| Anex-1 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWSS) Sher Qayum Kot at Sarwakai South Waziristan Tribal District (SWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **1** | **Water Supply Pipes Networking** | | | | |
| | **Excavation** | | | | |
| | Excavation in trench of water pipe line of different dia in all kind of soil including soft soil, hard rock, shingle/gravel etc, as per drawings & BOQ. | Cft | 8,324 | | |
| **2** | **HDPE Pipes** | | | | |
| | Providing and Laying HDPE pipe PN-12.5 PE-100, Din-8074/Din-8075/ISO-4427 including testing, disinfect, cutting, treading, shifting to spacified locations complete as per Drawing and BOQ. | | | | |
| | 2" dia | Rft | 1,000 | | |
| | 1" dia | Rft | 2,500 | | |
| | Providing and Laying GI pipe IIL-L for water supply including cutting, jointing, testing, fitting complete in all respect (1/2" dia) with all accessories as per engineer instruction | RFT | 400 | | |
| | 1/2" dia | Rft | 1,000 | | |
| **3** | **Construction of Stand Post and Pathway** | | | | |
| | Providing and laying plain cement concrete including shuttering, placing, compacting, finishing and curing (nominal mix ration 1:4:8) in foundation under walls steps, floors etc. (the crush must be well graded, free from mud and dust and the sand will be fine & clear from mud/dust) as in foundation of main gate columns and coping on top of columns complete in all respect | Cft | 444 | | |
| | Providing and laying plain cement concrete including shuttering, placing, compacting, finishing and curing upto one week (nominal mix ration 1:2:4) in foundation under walls steps, floor and slabs etc. (the crush must be well graded, free from mud and dust and the sand will be fine & clear from mud/dust) as in foundation of main gate columns and coping on top of columns complete in all respect | Cft | 396 | | |
| | First class burnt brick masonry in 1:4 cement send mortar , comprising 9" and and above thick wall in foundation and above foundation including curing upto one week, masonry work must be good finished, bricks must be 4.5" x 9" x 3" complete in all respects as in boundary walls and parapet walls. | Cft | 856 | | |
| | Dray Stone Soling including providing and masonry work complete (Stone shall be hard rock the best of its kind(sandstone), sound and durable, free from flaws and from soft weathered or decomposed parts size must be between 4" to 12") | Cft | 61 | | |
| | Cement plaster in 1:3 CSM 1/2"upto 20' height including curing, Shuttering complete in all respect | Sft | 1,512 | | |
| **4** | **Clamps for Distribution Lines connections** | | | | |
| | providing and fixing of HDPE clamps of best quality for distribution line from main line the sizes of clamp should as per the above mention pipes dia's (including testing ect complete ). | No's | 70 | | |
| **5** | **HDPE Pipes connectors( Couplers)** | | | | |
| | Suplying and Fixing of HDPE pipes connectors of best quality (including testing ect complete ) | | | | |
| | HDPE pipe 2" i/d main lines | No | 1 | | |
| | HDPE pipe 1" i/d Main lines | No | 7 | | |
| | HDPE pipe 1/2" i/d Distribution lines | No | 6 | | |
| **6** | **Paintings Works** | | | | |
| | **Three (3) Coats Weather Shield as on External Surface** | | | | |
| | Providing and laying Three (3) coats of weather shield as in external surface of pump house, Boundary wall and Overhead water tank including, preparation of surface and arrangement of shuttering complete. | SFT | 5,345 | | |
| | Repairing of Doors size (3.5' x 7') 2no's, Windows (4' x 4.5') 1 no's, R.S joist (10' x 0.5') 1 no's, Main gate (10' x 7') 1 no's, & Manhole cover (4' x 4') 01' n0's, including (bolts and locking arrangements or replacement where required with 3 coat paints complete as per instruction of engineer | job | 1 | | |
| **7** | **Sanitary works/ fittings/ Internal electrification** | | | | |
| | P/F Polyethylene Water Tank 250 gallons (Vertical) Connect with supply line, high quality as directed/approved by the Engineer before fixing at site. | Job | 1 | | |
| | Providing and Fixing glazed earthen ware WHB complete<br>Size 22""x16"" : White with pedestal including 22"x 16" size mirror. | Job | 1 | | |

| Anex-1 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWSS) Sher Qayum Kot at Sarwakai South Waziristan Tribal District (SWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| | Construction of main hole along with cover 12"x12" | Job | 1 | | |
| | Porceline/Ceramic tile floor 1/4" thick laid cement 1:2 or 3/4" thick cement mortar 1:2 (Local Master Tiles) sample approved by engineer | SFT | 300 | | |
| | Providing and Fixing bib-cock/ water tap heavy type : 1/2" dia complete, steel good quality ISO certified brand as directed/approved by the Engineer. | Job | 1 | | |
| | UPVC 4" Drainage pipe (PVC SCH 26/SDR 41) with clamp properly placed on roof and fixed on wall. | Rft | 52 | | |
| | UPVC 3" Drainage pipe (PVC SCH 26/SDR 41) with clamp properly placed on roof and fixed on wall. | Rft | 10 | | |
| | UPVC 4" Elbow Good Quality as per engineer instruction | No | 4 | | |
| | UPVC Tee 4"x 3" Good Quality as per engineer instruction | No | 1 | | |
| | Internal electrification for whole pump house building including Total<br>-08 No's of Energy savors 24 watts<br>-01 No's of best quality AC ceiling fan complete with GI rod, canopy, blades & regulator : 56" sweep<br>including all wiring complete recessed and other accessories complete in all respect in allocated places with instructions provided by Engineer incharge | Job | 1 | | |
| | Providing and Fixing of Main Board & Electric wall breakers with complete wiring 3/29" 7/29" including electric board, plug button etc. with all respect. | Job | 1 | | |
| | **Single Core copper wire for motor pump** | | | | |
| | Supply of good quality single core wire to run motor pump of 15HP on solar Panels to be used in DWSS complete in all respect as suggested & approved by engineer incharge. | RFT | 250 | | |
| **3** | **Sign Board** | | | | |
| | Providing and installation of Sign Board size of 4'X3' internal size using 18gauge steel sheet , 16 guage pipe 1.5" dia as in frame of size 4.5' x 3.5' & 4'heigh foots with cross angel iron double strips of 1 feet length, writing of given data double side with IR logo) and minimum 4x numbers of wall chalking of given data with IR logo complete 5' X 8' size on the near by wall or as directed by Engineer. | No's | 2 | | |
| **4** | **Plantation around the pond** | | | | |
| | Providing and planting of guava, grapes, pomegranate, olive, pine, mulberry or Sheesham plants to reduce evaporation losses. | No's | 50 | | |
| **Total Amount Inclusive of Material Supply, Labor & Taxes** | | | | | |

