REPUBLIC OF KENYA



MINISTRY OF LANDS, PUBLIC WORKS, HOUSING

& URBAN DEVELOPMENT

STATE DEPARTMENT OF PUBLIC WORKS

BILLS OF QUANTITIES

FOR

PROPOSED ELECTRO – MECHANICAL WORKS FOR

A SWIMMING POOL

AT

TANDAZA MODEL SECONDARY SCHOOL

PREPARED BY:
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PROPOSED ELECTRO - MECHANICAL WORKS FOR A SWIMMING POOL

AT TANDAZA MODEL SECONDARY SCHOOL

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	BILL NO. 1; MECHANICAL WORKS (SWIMMING POOL) PREAMBLES (i) Supply, deliver, install, test and commission the following swimming pool equipment, fittings and pipework as described herein, to positions shown on the contract drawings and as instructed by the Engineer. Makes and models stated are a guide to type and quality; equal and approved alternatives will be accepted subject to the Engineer's approval. (ii) Pool pressure pipework shall be uPVC Class D (PN12) to KS ISO 1452 / BS 3505, jointed with solvent cement to the manufacturer's instructions. Rates for pipework shall include for all couplings, cutting, jointing, pipe clips, holder bats, supports, and bedding and surrounding buried pipes in 150mm selected fine material. (iii) All pipework shall be hydraulically pressure tested to not less than 1.5 times the maximum working pressure for a minimum of two hours, before backfilling or concealment and in the presence of the Engineer. (iv) Pool lighting shall operate at safety extra-low voltage (SELV) through safety isolating transformers located outside zones 0 and 1, in accordance with BS 7671 Section 702.				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2.1 (FILTRATION AND CIRCULATION PLANT)				
	Pumps				
2.1.1	3.0kW (4HP) three-phase 415V self-priming swimming pool circulation pump with integral hair and lint pre-filter basket,	4	No.		
2.1.2	Ditto but 2.2kW (3HP) pump	2	No.		
	Filters				
2.1.3	complete with top-mounted multiport valve, pressure gauge, sight glass, unions and drain, mounted on concrete plinth (m.s.) and	4	No.		
2.1.4	Ditto but DX 900 filter	2	No.		
2.1.5	Graded silica sand filter media in 25kg bags, charged into DX 1200 filters to manufacturer's recommended grading and depth	60	Bags		
2.1.6	Ditto but charged into DX 900 filters	24	Bags		
	Controls and Protection				
2.1.7	Direct-on-line (DOL) starter in IP55 enclosure with thermal overload relay, start/stop push buttons and indicator lamps, rated	4	No.		
2.1.8	Automatic voltage switcher AVS 13, three-phase 380V, for protection of pool plant against over/under-voltage and phase failure, wired into pump control circuit	2	No.		
	Pump Room Drainage				
2.1.9	Pedrollo TOP 2 0.37kW submersible drainage pump with float switch or equal and approved, installed in pump room sump complete with discharge pipework to drain	1	No.		
	TOTAL FILTRATION AND CIRCULATION PLANT CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2.2 (POOL FITTINGS AND BUILT-IN ITEMS)				
	The following cast into the pool shell and balancing tank walls/floor, set to line and level before concreting, complete with				
2.2.1	Moulded ABS wall inlet with 2" adjustable eyeball flow director and water bar	24	No.		
2.2.2	Wall suction (vacuum) point with water bar and cover	4	No.		
2.2.3	450 x 450mm main drain sump with anti-vortex/anti-entrapment grating	3	No.		
2.2.4	110mm diameter uPVC main sump pipe, 6m long, with water bar	3	No.		
2.2.5	Wide-mouth skimmer with weir flap, basket, lid and water bar	10	No.		
2.2.6	Balancing tank down pipe complete with water bar	6	No.		
	TOTAL POOL FITTINGS AND BUILT-IN ITEMS CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2.3 (POOL PIPEWORK, VALVES AND FITTINGS)				
	uPVC Class D pressure pipes, solvent jointed, in trenches (excavation m.s.) or fixed in pump room with and including clips and supports				
	Pipes				
2.3.1	110mm diameter uPVC Class D pressure pipe	102	LM		
2.3.2	75mm ditto	138	LM		
2.3.3	63mm ditto	138	LM		
2.3.4	50mm ditto	24	LM		
	Extra over pipes for the following uPVC fittings				
2.3.5	110mm diameter 90° elbow	25	No.		
2.3.6	75mm ditto	33	No.		
2.3.7	63mm ditto	23	No.		
2.3.8	50mm ditto	18	No.		
2.3.9	110mm diameter equal tee	9	No.		
2.3.10	75mm ditto	6	No.		
2.3.11	63mm ditto	19	No.		
2.3.12	50mm ditto	9	No.		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2.3 CONT'D				
	Extra over pipes for the following uPVC fittings (cont'd)				
2.3.13	110 x 63mm reducing socket	5	No.		
2.3.14	90 x 75mm reducing socket	5	No.		
2.3.15	75 x 63mm reducing socket	5	No.		
2.3.16	63 x 50mm reducing socket	5	No.		
2.3.17	75mm diameter valve socket	2	No.		
2.3.18	50mm ditto	10	No.		
	Valves				
2.3.19	110mm diameter uPVC double-union ball valve	7	No.		
2.3.20	75mm ditto	4	No.		
2.3.21	63mm ditto	5	No.		
2.3.22	50mm diameter uPVC non-return (check) valve	5	No.		
2.3.23	63mm diameter uPVC foot valve with strainer	1	No.		
	Sundries				
2.3.24	Galvanised steel brackets, saddles and supports for exposed pipework in the pump room, fixed to walls/floor with expansion	1	Item		
2.3.25	uPVC pipe sleeves through pump room and balancing tank walls, sealed with approved flexible sealant	1	Item		
	TOTAL CARRIED TO COLLECTION BELOW				
	COLLECTION - POOL PIPEWORK, VALVES AND FITTINGS Totals brought forward from MECH/4 Totals brought down from above				
	TOTAL POOL PIPEWORK CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2.4 (UNDERWATER LIGHTING)				
2.4.1	Wall-mounted LED underwater pool light, 12V SELV, IP68, complete with niche, cable gland and water bar, cast into pool wall	12	No.		
2.4.2	300W safety isolating transformer 230/12V in weatherproof enclosure, mounted outside zones 0 and 1, complete with protective device and connections	2	No.		
2.4.3	Pool light deck junction box, sealed, flush with deck level	12	No.		
2.4.4	2.5mm² 4-core armoured cable for pool lights, laid in duct/trench (excavation m.s.) or clipped, including terminations and glands	300	LM		
	TOTAL UNDERWATER LIGHTING CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				
	ELEMENT NO. 2.5 (POOL DECK AND SAFETY EQUIPMENT)				
2.5.1	Grade 316 stainless steel pool access ladder, 3 steps, with anchor sockets cast into deck and escutcheon plates	2	No.		
2.5.2	Ditto but 4 steps	2	No.		
2.5.3	Grade 316 stainless steel pool handrail complete with brackets, base plates and anchors	90	LM		
2.5.4	Life-saving ring buoy with throwing line and wall-mounted holder	4	No.		
	FORWARD TO MECHANICAL WORKS SUMMARY PAGE				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2.6 (START-UP POOL WATER TREATMENT CHEMICALS) Supply and deliver to site the following chemicals for initial dosing and balancing of pool water, and allow for dosing under the Engineer's supervision.				
2.6.1	Granular chlorine 90%, 20kg drum	2	No.		
2.6.2	Granular chlorine 65%, 20kg drum	2	No.		
2.6.3	pH minus (pH reducer), 40-litre container	2	No.		
2.6.4	Magic Touch clarifier, 1-litre bottle	5	No.		
2.6.5	HTH Sparkle water clarifier, 1-litre bottle	5	No.		
2.6.6	Chlorine stabiliser (cyanuric acid)	5	Kg		
2.6.7	Pool salt, 50kg bag	45	Bags		
	TOTAL START-UP CHEMICALS CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				
	ELEMENT NO. 2.7 (POOL CLEANING EQUIPMENT)				
2.7.1	Pool vacuum head, weighted, with brushes	1	No.		
2.7.2	Floating vacuum hose, 30m long, with cuffs	2	No.		
2.7.3	Vacuum hose connector/skimmer adaptor	1	No.		
