

Construction of Serai Bazar Shah Weir, District Mohmand

Bill of Quantities

SUMMARY

Bill No.	Description	Cost (PKR)
1	Diversion and Protection of Works from Floods	
2	Sub Surface Water Management	
3	Irrigation Pipe	
4	Solar Pumping System	
5	Protection Boundary for Pannels	
6	On-farm Water Management Works	
7	General Items	
8	EMP Implementation Cost	
Total Project Cost		

Total Project Cost (In Words):

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Bill of Quantities

Bill No.1 - Diversion Arrangements

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
1.1	Diversion and Protection of Works from Floods	Provsional Sum	1			
Total Cost for Bill No.1						

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Bill No.2 - Sub-Surface Water Management

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
2.1	Excavation for core trench of Dam Embankment/Spillway/Intake & Outlet Structure and Irrigation System upto a minimum depth of 35 ft in common soil including removing of excavated material by machinery in 1 KM radius	cu.m	93.96			
2.2	Excavation for core trench of Dam Embankment/Spillway/Intake & Outlet Structure and Irrigation System upto a minimum depth of 35 ft in shingle gravel including removing of excavated material by machinery in 1 KM radius	cu.m	532.46			
2.3	Structural backfill using common Material available at site.	cu.m	405.71			
2.4	Lean concrete for use as thin layer under neath footings with cylinder compressive strength of 1423 psi on 28 days	cu.m	1.69			
2.5	PCC G10 in mass concrete less formwork using 50% boulders	cu.m	45.01			
2.6	Provide , Place & compact Fine Filter in chimney drain vertical / horizantol on downstream of clay core	Cu.m	21.72			
2.7	Provide , Place & compact Coarse Filter (well graded gravel) in chimney drain vertical / horizantol on downstream of fine filter i/c leveling, moistening etc	cu.m	12.33			
2.8	Reinforced cement concrete work as in dams, spillways, weirs, barrages, cross drainage works and other hydrolic structures using crushed stone aggregate(screening & washing) and coarse sand i/c costof all labour and material and all kinds of form works, moulds, shuttering, lifting/pumping, curing, rendering and finishing the exposed surface, cast in situ/precast excluding the cost of steel reinforcement and labour for bending binding also excludig cost of additives which have to be paid separately. Type B (1:1.5:3) G20	Cu.m	38.80			

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Bill No.2 - Sub-Surface Water Management

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
2.9	Supply & Fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 60)	Tonne	4.57			
2.10	Providing and Laying stone pitching/filling, dry hand packed in pitching & aprons	Cu.m	69.25			
2.11	Providing, laying, jointing and testing including cost of HDPE Pipe: dia=300 mm including cost of jointing, elbows etc. (SDR-21, Pressure Nominal (PN-8 Bar) (Collector Pipe)	Rm	6.30			
2.12	Providing and installing PVC strainer, in tubewell borehole comp. BSS Class 'D' working pressure : 12" i/d (Lateral Pipe)	Rm	30.00			
2.13	Providing, laying, jointing and testing including cost of HDPE Pipe: dia=300 mm including cost of jointing, elbows etc. (SDR-21, Pressure Nominal (PN-8 Bar) (Delivery Pipe)	Rm	70.00			
2.14	Making and fixing steel grated doors, complete with locking arrangements & angle iron frame (for pump room)	sq.m	2.54			
2.15	Providing and Fixing steel windows with openable glazed panels With 22 SWG wire gauze : Glass pane 3mm (for Pump room)	sq.m	3.86			
Total Cost for Bill No.2						

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Bill of Quantities

Bill No.3 - Irrigation Pipe

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
3.1	Excavation for core trench of Dam Embankment/Spillway/Intake & Outlet Structure and Irrigation System upto a minimum depth of 35 ft in common soil including removing of excavated material by machinery in 1 KM radius	cu.m	1,891.01			
3.2	Excavation for core trench of Dam Embankment/Spillway/Intake & Outlet Structure and Irrigation System upto a minimum depth of 35 ft in shingle gravel including removing of excavated material by machinery in 1 KM radius	cu.m	812.76			
3.3	Structural backfill using common Material available at site. (less compaction)	cu.m	799.07			
3.4	Rehandling of earthwork upto a lead of 25 m	cu.m	1,859.16			
3.5	Providing, laying, jointing and testing including cost of HDPE Pipe: dia=150 mm including cost of jointing, elbows etc. (SDR-21, Pressure Nominal (PN-8 Bar) Lift pipe + Irrigation Pipes	Rm	2,530.00			
Total Cost for Bill No.3						

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Technical Proposal for Solar Pumping System

Description of Work

Supply & Installation of Solar Energy based Pump (ISO – 9906 Certified) Coupled with Electric Motor Rewind-able, Water Cool capable of giving required Discharge (M³/Hour) at Given Total dynamic Head (Meter) and pump Setting (Meter) along-with Solar Panel (A-Grade Mono-crystalline), Fix Structure, Controller /Inverter, Motor Cable, Riser Pipe, Top Set (Sluice Valves, Reflux Valve, Bend, Suspension Clamps, Bore Cover Plate, Cable Ties, Nut Bolts & Rubber Gaskets etc.), and dry run protection complete in all respect with **three (3) years** comprehensive warranty for complete system as per attached specification

Sr. No.	Description	Unit	Value
1	Discharge	(m ³ /Hour)	100.2
2	No of Units	No	1
3	Discharge per Unit	(m ³ /Hour)	100.2
4	Total Dynamic Head (TDH)	meter	46.06
5	Pump Setting (Meter)	meter	3
6	WHP (Water Horse Power)	HP	
7	Pump Eff (%) at Duty Point	%	

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Technical Proposal for Solar Pumping System

8	Motor Eff (%)	%	
9	Pump Shaft Power (BHP): =WHP / Pump Efficiency	HP	
10	Motor Input Power(Watt): = (Pump shaft Power*746) / Motor Efficiency	Watt	
11	Total PV Power (Wp) (Min Required): = Motor Input Power*1.75	Wp	
12	Total PV Power Quoted (Wp): As per string Arrangements	Wp	
13	Single PV Module Size (Watts)	Watt	
14	No of PV Modules in Series	No.	
15	No of Strings in parallel	No.	
16	String (Vmp)	Vmp	
17	Motor Model,Make & HP		
18	Pump Model, Make		
19	Inverter Model & Make / Rated (kW)=(Motor Rated Power (kW) / ηm)	kW	
20	Inverter Rated Current=1.15 Times (Minimum) of Motor FLA Rated Current.	Amp	

Note: Bidder has to provide above mentioned information from Sr. No. 6 to 20

Bill No.4: Solar Pumping System

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Technical Proposal for Solar Pumping System

S No.	Description of Work	Rate of complete unit including Pumping Machinery along-with all accessories. (Rates will be quoted in digits as well as in words)		
4.1	Supply & Installation of Solar Energy based Pump (ISO – 9906 Certified) Coupled with Electric Motor Rewind-able, Water Cool capable of giving required Discharge (M³/H) at Given Total dynamic Head (Meter), along-with Solar Panel (A-Grade Mono-crystalline), Fix Structure, Controller /Inverter, Motor Cable, Riser Pipe, Top Set (Sluice Valves, Reflux Valve, Bend, Suspension Clamps, Bore Cover Plate, Cable Ties, Nut Bolts & Rubber Gaskets etc.), and dry run protection complete in all respect with three years comprehensive warranty for complete system as per attached specification.	Rate of Unit = (Rs)		
	<p align="center">Discharge per Unit</p>		<p align="center">Total Dynamic</p>	<p align="center">Pump Setting</p>
	<p align="center">(m³/Hour)</p>		<p align="center">(Meter)</p>	<p align="center">(Meter)</p>
	<p align="center">100.2</p>		<p align="center">46.06</p>	<p align="center">3</p>
	<p align="center">Required No of Units</p>		<p align="center">1</p>	
	Pump / Motor (HP) :			
	Inverter Size (kW)			
	Total Solar PV Power (Wp) Quoted			

Note: Rate/Price of the complete unit, and not the per watt rate, shall be considered for bid evaluation.

