**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**

ENGINEERING UNIT

CHENNAI – 600 036

**ITEM RATE TENDER**

**TENDER No. 11 / 2014-15 / ELDB**

**TECHNICAL BID (PART- A)**

**Name of Work:** Replacement of BMS System at PG Senapathy Centre for Computing Resources and Operation of the system for 5 years

**INDEX**

**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**

ENGINEERING UNIT

CHENNAI – 600 036

# INVITATION FOR BIDS

**TENDER NO. 11 / 2014-15 / ELDB**

EXECUTIVE ENGINEER (E), Indian Institute of Technology Madras, Chennai - 600 036 invites sealed tenders, in two envelope system ( Application for eligibility and financial bid) for the following work from the contractors who satisfy the Eligibility Criteria given below.

## 1. PARTICULARS OF WORK

| | |
|---|---|
| 1. Name of work: | Replacement of BMS System at PG Senapathy Centre for Computing Resources and Operation of the system for 5 years |
| 2. Estimated cost: | Rs. 1,47,04,000/- |
| 3. Earnest Money Deposit (EMD): | Rs. 2,94,080/- |
| 4. Cost of tender document: | Rs. 1,050/- |
| 5. Time period for completion: | Four months |
| 6. Validity of the tender: | Three months |
| 7. Date of Pre-bid Meeting: | 10/03/2014 at 11:00 AM |
| 8. Date and Time of submission of Tender | 24/03/2014 at 3:00 PM |
| 9. Date and time of opening of the Applications for eligibility (Envelope No. 1): | 24/03/2014 at 3:10 PM |
| 10. Date of opening of the Financial bid (Envelope 2) : | Will be intimated to all eligible applicants later |
| 11. Place of Receipt of tenders: | Office of the Executive Engineer (E),<br>Administrative Building, 3rd Floor,<br>Engineering Unit,<br>IIT Madras, Chennai – 600 036 |

## 2. ELIGIBILITY CRITERIA

2.1 Interested contractors should have successfully completed any of the following combination of similar works during last 7 years ending one month prior to the date of tender.

a. three similar works each costing not less than 40 % of the estimated cost or

b. two similar works each costing not less than 50% of the estimated cost (or)

c. one similar work costing not less than 80% of the estimated cost.

d. At least one of the above works should have been carried out in Central Govt/Central autonomous bodies/Central public sector undertaking. The technical bid will be rejected at initial level if the contractor doesn't meet the above norms. Proof of completion of similar works should be enclosed in technical bid. Copy of work order will not be considered as a proof of completion.

2.2. Should have an average annual financial turnover of Rs. 45 lakhs during the last 3 years ending 31–3–2013. This should be certified by a chartered accountant.

2.3. Should not have incurred any loss in more than two years during the last five years ending 31–3–2013

2.4. Should have a solvency of Rs. 30 Lakhs certified by the bankers of the applicant.

2.5. The applicant should have sufficient number of Technical and Administrative staff for the proper execution of the work. The applicant should submit a list of these employees stating clearly how they would be involved in this work.

2.6. The applicant's performance in respect of completed works and ongoing works should be certified by an officer not below the rank of Executive Engineer in case of Government works and Project Manager or equivalent officer for other works and should be obtained and delivered in sealed covers.

## 3. PROCEDURE FOR OBTAINING OF TENDER DOCUMENTS

3.1. The tender documents (application for eligibility and the tender) may be downloaded from the web site of IITM (http://tenders.iitm.ac.in ). The prescribed cost of tender document shall however, be paid along with application for eligibility.

3.2. The tender shall be submitted as a two envelope tender.

Envelope 1 shall contain

1. Letter of transmittal in the enclosed format.
2. Two crossed Demand Drafts - one for an amount of Rs. 2,94,080/- towards Earnest Money Deposit (EMD) and another for Rs. 1,050/- towards the cost of Tender Documents - both drawn in favour of IIT Madras and payable at Chennai.
3. The Technical bid (Part A) with all relevant documents shall be enclosed.
4. Page 12 may be cut and paste on top of the envelope for Technical Bid.

3.3. Envelope 2 shall contain the tender for the work with various conditions, specifications, Bill of quantity etc for the work. Page 13 may be cut and paste on top of the envelop for Financial Bid.

