimated at 20m. Precise lengths of cable shall be established with the Supervisor and school administration.	kompl.	1		
	UKUPNO ELEKTROINSTALACIJE U MOKRIM ČVOROVIMA				

Bill and quantity for rehabilitation works on heating system of Technical school

	Item Description	UoM	quantity	unit price	total
1	Dismounting of existing radiator valves and bleed valves	pcs	117		
	Dismounting total:				
2	Delivery and mounting of radiator valves with optional				
	Small workshop:				
	angle valve DN 15	pcs	3		
	angled bleed valve DN 15	pcs	3		
	straight valve DN 10	pcs	8		
	straight bleed valve DN 10	pcs	8		
	Small workshop total:				
	New workshop:				
	angle valve DN 15	pcs	1		
	angled bleed valve DN 15	pcs	1		
	angle valve DN 10	pcs	10		
	angled bleed valve DN 10	pcs	10		
	straight valve DN 15	pcs	1		
	straight bleed valve DN 15	pcs	2		
	straight valve DN 10	pcs	4		
	straight bleed valve DN 10	pcs	4		
	New workshop total:				
	School building				
	angle valve DN 15	pcs	27		
	angled bleed valve DN 15	pcs	27		
	angle valve DN 10	pcs	4		
	angled bleed valve DN 10	pcs	4		
	New school building total:				
	TOTAL:				

ZBIRNA REKAPITULACIJA SEPARAT

I	ARHITEKTOSKO GRAĐEVINSKI RADOVI
II	INSTALACIJE VODVODA I KANALIZACIJE
III	ELEKTROENERGETSKE INSTALACIJE
IV	MAŠINSKI RADOVI - CENTRALNO GREJANJE

UKUPNO SEPARAT: