



Standard Bidding Document

Name of Work	Supply installation Testing and Commissioning of Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200 in Server Room of SCADA Centre at Panama Chowk , Jammu.
District	Jammu
Unit	Mechanical Unit Jammu
Time of Completion	Three months



J&K PROJECTS CONSTRUCTION CORPORATION LTD.

(A J&K State Govt. Undertaking)

OFFICE OF DEPUTY GENERAL MANAGER, MECHANICAL UNIT, JAMMU

E-NIT No: MECH/J/NIT/43 of 2016-17

Dated: 21-02-2017

On behalf of Managing Director, Jammu & Kashmir Projects Construction Corporation Ltd., the Deputy Deputy General Manager, Mechanical Unit, Mechanical Unit JKPCC Ltd., Jammu invites e-tenders from Principal Manufacturers or their authorized dealers /eligible contractors for execution of below mentioned job:

Name of Work	Estimated Cost	Earnest Money	Cost of bid Documents	Period of Completion
Supply installation Testing and Commissioning of Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200 in Server Room of SCADA Centre at Panama Chowk , Jammu.	21.50 lacs	0.43lacs	1000/-	03 months

Scope of work:

Supply installation Testing and Commissioning of Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200 in Server Room of SCADA Centre at Panama Chowk , Jammu.

GENERAL CONDITIONS:-

INSTRUCTIONS TO TENDERERS:-

1. The NIT Consisting of qualifying information, eligibility criteria, specifications, Bill of Quantities can be seen/downloaded from the departmental website www.jktenders.gov.in from **Dt: 22-02-2017 from 1000 Hrs to Dt: 10-03-2017 upto 1400 Hrs**
2. The pre bid meeting will be held on date **28-02-2017 time 1200 Hrs** in the office chambers of Deputy General Manager, Mechanical Unit, JKPCC Ltd., Rail Head Complex, Jammu.
3. The Bids shall be deposited in electronic format on the departmental website www.jktenders.gov.in from **28-02-2017 to 10-03-2017 upto 1400 Hrs**
4. The complete bidding process will be **online**.
5. The original instruments in respect of cost of bid documents, EMD must be delivered to the **Deputy General Manager, Mechanical Unit, JKPCC Ltd., Rail Head Complex, Jammu** on or before **10-03-2017 up to 1400 Hrs**.

If the office happens to be closed on the date of receipt of the bids as specified, the bids will be received on the next working day at the same time and venue.

6. The Technical bids shall be opened online on **13-03-2017 at 1200 Hrs** in the Office chambers of **Deputy General Manager, Mechanical Unit, , J&K PCC Ltd. Jammu.**

In case of holidays/Office happens to be closed on the date of opening of the bids, bids will be opened on the next working day at the same time and venue.

7. Financial bids of bidders shall be opened online in the office of **Deputy General Manager, Mechanical Unit, , JKPCCLtd., Jammu** and shall be communicated separately.
8. The bids for the work shall remain **valid for a period of 90 days from the date of opening of bids.**
9. Bids must be accompanied by bid security as specified payable at Jammu pledged in favour of **Accounts Officer, JKPCCLtd., Jammu** and **cost of documents as specified payable at Jammu** duly pledged in favour of **to Deputy General Manager, Mechanical Unit,JKPCCLtd., Jammu.** Bid security shall be in the form of CDR/FDR only and shall have to be valid for 6 months or more after last date of receipt of Bid. The cost of downloaded tender documents in form of DD shall be in separate envelop with cover marking - **Cost of document.**
10. A bidder shall not be permitted to bid for works in the jurisdiction of officer responsible for award and execution of contract in which his or his spouse's near relative (defined as first blood relations, and their spouses) is posted as unit Accountant or as an officer in any capacity between the grades of Deputy General Manager and Manager (both inclusive)
11. No engineer of Gazetted rank or other Gazetted officer employed in Engineering or Administrative duties in an Engineering department of the State Government is allowed to work as a supplier for a period of two years after his retirement from Government service, without Government permission. This contract is liable to be cancelled if either the supplier or any of his employees is found any time to be such a person who had not obtained the permission of the government as aforesaid before submission of the tender or engagement in the contractor's service.
12. Other details can be seen in the bidding documents.
13. Any other information regarding e-tendering process can be had from the Office Deputy General Manager, Mechanical Unit, , JKPCCLtd.,Jammu at **Mobile no. 9419121510** or **e Tendering Cell on Mob No. 9419139825**
14. To qualify for award of the contract, each bidder should upload and submit the following documents with the tech bid :
 - A. Copy of Original Manufacturer or authorized dealer certificate renewed up-to-date.
 - B. Manufacturers or their authorized registered dealers or registered firm should have valid PAN No and Sales Tax registration.
 - C. Latest Performance Certificate from end user (Govt./ PSU/Autonomous Body) for at least one Supply installation Testing and Commissioning of Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200 work amounting to 80% of