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Bill No.5 - Protection Boundary For Solar Pannels

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
5.1	Structural Excavation in Common Material	cu.m	88.84			
5.2	Plain Cement Concrete including placing, compacting, finishing & curing (G-20)	cu.m	45.04			
5.3	Hollow Block Masonry in walls upto 20 feet height in 1:4 cement sand mortar using Hollow Block 16"x8"x8" factory manufactured with 1.5" wall thickness and strength of 1900 psi.	cu.m	51.32			
5.4	RCC in roof slab, beam, column & other structural members, insitu or precast. Type B (G-20)	Cu.m	12.49			
5.5	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 60)	Tonne	1.47			
5.6	Cement Plaster 1:5, upto 20' height 3/4" thick (for Wall)	Sq-m	101			
5.7	Cement plaster 1:5, upto 20' height 1/2" thick (for slabs)	Sq-m	36.96			
5.8	Making and fixing steel grated doors, complete with locking arrangements & angle iron frame (for room)	Sq-m	2.54			
5.9	Making and fixing steel grated doors, complete with locking arrangements & angle iron frame (Wash room)	Sq-m	2.54			
5.10	Making and fixing steel grated door, with 1/16" thick sheeting, including angle iron frame & lock (for Gate)	Sq-m	4.74			
5.11	Providing and Fixing steel windows with openable glazed panels With 22 SWG wire gauze : Glass pane 3mm	Sq-m	3.86			
5.12	Supply and Erection best quality AC ceiling fan complete with GI rod, canopy, blades & regulator : 36" sweep	No	1			

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Bill of Quantities

Bill No.5 - Protection Boundary For Solar Pannels

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
5.13	Providing and Fixing glazed earthen ware WC squatting type with built-in foot rests : White	No.	1			
5.14	Providing and Fixing glazed earthen ware WHB complete Size 22"x16" : White with pedestal	No.	1			
5.15	Providing and Fixing best quality 5mm mirror 22"x16" size	No.	1			
5.16	Providing and Fixing CP toilet paper holder	No.	1			
5.17	Providing and Fixing CP soap dish.	No.	1			
5.18	Providing and Fixing best quality 5mm glass shelf 24"x5" With chromium plated brackets & railing	No.	1			
5.19	Providing and Fixing CP towel rail : 24" long, 3/4" dia	No.	1			
5.20	Septic Tank (int.Size: 7'x2'x5') complete	No.	1			
5.21	P/F Fibre Glass Water Tank 300 gallons	No.	1			
5.22	Providing and Fixing CP shower rose : 1/2"x4"	No.	1			
5.23	Providing and Fixing CP mixing valve for WHB, sink or shower	No.	1			
5.24	Providing and Fixing stainless steel sink with drain board size 48"x24", including set of brackets, waste pipe etc	No.	1			
5.25	Providing and Fixing glazed earthen ware low down flushing cistern 3 gallons capacity : White	No.	1			

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Bill No.5 - Protection Boundary For Solar Pannels

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
5.26	Providing and Fixing 'P' trap including GI grating & PCC chamber 4" glazed	No.	2			
5.27	Supply and Erection button holder/angle holder Bakelite large size	No.	3			
5.28	Supply and Erection tube light, including rod, choke etc complete Single rod (40 watts) with 1 choke & 1 starter	No.	2			
5.29	Supply and Erection 3 pin 10/15 Amp. wall socket : Open type	No.	3			
5.30	Supply and Erection PVC pipe for wiring purpose complete Recessed in walls including chase etc : 3/4" i/d	Rm	70			
5.31	Making hole in wall with necessary masonry work for exhaust fan any size complete	NO	2			
5.32	Supply and Erection best quality exhaust fan complete with shutter & regulator : 12"sweep	No.	2			
5.33	Supply and Erection girder clamp hook, 5/8" dia.for hanging ceiling fans	No.	1			
5.34	Metal Guard Rail as per NHA (604a) (railing)	Rm	105			
Sub-Total Cost for Bill No.5						

