TERMS OF REFERENCE (TOR)

SUPPLY AND INSTALLATION OF SEISMIC ACCELEROGRAPH RECORDER AT VARIOUS BUILDINGS WITHIN QUEZON CITY HALL COMPOUND

I. RATIONALE AND BACKGROUND

The Quezon City Government, under the present administration, seeks to maintain safe and sound working environment for the benefits of the officials, employees and transacting public within the Quezon City Hall Compound.

II. PROJECT OBJECTIVES

This project aims to improve public safety against seismic events, enhance earthquake preparedness and response, and reduce post-earthquake downtime in Quezon City Hall Compound by installing sensors that will provide real-time data on the actual dynamic behavior of buildings under earthquake loadings.

This project also aims to comply with the National Building Code of the Philippines and the National Structural Code of the Philippines.

III. PROJECT SCOPE OF WORK

The Scope of Work under this project aims to ensure attainment of the Project Objectives.

The scope of work for the Supply and Installation of Seismic Accelerograph Recorder at various Buildings within Quezon City Hall Compound shall include, but not limited to, the following:

1. Coordinate with the Quezon City Disaster Risk Reduction Management Office (QCDRRMO), City General Services Department and other concerned offices, in the installation of the subject seismometers, submission of reports, and in the conduct of other related activities.
2. Conduct inspection to determine optimal location of devices in accordance with the DPWH Guidelines.
3. Supply and installation of cables and conduits.
4. Locate and mark reinforcement bars and/or electrical and plumbing lines using electromagnetic rebar scanner prior to coring.
5. Conduct coring works.
6. Supply and installation of conduit fittings and IMC pipes.
7. Application of fire-stopping sealant.
8. Supply and installation of Accelerographs and unattended Ethernet Switch.
9. Fabrication and installation of enclosures.
10. Level the Accelerographs using its built-in leveling feet and bubble level.
11. Installation and set-up of computer monitoring unit with installed Strong Motion Analysis Software for data auto-processing.
12. Programming, configuration, customization, and commissioning for data auto-processing.

BAGONG PILIPINAS
VISION : The General Services Department envisions itself to be a Quality Community within the Quezon City Government by delivering responsive and quality general services through committed, service-oriented and technologically advanced personnel.
MISSION : We provide the delivery of general services to the Quezon City Government and its constituents that are: EFFECTIVE, EFFICIENT and ECONOMICAL.
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13. Installation of uninterruptible power supply.
14. Submit As-built drawings, wiring diagrams, and shop drawings.
15. Submit operations and maintenance manual.
16. Hauling and demobilization.
17. Restoration of all ground works/ civil works.
18. Provide training and orientation for the use of devices and software.
19. Submit findings and recommendation.
20. Testing and commissioning.
21. Restoration of any damages that may occur during the conduction of the scope of works.
22. Integrate the relevant recording instruments with data servers for continuous, real-time monitoring.
23. Ensure integration and data collection with data servers for data protection in compliance with the Data Privacy Act of 2012.
24. Shoulder all costs for hosting the database for five (5) years.
25. In coordination with the QC Government, develop an open-access website for monitoring all the buildings in the QC Hall complex with installed earthquake recording instruments.
26. Develop an API for integration into the QC Emergency Operations Center and/or the Office of the QC Building Official.
27. Maintain the seismic accelerograph recorders every quarter within the first year of installation by cleaning, inspection and submission of reports indicating action taken, services rendered, findings and recommendations.

TECHNICAL SPECIFICATIONS:

Sensors

Type: Triaxial MEMS Strong Motion Accelerometer, Orthogonal
Weak Motion Seismometer, Vertical
Full scale range: User selectable at ±1g, ±2g
Bandwidth: DC to 100Hz
Offset: Factory set, calibration not necessary over time

Digitizer

Type: 24-bit ADC Sigma-Delta
Channels: 4 sensor channels
Dynamic range: 144 dB
Sample rate: 100 sps
Acquisition modes: Continuous, triggered (event-based)
Calibration: Pulse and sensor response tests
Damping: 0.7

Trigger

Trigger selection: Independently selected for each channel
Trigger: Threshold, from 0.01% to 100% of full scale
Trigger voting: Internal and networked voting

Timing

Type: NTP, GPS option available
Accuracy: Accurate within 1 sample or 1/100 sec
Interval: 1/100 sec

Data Storage

Memory: Up to 32 GB internal SDHC, commercial grade
Data: Local or remote offload