3.4 Both envelopes shall be placed in a third envelope and address of applicant, name of work, and the date of opening shall be written on the envelope. Page 13 may be cut and paste on top of the envelop for Tender document.

## 4.OPENING OF TENDERS

4.1 Tenders can be dropped in the tender box kept at the place of receipt of tenders up to 3.00 PM.

4.2. Tenders received will be opened after 3.10 P.M in the presence of tenderers or their authorized representatives.

4.3. Only Envelope 1 containing the Application for eligibility, EMD and the cost of tender will be opened.

4.4. Tender Documents received without EMD, and cost of tender document shall be summarily rejected.

4.5. The Envelope 2 of only those tenderers who qualify as per the eligibility criteria will be opened on a date which will be intimated later

## 5. EVALUATION OF APPLICATIONS FOR ELIGIBILITY.

5.1 The applications received along with the required EMD and the cost of tender shall be evaluated for eligibility to take part in the tendering process.

5.2. The applications will be evaluated for conformity to the eligibility criteria prescribed in 2.1.

5.3. The Indian Institute of Technology Madras reserves the right to restrict the list of eligible contractors to any number deemed suitable.

5.4. Even though an applicant may satisfy the specified criteria, he would be liable to disqualification if he has:

1. Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the application for eligibility.
2. Record of poor performance such as, slow progress of work, abandoning of work, not properly completing the contract, or financial failures/ weaknesses etc.

5.5 A list of eligible applicants whose financial bids will be opened shall be prepared and all concerned shall be intimated.

5.6. The Earnest Money of the Tenderers whose Technical Bid is found not acceptable will be returned as soon as scrutiny of Technical Bid has been completed by the Employer. After evaluation of the Financial Bids, the Earnest Money of unsuccessful Tenders will be returned within 28 days of the end of Tender Validity period.

The Earnest Money of the successful Tenderer will be taken as part of the Security Deposit as stipulated in Clause 1A of “General conditions of Contract”.

5.7 The employer reserves the right to accept or reject any application and to annul the qualification process / tender process and reject all applications at any time without assigning any reason or incurring any liability to the applicants.

## 6. INFORMATION AND INSTRUCTIONS TO APPLICANTS

6.1. **Definitions:**

The following words and expressions have their meaning here by assigned to them.

1. EMPLOYER means IIT Madras, Chennai - 36 acting through the Executive Engineer, Engineering Unit.

2. APPLICANT means individuals, proprietary firms, firm in partnership, limited company – private and Public Corporation

3. Engineer-in-charge means Executive Engineer, IIT Madras

**6.2 Information and Instructions**

1. The applicant is advised to visit the site of work at his own cost and examine it and its surroundings and collect all information that he considers necessary for proper assessment of prospective assignment.

2. The application should be type-written. The applicant should sign in each page of the application. Overwriting should be avoided. Correction, if any, shall be made by neatly crossing out, initialing, dating and rewriting.

3. All information called for in the enclosed forms should be furnished against the respective columns in the forms. If information is furnished in a separate document, reference to the same should be given against respective columns. Such separate documents shall be chronologically placed at the end of the prescribed application. If information is 'nil' it should also be mentioned as 'nil' or 'no such case'. If any particulars/query is not applicable in case of the applicant, it should be stated as 'not applicable'.

4. The applicants are cautioned that not giving complete information called for in the application forms required, not giving it in clear terms or making change in the prescribed forms or deliberately suppressing the information may result in the applicant being summarily disqualified.

5. The applicant may furnish any additional information, which he thinks is necessary to establish his capabilities to successfully complete the envisaged work. However the applicants are also advised not to attach superfluous/ additional information beyond the requirements of the Bid. No information will be entertained after the application is submitted, unless it is called for by the Institute

6. Applications made by Fax and those received late after the prescribed date and time will not be considered

7. Documents submitted in connection with the tender will be treated as confidential and will not be returned

6.3 **Authority to sign the application:**

1 If an individual makes the application, it shall be signed by him above his full type-written name and current address.

2. If a proprietary firm makes the application, it shall be signed by the proprietor (with seal) above his full typewritten name & the full name of his firm with its current address.

3. If the application is made by a firm in partnership, it shall be signed (with seal)by all the partners of the firm above their full typewritten names and current addresses or alternatively by a partner holding power of attorney for the firm in which case a certified copy of the power of attorney shall accompany the application. A certified copy of the partnership deed along with current addresses of all the partners of the firm shall also accompany the application.