| Annex-2 (BOQ for Drinking Water Supply Scheme (DWSS) Sher Qayum Kot at Sarwakai South Waziristan Tribal District (SWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **1** | **Solar Based Water pumping System** | | | | |
| **1.1** | Solar Panel( monocrystalline A Grade ) | | | | |
| | Supply, install, connect and operate -Mono Crystalline Photovoltaic Solar Modules (Grade-A) of 330 Watts with all other material needed to have complete job ready for installing high quality PV modules with total array capacity 15.6 KWp.Solar panels must be with IP68 rating junction box for long-term weather endurance, Outstanding performance at low irradiance, with an average relative efficiency of 96.0 % for irradiances between 200 W/m2 and 1000 W/m2).The Item Includes supply, install &connect the following:<br>• Water proof junction boxe IP65(combiner) for each array including DC switch disconnectors(CB), bus bars ,terminals, ducts, supports &labels suitable to the PV arrays loads.<br>• Solar DC cables appropriately sized to connect the PV solar Modules together and to the J.B and from J.B to the inverter to have a complete operational circuit with all conduits, clamps , trays and cable end terminations which shall be DC plug and socket connectors.<br>• Combiner box for AC Fuses I,e Circuit brakers and DC Fuses from input - out put side of power supply as per instruction of engineer incharge. The DC cables must be sized in accordance with the installation requirements applicable on site, the allowable voltage drop for DC cables between PV Arrays and inverter less than 3%.<br>The contractor should provide certified panel characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for each solar panel for a period not less than 20 years. The Manufacture testing certificate should be provided for the PV panels and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to work site.All works and materials must be according to specifications and supervisor engineer instruction's and approval. | No | 48 | | |
| **1.2** | Supply, installation, lowering and connecting MS Column pipe with flanges for submerssible pump : 2" ( 50mm) Nominal Pipe Size (NPS), 3/16" thick, 10' length, made of ERW steel pipe confirming to ASTM - A53 designation and duly painted with corrosion resistance paint. Each coulmn pipe should be completed with gaskets, bolts/studs, washers and nuts complete in all respect. After checking & testing the pump motor set including filling distilled water, supplying & fixing a long bend, 6.35mm thick M.S sheet tube- well cover, required heavy duty holding clamp with nuts, bolts & making all electrical & pipe connection complete as required as per direction of the Engineers. | RFT | 390 | | |
| **2** | **15 HP power submersible moter ( Solar** | | | | |
| | Supply & Installation, testing and commissioning of Submersible Pump (ISO – 9906 Certified) Coupled with Submersible rewind-able Electric Motor, Water Cool capable of giving Discharge 3000 GPH at Total dynamic Head 380 along with all accessories like Motor Control Unit (equipped with UV/OV, dry run protection device, surge protection, phase reverse indicator) required electric Flat Cable, NRV, Pressure Gauge, Sluice valve, Cable Ties except column pipe and power cable with appropriate Head and Discharge : 15 HP or as instructed and approved by engineer incharge. | no | 1 | | |

| Annex-2 (BOQ for Drinking Water Supply Scheme (DWSS) Sher Qayum Kot at Sarwakai South Waziristan Tribal District (SWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **3** | **Inverter 15 KVA** | | | | |
| | Supply, install, connect and operate of 3 Phase 220/380V Solar Pump inverter (MPPT) of 11-15KW capacity capable to safely operate 15 HP submersible pump with efficiency 98% and suited to any PV module Array configuration, the inverter depending on the system design and installation proposed and for the future extended. The DC max power input rating should be equal 15.6 kWp of the PV modules capacity at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65.. The inverter must include the safety concepts such as (triple protection with optiprotect, electronic string fuse, self-learning string failure detection, DC surge arrestor) to ensure max availability.<br>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter. All works and materials must be according to the specifications and supervisor engineer instruction's and approval.. | No | 1 | | |
| **4** | **Stand /Frame For Solar Pannel** | | | | |
| | Supply and install PV Module mounting structure from hot dipped galvanized steel (minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG 4.06 mm Angle) foundation profile suitable for the dimension of selected PV modules. The mounting structure provides a fixed inclination of the modules from 30 degree to 33 degree with vertical supports, plates, screws which can withstand load of modules and high wind velocities up to 150 km per hour.The structure profile includes bracing and double hot galvanized angles for dividers. The mounting structure components are bonded together to guarantee potential equalization. The height of the upper edge of the structure should not exceed 10 feet above the ground and 6 Feet for Roof Top Installations.PV to ground clearance must not be less than 1.5 feet. The concrete foundation size usnig j-bolt/anchore bolt should be minimum 1.5x1.5x2 feet for each individual leg or 1.5x2.5x2 for double leg and the concrete should be extended at least 1 foot above the ground. The concrete ratio should be 1:2:4. The price includes supply and install a complete earth system (3 meter copper rod, manhole with iron cover, earth joints, clamps and 25 mm2 flexible copper cable from the structure to the copper rod, all necessary copper wires to connect arrays and modules in one loop for earthen.<br>All works and materials must be according specifications and supervisor instructions and approval. | Job | 1 | | |
| **5** | Removing of old pump machinery, column/delivery pipe from existing borehole to water tank complete with all aspect as per engineer instruction | Job | 1 | | |
| **Total Amount Inclusive of Material Supply, Labor & Taxes** | | | | | |

