

5.1. BILL OF QUANTITIES

INTERIOR INSTALLATION OF WATERWORKS AND SEWERAGE STRUCTURE 712

No.	Item description	UoM	Quantity	Unit price	Total
I	MOUNTING				
A	WATERWORKS				
1.	Procurement, transport and mounting of water supply pipes of the PPR (PN10) type 3 with pipe fittings and sealing material. The mounted pipes are hidden in the wall or visible, depending on the project solution. The pipes must comply with the ISO 9001-2000 quality system and standards DIN 8077 and DIN 8078. Calculation per meter of mounted pipes depending on the diameter.				
	Ø20x1,9mm	m	102		
	Ø25x2,3mm	m	156		
2.	Procurement, transport and mounting of stop valves with cap and ceiling rose for installation under the shower bath.				
	ø25mm diameter PPR	pcs.	11		
3.	Procurement, transport and mounting of stop valves with cap. The valve will be mounted in the wall at the entrance of the pipe to every apartment separately as a main valve.				
	ø25mm diameter PPR	pcs.	11		
4.	Procurement, transport and mounting of stop valves with cap. The valve will be mounted in the wall at the entrance of the pipe to every kitchen separately as a main valve.				
	ø20mm diameter PPR	pcs.	7		
5.	Procurement, transport and mounting “EK-valves” for mounting the toilet cistern and sink with the low-mounting water-heater.				
	DN 15	pcs.	20		
6.	Procurement, transport and mounting of nickel angle cock with hose bib for connecting the washing machine. Payment per mounted piece.				
	DN 15	pcs.	11		
TOTAL WATERWORKS:					

No.	Item description	UoM	Quantity	Unit price	Total
B	SEWERAGE				
1.	Procurement and mounting of PVC sewerage pipes with the required number of pipe fittings and sealing material for mounting inside the structure.				
	Ø160mm	m	12.00		
	Ø125mm	m	62.00		
	Ø110mm	m	96.00		
	Ø75mm	m	63.00		
	Ø50mm	m	43.00		
2.	Procurement, transport and mounting of PVC ventilation heads on the roof of the structure, at the end of soil pipes (discharge stacks). While mounting the ventilation heads special attention should be given to the hemming of openings on the roof for the soil pipes passage. Payment per mounted piece of ventilation head.				
	Ø110/160mm	pcs.	3		
	Ø75/125mm	pcs.	1		
3.	Procurement, transport and mounting of plastic floor outlet with “rust-free” grid and horizontal connection to the sewerage. Together with flange for insulation intake. Manufacturer: Viega or similar other manufacturer with the same characteristics.				
	Φ50mm	pcs.	13		
4.	Procurement, transport and mounting of sleeves for the passage of faecal sewerage through the foundation. The sleeves are made of galvanized steel water supply pipes. The pipes must comply with the standard SRPS.C.B5.225. Calculation per piece. Sleeve length is 50 cm. Sleeve diameter is:				
	DN200	pcs.	3		
TOTAL SEWERAGE:					

No.	Item description	UoM	Quantity	Unit price	Total
II					
SANITARY ELEMENTS:					
1.	Procurement, transport and mounting of wash basin (dimensions 58x46 cm) made out of sanitary porcelain with an opening to mount the battery with plastic siphon Ø32, plug and chain. The wash basin must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	11		
2.	Procurement, transport and mounting of wash basin (dimensions 43x31cm) made out of sanitary porcelain without an opening to mount the battery, with plastic siphon Ø32, plug and chain. For mounting into small sanitary facilities. The wash basin must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	3		
3.	Procurement, transport and instalment of standing single-handle mixer tap for hot and cold water for wash basin with two flexible hoses P ³ / ₈ " and two EK valves for connection to the water supply network. The battery must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	11		
4.	Procurement, transport and installing of bib tap for cold water for the wash basin in small sanitary facilities. The battery must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	3		
5.	Procurement, transport and mounting of standing nickel single-handle battery (faucet) for hot and cold water for kitchen sink with two flexible hoses P ³ / ₈ " and two EK valves for connection to the water supply network. The battery must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	6		

No.	Item description	UoM	Quantity	Unit price	Total
6.	Procurement, transport and instalment of standing nickel single-handle battery for hot and cold water for the kitchen sink with three flexible hoses P ³ / ₈ " for connection to the water supply network and low-mounted water heater. The battery must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	6		