4. If a limited company or a corporation makes the application, it shall be signed by a duly authorized person holding power of attorney for signing the application, in which case a certified copy of the power of attorney shall accompany the application. Such limited company or corporation may be required to furnish satisfactory evidence of its existence. The applicant shall also furnish a copy of the Memorandum of Articles of association duly attested by a Public notary.

**6.4 Clarification on tender document,.**

A prospective Tenderer requiring any clarification on the Tender Document may notify Executive Engineer, IIT Madras at Chennai. The Executive Engineer will respond to any request for clarification, which he receives earlier than 8 days prior to the deadline for submission of Tenders.

**6.5 Pre-bid meeting.**

The Tenderer or his authorized official representative is invited to attend a Pre-bid Meeting & which will take place at III Floor, Admin. Block IITM, Engineering Unit Chennai on 10.03.2014 at 11:00 AM. The purpose of the Meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. The Tenderers are required to submit questions if any in writing so as to reach the Executive Engineer (E), IITM before the pre bid meeting. Minutes of the Meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be transmitted without delay to all who have attended the Pre bid meeting. Any modification of the Tender Documents which may become necessary as a result of the Pre-bid meeting shall be made exclusively through the issue of an Addendum Non-attendance at the Pre-bid Meeting will not be a cause for disqualification of a Tenderer.

**6.6 Amendment to tender documents**

Before the deadline for submission of tenders, the tender document may be modified by issue of addenda. Any Addendum issued shall be part of the Tender Documents and shall be communicated in writing to all who have attended the pre-bid meeting. The prospective Tenderers shall acknowledge receipt of each Addendum in writing to the Executive Engineer, IIT Madras. To give prospective Tenderers reasonable time in which to take the Addenda into account in preparing their tenders, extension of the deadline for submission of Tenders may be given as necessary.

6.7 **Instructions for filling up the forms A & B**

**1. Financial Information**

The applicant should furnish the Annual financial statement for the last 5 years in form – A

2. **Information about works the**

List of all works of similar class successfully completed during last the 5 years in Form – B

3**. Letter of Transmittal**

The applicant should submit the letter of transmittal as per the format attached.

**7. OPENING OF FINANCIAL BIDS**

7.1 The Financial bids (Tender) of the eligible applicants shall be opened on the date and time to be intimated.

7.2 The Financial bids (Tender) of the non-eligible applicants shall be returned unopened.

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## 8. FORMS

### 1. LETTER OF TRANSMITTAL

To

**The Executive Engineer (E)**,
Engineering Unit,
IIT Madras, Chennai – 600 036

**Sub:**

Sir,

Having examined the details given in notice inviting qualification application and tender and the qualification documents for the above work, I/ We hereby submit the application for eligibility and the tender (financial bid) for the work duly filled in.

1. I / We here by certify that all the statement made and information supplied in the enclosed forms and accompanying statements are true and correct.

2. I / We have furnished all information and details necessary for deciding our eligibility to be qualified for taking part in the tendering process for the work. . We have no further information to supply.

3. I / We submit the requisite solvency certificate and authorize the Executive Engineer (E), Engineering Unit, IITM, Chennai to approach the bank concerned to confirm the correctness of the certificate. I / We also authorize the Executive Engineer (E) to approach individuals, firms and corporations to verify our competence and general reputation.

4. I / We submit the following certificates in support of our suitability, technical know how and capability for having successfully completed following works.

   Name of work Certificate from

5. I/We certify that that the tender documents downloaded and submitted is the exact replica of the document published by the IITM and no alterations and additions have been made by me / us in the tender document.

6. I am / We are aware that the Financial bid submitted by me/us will not be opened if I / We do not become eligible after evaluation of my/our application for eligibility.