| Annex-3 (BOQ for Rehabilitation of DWSS Dandy Dirdooni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **A** | **Rehab Of Pumping Chamber** | | | | |
| 1 | Preparing surface & painting with snowcem / weathershield paint . 1st, 2nd and subsequent coats | Sft | 960 | | |
| 2 | Painting old surfaces : Doors / windows any type Each subsequent coat | sft | 39 | | |
| 3 | Distempering : Two coats | Sft | 1,008 | | |
| 4 | PC plaster (1:3), 1/2" thick | Sft | 960 | | |
| **B** | **Construction of 2 Public Water collection Points** | | | | |
| 1 | Plain Cement Concrete including placing, compacting, finishing & curing (Ratio 1:2:4) | Cft | 80 | | |
| 2 | Pacca brick work in Ground Floor in Cement, sand mortar 1:3 | Cft | 57 | | |
| 3 | Cement plaster (1:3), 1/2" thick | Sft | 173 | | |
| 4 | Providing and Fixing CP bib-cock, heavy type : 1/2" | Each | 10 | | |
| 5 | Preparing surface & painting with snowcem / weathershield paint . 1st, 2nd and subsequent coats | Sft | 173 | | |
| 6 | Supply & Installation of 2" dia GI pipe of 10 Feet length with 05 # CP Bib cocks properly welded/connected at equal distance including all accessories/specials complete in all respect or as per Engineer incharge directions | Job | 2 | | |
| 7 | Supplying and fixing Floor Trape Heavy Duty | No | 2 | | |
| **C** | **Construction of courtyard for solar system** | | | | |
| 1 | Excavation in foundation of buildings, bridges etc in all kind of soils | Cft | 552 | | |
| 2 | Plain Cement Concrete including placing, compacting, finishing & curing Ratio: 1:4:8 | cft | 69 | | |
| 3 | First class burnt brick masonry in 1:4 cement send mortar , comprising 9" and and above thick wall in foundation and above foundation including curing upto one week, masonry work must be good finished, bricks must be 4.5" x 9" x 3" complete in all respects as in boundary walls and parapet walls. | Cft | 844 | | |
| 4 | Damp proof course of cement concrete 1:2:4 including bitumen coat, 1 layer polythene & 2 coats bitumen (3" thick) | Sft | 207 | | |
| 5 | Cement plaster in 1:3 CSM 1/2"upto 20' height including curing, Shuttering complete in all respect | Sft | 1,288 | | |
| 6 | Preparing surface & painting with snowcem / weathershield paint . 1st, 2nd and subsequent coats | Sft | 1,288 | | |
| 7 | Supplying and Fixing 18 SWG MS Sheet Gate with angle iron frame (2"x2"x3/16") with side window, lock, painting etc | Sft | 28 | | |
| 8 | Dressing and levelling of courtyard for solar system | Cft | 2,100 | | |
| 9 | Providing & spreading Mechanized crused stone of size 3/8" in the courtyard | Sft | 2,100 | | |
| 10 | Providing & Fixing Galvonized Chain Link fence around courtyard of solar system made of fence posts (GI - L pipe 2" i/d , clear Height 4 feet) and GI wire (9 SWG). Fence posts should properly be embeded in concrete (1:2:4) upto 2 feet at spacing of 6 feet from each other capable to withstand against high velocity wind. or as instructed by engr incharge complete in all respect | Sft | 736 | | |
| **D** | **Construction of Storage Tank 7,500 Gallons** | | | | |
| 1 | Excavation in foundation of buildings, bridges etc | Cft | 613 | | |
| 2 | Plain Cement Concrete including placing, compacting, finishing & curing Ratio: 1:4:8 | cft | 613 | | |
| 3 | Pacca brick work in Ground Floor in Cement, sand mortar 1:3 | Cft | 326 | | |
| 4 | R.C.C as in Base Slab, core wall & Roof slab (1:2:4) | Cft | 410 | | |
| 5 | Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 40) | Ton | 2 | | |
| 6 | Cement plaster 1:3 upto 20' height 1/2" thick with water proofing material | Sft | 794 | | |
| 7 | F/instalation of m.s main hole cover 2'x2', using 2"x2"x.25" angle iron with lock arrangement complete | Sft | 4 | | |
| 8 | Preparing surface & painting with snowcem / weathershield paint . 1st, 2nd and subsequent coats | Sft | 458 | | |
| 9 | F/Instalation of 3" dia G.I Pipe wash out, ventilation & Inlet | Rft | 20 | | |
| 10 | F/Instalation of 1.5" dia G.I Pipe for outlet | Rft | 15 | | |
| **E** | **Pipe Networking** | | | | |
| 1 | Excavation & Back filling for pipelining in all kind of soil complete | Cft | 13,725 | | |
| 2 | Providing & Laying HDPE pipe (PN -10) including jointing, testing & disinfect (75 mm) along-with all fittings/accessories/especials in trenches complete in all respects. Approved by Engineer incharge | Rft | 2,787 | | |

| Annex-3 (BOQ for Rehabilitation of DWSS Dandy Dirdooni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| 3 | Providing, laying, cutting, jointing, testing and disinfecting High Density Polyethylene Pipe (HDPE) Din-8074/Din-8075/ISO-4427 in trenches, complete in all respects (63 mm dia) PN-10 | Rft | 800 | | |
| 4 | Providing and Laying cut, joint, test & disinfect GI pipe line using light quality GI pipe: 3" i/d with all fitting/flanges etc. Approved by Engineer Incharge | Rft | 75 | | |
| 5 | Providing and installation of service connncetions in distribution pipeline including GI clamp and GI pipe 0.5" to 0.75" dia having length upto 1 feet complete in all respect as directed by Engineer Incharge | Each | 40 | | |
| 6 | Construction of valve chamber (3'x3x'3')as per the attached drawing. | Job | 3 | | |
| 7 | Providing and Fixing sluice valve of BSS quality weight for GI & PVC pipe line including jointing material : 3" i/d | Each | 5 | | |
| **G** | **Scheme Visibility** | | | | |
| 1 | Providing and installation of Sign Board size of 4'X3' internal size using 18gauge steel sheet , 16 guage pipe 1.5" dia as in frame of size 4.5' x 3.5' & 4'heigh foots with cross angel iron double strips of 1 feet length, writing of given data double side with IR logo) and minimum 4x numbers of wall chalking of given data with IR logo complete 5' X 8' size on the near by wall or as directed by Engineer. | job | 1 | | |
| **Total Amount Inclusive of Material Supply, Labor & Taxes** | | | | | |