- the estimated cost OR two works each amounting to 60% of the estimated amount OR three works each amounting to 40% of the estimated amount.
- D. The prospective tenderer's annual turn-over should not be less than Rs. 60.00 lacs during the last three years and the certificate of the same duly authenticated by the Chartered Accountant should be enclosed in the Technical Bids.
 - E. Undertaking that the bid shall remain valid for the period of 90 days from the date of opening of bids and all the terms and conditions of the tender document are accepted to the firm.
 - F. An affidavit affirming that information he has furnished in the bidding document is correct to the best of his knowledge and belief.
 - G. The bidders shall have to submit an undertaking to get the firm registered with Sales Tax Deptt. at J&K State and set up a service office at Jammu for better sale and service during the warranty period as well as AMC Contract period and the payment to the successful bidder shall be released only after submission of proof in this regard.

15. **INSTRUCTION TO BIDDERS REGARDING E-TENDERING PROCESS**

- a) The interested bidder can download the bid from the website <http://jktenders.gov.in>. Bidders are advised to download bid submission manual for the help of bid submission process from the Downloads option as well as from **Bidders Manual Kit** on website <http://jktenders.gov.in>
- b) To participate in bidding process, bidders have to get digital signature certificate card as per information technology Act- 2000, to participate in online bidding. This certificate will be required for digitally signing the bid. Bidders can get above mentioned digital signature certificate card from any approved vendors. The bidders who already possess valid digital signature certificates card, need not to procure new digital signature certificate card.
- c) **The bidders have to submit their bids online in electronic format with digital signature. The bids proposed without digital signature will not be accepted.**
- d) Bids will be opened online as per time schedule.
- e) Before submission of online bids, bidders must ensure that scanned copy of all the necessary documents have been attached with bid.
- f) The department will not be responsible for delay in online submission due to any reasons.
- g) All required information for bid must be filled and submitted online. The bidder should recheck his online document before submission on line otherwise damaged/ corrupt document shall not be considered in any case.
- h) **The original instruments in respect of cost of bid documents& EMD must be submitted to Tender Inviting Authority by Registered post/ Courier/By Hand as per time schedule specified otherwise bid shall be treated non responsive out rightly.**
- i) **Any bid not accompanied by an Earnest Money, Pledged in favour of Accounts officer, JKPCCL Ltd. Jammu shall be rejected by the Employer as non-responsive.**

- j) The details of hard copies of original instruments in respect of cost of bid Documents & EMD specified in the tender documents should be the same as submitted online otherwise tender will summarily be rejected.
- k) Bidders are advised to use My Documents area in their user on e-tendering portal to store important documents which are used in all tenders like VAT Certificate, sales Tax clearance Certificate etc and attach these certificates as Non Statutory Documents while submitting their bids.
- l) Bidders are advised not to make any change in BOQ (Bill of Quantities) contents/ specifications or its name. In no case they should attempt to create similar BOQ manually. The BOQ downloaded should be used for filling the net item rate inclusive of all taxes and it should be saved with the same name as it contains.
- m) Bidders are advised to scan their documents at 100 DPI (Dots per inch) resolutions with Black and white, JPEG scan properly. Convert scanned images to PDF.
- n) The guidelines for bidders to submit bid online can be downloaded from website <http://jktenders.gov.in> (**Download option**).