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Bill No.6 - On-Farm Water Management Works

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
LINING OF 650 R/M WATERCOURSE USING PRECAST PARABOLIC SEGMENTS						
6.1	Earth excavation in irrigation channels/drains & disposal upto 25m. & dressing : in Ordinary Soil	cu.m	39			
6.2	Earth excavation in irrigation channels/drains & disposal upto 25m. & dressing : in Shingle/Gravel	cu.m	39			
6.3	Embankment formation in ordinary soil and compaction by mechanical means at optimum content to 90% max. modified AASHTO dry density(borrow area).	cu.m	254.02			
6.4	Supplying clean and screened river or pit sand within 150m including removal of loose earth or overburden	cu.m	11.05			
6.5	Providing and Laying pre-cast segments in PCC lining (parabola type) type E	Rm	650			
10 NUMBER PCC TANKS (2M X 2M X 1M) AT EVERY OUTLET OF MAIN PIPELINE						
6.6	Plain Cement Concrete including placing, compacting, finishing and curing (G20) (in bed)	cu.m	8.41			
6.7	Plain Cement Concrete including placing, compacting, finishing and curing (G15) (in walls)	cu.m	40.43			
6.8	Providing and Fixing sluice valve of BSS quality weight for GI & PVC pipe line including jointing material : 6" i/d	No	10			

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Bill of Quantities

Bill No.6 - On-Farm Water Management Works

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
1 NUMBER WASHING PADS NEAR HOUSES OF FARMING COMMUNITY IN THE COMMAND						
6.9	Plain Cement Concrete including placing, compacting, finishing and curing (G20)	cu.m	1.18			
6.10	Supply and fabricate M.S reinforcement for cement concrete (Hot rolled deformed bars Grade 40)	tonnes	0.007			
INSTALLATION OF 30 NACCA PANELS						
6.11	Standard Nacca Panels (0.31m)	No	30.00			
6.12	4" thick PCC lining using washed screened and graded crushed stone aggregate On slope, G20 (on sides of Naccas)	cu.m	7.20			
Total Cost for Bill No.6						

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Bill of Quantities

Bill No. 7 - General Items

Item	Item Description	Unit	Quantity	Unit Rate (Rs) in Figures	Amount (Rs.) in Figures	Amount (Rs) in Words
	Engineer's Main Office (RE Office)					
	Rental of Vehicles					
7.1	1 No. Rental 4WD Toyota Hilux (model-2012 and above)	Month	7			
	Provisional Sum					
7.2	O & M (PoL, Oil & Service) - Vehicles + Generators	Month	7	40,000	280,000	(Rupees Two Hundred Eighty Thousand Only)
Sub Total:						
Add 10 % Contractor's Profit on item under provisional sum						
Total Cost for Bill No.7						

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Bill of Quantities

Bill No.8 - EMP Implementation Cost

Item	Item Description	Unit	Quantity	Rate (Rs)	Rate (Rs)	Amount (Rs)
8.1	<u>Air Testing at site</u> 1. Carbon Monoxide (CO) 2. Sulfur Dioxide (SO ₂) 3. Nitric Oxide(NO) 4. Nitrogen Dioxide(NO ₂) 5. PM10 6. PM2.5	No	4	8,000.00	Eight Thousand	32,000.00
8.2	<u>Noise Testing at site</u> 1. Noise	No	4	1,000.00	One Thousand	4,000.00
8.3	<u>Water Testing in Lab</u> 1. Total Coli form 2. E.coli 3. pH 4. Total Dissolved solids (TDS) 5. Total Hardness as CaCO ₃ 6. Sodium 7. Potassium 8. Sulphate 9. Chloride 10. Alkalinity 11. Color 12. Odor 13. Taste 14. Nitrogen-Nitrates 15. TSS	No	8	11,000.00	Eleven Thousand	88,000.00
Sub-Total Cost						124,000.00
Contingency Cost @ 5%						6,200.00
Total Cost for Bill No.8						130,200.00