Seal of the Applicant

Date of submission Signature(s) of the applicants

**FORM 'A'**

## FINANCIAL INFORMATION

I Financial Analysis –

Details to be furnished duly supported by figures in Balance Sheet / Profit and Loss Account for the last Five years duly certified by the Chartered Accountant, as submitted by the applicant to the Income-Tax Department (Copies to be attached)

| Sl No | Details | Year ending 31st March of 2013 | | | | |
|---|---|---|---|---|---|---|
| | | 2009 | 2010 | 2011 | 2012 | 2013 |
| 1 | Gross annual turnover in construction work | | | | | |
| 2 | Profit (+) / Loss (-) | | | | | |

II. Financial arrangement for carrying out the proposed work.

III. Income Tax PAN details

IV. Solvency certificate from Bankers of Applicant

SIGNATURE OF APPLICANT (S)

**Signature of Charted Accountant with seal**

**FORM 'B'**

**DETAILS OF ALL WORKS OF SIMILAR NATURE COMPLETED DURING THE LAST FIVE YEARS ENDING BY 31st MARCH 2013.**

| SL NO | Name of work/project & location | Owner or sponsoring organizations | Agreement No | Scope of work * | Cost of work in Crores | Date of commencement as per contract | Stipulated Date of completion | Actual date of completion | Litigation/ Arbitration pending / In progress with details ** | Name and address/ Tel No of Officer to whom reference may be made | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | | | | | | | | | | | |

*** indicate Number of stories in super structure.**

**** Indicate gross amount claimed and amount awarded by the Arbitrator**

**Signature of Applicant(s)**

**In case of works carried out for private persons / Organizations copies TDS certificate along with copy of performance order and work order / Agreement should be enclosed. Private works with out TDS certificates shall not be considered for valuation.**

Certified that the Application for Eligibility as published on the web contains 20 pages

-Sd-

Signature of the Contractor

Consultant (Elect)

-Sd-

Executive Engineer (E)

**Name of work:** Replacement of BMS System at PG Senapathy Centre for Computing Resources and Operation of the system for 5 years

**Brief Description of work:**

It is proposed to replace the existing Building Management System installed with fire and Security system installed at DATA CENTER of IIT Madras with new system with added function. The existing system supplied by M/s. HONEYWELL Automation limited has the following.

1. BMS — XL 100
2. EBI(Front end software) — EBI R300
3. Integration with the following software for monitoring.
    a. Fire Alarm panel — XL 50
    b. Fire suppression system — FPIIGR
    c. Water leakage detection system — SAINI
    d. Access control system — STAR II
    e. CCTV — PELCO DVR
    f. VESDA — Xtralis VLF
    g. PA system — BOSCH
    h. 12 Nos. of Precision AC units
    i. 14 Nos. of Comfort AC units
    j. 10 No. of UPS
    k. No. of Batteries: 120 AH-192 Nos,200AH-120 Nos,150AH-64 Nos,42 AH-68 Nos.
    l. No. of racks. Rack -9 Nos

It is proposed to provide a new IBMS with fire and Security system and retain NAF III gas based fire suppression system with suitable modification to the interfaces to suit the new IBMS.

1. Measurement of electrical energy consumption of each server rack.
2. Battery bank monitoring system to monitor cell level parameters for early warning of cell distress.
3. Monitoring the electrical parameters of the incoming supply.
4. Monitoring the electrical parameters of 2 Nos.600 kVA DG sets.

## Scope of work.

1. Providing new IP based BMS suitable for integration of the existing sub systems and with the above defined added function with 2 years of Defect Liability Period (DLP) with provision of 24 X 7 manned supervision, operation and maintenance.
2. Providing the required number of controllers and Meters.
3. Providing necessary converters wherever required to match the new IP based system.
4. Providing the CAT 6 cable wiring for interconnecting the components of the systems to the BMS.
5. Non Comprehensive AMC with 24 X 7 manned supervision, operation & maintenance of the system for the period of 5 years after DLP of 2 years and thereafter renewal of AMC for every year. The cost of renewal of AMC will not be more than 5% of the lat year quoted rate.
6. Buy back of existing system IBMS with allied fire & security system excluding NAF III gas based fire suppression system.

**BMS Software:**

The Building Management System (BMS) shall be a fully integrated building automation system, incorporating direct digital controllers (DDC) for energy management, equipment monitoring and control.

The essential function of the system shall be as follows:

-Centralized operation of the Data Center (remote control)

-Dynamic and animated graphic details of all components of the system.

-early recognition of the fault

-Faults statistics for identification

-Trend Register to identify discrepancies, energy consumption etc

-Prevention of unauthorized or unwanted access

-Own error diagnosis.

The management station software shall be modular, object oriented and shall be based on Window 7 or later standard 32/64 bit technology.

The main software applications shall include

..System viewer: Graphics based operation of the system.

..Trend viewer: Logging and display of measured values.

