Republic of the Philippines
GENERAL SANTOS CITY WATER DISTRICT (GSCWD)
GSCWD Bldg., E. Fernandez Street, Lagao, General Santos City
Telephone No.: 552-3824/554-7231; Telefax No.: 553-4960
E-mail Address: gscwaterdistrict@yahoo.com

TECHNICAL SPECIFICATION

TITLE: PURCHASE OF BRAND NEW SUBMERSIBLE PUMP AND MOTOR COUPLED WITH SUBMERSIBLE CABLE AND VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER WITH COMPLETE ACCESSORIES

1.0 SCOPE OF CONTRACT

The scope shall be supply, testing, delivery and commissioning of brand new Submersible Pump and Motor Coupled with Submersible Cable and Variable Frequency Drive Motor Controller with complete accessories to General Santos City Water District (GSCWD).

2.0 SUBMERSIBLE PUMP OPERATING REQUIREMENTS

Particulars	Requirements	Statement of Compliance
Minimum Capacity at design Head, lps(gpm)	**60 (951)**	
Design Head TDH, m(ft)	**112 (367)**	
Maximum Capacity at minimum Head, lps(gpm)	**80 (1268)**	
Minimum Head TDH, m(ft)	**94 (308)**	

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Size of Discharge pipe, mm (in)	**150 (6)**	
Minimum Pump Efficiency at design head, percent	**72%**	
Design Speed (RPM)	**3400-3600**	
Pump Valve Casing, Diffuser and Suction casing Type	**316 Stainless Steel**	
Impeller, Shaft Bearing	**316 Stainless Steel – EPDM Rubber**	
Pump Shaft	**316 Stainless Steel**	
Conical Valve, Suction Screen	**316 Stainless Steel**	
Flanged coupling Type	**316 Stainless Steel**	
Bowl Intermediate	**316 Stainless Steel**	

3.0 SUBMERSIBLE MOTOR OPERATING REQUIREMENTS

Particulars	Requirements	Statement of Compliance
Motor Power Rating HP	**125**	
Rated Voltage	**460**	
Phase	**3**	
Service Factor	**1.15**	
Power Factor(4/4)	**0.8**	
Design point	**3400-3600RPM**	
Winding	**Encapsulated in anti-tracking resin (non-rewindable)**	

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Stator area	**Hermetically-sealed**	
Water-block lead	**Removable connection**	
Flange design	**Double**	
Shell	**Stainless Steel**	
Shaft	**Splined stainless steel**	
Thrust bearing	**water lubricated**	
Diaphragm	**Pressure equalizing**	
Slinger	**Sand Fighter**	
Lead wire configurations	**3**	
Bar rotor	**Copper**	
Minimum Motor Resistance (Mega ohms)	**1000 for not spliced, not submerged**	

4.0 Submersible cable requirements

Particulars	Requirement	Statement of Compliance
Type	**Round**	
Size (mm^2)	**100**	
Length (meters)	**115**	
No. of Leads	**3**	
Maximum Operating Temperature (°C)	**75**	
All Submersible Cables shall be PVC- insulated with PVC & PE jacket		

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4.1 Other materials used for splicing Submersible Cable

Particulars	Requirements	Statement of Compliance
Shrinkable Termination Kit / Splicing Kit (Brand 3M)	Three (3) sets kit No.82-A3	
100mm^2 Butt Connector (pieces)	Six (6) pcs	
Rubber Tape (Brand 3M)	Six (6) rolls; with ASTM D-4388 type 1,2 &3 / HH-I-3825B approval.	
Electrical Tape (Brand 3M)	Six (6) rolls ; Super 33+ Vinyl Electrical Tape	
Royal Cord (Philflex)	12AWG/3C – 130mtrs	
Electrodes (water level sensor)	Six (6) pcs	

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5.0 Variable Frequency Drive Motor Controller Operating Requirement

Particulars	Requirement	Statement of Compliance
Product or Component Type	Variable Frequency Drive	
Motor power, Hp (Kw)	125 (92)	
AC Voltage Range	380v – 500v	
Voltage % Tolerance	+10% -15%	
Supply Number Of Phases	3 phases	
Prospective line Isc (kAIC rating)	50 kA	
Maximum Transient Current for 60 s	190 A	
Maximum Continuous Current	173A	
Acceleration-Deceleration Ramps	0.01 – 9999s	
Speed Output Frequency	0.1 - 599Hz	
Enclosure	IP55	

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Rating		
Digital Variable Frequency Drive with torque control system, heavy duty application. Graphical terminal display, SCADA ready, built pumping control system and integrated EMC filter. With provision for external reset, external start stop, external speed control. Complete protection against phase rotation, over/under voltage, thermal overcurrent, lock rotor, ground fault, under current, definite time overcurrent. Digital monitoring of voltage, current, frequency, energy, kW and fault history included. With RS485 communication port.		

