



TECHNICAL SPECIFICATION

TITLE: SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM FOR THREE (3) PUMPING STATIONS AND THREE (3) RESERVOIR

1.0 SCOPE OF CONTRACT

The scope of work for this project shall be supply, delivery, installation, testing and commissioning of supervisory control and data acquisition (SCADA) system to General Santos City Water District with in **120 Calendar Days**.

Item no.	Requirements	Statement of Conformance
1.1	The winning bidder is responsible for providing, installing, conducting testing, and commissioning the Super Supervisory Control and Data Acquisition (SCADA) System for Pumping Station No. 6 (Roca), Pumping Station No. 7 (Philbanking), Pumping Station No. 8 (Lansang), the elevated steel tank at Pumping Station No. 6 (PS6), and the two (2) Reservoir at SM Village, Brgy Sinawal. This entails transmitting and presenting all essential parameters in the central command center.	
1.2	The successful bidder is tasked with seamlessly incorporating the new SCADA project into the already operational SCADA system. This integration involves ensuring that the new SCADA system is able to communicate, interact, and work harmoniously with the existing one. It includes making certain that data, processes, and control functions between the two systems are effectively coordinated.	
1.3	The integration should be carried out without disrupting the continuous operation of the existing SCADA system, ensuring a smooth transition and minimal downtime during the implementation of the project.	



1.4	The winning bidder shall furnish all labor, materials, tools, equipment, transport, supplies, and other necessary services required for the complete and proper conclusion of a working SCADA system.	
1.5	The winning bidder shall provide Command Center and onsite HMI controlling capability for; <ul style="list-style-type: none">✓ Remote start and remote stop of diesel generator✓ Remote start and remote stop of Motor Control Panel✓ Remote start and remote stop of Sampling✓ Provisions for ATS Trip Command✓ Provision for remote opening and remote closing of butterfly valves	
1.6	The system and instruments shall be brand new Programmable Automation Controllers, Sensors and transmitters and SCADA Software, those that were not stated herein but are necessary in the complete SCADA system shall be included in the tendered price.	



2.0 LIST OF MAJOR COMPONENTS

Item no.	Item	Quantity	Total Quantity	Statement of Conformance
1	Programmable Logic Controller (PLC)	4	4	
2	Power Meter	3	3	
3	Fabricated Powder Coated Panels	4	4	
4	Human Machine Interface (HMI)	4	4	
5	Un-interruptible Power Supply	4	4	
6	Surge Protection Device	4	4	
7	Chlorine Gas Leak Sensor	3	3	
8	Residual Chlorine Analyzer	3	3	
9	Pressure Transducer	3	4	
10	Water Level Monitoring Transmitter (well)	3	4	
11	Water Level Monitoring Transmitter (Reservoir)	3	3	
12	Chlorine Weighing Scale	3	3	



3.0 MAJOR COMPONENT SPECIFICATIONS

HUMAN MACHINE INTERFACE (HMI)		
Description		Statement of Conformance
10.1 inch widescreen, Universal model, 2serial ports,1Ethernet port, embedded RTC		
Range of product Harmony Easy GXU		
Product or component type Advanced touchscreen panel		
Display type LCD touch screen		
Display resolution 800 x 480 pixels WVGA		
Display colour 65536 colours		
Backlight lifespan 20000 hours		
[Us] rated supply voltage 24 V DC		
Software designation Vijeo Designer Basic configuration software		
Memory description Internal, 48 MB for application Internal DDR, 128 MB Internal, 128 kB for backup		
Ambient air temperature for operation 0...50 °C		
Ambient air temperature for storage-20...60 °C		
IP degree of protection IP65 (front panel)		
Description	Requirement	Statement of Conformance
PLC (Programmable Logic Computer)		
Rated supply voltage:	24Vdc	
Discrete input number:	24 discrete input (4 fast input conforming to IEC 61131-2 Type 1)	
Discrete output number:	16 transistor (2 fast output)	
Memory capacity:	256kB user application and data RAM 10000 instructions 256kB internal variables RAM 256 kB built-in flash	



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Description	Requirement	Statement of Conformance
Data backed up:	Memory backup of application and data 2 GB SD card	
Battery type:	BR2032 or CR2032X lithium non-rechargeable	
Backup time:	1 year 77 °F (25 °C) by interruption of power supply	
Regulation loop:	Adjustable PID regulator up to 14 simultaneous loops	
Positioning functions:	PTO 2 pulse/direction 100 kHz) PTO 1 CW/CCW 100 kHz)	
Function Available:	PWM (Pulse Width Modulation)	
	PLS (Programmable Logic System)	
Counting input number:	Frequency generator	
	4 fast input (HSC mode) 100 kHz 32 bits	
Integrated connection type:	USB port mini B USB 2.0	
	Non isolated serial link serial	
	1 RJ45 RS232/RS485 Ethernet RJ45	
Communication port protocol:	USB port USB - SoMachine-Network Non isolated serial link master/slave - RTU/ASCII or Modbus SoMachine-Network Ethernet	
Port Ethernet:	10BASE-T/100BASE-TX 1 328.08ft (100 m) copper cable	
Communication Service:	Modbus TCP slave device	
	Ethernet/IP adapter	
	Modbus TCP server	
	Modbus TCP client	
	DHCP client	