| Annex-4 (BOQ for Rehabilitation of DWSS Dandy Dirdooni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **A** | **Solar Based Water Pumping System** | | | | |
| 1 | Supply & Installation, testing and commissioning of Submersible Pump (ISO – 9906 Certified) Coupled with Submersible rewind-able Electric Motor, Water Cool capable of giving Discharge 3000 GPH at Total dynamic Head 380 along with all accessories like Motor Control Unit (equipped with UV/OV, dry run protection device, surge protection, phase reverse indicator) required electric Flat Cable, NRV, Pressure Gauge, Sluice valve, Cable Ties except column pipe and power cable with appropriate Head and Discharge : 15 HP or as instructed and approved by engineer incharge. | Each | 1 | | |
| 2 | Supply, install, connect and operate of 3 Phase 220/380V Solar Pump inverter (MPPT) of 11-15KW capacity capable to safely operate 15 HP submersible pump with efficiency 98% and suited to any PV module Array configuration, the inverter depending on the system design and installation proposed and for the future extended. The DC max power input rating should be equal 15.6 kWp of the PV modules capacity at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65.. The inverter must include the safety concepts such as (triple protection with optiprotect, electronic string fuse, self-learning string failure detection, DC surge arrestor) to ensure max availability.<br>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter. All works and materials must be according to the specifications and supervisor engineer instruction's and approval. | Each | 1 | | |

| Annex-4 (BOQ for Rehabilitation of DWSS Dandy Dirdooni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| 3 | Supply, install, connect and operate -Mono Crystalline Photovoltaic Solar Modules (Grade-A) of 330 Watts with all other material needed to have complete job ready for installing high quality PV modules with total array capacity 15.6 KWp.Solar panels must be with IP68 rating junction box for long-term weather endurance, Outstanding performance at low irradiance, with an average relative efficiency of 96.0 % for irradiances between 200 W/m2 and 1000 W/m2).The Item Includes supply, install &connect the following:<br>• Water proof junction boxe IP65(combiner) for each array including DC switch disconnectors(CB), bus bars ,terminals, ducts, supports &labels suitable to the PV arrays loads.<br>• Solar DC cables appropriately sized to connect the PV solar Modules together and to the J.B and from J.B to the inverter to have a complete operational circuit with all conduits, clamps , trays and cable end terminations which shall be DC plug and socket connectors. • Combiner box for AC Fuses I,e Circuit brakers and DC Fuses from input - out put side of power supply as per instruction of engineer incharge. The DC cables must be sized in accordance with the installation requirements applicable on site, the allowable voltage drop for DC cables between PV Arrays and inverter less than 3%.<br>The contractor should provide certified panel characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for each solar panel for a period not less than 20 years. The Manufacture testing certificate should be provided for the PV panels and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to work site.All works and materials must be according to specifications and supervisor engineer instruction’s and approval. | No | 48 | | |

| Annex-4 (BOQ for Rehabilitation of DWSS Dandy Dirdooni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| 4 | Supply and install PV Module mounting structure from hot dipped galvanized steel (minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG 4.06 mm Angle) foundation profile suitable for the dimension of selected PV modules. The mounting structure provides a fixed inclination of the modules from 30 degree to 33 degree with vertical supports, plates, screws which can withstand load of modules and high wind velocities up to 150 km per hour.The structure profile includes bracing and double hot galvanized angles for dividers. The mounting structure components are bonded together to guarantee potential equalization. The height of the upper edge of the structure should not exceed 10 feet above the ground and 6 Feet for Roof Top Installations.PV to ground clearance must not be less than 1.5 feet. The concrete foundation size usnig j-bolt/anchore bolt should be minimum 1.5x1.5x2 feet for each individual leg or 1.5x2.5x2 for double leg and the concrete should be extended at least 1 foot above the ground. The concrete ratio should be 1:2:4. The price includes supply and install a complete earth system (3 meter copper rod, manhole with iron cover, earth joints, clamps and 25 mm2 flexible copper cable from the structure to the copper rod, all necessary copper wires to connect arrays and modules in one loop for earthen.<br>All works and materials must be according specifications and supervisor instructions and approval. | Job | 1 | | |
| 5 | Supply, installation, lowering and connecting MS Column pipe with flanges for submerssible pump : 2" ( 50mm) Nominal Pipe Size (NPS), 3/16" thick, 10' length, made of ERW steel pipe confirming to ASTM - A53 designation and duly painted with corrosion resistance paint. Each coulmn pipe should be completed with gaskets, bolts/studs, washers and nuts complete in all respect. After checking & testing the pump motor set including filling distilled water, supplying & fixing a long bend, 6.35mm thick M.S sheet tube- well cover, required heavy duty holding clamp with nuts, bolts & making all electrical & pipe connection complete as required as per direction of the Engineers. | No | 25 | | |
| **Total Amount Inclusive of Material Supply, Labor & Taxes** | | | | | |