(Er. K.K. Padotra)
Deputy General Manager,
Mechanical Unit,
Jammu

General Conditions of Contract

1. Scope of Contract :

The contractor shall carry out and complete the said work/ supplies in every respect in accordance with this contract and under the directions of and to the satisfaction of the Engineer in-charge. The Engineer In-charge may in his discretion and from time to time issue written instructions, details, directions and explanations which are hereunder collectively referred to as "Engineer In-charge" instruction in regard to :-

- a) The variation or modification of the quality or quantity of works/ supplies or omission or substitution of any work.
- b) Any discrepancy between the schedule of quantities and/or specifications.
- c) The removal and/or re execution of any works executed by the contractor.
- d) The amending and making good of any defects under clause 18. The contractor shall forthwith comply with and duly execute any work / supplies comprised in such Engineer in-charge instructions provided always that verbal instructions, directions and explanations given to the contractor or his representative upon the works/ supplies by the Engineer In charge shall if involving a variation, be confirmed in writing by the contractor within 14 days. And if not dissented from in writing within a further 7 days by the Engineer in-charge, such shall be deemed to be the Engineer In-charge instructions within the scope of the contract.

2. Time of completion :-

The time of completion of the job will be **within** three months from the date of issue of allotment order.

3. Date of Commencement and Completion :

The date of allotment shall be the 'date of commencement' and the contractor shall thereupon and forthwith begin the works and shall regularly proceed with and complete the same on or before the date of completion stated in the allotment order.

4. Damage for Non Completion :

If the contractor fails to complete the works by the date stated in the allotment order or within any extended time and the Engineers In-charge certifies in writing that in his opinion the same ought reasonably so to have been completed, the department shall deduct the liquidated damages from any payment due to the contractor as per clause.

5. Force Majeure :

The right of the contractor to proceed with the work shall not be terminated because of any delay in the completion of the work due to unforeseen causes beyond the control and without the fault or negligence of the contractor.

6. Delay and Extension of Time :

In the opinion of the Engineer In-charge the works/ supplies if gets delayed.

- a) By force majeure.
- b) By reasons of civil commotion, location combination of workers on strike or lock-out affecting any of the building trades.
- c) In consequence of the contractor for not having received in due time necessary instructions from the Engineer In-charge for which he shall have specifically applied in writing.
- d) By reasons of Engineers In-charge' instructions as per clause 2. The Engineers In-charge shall make a fair and reasonable extension of time for completion of the contract works/ supplies.

In case the physical progress of the work/ supplies is delayed as compared to the time schedule referred to above due to reasons which are beyond the control of the contractor, or due to force majeure conditions, or due to delays owing to other agencies, strike or lock-out, the contractor shall apply in writing for extension of the time for completion of the work/ supplies, stating clearly the reasons for the delay, period of delay and the extension of time desired. The owner on satisfying himself that the reasons for delay are really beyond the control of the contractor, may grant extension of time for the completion of work/ supplies. No payment or compensation shall be made to the contractor in the event of the owner is not in a position to allow the contractor to do the work on specific days and time due to whatsoever reason. Such delays are only for the consideration of extension of time. On no account any compensation shall be made to the contractor for extension of time due to delay made by the owner. However the liquidated damages from the contractor can be recovered on account of delay from his side for completion.