AI MODULE		
Rated supply voltage:	24Vdc	
Analogue input number:	8 Analogue Inputs	
Analogue input type:	Current 4...20 mA	
	Current 0...20 mA	
	Voltage 0...10 V	
	Voltage - 10...10 V	
Permissible continuous overload:	13 V, analogue input type: voltage 40 mA, analogue input type: current	
Surge withstand:	1 kV power supply common mode conforming to EN/IEC 61000-4-5	
	0.5 kV power supply differential mode conforming to EN/IEC 61000-4-5	
	1 kV input common mode conforming to EN/IEC 61000-4-5	
Mounting support:	Top hat type TH35-15 rail conforming to IEC 60715	
	Top hat type TH35-7.5 rail conforming to IEC 60715	
	Plate or panel with fixing kit	
Turbidity controller		
Measure range:	0 to 10 NTU	
Power supply:	AC Voltage : 220V	
Output signal:	Relay, 4-20mA, RS485	
Turbidity sensor:	RMD-Z5-1	
Temperature range:	0-60°C	
Pressure range: (5m cable length without temperature compensation Flow through type)	0 to 2bar	



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Chlorine Residual		
Measure range:	0 to 20mg/L	
Power supply:	AC220V	
Output signal:	Relay, 4-20mA, RS485	
Chlorine sensor:	Relay, 4-20mA, RS485	
Temperature range:	0 - 60°C	
Pressure range:	0 to 1bar	
(Constant voltage type 5m cable length, pin type wiring without temperature compensation Flow through type)		
Pressure transmitter (Discharge pressure monitoring)		
Range:	0-80psi	
Signal Output:	24VDC, 4-20mA, 2-wire	
Process connection:	1/4"NPT(M), SS304	
Electrical connection:	DIN 43650, IP65	
Pressure transmitter (Well and Tank level monitoring)		
Range:	0-5bar (0-50m H ₂ O)	
Cable length:	50meters PUR cable	
Signal Output:	24VDC, 4-20mA, 2-wire	
Atmospheric Humidity Sensor		
Range:	Humidity:0-100%RH	
Resolution:	Humidity: ±3%RH	
Accuracy:	Humidity: 0.5%RH	
Supply :	24VDC	
Output Signal :	4-20mA	
(With Solar Radiation Shield 3m Cable Length)	24VDC 4-20mA	



4.0 LIST OF HMI ALARM

No.	Alarms	Statement of Conformance
1	Low Voltage	
2	High Voltage	
3	Over Current	
4	Water Reservoir Low Level	
5	Water Reservoir High Level	
6	Chlorine leak	
7	Chlorine low in terms of weight	
8	Discharge Valve Close / Open	
9	Discharge line High pressure	
10	Discharge line Low Pressure	
11	Motor Control Panel Tripped	
12	Submersible motor tripped off	
13	Motor Control Panel High Temperature	
14	Well water Level Low	
15	Power Utility / Generator Power	

5.0 ALARM MESSAGES VIA SMS

No.	Alarms	Statement of Conformance
1	Submersible Motor Stop	
2	Submersible Motor Running	
3	Submersible motor Tripped	
4	Submersible motor Tripped Reset	
5	Voltage Monitor Tripped	
6	Voltage Monitor Tripped Reset	
7	Main Contactor Closed	
8	Main Contactor Open	
9	Chlorine Leak	
10	Discharge line High pressure	
11	Power Utility Power	
12	Genset Power	



6.0 INTEGRATION OF EXISTING ELECTRICAL COMPONENTS

Particulars	Requirements	Statement of Conformance
Existing Electromagnetic Flow Meter	The winning bidder shall integrate the Flow Meter to be connected to the PLC by means of any communication protocol and the data collected shall be displayed and monitored at the command and monitoring center such as but not limited to flow rate, total volume, total volume of reverse flow and water velocity.	
Existing SS/SS and VFD Motor Controller	The winning bidder shall integrate all existing motor controllers to the Programmable Logic Controller. It can be controlled and monitored in the command and monitoring center such as but not limited to voltage, current, fault and fault history.	
Existing Fault Monitoring Devices	The winning bidder shall integrate existing fault monitoring devices, such as voltage monitor, floatless relay and EOCRs to the Programmable Logic Controller. The fault status shall be logged to the alarm reports with exact time of fault.	
. Existing Standby Generator Set	The winning bidder shall integrate all existing standby Generator Set to the Programmable Logic Controller. It can be controlled and monitored in the command and monitoring center.	
API	The winning bidder shall provide API (Application Programmers Interface) for the data acquisition and future customization.	