| Annex-5 (BOQ for Rehabilitation of DWSSAli Khel hamzoni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **A** | **Rehab Of Pumping Chamber** | | | | |
| 1 | Preparing surface & painting with snowcem / weathershield paint . 1st, 2nd and subsequent coats | Sft | 2,644 | | |
| 2 | Painting old surfaces : Doors / windows any type Each subsequent coat | sft | 140 | | |
| 3 | 1st class brick work (BBM) on boundary wall Cement, sand mortar 1:4 | cft | 291 | | |
| 4 | Distempering : Two coats | Sft | 1,380 | | |
| 4 | PC plaster (1:3), 1/2" thick | Sft | 418 | | |
| 5 | Construction of Septic tank (5'X5'4') having 4" PCC bed (1:2:4), 4.5" wall thickness (Long+short) wall, 4" precast slab, 4" UPVC pipe having 20ft length, Installation of WC including all accessaries in existing latrine. | Job | | | |
| **C** | **Construction of OHT 10K gallons** | | | | |
| 1 | Excavation in foundation of building, septic tank, water tank, drainage line, irrigation channel and water pipe line of different dia in all kind of soil including soft soil, hard rock, shingle/gravel etc. For details see the drawings. | Cft | 2,206 | | |
| 2 | Providing and laying Plan cement concrete including shuttering, maxing, placing, compacting, finishing and curing up to two weeks (nominal mix ration 1:4:8) (the crush must be well graded, free from mud and dust and the sand will be fine & clear from mud/dust) as in foundation complete in all respect & as per drawing. Required crushing strength must be not less than 1800 psi. | cft | 100 | | |
| 3 | First class burnt brick masonry in 1:4 cement sand mortar , comprising 9" or 4.5" including curing upto one week, masonry work must be good finished, bricks must be 4.5” x 9” x 3” complete in all respects as in core wall of water tank including v-type pointing on outer edge. For details see the drawings in Annex. Required crushing strength must be not less than 1800 psi. | Cft | 302 | | |
| 4 | Providing and laying/pouring reinforced cement concrete (RCC) 1:2:4 ratio including shuttering, curing up to 28 days, compacting, maxing (maxing must be on a surface which having zero water absorption capacity like concrete floor or thick polythene sheet etc.), finishing (for good finishing polythene sheet must be used on the shuttering surface). as columns, slabs, braced beams, stairs etc. For details see the drawings. Required crushing strength must be not less than 3000 psi. | Cft | 2,083 | | |
| 5 | Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade-60) including cutting, bending, binding, fixing on specified location, transportation form cutting point to fixing location etc | Ton | 8 | | |
| 6 | Supplying & fixing of MS angle iron ladder of 1.5"x1.5" x 2/8" main irons bars, 1.5"x1.5" x 2/8" agnle iron as in steps @9" c/c distance and 1.5"x1.5"x1/8", 1'-6'' wide and 2'-6" high side rail on both sides complete with weldings, painting and other nessessory fittings, as per drawings and instruction of engineer incharge. | Sft | 35 | | |
| 7 | F/installation of M.S main hole cover 2'x2' or 0 .37sqm(2"x2"x.25" with lock arrangement) | Sft | 4 | | |

| Annex-5 (BOQ for Rehabilitation of DWSSAli Khel hamzoni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| 8 | Supplying & fixing of MS angle iron grill of 1"x1"x1/16" square or round iron bars in vertical supports with 2'-6" height and at a distance of 9"c/c, the top rail should be 1.5"x1.5"x1/8" complete with weldings and other nessessory fittings, as per drawings. The bottom of the support pipes should be welded with extended bars of base slab of water tank or with plat of 4"x4"x1/8". | Rft | 156 | | |
| 9 | Refilling with excavated/out side earth upto 2km lead in 6" layers including compaction upto 85% FDT with mechanical machineries i.e compactor, mini roller etc | Cft | 1,800 | | |
| 10 | Supplying and fixing of water stopper of 10" wide complete of best quality. | Rft | 100 | | |
| 11 | Point of cement mortar 1:3 over outer surface of water tank of V-type complete in all respact, curig upto 14 days, proper finishing and edges of masonry should be made of plaster in border shape. | Sft | 403 | | |
| **E** | **Pipe Networking** | | | | |
| 1 | Excavation & Back filling for pipelining in all kind of soil complete | Cft | 9,636 | | |
| 2 | Providing and Laying cut, joint, test & disinfect GI pipe line using light quality GI pipe including all fittings/especials/accessories: 3" i/d Approved by Engineer Incharge | Rft | 120 | | |
| 2 | Providing & Laying HDPE pipe (PN 10) including jointing, testing & disinfect (75 mm) along-with all fittings/accessories/especials in trenches complete in all respects. Approved by Engineer incharge | Rft | 1,000 | | |
| 3 | Providing, laying, cutting, jointing, testing and disinfecting High Density Polyethylene Pipe (HDPE) in trenches, complete in all respects (50 mm dia) PN-10 | Rft | 2,000 | | |
| 4 | Providing and Laying cut, joint, test & disinfect GI pipe line using light quality GI pipe: 3" i/d with all fitting/flanges etc. Approved by Engineer Incharge | Rft | 92 | | |
| 5 | Providing and installation of service connncetions in distribution pipeline including GI clamp and GI pipe 0.5" to 0.75" dia having length upto 1 feet complete in all respect as directed by Engineer Incharge | Each | 40 | | |
| 6 | Construction of valve chamber (3'x3x'3')as per the attached drawing. | Job | 3 | | |
| 7 | Providing and Fixing sluice valve of BSS quality weight for GI & PVC pipe line including jointing material : 3" i/d | Each | 6 | | |

| Annex-5 (BOQ for Rehabilitation of DWSSAli Khel hamzoni, Tehsil Miranshah NWTD) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Work Description (Specifications)** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **F** | **Solar Based Water Pumping System** | | | | |
| 1 | Supply, install, connect and operate -Mono Crystalline Photovoltaic Solar Modules (Grade-A) of 260 Watts with all other material needed to have complete job ready for installing high quality PV modules with total array capacity 12 KWp.Solar panels must be with IP68 rating junction box for long-term weather endurance, Outstanding performance at low irradiance, with an average relative efficiency of 96.0 % for irradiances between 200 W/m2 and 1000 W/m2).The Item Includes supply, install &connect the following:<br>• Water proof junction boxe IP65(combiner) for each array including DC switch disconnectors(CB), bus bars ,terminals, ducts, supports &labels suitable to the PV arrays loads.<br>• Solar DC cables appropriately sized to connect the PV solar Modules together and to the J.B and from J.B to the inverter to have a complete operational circuit with all conduits, clamps , trays and cable end terminations which shall be DC plug and socket connectors . The DC cables must be sized in accordance with the installation requirements applicable on site, the allowable voltage drop for DC cables between PV Arrays and inverter less than 3%.<br>The contractor should provide certified panel characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for each solar panel for a period not less than 20 years. The Manufacture testing certificate should be provided for the PV panels and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to work site.All works and materials must be according to specifications and supervisor | No | 6 | | |
| **G** | **Scheme Visibility** | | | | |
| 1 | Providing and installation of Sign Board size of 4'X3' internal size using 18gauge steel sheet , 16 guage pipe 1.5" dia as in frame of size 4.5' x 3.5' & 4'heigh foots with cross angel iron double strips of 1 feet length, writing of given data double side with IR logo) and minimum 4x numbers of wall chalking of given data with IR logo complete 5' X 8' size on the near by wall or as directed by Engineer. | job | 1 | | |
| **Total Amount Inclusive of Material Supply, Labor & Taxes** | | | | | |