7. **Prices :**

The prices to be quoted by the intending tenderer shall include the supply and installation of all equipment at site, ancillary material and other items whatsoever required for carrying out the job to fulfill the intent and purpose as laid down in the specifications whether specifically mentioned or not. The prices/rates quoted shall be inclusive of all taxes, duties, entry tax, packing, forwarding, freight, transit insurance and all other levies as applicable by the Central as well as State Government (Except WCT as applicable in the J & K State Govt. on Work contracts) for the completion of the work. **The WCT (Works Contract Tax)/ Service Tax applicable in the J & K State Govt. is not to be included in the quoted prices as the J&K Projects Construction Corporation Ltd. is the Main Contractor and the tenderer being the Sub Contractor shall not be liable to the WCT/Service Tax in the present case as per the Commissioner Commercial Taxes Department, J&K Govt. vide clarification No. 08 of 2006 dt 14-08-2006.** The successful tenderer/ contractor, on completion of the contract/work shall be issued a certificate on prescribed format from the Main Contractor J&K PCC Ltd. Jammu/Srinagar (to be issued by the competent Authority) for the purpose of proof of payment of such tax. Failure to include all other taxes and duties will not entitle the contractor to any extra claims from the employer. The contractor's rates shall remain firm and fixed during the currency of the contract.

8. **Maintenance Manuals etc :**

Prior to the completion of work the contractor shall furnish to the employer (3) three sets of a comprehensive manual, describing all components, furnish a list of spare parts and settings forth in details the instructions for the operation and maintenance of the equipment

Any special tools required for the operation or the maintenance of the Fire Suppression System, shall be supplied free of cost.

9. **Testing and handing over :**

The contractor shall complete the following before handing over:

- a) Preparation of working drawings on the basis of actual site conditions and getting approval of the Engineer In Charge.
- b) **Getting tested by and approval of the installation by the Local Fire Authority after completion of work.**
- c) Supply of necessary spare parts during the commissioning stage.
- d) Before release of final payment the allottee shall produce NOC from local fire authorities regarding safety, suitability of the system installed
- e) On the completion of work the contractor shall arrange to carry out various initial tests, in the presence of and to the complete satisfaction of the Engineer in-charge or his representative. Any defects or shortcomings found during the tests shall be speedily rectified or made good by the contractors at his own expense.

10. **Copies of bill**

Contractor shall submit all bills and vouchers in Duplicate

11. **Defects liability**

The complete work shall be guaranteed against defective materials and workmanship for a period of 12 months from the successful commissioning of the Fire Suppression System and shall be reckoned from the date of commissioning of the system. If any part of work is found unsound or defective during the defect liability period, the contractor shall repair and make good the same, within a reasonable time, at his own risk, responsibility and cost. Any delay in such repairing and making good by the contractor, shall entitle the Employer to do it at the contractors entire risk, cost and responsibility.

12. **Rejection of Defective Plant :**

- a) If on test any portion of the Fire Suppression System is found to be defective or not fulfilling the intent or the meaning of the specifications, the same shall be replaced or repaired to the entire satisfaction of the Engineer In-charge.
- b) In case the contractor fails to remove the defects, within a period considered reasonable by the Engineer in-charge, the JKPC reserves the right to take necessary remedial measures through other agencies and all expenses thus incurred would be recovered from the contractor.

13. **Variation**

The J.K.P.C.C. shall be entitled to make any variation of the quality or quantity of the works/ supplies or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any reason it shall, in his opinion be desirable, he shall have power to order the contractor to do and variations in quantities exceeding 5%. Shall be allowed with the approval of competent authority.

14. **Contract Specification**

Before execution of contract, the contractor shall check all specification and shall within ten days report any errors, discrepancies or omissions discovered therein to Engineer-in-Charge and obtain appropriate clarifications on the same. Any adjustment made by the contractor without prior approval of JKPCC shall be at his own risk and cost.

15. **Liquidated damages**

- (i) 0.25% (zero point two five percent) of contract value for every week of delay after the schedule date of completion of work.
- (ii) Total Amount of Recovery shall be maximum upto 10 % (Ten percent) of the unfinished portion of the work.

16. **Specifications**

The Specifications lay down minimum standards of equipment and workmanship. Should the Tenderer wish to depart from the provision of the specifications ,either on account of manufacturing practice or for any other reasons, he should clearly draw attention in his tender to the proposed points of departures and submit each complete information and specifications, as will enable the relative merits of the deviations to be fully approached. In the absence of any deviations, it will be deemed that the Tenderer is fully satisfied with the intents of the Specifications and their compliance with the statutory provisions and local codes.