..Alarm viewer: Display of alarm messages

..Alarm Router: Automatic routing of alarms

.. Log Z Viewer: Logging of alarms system events and user activities

All the system and equipment requiring control and/or monitoring functions as defined in the scope of work shall be fitted with all necessary interfacing equipment readable by the BMS network.

The BMS system offered should be of freely programmable type.

Personnel computer based operator management stations shall be provided for supervision and operation, alarm management, information and database management function.

All real time control functions shall be resident in the DDC controllers to facilitate greater fault tolerances and reliability.

**Remote Monitoring and control:**

It shall be possible with additional hardware if necessary to interrogate the system remotely via the following methods;

.Building IT network

.Web browser technology with password access via IT networks accessing information stored.

.It shall be possible for the system to provide alarm reporting to mobile/pagers/phones/e-mail and access for energy usage monitoring and control via Building Management systems.

**Reports**

Reports shall provide the latest information from the system at specific times or when specific events occur. The following features shall be supported.

‘’Reports routed on basis of time and/or priority

‘’Manual/automatic triggering

‘’User definable or standard reports

‘’Facility to integrate 3rd party report programs into the management station software.

**Additional Function to be added to the BMS**

1. 12 Nos. server racks to be provided with multifunction electrical meters to measure and record all parameters including energy consumption in the BMS.
2. Nos. battery banks (details attached) are to be provided with battery bank monitoring system. The system shall be capable of monitoring each cell in the bank for its healthiness. In case of an impending failure of a cell the system shall provide an early warning. The system shall have provision to maintain the voltage across the defective cell to maintain the voltage of the bank and reduce damage to the cell in distress.
3. 2 Nos. 600 kVA DG sets are providing generator supply to the Data center. The sets are to be connected to the BMS to monitor all electrical parameters, time of start, time of stop, duration of running, energy produced and the fuel consumed.
4. The incoming electrical supply to be monitored in the BMS for all electrical parameters provided by a suitable multifunction meter.

**Operation and Maintenance**

The supplier of BMS shall supervise operate and maintain the system during DLP of 2 years from the date of handing over. The system shall be manned 24/7. The required number of personnel shall be deployed to supervise operate the system. No payment will be given for supervision, operation and maintaining the system during DLP of 2 years. The system as whole shall be maintained under Non Comprehensive AMC for 5 years after DLP.

**Details of existing system Installed by M/s. Honeywell Automation limited on 01/11/2006**

**Section A : Analog Addressable Fire Alarm System**

| | | | |
|---|---|---|---|
| | Supply, Installation, Testing and Commissioning of the following : | | |
| 1 | Analog Addressable Fire Alarm Panel with 2 loop cards, capable of communicating with fire graphics software & battery backup as per specification | 1 | No. |
| 2 | Analog Addressable Multi Detection Smoke Detector as per specification | 55 | Nos. |
| 3 | Addressable Heat Detector as per specification | 2 | |
| 4 | Addressable Manual Call Point as per specification | 2 | Nos. |
| 5 | Addressable Loop Powered Sounder as per specification | 6 | Nos. |
| 6 | Short Circuit Isolator as per specification | 3 | Nos. |
| 7 | Addressable Relay module for Precision AC (3), Comfort AC Tripping(4), Fire Damper closing (2) & Gas Release (12) as per specification | 15 | Nos. |
| 8 | Addressable input modules for aspiration system (8) / water leak (3) /Panic Bar (1) as per specification | 11 | Nos. |
| 9 | Fire Grahics Software with necessary interfaces with Fire Panel & IBMS Software as per specification | 1 | Copy |
| 10 | Panic Bar with LSA + Power Supply as per specification | 4 | No |
| 11 | Water leak tape interface module as per specification | 3 | Nos |
| 12 | Hand held Fire Extinguisher - NAF PIV - 5 Kg | 6 | Nos. |
| 13 | Hand held Fire Extinguisher - CO2 - 4.5 Kg | 4 | Nos |
| 14 | Hand held Fire Extinguisher - ABC Powder - 2 Kg | 5 | Nos |

**Section B : Aspirating Smoke Detection System**

| | | | |
|---|---|---|---|
| | Supply, Installation, Testing and Commissioning of : | | |
| 1 | 4 Channel VESDA Aspiration Detector within built programmer | 1 | |
| 2 | Power Supply Unit for above detector as per specification | 1 | |
| 3 | Capillary Tube with accessories as per specification | 25 | |
| 4 | Air Termination (Nozzle) as per specification | 25 | |

