No.I-17018/Proc./1420/HQ DG NDRF/2018/125

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Dated, the 13 February, 2018

Subject:- **Swiss Challenge Method – Uploading on NDRF web Site/ CPP Portal**

It is to inform that National Disaster Response Force (NDRF) intends to procure **Early earthquake warning and security system** Qty – 01 Nos. through Single Tender Enquiry on operational trial basis. The details is as under:-

Sl.No.	Nomenclature of the equipment	Specification & Description of Equipment	Qty.
1.	Early earthquake warning and security system	Attached as **Appendix – "A"**	01 No.

2. All potential OEMs are hereby requested to submit their offer for above equipment in following proforma **within one week** from the date of uploading on NDRF Web site/ CPP Portal.

Sl.No.	Nomenclature of the equipment	Specification & Description of Equipment & Model	Qty

Note:- This quote will not be an offer or procurement but only as Technical Guidance for further reference.

Signature authority of Firm.

Encl: Appendix – A (4 pages)

(Keshav Kumar)
Second-In-Command (Proc.)
HQ DG NDRF

Copy to:

IT Cell, HQ NDRF for needful action please.

Directorate General, NDRF * Procurement A Wing 2nd Floor L. N. Bhawan Khan Market, N.D. *

Appendix –A

TECHNICAL SPECIFICATIONS OF EARTHQUAKE MASTER DETECTOR & SUB MASTER DETECTOR

Ministry of Earth Sciences, Bureau of Indian Standards and NDMA have not framed any particular specification for such EWS. We relied on the specifications of the EWS installed by Haryana Institute of Public Administration, Gurugram (A venture of Haryana Government) and NIT of Hindustan Prefab Limited (A venture of Government of India). The details of specifications of Earthquake Onsite Early Warning and Security System and Indoor and outdoor siren are as under:

I. EARTHQUAKE MASTER DETECTOR

1. Applications:

- Early Warning through Indoor and outdoor siren.
- SMS or email alert warnings to designated group.
- Coded system access only to authorized personnel.
- Test alarm function
- Close gas and water valves
- Shut off electricity
- Park elevators and escalators
- Open safety and security gates automatically
- Activate power generators
- Switch on emergency lights
- Switch signals for bridges and tunnels
- Controls traffic / railways signal
- Create redundant net works
- Signals could be integrated as per other any specific requirement.

2. Conditions:

- System Capable of working on Power supply of 12/24/110/230V
- The product should have been accepted and installed in India in any government establishment.
- The product capable to generate SMS or Email alerts.
- System should be capable to integrate with Building Management System (BMS) as per applications stated under Para above as Applications.
- The product should be capable to trigger on the primary wave of the earthquake (8 threshold level (0.015g -0.4g) and triggering on different threshold levels, certified by any Indian Scientific Institution.

- The product should have proven record of triggering of early warning of earthquake at any place of installation.
- The product must have sensor test facility 24x7, in case of a sensor problem via LED and RELAY to BMS.
- The product should have proven test reports from two or more different reputed scientific institutions or universities.

3. Specifications of System Sensors:

- Electronic sensor (3-Axis), Analysis method- 3 Analog devices sensors, installed in the system in 3 directions (X, Y and Z axis) making 3 axis capable of analyzing the acceleration of the ground motion from all directions.
- Operating Range: DC - 40 Hz
- Lowest Threshold for monitoring the system: 0.3 m/s2
- Sensitivity: 1V/g + 4%
- Nonlinearity: < 2.5%
- Cross Sensitivity : <3%
- Noise: ~0.01m/s2

4. Features/Components of Master Detector:

- Providing and fixing of Battery back up to avoid voltage fluctuations/power failure for 10 indoor Alarms.
- Relay controlled connections for Sirens.
- Relay connection for the commissioning of indoor/ public warning sirens.
- Relay connector for gas valve up to 16A.
- Relay connection for 3 indicators (status, alarm, error) to the building control.
- Single relay for 8 thresholds for building control.
- Indication of the system status via LED.
- Sabotage contact in every device.
- Master System Installed in Protected Weatherproof case.