Tenderers not submitting equipment data in full, will do so at the risk of their tenders being valuated with such information as may be available with the J.K.P.C.C.

17. **Maintenance of the system and Training of Personnel :**

The successful bidder shall have to impart operational training to the staff for the purpose and nothing extra shall be paid. The contractor shall also train the JKPCC's personnel, to operate the system on emergent demand basis and carry out routine checks during the warranty period.

18. **Completeness of the work/ job :**

The contractor shall provide all required materials, equipment, ancillary items, etc., to install the Fire Suppression System capable of fulfilling the intent and purpose of the contract, whether or not each and every item is mentioned in the specifications. Any shortcomings noticed at any stage shall be made good at no extra cost.

19. **Guarantee :**

- a) The contractor shall guarantee that all the material, and components supplied, fabricated, designed and installed by him on Fire Suppression System, shall be free from defects due to faulty design material and/or workmanship, that the unit shall perform satisfactorily and the efficiency of all the components shall not be less than the values laid down in the specifications and the capacities, shall be at least equal to those specified.
- b) The period of the guarantee shall be minimum (12) Twelve months after the Fire Suppression System, is successfully commissioned during which period if any or all components found to be defective shall be replaced or repaired free of charge and any short comings found in the system as specified shall be removed at no extra cost. The contractor shall provide the necessary personnel and tools for fulfilling the above guarantee.
- c) If the defects are not removed with in a reasonable time, the employer may arrange to do so at the contractor's risk and cost, without prejudice to any other rights.

20. **Terms of payment :**

70% prorate payment shall be paid against supply of equipment, component at site and its verification by the Engineer In charge. 15% of the contract value shall be paid against installation/erection of the equipments and balance 15% payment shall be made after successful testing and commissioning of Fire Suppression System.

21. **Bank Guarantee :**

The firm shall execute bank guarantee of any scheduled bank in favour of Dy. Deputy General Manager, Mechanical Unit, Mechanical Unit JKPCCLtd. Jammu amounting to 10% of the value of the contract after the issue of the Allotment order and will be released after warranty period is over.

22. **After Sales Service :**

The firm shall provide free services during the guarantee period and give prompt attention to any complaint of consignee at short notice. The firm shall provide service and spares for the said equipment /system for at least 10 years at the mutually acceptable terms and conditions after expiry of the guarantee period of 12 months.

23. **Arbitration :**

In case of any dispute arising at any time between the Contractor and the Corporation, the same shall be referred to the Deputy General Manager, Mechanical Unit, , JKPCCLtd., who may give decision on such a dispute himself or request the Government to nominate any other officer of the Government for arbitration. Decision of the Deputy General Manager, Mechanical Unit, or the officer nominated by the Government shall be final and binding on both the parties.

24. **Agreement :**

25. The firm shall execute an agreement with the corporation within 15 days from the date of allotment of work.

26. **Insurance**

The successful contractor shall take out contractor all risk (AR) insurance policy in the name of the contractor and the original policy shall be deposited with the Department.

27. **Earnest Money**

- a) The bidder shall furnish, as part of the Bid, earnest Money of Rs. 0.43 lacs
- b) **The earnest money shall, be in the form of Fixed Deposit Receipt of a scheduled commercial bank, issued in favour of Accounts officer, JKPCC Ltd. Jammu. The Fixed Deposit Receipt shall be valid for six months or more after the last date of receipt of bids. Or after the submission of performance security whichever is later.**
- c) Any bid not accompanied by an Earnest Money, **Pledged in favour of Accounts officer, JKPCC Ltd. Jammu** shall be rejected by the Employer as non-responsive.
- d) The earnest money of unsuccessful bidders shall be returned within 30 days of the end of the Bid validity period.
- e) The earnest Money of the successful Bidder will be released when the Bidder has signed the Agreement and furnished the required performance security.

