QCDRRMO-24-EHSE-0124
Line 3

SUPPLY, DELIVERY, INSTALLATION, TESTING, AND COMMISSIONING OF RIVER FLOW MONITORING AND RISK ANALYSIS SYSTEM

I. RATIONALE AND BRIEF BACKGROUND

Flooding occurs most commonly from heavy rainfall when natural watercourses lack the capacity to convey excess water. Various climatic and non-climatic processes can result in different types of floods: riverine floods, flash floods, urban floods and other factors. Given that Quezon City is highly susceptible to evolving disaster risks due to multiple hazards, it is therefore a must to continuously improve on this matter and invest on modern technologies that will promote knowledge building, awareness raising and disaster preparedness not just for the CDRRMO but to the citizens of Quezon City.

By installing river flow monitor sensors within the major river systems within the city, the CDRRMO will be able to create an index to identify the role of river systems on the flooding occurrences within the city. The sensors will serve as an enhancement to the currently installed river and street flood sensors in the city.

II. PROJECT DESCRIPTION

The concept of the project is to identify the role of river systems on the flooding occurrences within the city. The CDRRMO hopes to install river flow monitor sensors so that its data can act as an early warning indicator of possible flooding, thus improving the flood monitoring and forecasting system of the city.

Since these are critical systems for disaster preparedness, the CDRRMO recommends a system that is already existing and proven working by other Local Government Units in Metro Manila. The CDRRMO is aiming to have a system aligned with SMART CITY models or solutions that are automated, faster to implement, easy to manage, and more cost effective. In addition, the datasets of the sensors should be seamlessly integrated to the existing iRise UP data display and data management system (cloud-based and QCITDD).

III. PROJECT SCOPE OF WORK

The CDRRMO plans to install three (3) river flow monitoring sensors within the City identified by CDRRMO to identify the role of river systems on flooding occurrences within the city. The datasets will then be integrated into the existing data display and data management system (cloud-based and QCITDD) of CDRRMO along with the previously procured sensors.

System Output

- Three (3) Operational River Flow Monitoring Sensors
- River Flow Monitoring And Risk Analysis System
    - Data Display
    - Report
    - Alerts
    - Integration
    - Data Backup/Redundancy
    - Historical data

Technical Specifications

Lot	Description	Delivery Time

1 Lot	**THREE (3) RIVER FLOW MONITORING SENSORS**
	
	Flow Velocity Sensor
	• Power supply: 6 to 30 V
	• Power consumption at
	• 12 VDC: Active measurement approx. 110 mA
	• Outputs: RS-485 ASCII / Modbus RTU SDI-12
	• Operating temperature: -40 to 75 °C
	• Storage temperature: -40 to 60 °C
	• Relative humidity: 0 to 100 %
	• Protection rating: IP67
	• Detectable measurement range: 0.08 to 18 m/s (depending on waves)
	• Accuracy: ± 0.01 m/s
	• Resolution: 1 mm/s
	• Direction recognition: +/-
	• Measurement duration: 5 to 240 s
	• Measurement interval: 8s to 5 h
	• Measurement frequency: 24 GHz (K-Band)
	• Radar opening angle: 12°
	• Distance to water surface:
	  ○ 0.50...130 m
	  ○ 0.05...130 m
	• Automatic vertical angle compensation
	  ○ Accuracy: ± 1 °
	  ○ Resolution: ± 0.1 °
	• Solar Power Set
	• Cage
	• Equipment Calibration
	
	Data Logger:
	• Protection Class: IP67
	• Remote Data Transmission via 2G/4G modem
	• Sensor supply: 5 /100 mA or 12 V / 200 mA
		Sixty (60) Calendar Days

	• Reference voltage 2.5 V for potentiometer (max. 4 mA) • Number of channels up to 99 • Operating temperature -35 DegC to 60 DegC	
	SENSOR SERVICE REPLACEMENT, MAINTENANCE, WARRANTY AND DATA SUBSCRIPTION **Quarterly checking of station such as:** • Flow Velocity Sensor • Data logger • Battery • Solar Charge Controller • Solar Panel • Three (3) years coverage **Replacement of devices and accessories such as:** • Flow Velocity Sensor • Data logger • Battery • Solar Panel • Solar Charge Controller • Three (3) years coverage **Emergency Repair and Maintenance** • 24/7 Availability of Personnel • Three (3) years coverage **Data Connectivity Subscription** • Three (3) years coverage	
	RIVER FLOW MONITORING AND RISK ANALYSIS SYSTEM **Data Display** • GIS, Table, Graph and Threat Matrix display of real-time and historical of river flow velocity data • GIS analysis overlaying river flow velocity data • Menu & Settings to display clustered view and per sensor view **Report** • Report Facility to assign automated email reports per location and its recipients • Email (HTML) Format **Alerts** • Alert Facility to provide river flow velocity monitoring and early warning alerts	