No.	Item description	UoM	Quantity	Unit price	Total
7.	Procurement, transport and mounting of the sink with stainless steel bottom and adjacent lower kitchen cabinet 60 cm wide. The sink must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	12		
8.	Procurement, transport and mounting of the toilet seat made out of sanitary porcelain together with the plastic seat and cover. The seat must have vertical discharge SIMPLON. The toilet seat must be produced by a renowned first class domestic manufacturer or some other foreign manufacturer with the same characteristics.	pcs.	14		
9.	Procurement, transport and mounting of high-mounted PVC toilet cistern with discharge pipe of Ø32. Manufacturer: Geberit or equivalent.	pcs.	14		
10.	Procurement, transport and mounting of the high-mounted electric water heater of 80 l volume with thermo regulator, safety valve and wall-mounted check valve and connected to water supply network and electrical installation and tested. Manufacturer: Metalac or equivalent.	pcs.	11		
11.	Procurement, transport and mounting of the low-mounted electric water heater of 10 l volume with thermo regulator, safety valve and wall-mounted check valve and two flexible armor hoses 3/8" for connection to the faucet. The water heater must be connected to water supply network and electrical installation and tested. Manufacturer: Metalac or equivalent.	pcs.	6		
12.	Procurement, transport and mounting of enamelled shower bath (dimensions 80x80 cm) with floor drain (outlet) and siphon. The bath floor must have a slope of 2 to 3% towards the drain. Together with the bath lining and mounting kit.	pcs.	11		

No.	Item description	UoM	Quantity	Unit price	Total
13.	Procurement, transport and mounting of a single handle wall mounted battery-faucet with flexible hose, shower, wall-mounted mobile console and mounting kit above the shower bath...	pcs.	11		
14.	Procurement, transport and mounting of a framed mirror above the wash basin, produced by a first class domestic manufacturer. Together with the mounting kit. Calculated and paid per mounted piece.	pcs.	14		
15.	Procurement, transport and mounting of shelf above the wash basin, produced by a first class domestic manufacturer. Together with the mounting kit. Calculated and paid per mounted piece.	pcs.	14		
16.	Procurement, transport and mounting of nickel towel holder next to the wash basin, produced by a first class domestic manufacturer. Together with the mounting kit. Calculated and paid per mounted piece.	pcs.	14		
17.	Procurement, transport and mounting of soap holder next to the wash basin. Together with the mounting kit. Calculated and paid per mounted piece.	pcs.	14		
18.	Procurement, transport and mounting of toilet paper roll holder next to the toilet seat, produced by a first class domestic manufacturer. Together with the mounting kit. Calculated per mounted piece.	pcs.	14		
TOTAL SANITARY ELEMENTS:					

No.	Item description	UoM	Quantity	Unit price	Total
III					
INSTALLATION TESTING					
1.	Testing of mounted water supply network for water tightness in line with the regulations and instructions of the supervisory body.	m	258		
2.	Rinsing and disinfection of the water supply pipeline with chlorine. Chlorine dosage should be signed by the authorised person from the sanitary authority fully responsible for disinfection. After disinfection the grid should be rinsed with potable water. The contractor will provide the water needed for the testing. Calculated and paid per running meter of pipeline.	m	258		
3.	After disinfection, the water samples from the newly mounted water supply network should be tested in the institute for hygiene – to see if the water is potable. Payment per submitted water quality certificate.	pcs.	2		
4.	Hydraulic testing of the sewerage network for water tightness.	m	276		
TOTAL INSTALLATION TESTING:					
IV					
PREPARATORY AND FINISHING WORKS					
1.	Drilling openings and chasing the walls for water supply and sewerage installations and patching after the completed mounting. The item includes small construction openings that are not included through AG project.	flat rate			
2.	Works that cannot fit into a norm.	flat rate			
TOTAL PREPARATORY AND FINISHING WORKS:					

No.	Item description	UoM	Quantity	Unit price	Total
SUMMARY					
I	MOUNTING				
	A. WATERWORKS				
	B. SEWERAGE				
II	SANITARY ELEMENTS				
III	INSTALLATION TESTING				
IV	PREPARATORY AND FINISHING WORKS				
TOTAL					

CONNECTING STRUCTURE 712 TO WATER SUPPLY NETWORK					
No.	Item description	UoM	quantity		total
I PRELIMINARY AND GEODETIC WORKS					
1.	ROUTE MARKING				
	Prior to works on the excavation, it is necessary to mark the route with all its elements, as well as water meter manholes and other structures in the network. Calculation per m' of marked route.	m	86.00		
TOTAL PRELIMINARY WORKS:					
II EARTHWORKS					
1.	DITCH EXCAVATION				
	Mechanical and manual ditch excavation in the 3rd category soil for laying the pipes, completely in accordance with the projected location plan and transverse profile. The excavated soil is deposited 1.0 m away from the edge of the ditch. If during excavation other installations and structures are found, the contractor is obliged to secure them. The item includes clearing up and preparation of the terrain for excavation and mounting of the pipeline, protection of other installations, depositing soil at a necessary distance, rough levelling of the ditch bottom, labour force, securing the ditch with warning signs, protection fence in order to protect unemployed persons at the construction site, ditch maintenance, as well as all other costs related to this item. The excavation will be done 80% mechanically and 20 % manually. The projected ditch widths are 80 and 70 cm. The average ditch depth is 1.3 m. Calculation is per m3 of excavated soil.				
	mechanical excavation 70 %	m3	36.00		
	manual excavation 30 %	m3	15.44		
2.	LEVELLING OF THE BOTTOM OF THE DITCH				