2.7.4	Telescopic aluminium pole, 6m	3	No.		
2.7.5	Leaf rake (deep net) with pole fitting	3	No.		
2.7.6	Leaf skimmer (flat net) with pole fitting	3	No.		
2.7.7	Wall and floor brush, 450mm	3	No.		
2.7.8	Stainless steel algae brush	1	No.		
2.7.9	Pool water test kit (chlorine and pH)	1	No.		
	TOTAL POOL CLEANING EQUIPMENT CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2.8 (TESTING, COMMISSIONING AND HANDOVER)				
2.8.1	Allow for hydraulic pressure testing of all pool pipework in sections as the work proceeds, as described in the preambles	1	Item		
2.8.2	Allow for setting to work, testing and commissioning the complete filtration, circulation and lighting installation, balancing flows and achieving the 7-hour turnover, and leaving in good working order	1	Item		
2.8.3	Allow for preparing and handing over three copies of as-installed drawings of the pump room and pool pipework	1	Item		
2.8.4	Allow for three copies of operation and maintenance manuals, including manufacturers' literature and warranties	1	Item		
2.8.5	Allow for training the Employer's pool attendants in plant operation, backwashing, water testing and chemical dosing	1	Item		
2.8.6	Allow for monthly servicing of the pool plant and remedying defects during the Defects Liability Period	1	Item		
	TOTAL TESTING AND COMMISSIONING CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				
	ELEMENT NO. 2.9 (BUILDER'S WORK IN CONNECTION)				
2.9.1	Excavate trenches not exceeding 1.0m deep for buried pool pipework and cables, bed and surround pipes in selected fine material, backfill, compact and cart away surplus	1	Item		
2.9.2	Class 20 concrete plinths 150mm high for pumps and filters, including formwork	1	Item		
2.9.3	Cutting holes, chases and mortices for pipes, cables and fittings and making good	1	Item		
	TOTAL BUILDER'S WORK CARRIED FORWARD TO MECHANICAL WORKS SUMMARY PAGE				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	MECHANICAL WORKS SUMMARY PAGE				
2.1	FILTRATION AND CIRCULATION PLANT BROUGHT FORWARD FROM MECH/2				
2.2	POOL FITTINGS AND BUILT-IN ITEMS BROUGHT FORWARD FROM MECH/3				
2.3	POOL PIPEWORK, VALVES AND FITTINGS BROUGHT FORWARD FROM MECH/5				
2.4	UNDERWATER LIGHTING BROUGHT FORWARD FROM MECH/6				
2.5	POOL DECK AND SAFETY EQUIPMENT BROUGHT FORWARD FROM MECH/6				
2.6	START-UP POOL WATER TREATMENT CHEMICALS BROUGHT FORWARD FROM MECH/7				
2.7	POOL CLEANING EQUIPMENT BROUGHT FORWARD FROM MECH/7				
2.8	TESTING, COMMISSIONING AND HANDOVER BROUGHT FORWARD FROM MECH/8				
2.9	BUILDER'S WORK IN CONNECTION BROUGHT FORWARD FROM MECH/8				
	TOTAL FOR MECHANICAL WORKS CARRIED FORWARD TO GRAND SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	BILL NO. 2; PRIME COST AND PROVISIONAL SUMS				
	ELEMENT NO. 3.1 PROVISIONAL SUMS				
3.1.1	Allow a Provisional Sum of Kenya Shillings Seventy Five Thousand only (Kshs 75,000.00) for PMC Facilitation				75,000.00
3.1.2	Allow a Provisional Sum of Kenya Shillings One Hundred Fifty Thousand only (Kshs 150,000.00) for Project Management				150,000.00
	TOTAL PRIME COST AND PROVISIONAL SUMS, CARRIED TO GRAND SUMMARY				225,000.00

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	BILL NO. 3; GRAND SUMMARY				
4.0.1	Total cost for Mechanical Works brought forward from Page MECH/9				
4.0.2	Total for Prime Cost and Provisional Sums brought forward from Page PS/1				
	TOTAL 1				
	Add 16% Value Added Tax				
	TOTAL 2 (INCLUSIVE OF VAT)				
	Add 0.03% Public Procurement Capacity Building Levy				
	GRAND TOTAL AMOUNT CARRIED TO FORM OF TENDER				
	SIGNATURE AND STAMP OF TENDERER ..... DATE ..... NAME AND ADDRESS ..... TENDERER'S WITNESS SIGNATURE ..... DATE ..... NAME AND ADDRESS				