5.1 Other Motor Controller Operating Requirements

Item No.	Requirements	Statement of Compliance
1	Enclosure, **Free Standing**, IP55 ingress protection, gasketted with screened/louver ventilation and ventilation fan industrial type 220Vac, cable glands for supply power, motor supply and control cables.	
2	Molded Case circuit breaker, 3 Pole, 300Amp, 480Vac minimum operating voltage with built in shunt trip coil @ 440Vac.	
3	3 phase Over/Under Voltage relay with phase rotation and delay 380vac – 500Vac.	

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4	3 pole, MCB, 10Amp, 480Vac, dinrail mount. (Two (2) pcs.)	
5	Transient Voltage surge suppressor (TVSS), 600Vac, 3 phase + N. 35Kaic with monitoring LED. **Nema Standard**.	
6	750VA, dry type transformer, 480Vac 220Vac/110Vac, 1 phase, center tap.	
7	LED Lamp. 220Vac with door limit switch.	
8	Illuminated push buttons, 220Vac, start, stop and reset.	
9	Local and remote selector switch. 3 positions, maintained.	
10	Liquid Level relay, high and low for well application and reservoir water level, stop at full tank and auto run at low water level. 220Vac control voltage. Must be wired interlock to the system and terminated to terminal block. (2 pcs) Complete with level relay probe.	
11	Control Panel must have installed **GSM SMS Alarm and Controller Unit** with one USB port, 2 relay Output, and 8 Digital Input. All digital input and relay output must be wired and terminated to terminal block.	

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6.0 TERMS AND CONDITIONS

Item No.	Requirements	Statement of Compliance
1	The scope of work shall be supply, delivery and commissioning of brand new Submersible Pump and Motor Coupled with Submersible Cable and Variable Frequency Drive Motor Controller with complete accessories to General Santos City Water District (GSCWD).	
2	**OEM** and **locally assembled** submersible pump is not allowed.	
3	All bidder is required to submit and include documents but not limited to manuals, data sheets, and **Manufacturers Certificate** in there bidding documents.	
4	The submersible pump and motor shall be tested in a laboratory before delivery to ensure conformance with the design parameters. The cost of the laboratory testing shall be borne entirely by the winning bidder.	
5	The winning bidder is required to submit actual documents but not limited to manuals, data sheets, manufacturer's Test Certificate (include serial number & model number/type), Manufacturer's Certificate, name plate specifications, of the unit that are to be tested prior to the scheduling of laboratory testing.	
6	In case the unit to be tested are different from the submitted documents and/or do not comply with the specifications set by GSCWD,	

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	laboratory testing shall not be conducted. The winning bidder shall make necessary adjustment to comply with the set specifications and re-schedule another laboratory testing without cost to GSCWD.	
7	In case the unit/units failed to pass the minimum requirements during laboratory testing, the winning bidder shall replace the unit/units subject to another laboratory testing without cost to GSCWD.	
8	That during the installation and commissioning of the units, the winning bidder shall be required to send a technician responsible of Variable Frequency Drive set up and splicing the cables with the motor cable leads and commissioning thereafter with the presence of GSCWD technical representatives. **The insulation resistance of submersible motor reading must be greater than or equal to 1000 mega-ohms before splicing.** All relevant and incidental costs (transportation, accommodation, allowances and etc.) during commissioning of the equipment shall be shouldered by the winning bidder.	
9	Electrical installation of main circuit breaker and grounding shall be performed by GSCWD technicians.	

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10	Field testing shall be made once the units are ready for operation and when both the GSCWD and winning bidder have finished their scopes of work on the installed units. GSCWD engineers shall conduct field testing with the presence of winning bidder's representative. ***A.)***Submersible Pump must meet the minimum requirements in terms of capacity, head, **and efficiency with tolerance of -2%.** ***B.)*** Submersible motor shall operate with in its rated current and shall not consumed the safety factor (115% of rated current). ***C.)***The motor controller shall operate and does not trip-off in normal condition. All external motor protections must properly interlock and functional. In case the unit/units failed to pass the field testing, the winning bidder shall make necessary corrections / changes to replace the unit/units without cost to GSCWD.	
11	The winning bidder shall deliver the units within **Ninety (90)** calendar days upon receipt of Purchase Order (PO). Laboratory testing is included in the 90- calendar day's delivery period.	
12	The winning bidder shall be subjected to Liquidated Damages (LD) for each day of delay as provided by the IRR of RA 9184.	
13	The submersible motor and cable must comply with PEC standard as to their current rating.	
14	That the winning bidder shall issue a	

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	warranty certificate of not less than one (1) year and the warranty shall commence from the date of commissioning of the pumping equipment.	
15	That the winning bidder shall have an available qualified and trained technicians 24/7 in case of equipment failure.	

Prepared by:

EDMUND L. BADAL, REE
TWG – Member

JUDY LIM PASMAN
TWG – Member

MICHAEL G. GABALES, REE
TWG – HEAD

Recommending Approval:

ROGELIO A. BESANA JR. C.E./RMP
Assistant General Manager

Approved:

ARN B. GELLANGARIN, PME
General Manager A