No.	Item description	UoM	quantity	total
	<p>After excavation and prior to pouring the sand, the bottom of the ditch should be finely levelled in accordance with the levels (elevations) and down-falls + - 3 cm. Before that fine levelling the necessary corrections should be made (excavation or covering) in order to create the required down-fall. Calculation per m2 of the levelled surface.</p>	m2	63.20	

No.	Item description	UoM	quantity	total
3.	DEPOSITING SAND			
	Procurement, transportation and depositing of the medium sand (medium-sized grain) below, above and around the pipe. After depositing the pipe on the 10 cm layer of sand and completed hydraulic testing, the pipe should be covered with sand to 10 cm above the apex of the pipe. This should be done manually with simultaneous tamping below the pipe, and the ramming of the finishing layer should be done with the hand rammer. The biggest size of the sand grain must not exceed 3 mm. Calculation per m3 of the deposited sand.	m3	15.80	
4.	MECHANICAL AND MANUAL DITCH FILLING			
	Transporting and depositing the excavated soil into the remaining part of the ditch. Fill the ditch with excavated soil in 30 cm layers with previous dampening with water, and with complete ramming and simultaneously take out the timbering from the ditch. Ramming should be done up to 90% maximum density (laboratory condition compaction) according to Proctor. Payment per m3 of deposited material.			
		m3	35.64	
5.	TRANSPORTATION OF EXCESS MATERIAL			
	After filling the ditch and ramming, the remaining excavated material should be transported to a location designated by the supervisory body up to 6 km away. The price includes loading, transport, unloading and rough spreading of the material at the landfill as well as the necessary tools and labour force. Payment per m3.	m3	15.80	
TOTAL EARTHWORKS:				

No.	Item description	UoM	quantity		total
III MOUNTING					
1.	MOUNTING POLYETHYLENE PIPES				
	Procurement and mounting of HDPE PE-100 (okiten) water supply pipes with pipe fittings and sealing material. The mounting of the pipes in the ground from the water meter manhole containing the control water meters to the verticals in the structure. Prior to closing the entire network, pressure testing should be performed according to the current regulations for the water supply network.				
	Ø25x1,9mm	m	234		
TOTAL MOUNTING:					
IV OTHER WORKS					
1.	HYDRAULIC TESTING OF THE GRID				
	Hydraulic pressure testing of the laid down grid in line with technical requirements from this project with mandatory presence of the supervisory body. Calculation per m' of tested grid.	m'	234.00		
2.	PIPELINE DISINFECTION AND WASHING				
	Rinsing and disinfection of the water supply pipeline with chlorine. Chlorine dosage should be signed by the authorised person from the sanitary authority fully responsible for disinfection. After disinfection the grid should be rinsed with potable water. The contractor will provide the water needed for the testing. Calculated and paid per running meter of pipeline.	m'	234.00		
3.	AS-BUILT SURVEY				
	Before covering the pipeline, and after hydraulic testing, the pipeline should be surveyed and the data should be entered into underground installation cadastre and reported to cadastre administration. Calculation per m' of surveyed pipeline.	m'	234.00		
TOTAL OTHER WORKS:					

No.	Item description	UoM	quantity	total	
SUMMARY					
I	PRELIMINARY AND GEODETIC WORKS				
II	EARTHWORKS				
IV	MOUNTING				
V	OTHER WORKS				
	TOTAL:				

CONNECTING STRUCTURE 712 TO SEWERAGE NETWORK					
No.	Item description	UoM	Quantity	Price	Total
I PRELIMINARY AND GEODETIC WORKS					
1. ROUTE MARKING					
	Prior to works on the excavation, mark the route with all its elements. Calculation per m' of marked route.	m'	51.00		
TOTAL PRELIMINARY AND GEODETIC WORKS:					
II EARTHWORKS					
1. МАШИНСКИ И РУЧНИ ИСКОП					
	Mechanical and manual ditch excavation in the 3rd category soil for laying the pipes, completely in accordance with the projected location plan and transverse profile. The projected ditch width is 1.1 m. The excavated soil is deposited 1.0 m away from the edge of the ditch or it is loaded into a truck. While excavating the whole ditch should be immediately timbered in order to ensure full safety for works in the ditch and the safety of the transport route. The unit prices of the item includes excavation and loading. Out of the total quantity to be excavated 90% will be done mechanically and 10 % manually. In the zone of intersection with the existing installations the manual excavation is planned. Calculation is per m3 of excavated soil.				
	excavation - H<2 m				
	mechanical excavation 70 %	m3	18.23		
	manual excavation 30 %	m3	7.81		