**Section C : Public Address System**

| | | | |
|---|---|---|---|
| 1 | 6 W Ceiling Speakers as per specification | 35 | Nos |
| 2 | 300 W Amplifier as per specification | 1 | No |
| 3 | Voice transmission with speech processor for fire alarm integration as per specification | 1 | Set |
| 4 | Table top Goose neck Microphone as per specification | 1 | No |
| 5 | 2 Core Speaker Wire in PVC Conduits as per specification | 600 | Mtrs. |

**Section D : Access Control System**

| | | | |
|---|---|---|---|
| 1 | Single Door controller with TCP IP connectivity & battery backup as per specification | 13 | Nos |
| 2 | Smart Card Reader (with sector reading capability) as per specification | 26 | Nos |
| 3 | Optic based Finger Print Reader as per specification | 4 | Nos |
| 4 | Electro Magnetic lock as per specification | 19 | Nos |
| 5 | Emergency door release as per specification | 13 | Nos |
| 6 | Magnetic contact for Access Control as per specification | 19 | Nos |
| 8 | Magnetic contact for Door Monitoring as per specification | 19 | Nos |
| 8 | Smart cards as per specification | 100 | Nos |
| 9 | Access Management Software as per specification | 1 | Copy |

**SECTION E : CCTV SYSTEM**

| | | | |
|---|---|---|---|
| 1 | 1/4" Color dome camera with 460 TV lines resolution with 3.6mm auto iris lens as per specification | 23 | Nos. |
| 2 | 1/3" color dome camera Min 480 TVL with 8mm lens | 2 | Nos. |
| 3 | IP 66 Weather Proof Outdoor Camera Housing as per specification | 2 | Nos |
| 3 | Power supply unit with battery backup as per specification | 8 | Nos. |
| 4 | 16 Channel digital Duplex colour multiplex recorder with 120GB hard disk, TCP/IP connectivity & Telemetry as per specification | 2 | Nos |

**Section F : NAF SIII Gas Based Fire Suppression System**

**I High Computing Room**

| | | | |
|---|---|---|---|
| 1 | NAF SIII SYSTEM | | |
| | 4 x 80 Ltrs Capacity Cylinders | | |
| | LPG 190 Discharge valve | | |
| | Centralized Hose | | |
| | Check Valve 1" | | |
| | TF 1/4" MG/MG x 580 Cone Hose | | |
| | Pneumatic cone + Elbow + Decompression Screw "L" | | |
| | Solenoid Valve | | |
| | Double Pneu Manual lever | | |
| | Accessories & Manifold | | |
| | Pressure Switch | | |
| | NAF SIII Gas - 235 Kgs | 1 | Set |

| | | | |
|---|---|---|---|
| 2 | Discharge Nozzle | 8 | Nos. |
| 3 | Gas Release panel | 1 | Mtr. |
| 4 | Electronic Hooter | 1 | No. |
| | **Room Dimensions** | | |
| | High Computing Room - 11.4 M x 12.6 M x 4.50 M | 646 | Cu Mtr |
| | Qty of NAF SIII Gas Required | 235 | Kgs |
| **II** | **Visitor Gallery** | | |
| 1 | NAF SIII SYSTEM | | |
| | 2 x 60 Ltrs Capacity Cylinders | | |
| | LPG 190 Discharge valve | | |
| | Centralized Hose | | |
| | Check Valve 1" | | |
| | TF 1/4" MG/MG x 580 Cone Hose | | |
| | Pneumatic cone + Elbow + Decompression Screw "L" | | |
| | Solenoid Valve | | |
| | Double Pneu Manual lever | | |
| | Accessories & Manifold | | |
| | Pressure Switch | | |
| | NAF SIII Gas - 101 Kgs | 1 | Set |
| 2 | Discharge Nozzle | 4 | Nos. |
| 3 | Gas Release panel | 1 | Mtr. |
| 4 | Electronic Hooter | 1 | No. |
| | **Room Dimensions** | | |
| | Visitor Gallery - 11.4 M x 5.4 M x 4.50 M | 277 | Cu Mtr |
| | Qty of NAF SIII Gas Required | 101 | Kgs |
| **III** | **Data Center** | | |
| 1 | NAF SIII SYSTEM | | |
| | 3 x 80 Ltrs Capacity Cylinders | | |
| | LPG 190 Discharge valve | | |
| | Centralized Hose | | |
| | Check Valve 1" | | |
| | TF 1/4" MG/MG x 580 Cone Hose | | |
| | Pneumatic cone + Elbow + Decompression Screw L" | | |
| | Solenoid Valve | | |
| | Double Pneu Manual lever | | |
| | Accessories & Manifold | | |
| | Pressure Switch | | |
| | NAF SIII Gas - 168 Kgs | 1 | Set |
| 2 | Discharge Nozzle | 6 | Nos. |
| 3 | Gas Release panel | 1 | Mtr. |
| 4 | Electronic Hooter | 1 | No. |
| | **Room Dimensions** | | |
| | Data Center - 11.4 M x 9.0 M x 4.50 M | 462 | Cu Mtr |
| | Qty of NAF SIII Gas Required | 168 | Kgs |