	• Integrated to existing Telegram alerts for group alerts **Integration** • Integration to existing web application and data dump system (cloud-based and QCITDD) • Integration to iRISE UP application **Data Backup/Redundancy** • Data dumps are to be performed every 15 minutes or shorter (all details pertaining to access to the QCDRRMO database such as address or URL to a management console, user ID and password are to be given to QCDRRMO). • Perform redundant data writes to an ITDD database • Historical data must be stored in the existing QCDRRMO database with redundancy on the ITDD database. **Software License** • Perpetual Software License with three (3) years technical support and maintenance	
	SENSOR INSTALLATION • Three (3) Locations • Site Survey • Installation and Calibration • Engineering works	
	TRAINING • Two (2) days end user orientation for processing of datasets, analysis of datasets, and generation of river flow velocity report. • All training will have eight (8) hours per day with five (5) attendees.	

IV. AREA OF COVERAGE

The sensor installation will cover three (3) locations within Quezon City and will be identified by the Emergency Operations Center (EOC) during the start of implementation.

V. PROJECT STANDARDS AND REQUIREMENTS

Bidders should have completed, a single contract that is similar to this Project or related to Supply, Installation and Maintenance of meteorological devices and data processing systems, equivalent to at least fifty percent (50%) of the ABC three

(3) years from the date of submission and receipt of bids, a contract similar to the project.

Bidders should have at least one (1) field staff for the installation and three (3) years on-going support and maintenance of three (3) sensors. Bidders should have demonstrated experience and capacity to manage community based early warning systems in a highly urbanized city (HUC) in Metro Manila.

Bidders should have at least one (1) Meteorologist and one (1) IT-Data Science resources for Training and continuous consultation within the project as this is a science-based data driven project.

VI. PROJECT DURATION

The delivery period of the Project shall be within **sixty (60) calendar days** after the issuance of the Notice to Proceed.

VII. APPROVED BUDGET FOR THE CONTRACT

The approved budget for the contract amounts to **fifteen million six hundred thousand pesos (P15,600,000).**

ITEM	BUDGET (PHP)
1. THREE (3) RIVER FLOW MONITORING SENSORS	6,900,000
2. SENSOR SERVICE REPLACEMENT, MAINTENANCE, WARRANTY AND DATA SUBSCRIPTION	1,500,000
3. RIVER FLOW MONITORING AND RISK ANALYSIS SYSTEM	6,500,000
4. SENSOR INSTALLATION	600,000
5. TRAINING	100,000
TOTAL	**15,600,000**

VIII. BASIS OF PAYMENT

Below are the deliverables that will be used as the basis for full payment.

Item	Deliverables	Payment Percentage
Delivery & Installation of three (3) River Flow Monitoring Sensor Set Solar Panel and Data Connectivity	Project Acceptance Document: Receipt, Inventory, Installation Completion and Maintenance & Warranty Certificate	15%
Delivery of River Flow Monitoring And Risk Analysis System	Project Acceptance Document: Fully delivered system and documentation	75%
Training	Training Certificate	10%

IX. PENALTIES FOR BREACH OF CONTRACT

Incomplete and delayed delivery will result in penalties based on standard Government implementing rules and regulations.

Due to the nature of the system, technical support on the cloud-based application must be readily available for emergency repair and maintenance works.

X. CANCELLATION FOR OR TERMINATION OF CONTRACT

Incomplete and delayed delivery and non-performance of services will result in penalties and termination of contract based on standard Government implementing rules and regulations.

Prepared and recommended by:

ERWIN CARLOS N. VALDEZ
Deputy for Operations
Quezon City Disaster Risk Reduction &
Management Office (QCDRRMO)

Noted by:

EnP MA. BIANCA D. PEREZ
Officer-in-Charge
Quezon City Disaster Risk Reduction &
Management Office (QCDRRMO)