| Annex-6 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWASS) At Yar Gul Khel Hamdard Kaly Bar Qamber Khel Tribe) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Activities** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **A.** | **Construction of Over Head Water Tank** | | | | |
| **1** | **Excavation in foundation of tank** | | | | |
| | Excavation in foundation of building, septic tank, water tank, drainage line, irrigation channel and water pipe line of different dia in all kind of soil including soft soil, hard rock, shingle/gravel etc. For details see the drawings. | Cft | 1,949 | | |
| **2** | **P.C.C(1:4:8) as in Foundation** | | | | |
| | Providing and laying Plan cement concrete including shuttering, maxing, placing, compacting, finishing and curing up to two weeks (nominal mix ration 1:4:8) (the crush must be well graded, free from mud and dust and the sand will be fine & clear from mud/dust) as in foundation complete in all respect & as per drawing. Required crushing strength must be not less than 1800 psi. | Cft | 88 | | |
| **3** | **RCC 1:2:4 as in Foundation** | | | | |
| | Providing and laying/pouring reinforced cement concrete (RCC) 1:2:4 ratio including shuttering, curing up to 28 days, compacting, maxing (maxing must be on a surface which having zero water absorption capacity like concrete floor or thick polythene sheet etc.), finishing (for good finishing polythene sheet must be used on the shuttering surface). as foundation, plinth beam, base slab etc. For details see the drawings. Required crushing strength must be not less than 3000 psi. | Cft | 737 | | |
| **4** | **RCC 1:2:4 as in Super Structure** | | | | |
| | Providing and laying/pouring reinforced cement concrete (RCC) 1:2:4 ratio including shuttering, curing up to 28 days, compacting, maxing (maxing must be on a surface which having zero water absorption capacity like concrete floor or thick polythene sheet etc.), finishing (for good finishing polythene sheet must be used on the shuttering surface). as columns, slabs, braced beams, stairs etc. For details see the drawings. Required crushing strength must be not less than 3000 psi. | Cft | 1,453 | | |
| **5** | **Supplying/Fixing Grade-60 Steel** | | | | |
| | Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade-60) including cutting, bending, binding, fixing on specified location, transportation form cutting point to fixing location etc | kg | 7,049 | | |
| **6** | **Mosaic Work Over Plaster surface on Internal surface of Water Tank** | | | | |
| | Mosaic work including rough cement plaster surface as a base in 1:4 CSM 1/2"upto 20' height as in water tank, parapet wall etc complete with good finishing and smooth edges. | Sft | 641 | | |
| **7** | **F/installation of M.S main hole cover 2'x2' or 0 .37sqm(2"x2"x.25" with lock arrangement)** | | | | |
| | Providing and fixing of M.S main hole cover 2'x2' or 0 .37sqm(2'x2'x.25" with lock arrangement) complete with all necessary fittings | No | 1 | | |
| **8** | **F/installation of Wash out, over flow, out let, vent pipe 3" dia with hoisting & foot duck** | | | | |
| | Supplying & installation of Wash out, over flow, out let, vent pipe 3" dia with hoisting & foot duck complete with fixing clamps, cutting, treading etc as per drawing. | Rft | 150 | | |
| **9** | **F/installation of M.S Ladder** | | | | |
| | Supplying & fixing of MS angle iron ladder of 1.5"x1.5" x 2/8" main irons bars, 1.5"x1.5" x 2/8" agnle iron as in steps @9" c/c distance and 1.5"x1.5"x1/8", 1'-6" wide and 2'-6" high side rail on both sides complete with weldings, painting and other nessessory fittings, as per drawings and instruction of engineer incharge. | Rft | 45 | | |
| **10** | **Earth Fill around Water Tank** | | | | |
| | Refilling with excavated/out side earth upto 2km lead in 6" layers including compaction upto 85% FDT with mechanical machineries i.e compactor, mini roller etc | Cft | 400 | | |
| **11** | **Grill at the Bottom and Top slabs of water tank** | | | | |