Recording Characteristics

Sampling: 100 sps
Event acquisition: Continuous, pre-event and post-event clipping is user selectable

RMS noise: 30 µg over 40Hz
AD Converter: 24 bits

Communications

Wired: Ethernet 10 base-T or 100 base-TX
Protocols: TCP/IP, FTP, SFTP
Wireless: Wi-Fi, Long Range Wide Area Network (LoRaWAN) option available

Environment

Dimensions: 160mm x 160mm x 95mm
Ingress protection: IP67, NEMA 6P

Power

Input power: 110-240 VAC
Protection: Internal regulator and battery backup
Power Consumption: Start-up: 5Volts, 0.550Amps
Runtime: 5Volts, 0.460Amps
Internal Battery: Lithium Polymer 3.7Volts 2000mAh

Others

Reliability: 50,000Hrs Mean Time Between Failures
Fault detection: LEDs, alarms, remote display
Interfaces: USB, HDMI
Power back-up: Uninterruptible power supply (UPS)
1000VA option available

- Liabilities of Service Provider:

1. The service provider shall indemnify and keep indemnified the City against all losses and claims for injuries or damage to any person or property whatsoever which may arise or consequence of the performance of this agreement and against all claims, demands, proceedings, damages, cost, charges and expenses whatsoever in respect of or in relation thereto.
2. The service provider agrees that the City shall be free from any liability to any accident at the service provider's personal doing to implementation of the contract.

IV. AREA OF COVERAGE

a. High Rise Building – 3 units
b. Legislative Building – 2 units
c. CTO Annex Building – 2 units
d. Civic Center Building A – 3 units
e. Civic Center Building B – 3 units
f. Civic Center Building C – 1 unit
g. Civic Center Building D – 3 units
h. Civic Center Building E – 2 units
i. Civic Center Building F – 3 units
j. QC Health Building – 3 units
k. NGO Building – 2 units
l. DRRMO Building – 2 units
m. DPOS Building – 2 units
n. Police Detachment – 1 unit
o. Community Center Building – 1 unit
p. CGSD Motorpool – 1 unit
q. MRF Building – 1 unit
r. Public Library Building – 1 unit
s. Yakap Day Care Center – 1 unit
t. Multi-Level Parking (Free Field) – 1 unit

All within Quezon City Hall Compound

V. PROJECT STANDARDS & REQUIREMENT

The following are the minimum qualifications and requirements for the service provider:

- Track record
  - The service provider shall have at least three (3) years actual experience in installation and maintenance of seismic accelerograph recorder and other related equipment.
- Organization
  - The service provider shall submit its detailed organization chart which shall indicate an established organizational structure of technical personnel to show its capability to undertake the project.
- Manpower
  - The service provider shall provide at least four (4) technical personnel with Certificate of Training and wearing proper personal protective equipment in conducting the installation works.
  - All services to be rendered must be supervised by one (1) accredited Safety Officer whom is required to provide Certificate of Registration.

VI. PROJECT DURATION

The project has a duration of ninety (90) calendar days upon issuance of the Notice to Proceed.

VII. WARRANTY

The service provider shall provide five (5) years warranty for the equipment and workmanship.

VIII. APPROVED BUDGET FOR THE CONTRACT

The City has set an Approved Budget for the Contract (ABC) of NINE MILLION NINE HUNDRED NINETY-NINE THOUSAND NINE HUNDRED NINETY-NINE PESOS AND 82/100 PESOS ONLY (P9,999,999.82).

- No Price Adjustment
- The Project cost shall be fixed and there shall be no price adjustments applicable for the duration of the contract except when the operations cost are increased by more than 10% as a result of any extraordinary circumstance as determined by the National Economic Development Authority (NEDA). Pursuant to the provisions of RA 12009 and its IRR on contract price escalation, all contract price escalation shall be approved by the Government Procurement Policy Board (GPPB).

IX. BASIS OF PAYMENT

One-time payment upon completion of the scope of work.

X. PENALTIES FOR BREACH OF CONTRACT

Failure to deliver the services according to the standards and requirements set by the City shall constitute an offense and shall subject the Contractor to penalties and/or liquidated damages pursuant to RA 12009 and its revised Implementing Rules and Regulations.

XI. CANCELLATION OR TERMINATION OF CONTRACT

The guidelines contained in RA 12009 and its revised IRR shall be followed in the termination of any service contract. In the event the City terminated the Contract due to default insolvency, or for cause, it may enter into a contract pursuant to RA 12009 and its IRR.

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