| | | | |
|---|---|---|---|
| **IV** | **Network Room** | | |
| 1 | NAF SIII SYSTEM | | |
| | 2 x 60 Ltrs Capacity Cylinders | | |
| | LPG 190 Discharge valve | | |
| | Centralized Hose | | |
| | Check Valve 1" | | |
| | TF 1/4" MG/MG x 580 Cone Hose | | |
| | Pneumatic cone + Elbow + Decompression Screw "L" | | |
| | Solenoid Valve | | |
| | Double Pneu Manual lever | | |
| | Accessories & Manifold | | |
| | Pressure Switch | | |
| | NAF SIII Gas - 88 Kgs | 1 | Set |
| 2 | Discharge Nozzle | 3 | Nos. |
| 3 | Gas Release panel | 1 | Mtr. |
| 4 | Electronic Hooter | 1 | No. |
| | **Room Dimensions** | | |
| | Net work Room - 9 M x 6 M x 4.50 M | 243 | Cu Mtr |
| | Qty of NAF SIII Gas Required | 88 | Kgs |
| **V** | **NOC Room** | | |
| 1 | NAF SIII SYSTEM | | |
| | 2 x 80 Ltrs Capacity Cylinders | | |
| | LPG 190 Discharge valve | | |
| | Centralized Hose | | |
| | Check Valve 1" | | |
| | TF 1/4" MG/MG x 580 Cone Hose | | |
| | Pneumatic cone + Elbow + Decompression Screw "L" | | |
| | Solenoid Valve | | |
| | Double Pneu Manual lever | | |
| | Accessories & Manifold | | |
| | Pressure Switch | | |
| | NAF SIII Gas - 107 Kgs | 1 | Set |
| 2 | Discharge Nozzle | 4 | Nos. |
| 3 | Gas Release panel | 1 | Mtr. |
| 4 | Electronic Hooter | 1 | No. |
| | **Room Dimensions** | | |
| | NOC Room - 65.52 Sq Mtrs x 4.5 M | 295 | Cu Mtr |
| | Qty of NAF SIII Gas Required | 107 | Kgs |
| **VI** | **UPS Room** | | |
| 1 | NAF SIII SYSTEM | | |
| | 3 x 60 Ltrs Capacity Cylinders | | |
| | LPG 190 Discharge valve | | |
| | Centralized Hose | | |
| | Check Valve 1" | | |
| | TF 1/4" MG/MG x 580 Cone Hose | | |

| | | | |
|---|---|---|---|
| | Pneumatic cone + Elbow + Decompression Screw "L" | | |
| | Solenoid Valve | | |
| | Double Pneu Manual lever | | |
| | Accessories & Manifold | | |
| | Pressure Switch | | |
| | NAF SIII Gas - 148 Kgs | 1 | Set |
| 2 | Discharge Nozzle | 9 | Nos. |
| 3 | Gas Release panel | 1 | Mtr. |
| 4 | Electronic Hooter | 1 | No. |
| 5 | 2C x 1.5 Sq.mm. Cu. Armoured Cable. | 30 | Mtr. |
| | **Room Dimensions** | | |
| | UPS Rooms - 105.5 Sq Mtrs x 3.86 M | 407 | Cu Mtr |
| | Qty of NAF SIII Gas Required | 148 | Kgs |