II. EARTHQUAKE DETECTOR SUB MASTER

Sub Master connecting to Master system via bus cable, compulsory for redundant configuration capable of running on power supply of 12/24/110/230V supported by:

- Battery back up to avoids voltage fluctuations/ power failure.
- Relay connections for Sirens.
- Relay connection for the commissioning of indoor/ public warning sirens.
- Relay connector for gas valve up to 16A.
- Relay connection for 3 indicators (status, alarm, error) to the building control.
- Single relay for 8 thresholds for building control.

- Capable of Indication of the system status via LED.
- Sub Master System Installed in Protected Weatherproof case.
- Capable of displaying on the system helping user's as guide.

Essential Accessories

i. Indoor Siren:

- Optic and Acoustic Alarms Red or Blue color.
- Power supply 12V DC, 250 mA
- Housing of the Alarms - Koli Carbonates.
- Capacity Volume of alarms - 110 + 5 dB.
- Terminal block for housing of connection
- Siren connected in parallel

ii. Public Siren compatible to Earthquake Onsite Early warning System and security system:

a) **GENERAL:**

- Sound Pressure Level: >/= 115dB@30m Omni directional
- Siren-Speaker-Horns: Long Live Aluminum Directional Horn Assembly
- Single-Horn-Power: 125W max.
- Total Driver Power used: 900W
- Power Supply: Capable of working on Mains 220 V or Solar or Single Battery
- Standby Power back: To be provided by the bidder capable for 4 weeks without charging
- Operational temperature: -25°C up to +80°C

b) **SIREN HEAD**:

- Speaker Horn mounting on steel pole from 4.5" to 6" without any flange on Horn, or flange on pole, or any holes in mounting pole
- Capable of replacing Direct-Single-Horn any time.
- Single Speaker Horn- Driver max power 125W
- Siren-Speaker-Horns: Long Live Aluminum Directional Horn Assembly
- Lightning protection: Siren-Speaker-Array capable to have fully ground potential.
- All Speaker cable should be inside the pole or covered by metal structure for lightening protection.
- Total Number of Horn-Assembly: max 6
- Total Number of Driver used: max 6
- Total Weight Horn-Assembly: max 72kg
- Single-Horn-Mounting must be possible (for directional coverage)
- Twin-Horn-Mounting must achieve Omni directional coverage
- Speaker-Horn-Array must be easy extendable by minimum 50%

c) **ELECTRONICS:**

- Simple Single-Electronic-Module assembled on metal base plate.
- ONE Four-Channel Digital Amplifier (4x125W on 11Ohm), efficiency >90%
- Each Amplifier should support 4Siren Driver with independent Amp-Channel
- Nominal Amplifier Operation Voltage - 12V DC
- Direct 220VAC- Mains Operation without Battery should be possible with optional alternatives too.
- System Operation Voltage = 12V DC
- One 12V65Ah maintenance free VRLA-AGM-Type Battery must be sufficient for supply 30 minutes full/continuous operation.
- Local Control with basic siren features should be possible.
- Local Control with secured setup-functions.
- Local Control Alarm Activation with password only.
- Automatic Log-file for last 30days operations with date and time.
- Remote Idle (off) - function should be possible.
- Individual Amplifier Power measurements should be possible.
- Remote communication should be possible by a common interface module for integration of any remote control like Radio VHF/UHF digital or analog, GPRS/#G/LTE, Wi-Fi/ Wi MAX, IP/Ethernet must be possible.

d) **RADIO COMMUNICATION/CONTROL:**

- Communication over VHF/UHF- Analogue Radio-Chanel
- Two-way communication using semi-duplex
- Secured DATA-Packages against hacking
- Secured DATA-Packages against false-alarm
- Live P.A over the same Chanel as DATA
- For long distance a Chain communication (Storing and forwarding) should be Possible.

e) **CABLE:**

- Bus –Cat.7 4x2x0.5 mm2
- IY (St) Y 2x2x0.80 mm2 and 15 V cable for siren
- Main Voltage 110/230V: NYM 3x1.50 mm2

f) **INSTALLATION INCLUDING CABLING AND OTHER SERVICES LIKE:**

- Training of technical staff in the earthquake early warning.
- Training in earthquake.
- Training in behavioral measures.
- General Advice in earthquake.

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