| Annex-6 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWASS) At Yar Gul Khel Hamdard Kaly Bar Qamber Khel Tribe) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Activities** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| | Supplying & fixing of MS angle iron grill of 1"x1"x1/16" square or round iron bars in vertical supports with 2'-6" height and at a distance of 9"c/c, the top rail should be 1.5"x1.5"x1/8" complete with weldings and other nessessory fittings, as per drawings. The bottom of the support pipes should be welded with extended bars of base slab of water tank or with plat of 4"x4"x1/8". | Sft | 240 | | |
| **12** | **B.B.W in Core Wall of Water Tank** | | | | |
| | First class burnt brick masonry in 1:4 cement sand mortar , comprising 9" or 4.5" including curing upto one week, masonry work must be good finished, bricks must be 4.5" x 9" x 3" complete in all respects as in core wall of water tank. Required crushing strength must be not less than 1800 psi. | CFT | 371 | | |
| **13** | **Water Stopper (10" Wide)** | | | | |
| | Supplying and fixing of water stopper of 10" wide complete of best quality. | Rft | 100 | | |
| **14** | **P.C Pointing in (1:3) CSM** | | | | |
| | Point of cement mortar 1:3 over outer surface of water tank of V-type complete in all respact, curig upto 14 days, proper finishing and edges of masonry should be made of plaster in border shape. | SFT | 494 | | |
| **B.** | **Water Supply Pipes Networking** | | | | |
| **1** | **Excavation for Pipe Lines** | | | | |
| | Excavation in trench of water pipe line of different dia in all kind of soil including soft soil, hard rock, shingle/gravel etc, as per drawings & BOQ. | Cft | 3,855 | | |
| **2** | **Supply and Installation of HDPE Pipes** | | | | |
| | Providing and Laying HDPE pipe PN-12.5 PE-100, Din-8074/Din-8075/ISO-4427 including testing, disinfect, cutting, treading, shifting to spacified locations complete as per Drawing and BOQ. | | | | |
| | 2" dia | Rft | 1,640 | | |
| | 1-1/2" dia | Rft | 3,500 | | |
| | 1" dia | Rft | 500 | | |
| | 3/4" dia | Rft | 500 | | |
| | 1/2" dia | Rft | 1,000 | | |
| **3** | **HDPE Fittings (Clamps for Distribution Lines connections)** | | | | |
| | providing and fixing of HDPE fittings clamp of best quality for distribution line from main line. The sizes of clamp should as per the above mention pipes dia's(including testing ect complete ). | | | | |
| | | No's | 110 | | |
| **4** | **Gate Valve 3"x2", or as per the above mentioned diameters.** | | | | |
| | Suplying and Fixing of G.I valve of best quality and approved brand (including testing ect complete ) | No | 8 | | |
| **5** | **G.I Ball Valve** | | | | |
| | Suplying and Fixing of G.I valve for supply lines of best quality and approved brand (including testing ect complete ). The dia od the valve shoulb be as per the item#2 pipes dia. | No | 8 | | |
| **6** | **HDPE Pipes connectors( Coupler)** | | | | |
| | Suplying and Fixing of HDPE pipes connectors of best quality (including testing ect complete ) | | | | |
| | HDPE pipe 2" i/d main lines | No | 4 | | |
| | HDPE pipe 1.5" i/d Main lines | No | 8 | | |
| | HDPE pipe 1" i/d Main lines | No | 2 | | |
| | HDPE pipe 3/4" i/d Main lines | No | 2 | | |
| | HDPE pipe 1/2" i/d Distribution lines | No | 3 | | |
| **7** | **Socket/Flang 3" with Rubber washer and nut bolts** | | | | |
| | Suplying and Fixing of 3" socket or flange with rubber washer and nuts of 2"x 1/2" of best quality and approved brand (including testing etc complete ) | No | 8 | | |
| **C** | **Construction of Pump House+Boundary Wall** | | | | |
| **c.** | **Brick Work** | | | | |

| Annex-6 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWASS) At Yar Gul Khel Hamdard Kaly Bar Qamber Khel Tribe) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Activities** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| | First class burnt brick masonry in 1:4 cement sand mortar , comprising 9" including curing upto one week, masonry work must be good finished, bricks must be 4.5" x 9" x 3" complete in all respects as in pump house of water tank including v-type pointing on outer edge. For details see the drawings in Annex. Required crushing strength must be not less than 1800 psi. | CFT | 1,080 | | |
| **2** | **RCC 1:2:4 as in Slabs,Beams** | | | | |
| | Providing and laying/pouring reinforced cement concrete (RCC) slab in 1:2:4 ratio including shuttering, curing, compacting, maxing (maxing must be on a surface which having zero water absorption capacity like concrete floor or thick polythene sheet etc.), finishing (for good finishing polythene sheet must be using on the shuttering surface). as in lintels, roof slab and Shads etc. For details see the drawings in Annex. Required crushing | CFT | 42 | | |
| **3** | **Steel Reinforcement:- Grad-40** | | | | |
| | Providing and laying of special length Hot Rolled Deformed grade-40 steel bars 1/2"dia @ 6" c/c including Straightening, cutting, binding, jointing, fixing etc. For details see the drawings in Annex. | Kg | 256 | | |
| **4** | **Earth Filling Under Floor/plinth** | | | | |
| | Earth fill under floor including compaction, curing as per the instructions of engineer incharge | CFt | 1,392 | | |
| **5** | **Plaster Work** | | | | |
| | Cement plaster in 1:3 CSM 1/2"upto 20' height as in pump house including boundary wall, veranda, parapet wall and rooms. | SFT | 1,631 | | |
| **6** | **Pointing:-** | | | | |
| | P.C pointing struck joint on wall up to 20: height (1:2) | SFT | 1,521 | | |
| **7** | **Sand Fill under Floor** | | | | |
| | Provide /laying dray sand under floor including watering. | CFT | 55 | | |
| **8** | **PCC 1:2:4 as in Floor, Plinth, coping and DPC** | | | | |
| | Providing and laying 2" thick Plan cement concrete divided in to panels including shuttering, maxing, placing, compacting, finishing and curing up to tow weeks (nominal mix ration 1:2:4, maxing must be on a surface which having zero water absorption capacity like concrete floor or thick polythene sheet etc.) (the crush must be well graded, free from mud and dust and the sand will be fine & clear from mud/dust) as in Floor of pump house rooms and lawn including dismantling of the existing concrete compete in all respect or as directed by incharge engineer. Required crushing strength must be not less than 3000 psi. | CFT | 66 | | |
| **9** | **Weather Shield as In External Surface** | | | | |
| | Providing and laying Three (3) coats of weather shield as in external surface of pump house, Boundary wall and Overhead water tank including, preparation of surface and arrangement of shuttering complete. | SFT | 5,361 | | |
| **10** | **Distempering as in Internal Surface** | | | | |
| | Providing and laying Three (3) coats of good quality distempering as in internal surface of pump house, preparation of surface, arrangement of shuttering and good finishing complete. | SFT | 1,631 | | |
| **11** | **Steel Doors:-** | | | | |
| | Providing and Fixing steel Doors of 18 gauge thick sheet and angle iron frame 2" x 2" x 0.25", size 4' x 7', three (3) coats of good quality paint with lock arrangement and other associated activities complete. | Sft | 28 | | |
| **12** | **Steel Window** | | | | |
| | Providing and Fixing steel Window of 18 gauge thick sheet and angle iron frame 2" x 2" x 0.25", size 3' x 4', three (3) coats of good quality paint with lock arrangement and other associated activities complete. | No's | 9 | | |
| **13** | **Electrification** | | | | |
| | Internal electrification complete as specified in p.v.c pipe complete in all respect. Including 1 energy saver, 1 4"x4" pvc electric box, 3/0.029 wire as per requirments etc | Job | 1 | | |
| **14** | **Wall Bracket Fan:-** | | | | |
| | S/F of best quality A.C. Wall fan with complete installation . | No | 1 | | |
| **D.** | **Visibility Sign Board** | | | | |
| **1** | **Sign Board Fixing** | - | - | | |