7.0 OTHER REQUIREMENTS

Requirements	Statement of Conformance
<p>Reports During fault alarms of VFD, soft starter, pressure, flow and other protective devices to command center.</p>	
<p>Trends and Data Logging GSCWD will provide the list of variables to be included in the trend and shall be logged continuously in the hard drive for historical trending with reference to the monitoring requirements.</p>	
<p>After Sales Service After the final acceptance, the contractor shall conduct a monthly site visit within the warranty period. The contractor shall have 24/7 availability of technicians within Mindanao Island.</p>	
<p>WARRANTY All components shall be guaranteed against defects in workmanship and materials for a period of two (2) years from the date of project completion. Defective components or parts discovered within the warranty period shall be replaced without charge or additional cost to GSCWD.</p>	
<p>Trainings / Transfer of Technology The winning bidder shall provide training of the set-up and configuration of all equipment and shall conduct especial training on PLC without additional cost to General Santos City Water District.</p>	
<p>Bidders Qualification</p> <ul style="list-style-type: none"> ➤ Bidder must have a Regional Presence or a Regional Service/Support Partner/Center within Mindanao. ➤ Bidders must be an Authorized Distributor, Reseller, Partner or Dealer of the Equipment Manufacturer. ➤ Bidder must be the exclusive or authorized distributor of the principal company of the equipment and the necessary consumables in the Philippines. ➤ Bidder must have an experience of having completed at least Three (3) contracts that is similar to the contract to be bid, and at least one (1) contract whose value should be equivalent to at least fifty percent (50%) of the ABC of this project. 	



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| <p>➤ Bidders must have been in the business for at least Five (5) Years of providing SCADA system solution and Services in government or private sectors.</p> | |
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8.0 Personnel Requirement

The contractor shall provide a minimum number of personnel for the project, as detailed in the table below. These roles and responsibilities ensure thorough coverage of all project aspects.

Quantity	Description
1	Project Engineer (PEE)
3	Technical Engineers (REE)

To ensure qualified personnel, all professionals must have unexpired PRC licenses.

9.0 SCHEDULE OF PAYMENT

The contract duration is one hundred twenty (120C.D.) Calendar Days starting upon receipt of Purchase Order. All reports and related documents must be submitted to the GSCWD project engineer and should be officially acknowledged monthly. The following are the schedule of payments:

Payment	Description	Percentage of contract price	Remarks
First Payment	Upon reaching 40% of project accomplishment.	15%	With 5% retention and surety bond 15% of the contract price
Final Payment	Upon project completion and acceptance.	85%	With 5% retention
Total		100%	

Note: Release of retention is one year after acceptance of the project.



10.0 TERMS AND CONDITION

No.	TERMS AND CONDITIONS
1	The winning bidder shall observed good housekeeping during the entire duration of the project. They shall be responsible of their own materials, equipments and tools to avoid accident to happen in the work place.
2	<p>The winning bidder shall be liable for any damages to materials, electro-mechanical equipments such as but not limited to submersible motor, flow meters, pumps, motor controllers and other electro-mechanical devices during testing and commissioning of the SCADA project. And shall be required to replace immediately to any incur defects without cost to GSCWD.</p> <p>➤ The GSCWD shall issue MOA stating that all electro-mechanical equipments thereof as well as all facilities found therein are one hundred percent (100%) maintained and good working condition before commencement of the project. Any damages incur during the implementation of SCADA project, the winning bidder is held liable for any abnormalities and defects found.</p>
3	In accordance with the Electricity Safety Regulations, successful bidders are obligated to ensure that unsafe wiring or equipment is neither connected to an electrical installation nor left connected under hazardous conditions. Furthermore, with regard to the management of potentially dangerous energy sources, the standard mandates the isolation of machinery and equipment from these sources and the application of locking or tagging procedures before any servicing activities take place.
4	All bidders is required to submit and include documents but not limited to manuals, data sheets, Test Certificate and Manufacturers Certificate to all electrical and mechanical components in there bidding documents.
5	That during the installation and commissioning of the SCADA System, the winning bidder shall be required to send a technician responsible of commissioning. All relevant and incidental cost (transportation, accommodation, allowances and etc.) in the commissioning of the SCADA System shall be shouldered by the winning bidder.



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6	The certificate of acceptance shall be release only if the project is 100% working condition.	
7	The winning bidder shall be subjected to Liquidated Damages (LD) for each day of delay as provided by the IRR of RA 9184.	

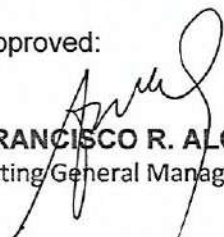
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