28. **The earnest money may be forfeited:**

- a) If the bidder withdraws the Bid after bid opening (technical bid) during the period of Bid validity :
- b) In the case of a successful Bidder, if the Bidder fails within the specified time limit to :
 - i) Sign the Agreement; and / or
 - ii) Furnish the required performance security

29. **Preparation of Bids**

- a) Language of Bid is English
- b) All documents relating to the Bid shall be in the language specified

30. **Documents Comprising the Bid**

The bid submitted by the Bidder shall be in two separate parts:

Part I

This shall be named technical Bid and shall comprise parts:

- i. Earnest Money in a separate cover marked Earnest Money.
- ii. Cost of document in a separate cover marked Cost of Document.
- iii. Qualification information, supporting documents, affidavit and undertaking .
- iv. Undertaking that the bid shall remain valid for the period of 90 days from the date of opening of bids.
- v. An affidavit affirming that information he has furnished in the bidding document is correct to the best of his knowledge and belief.

Part II

It shall be named Financial Bid and shall be submitted on line

31. **SUBMISSION OF BIDS**

Deadline for submission of Bids:-

The submission of bids shall be online only. However the contractor shall submit the hard copy of Technical Bid only, along-with the original EMD and cost of tender document to the tender opening authority i.e. **Deputy General Manager, Mechanical Unit, J&KPCC Ltd., Rail Head Complex, Jammu not later than 10-03-2017 upto 1400 Hrs.** In the event of the specified date for the submission of bids being declared a holiday for the Employer, the

Bids will be received up to the specified time on the next working day. This shall be in addition to the bid submitted online, which is mandatory.

The employer may extend the deadline for submission of bids by issuing an amendment, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

32. **Late Bids**

Any Bid received by the Employer after the deadline prescribed will be returned unopened to the Bidder.

33. **Fundamental breach of contract will include:-**

- a) Continuous stoppage of Work for a period of 30 days without authorization of Engineer in-charge.
- b) Contractor is declared bankrupt.
- c) Any evidence of involvement of contractor in corrupt practices.
- d) Contractor delays the completion of work beyond stipulated time of completion.
- e) Pursuant to the process of termination of defaulted contract, the employer reserves the right to invite fresh tender for the balance work at the risk and cost of defaulter contractor.
- f) If In case contractor failed to start /complete the work, within the stipulated time period, his CDR/Earnest Money shall be forfeited after termination of the contract. Besides, defaulting contractor shall be debarred from taking works in JKPC Department for at least for one year.

34. **MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENT ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK**

Compliance with Labour Regulation Laws of J&K State.

35. **Specification/Quality Control**

All items of works shall conform to specifications as per IRC/MORTH/NBO/CPWD/SSR/ Any other prescribed specifications.

36. **Insurance**

Insurance cover to Labour / Machinery / Work / Plant material / Equipment by the contractor shall be mandatory.

37. **Laws Governing the Contract**

The contract shall be governed by Laws of the land.

38. **Court's Jurisdiction**

In case of any disputes/differences between contractor and Department the jurisdiction shall be J&K State

39. **All other terms and conditions are as same as are in vogue in JKPC Ltd.**

(Er. K.K.Padotra)
Deputy General manager
Mechanical Unit JKPC

Ltd.,

Jammu

SPECIFICATIONS

Supply installation Testing and Commissioning of Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200 in Server Room of SCADA Centre at Panama Chowk , Jammu.

The Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200, in Server Room to be supplied and installed in accordance with the following technical specifications:

1.0.0 SCOPE OF TENDER

1.1.1 The contractor shall supply, install, test, commission and put in operation an **UL Listed / LPCB approved HFC 227ea** based fire suppression system. The fire suppression system shall include **Seamless Cylinders which have been approved for use in India by CCOE/PESO.**

The HFC 227ea system will also have the following LPCB / UL listed accessories such as Discharge valve, Solenoid, Manual release lever, Pressure Gauge with Pressure switch, Non return Valve, Discharge hose, Nozzles.