**Section F : Integrated Building Management System (Buy Back Item)**

| S.No. | Description | Qty. | Unit |
|---|---|---|---|
| 1.0 | **CENTRAL CONTROL STATION** | | |
| 1.1 | Communication controller for Networking DDCs | 1 | No |
| 1.2 | 32 channel RS 485 MODBUS interface to integrate with UPS, DG, Precision AC, Load Manager, Energy Meter etc., as mentioned in the I/O list | 1 | No |
| 1.3 | Integrated Building Management system software with Access Control System Interface software | 1 | Copy |
| 2 | **DIRECT DIGITAL CONTROLLERS (DDC)** | | |
| 2.1 | Direct Digital Controller (DDC) for the following capacity to meet the requirements indicated in the I/O List<br>DI - 42, AI - 4, DO - 27 | 1 | Set |
| 2.2 | AC, DC Relays+ Termination Blocks + Panel | 1 | Set |
| 3 | **SENSORS** | | |
| 3.1 | Passive infrared Motion Detector | 3 | Nos |
| 3.2 | Power Supply Unit for Motion Detector | 1 | No |
| 3.3 | Temperature Sensor with necessary output for IBMS interface | 2 | Nos |
| 3.4 | CO2/VOC Monitor with necessary output for IBMS Interface | 1 | No |

| INPUT OUTPUT POINT SUMMARY | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **S. No** | **Point Description** | **I/O Listing** | | | | **BMS VENDOR SCOPE** |
| | | **DI** | **AI** | **DO** | **AO** | |
| | | | | | | |
| | Precision AC (14 Nos) | Through Modbus RS485 Interface | | | | |
| | | | | | | |
| | UPS System (12 Nos) | Through Modbus RS485 Interface | | | | |
| | | | | | | |
| | DG Panel (2 Nos) | Through Modbus RS485 Interface | | | | |
| | | | | | | |
| | DG Panel Energy Meter ( 2 Nos) | Through Modbus RS485 Interface | | | | |
| | | | | | | |
| | Electrical - Load Manager | Through Modbus RS485 Interface | | | | |
| | | | | | | |
| | Access Control System | Through Software Interface | | | | |
| | | | | | | |
| | Fire Alarm System | Through Software Interface | | | | |
| | **Hardwired Monitor & Control** | | | | | |
| | Lighting On /Off Control | 3 | | 11 | | |
| | Comfort AC On/Off Status & Control | 14 | | 14 | | |
| | VESDA Fire & Fault Status - 4 Channel | 8 | | | | |
| | UPS & Network Room Temp Monitoring | | 3 | | | |
| | Battery bank monitoring | 8 | | **8** | | |
| | NOC Room CO2 / Volatile Organic Compound Level Monitoring | | 2 | | | |
| | Fresh Air Fan ON/OFF Control | | | 1 | | |
| | Water Leak Detection | 3 | | | | |
| | NAF SIII Gas release from Solenoid | 6 | | | | |
| | NAF SIII Gas release panel alarm status | 12 | | | | |
| | **Total** | **54** | **5** | **34** | **0** | |

Envelope: 1

**Name of work:** Replacement of BMS System at PG Senapathy Centre for Computing Resources and Operation of the system for 5 years

**(Due Date and Time: 24/03/2014 @ 3.00 PM)**

**TENDER. NO: 11 / 2014-15 / ELDB**
**TECHNICAL BID (PART- A)**

**From:**

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**To:**

The Executive Engineer (E),

Engineering Unit,

Administrative Building, 3rd floor,

Indian Institute of Technology Madras

Chennai – 600036

Envelope: 2

**Name of work:** Replacement of BMS System at PG Senapathy Centre for Computing Resources and Operation of the system for 5 years

**(Due Date and Time: 24/03/2014 @ 3.00 PM)**

**TENDER. NO: 11 / 2014-15 / ELDB**
**FINANCIAL BID (PART- B)**

**From:**

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**To:**

The Executive Engineer (E),

Engineering Unit,

Administrative Building, 3rd floor,

Indian Institute of Technology Madras

Chennai – 600036

Envelope: 3

**Name of work:** Replacement of BMS System at PG Senapathy Centre for Computing Resources and Operation of the system for 5 years

**(Due Date and Time: 24/03/2014 @ 3.00 PM)**

**TENDER. NO: 11 / 2014-15 / ELDB**

**From:**

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