No.	Item description	UoM	Quantity	Price	Total
2.	LEVELLING OF THE BOTTOM OF THE DITCH				
	After excavation and prior to pouring the sand for base, the bottom of the ditch should be finely levelled in accordance with the levels (elevations) and down-falls + - 2 cm. Before that fine levelling the necessary corrections should be made (excavation or covering) in order to create the required down-fall, the base should be rammed with plate vibrator until the necessary compactness of 60MH/m2. Calculation per m2 of the levelled surface.				
		m2	36.80		
3.	DEPOSITING SAND				
	Procurement, transportation and depositing of the medium sand (medium-sized grain) above and around the pipe. After depositing the pipe on the 10 cm layer of sand and completed hydraulic testing, the pipe should be covered with sand to 30 cm above the apex of the pipe and around the pipe. This should be done manually with simultaneous tamping below the pipe, and the ramming of the finishing layer should be done with the hand rammer. The biggest size of the sand grain must not exceed 3 mm. Calculation per m3 of the deposited sand.				
		m3	14.72		
4.	MECHANICAL AND MANUAL DITCH FILLING				
	Transporting and depositing the excavated soil into the remaining part of the ditch. Fill the ditch with excavated soil in 30 cm layers with previous dampening with water, and with complete ramming and simultaneously take out the timbering from the ditch. Ramming should be done up to 90% maximum density (laboratory condition compaction) according to Proctor. Payment per m3 of deposited material.				
		m3	11.32		
5.	TRANSPORTATION OF EXCESS SOIL FROM THE EXCAVATED DITCH				

No.	Item description	UoM	Quantity	Price	Total
	Transport the remaining excavated material to a landfill 8 km away. The price shall include transport, unloading and rough spreading of the material at the landfill. Payment per m3 of transported material.				
		m3	14.72		
TOTAL EARTHWORKS:					

No.	Item description	UoM	Quantity	Price	Total
III MOUNTING					
1.	MOUNTING PIPES				
	Procurement, loading, transport and unloading of PVC pipes to a temporary construction landfill – local transportation to the route, laying along the ditches and mounting according to the instructions of the pipe manufacturer. Prior to mounting, inspect the appearance and condition of the pipes and lay them according to the projected finish grade. The unit price of the item includes all the necessary small material and labour including the necessary cutting. Calculation per m' of mounted pipeline.				
	PVC S-20 (SDR41) Ø160mm	m'	10.00		
TOTAL MOUNTING:					
IV OTHER WORKS					
1.	SEWERAGE WASHING				
	Rinsing the sewerage network before caulking the pipeline with expanding plug with manual removal of all types of material that ended up in the pipeline through rinsing process. Rinsing is done with high pressure tank (woma) and sludger pump. Calculation per m' of the rendered pipeline route.	m'	10.00		
2.	HYDRAULIC TESTING				
	After the completed mounting of individual pipeline sections, the pipeline as well as the manholes should be tested for watertightness, in the mandatory presence of the supervising body. All should be done according to the conditions of the utility company and current regulations for that type of works (water column hydrostatic pressure). All possible deficiencies should be removed before covering the ditch. Calculation per m' of the rendered pipeline route.	m'	10.00		

No.	Item description	UoM	Quantity	Price	Total
3.	AS-BUILT SURVEY				
	Before covering the pipeline, and after hydraulic testing, the pipeline should be surveyed and the data should be entered into underground installation cadastre and reported to cadastre administration. Calculation per m' of surveyed pipeline.	m'	10.00		
TOTAL OTHER WORKS:					
SUMMARY					
I	PRELIMINARY AND GEODETIC WORKS				
II	EARTHWORKS				
III	MOUNTING				
IV	OTHER WORKS				
	TOTAL:				

SUMMARY					
1.	INTERIOR INSTALLATIONS FOR WATER SUPPLY AND SEWERAGE OF TYPE ONE STRUCTURE				
2.	CONNECTING TYPE ONE STRUCTURE TO WATER SUPPLY NETWORK				
3.	CONNECTING TYPE ONE STRUCTURE TO SEWERAGE NETWORK				
	TOTAL:				