| Annex-6 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWASS) At Yar Gul Khel Hamdard Kaly Bar Qamber Khel Tribe) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Activities** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| - | Providing and installation of Sign Board size of 4'X3' internal size using 18gauge steel sheet , 16 guage pipe 1.5" dia as in frame of size 4.5' x 3.5' & 4'heigh foots with cross angel iron double strips of 1 feet length, writing of given data double side with IR logo) and minimum 4x numbers of wall chalking of given data with IR logo complete 5' X 8' size on the near by wall | No | 1 | | |
| **2** | **Plantation** | - | - | | |
| - | Providing and planting of guava, grapes, pomegranate, olive, pine, mulberry or Sheesham plants to reduce evaporation losses. | No's | 100 | | |
| **Sub Total** | | | | | |

| Annex-7 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWASS) At Yar Gul Khel Hamdard Kaly Bar Qamber Khel Tribe) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Activities** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| | **Solar Water pumping System and Visibility Sign Board** | | | | |
| **1** | **Supply & installation of Solar panels** | | | | |
| | Supply, install, connect and operate -Mono Crystalline Photovoltaic Solar Modules (Grade-A) of 325 Watts with all other material needed to have complete job ready for installing high quality PV modules with total array capacity 14.8 KWp.Solar panels must be with IP68 rating junction box for long-term weather endurance, Outstanding performance at low irradiance, with an average relative efficiency of 96.0 % for irradiances between 200 W/m2 and 1000 W/m2).The Item Includes supply, install &connect the following:<br>• Water proof junction boxe IP65(combiner) for each array including DC switch disconnectors(CB), bus bars ,terminals, ducts, supports &labels suitable to the PV arrays loads.<br>• Solar DC cables appropriately sized to connect the PV solar Modules together and to the J.B and from J.B to the inverter to have a complete operational circuit with all conduits, clamps , trays and cable end terminations which shall be DC plug and socket connectors. • Combiner box for AC Fuses I,e Circuit brakers and DC Fuses from input - out put side of power supply as per instruction of engineer incharge. The DC cables must be sized in accordance with the installation requirements applicable on site, the allowable voltage drop for DC cables between PV Arrays and inverter less than 3%.<br>The contractor should provide certified panel characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for each solar panel for a period not less than 20 years. The Manufacture testing certificate should be provided for the PV panels and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to work site.All works and materials must be according to specifications and supervisor engineer instruction's and approval. | No | 18 | | |
| **2** | **PV Mounting structure:** | - | - | | |
| | Supply and install PV Module mounting structure from hot dipped galvanized steel (minimum thickness of 12 SWG / 2.64 mm Channel / Pipe or 8 SWG 4.06 mm Angle) foundation profile suitable for the dimension of selected PV modules. The mounting structure provides a fixed inclination of the modules from 30 degree to 33 degree with vertical supports, plates, screws which can withstand load of modules and high wind velocities up to 150 km per hour.The structure profile includes bracing and double hot galvanized angles for dividers. The mounting structure components are bonded together to guarantee potential equalization. The height of the upper edge of the structure should not exceed 10 feet above the ground and 6 Feet for Roof Top Installations.PV to ground clearance must not be less than 1.5 feet. The concrete foundation size usnig j-bolt/anchore bolt should be minimum 1.5x1.5x2 feet for each individual leg or 1.5x2.5x2 for double leg and the concrete should be extended at least 1 foot above the ground. The concrete ratio should be 1:2:4. The price includes supply and install a complete earth system (3 meter copper rod, manhole with iron cover, earth joints, clamps and 25 mm2 flexible copper cable from the structure to the copper rod, all necessary copper wires to connect arrays and modules in one loop for earthen.<br>All works and materials must be according specifications and supervisor instructions and approval. | Job | 1 | | |

| Annex-7 (BOQ for Rehabilitation of Drinking Water Supply Scheme (DWASS) At Yar Gul Khel Hamdard Kaly Bar Qamber Khel Tribe) | | | | | |
|---|---|---|---|---|---|
| **S#** | **Activities** | **Unit** | **Quantity** | **Unit Rate** | **Amount** |
| **3** | **Inverter – 11-15 KW** | - | - | | |
| | Supply, install, connect and operate of 3 Phase 220/380V Solar Pump inverter (MPPT) of 11-15KW capacity capable to safely operate 10 HP submersible pump with efficiency 98% and suited to any PV module Array configuration, the inverter depending on the system design and installation proposed and for the future extended. The DC max power input rating should be equal 13 kWp of the PV modules capacity at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65.. The inverter must include the safety concepts such as (triple protection with optiprotect, electronic string fuse, self-learning string failure detection, DC surge arrestor) to ensure max availability.<br>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter. All works and materials must be according to the specifications and supervisor engineer instruction's and approval.. | No | 1 | | |
| **4** | **Pumping Machinary** | - | - | | |
| | Supply & Installation, testing and commissioning of Submersible Pump (ISO – 9906 Certified) Coupled with Submersible rewind-able Electric Motor, Water Cool capable of giving Discharge 3000 GPH at Total dynamic Head 300 along with all accessories like Motor Control Unit (equipped with UV/OV, dry run protection device, surge protection, phase reverse indicator) required electric Flat Cable, NRV, Pressure Gauge, Sluice valve, Cable Ties except column pipe and power cable with appropriate Head and Discharge : 5.5 HP as instructed and approved by engineer incharge. | - | 1 | | |
| **Grand Total of Solar System (Labour+Materials+Tax)** | | | | | |