Any other accessories required to provide a complete operation system shall also be meeting requirements of NFPA 2001 standards and installed in compliance with all applicable requirements of the local codes and standards.

1.1.2 The system design should be based on the specifications contained herein, NFPA 2001 & in accordance with the requirements specified in the manufacturers design manual of the agent. The bidder shall confirm compliance to the above along with their bid.

1.2.0 DESIGN AND ENGINEERING:

1.2.1 The systems, shall be designed taking a minimum design concentration of 7.0% as applicable to class 'A' & 'C' risks.

1.2.2 The system design must consider the limitations caused by the void height. It should also consider temperature in the void. The vendor should clearly indicate the qty. of the gas in Kgs. to be used in the system for protecting the hazard. All voids within the protected hazard shall be discharged simultaneously. Each hazard shall have an independent system, unless otherwise specifically stated, when a centralized system with directional valves can be used. HFC 227ea system shall have a working pressure of 42 bar.

1.2.3 A fill density in the range of 0.48 to .93 kg/ltr should be considered for the agent to be discharged within the specified time of 10 seconds as per NFPA 2001.

1.2.4 The system engineering company should carry out piping Isometric design and validate the same with a hydraulic flow calculation generated by using the LPCB/UL or the manufacturer approved HFC 227ea design software. The appropriate fill density has to be arrived at, based on the same.

1.2.5 The design & flow calculation shall be carried out using software program for HFC 227ea you may note that the calculation is the only guarantee that the system will work, provided the system is installed exactly as per the design. The contractor has to take into consideration the routing available while designing the pipe network.

1.3 LPCB/ UL APPROVED HFC 227ea AUTHENTICATION

The system engineering company should submit a filling certificate along with the Serial numbers of the Cylinder, Valve & other accessories along with the qty. of agent filled from the manufacturer/filling station. They should also submit the gas chromatography analysis report of the canister batch to authenticate the agent used.

1.4.0 REFILLING AND MAINTENANCE

In case of any leakage of accidental discharge of the agent, it should be possible to refill the cylinder in a CCOE approved filling station for HFC 227ea in India itself. The contractor should indicate the source of refilling and time that will be taken for refilling and replacement.

1.5.0 DISCHARGE TIME

As gas has to be fully discharged within 10 seconds (as per NFPA 2001) for effective quenching of fire as per the relevant standards, the contractor has to ensure that the design meets this requirement. Once the discharge takes place there should be warning signs restricting personnel from entering the protected area until the gas has been cleared from the area.

2.0.0 MATERIALS AND EQUIPMENTS

- 2.1.0 All materials and accessories shall be LPCB/UL Listed from approved manufacturers and shall be suitable for the performance of their respective functions.
- 2.1.1 The cylinders should be completed with all accessories. The contractor shall indicate the dimensions of the cylinders required for each area while quoting.
- 2.1.2 The number of nozzles and their positions must be chosen so that the design concentration is established everywhere in the enclosure.
- 2.1.3 The gas release panel should have manual override and manual discharge key/lever.

2.2.0 CCOE/PESO APPROVED CYLINDER

- 2.2.1 The High pressure flat type, concave bottom as per complete with neck ring **Seamless Cylinders shall be CCOE approved for use in India by CCOE.** Welded and non-CCOE approved cylinders will not be accepted.
- 2.2.2 As per the regulations of the Chief Controller of Explosives (CCOE) Nagpur, any system which has a working pressure above 19 bar (280 psi) will require the use of seamless cylinders that have been duly approved by the CCOE, Nagpur. The same shall be considered while selecting the cylinder type.
- 2.2.3 The maximum fill density of HFC 227ea in a cylinder shall not be less than 0.48 kg/lit. and not exceed 0.93 kg/lit. of internal volume. Appropriate fill density shall be chosen based on the cylinder location and piping design. The hydraulic calculations should prove that the fill density is appropriate and total discharge will take place within 10 seconds.
- 2.2.4 The cylinders shall be super-pressurized with dry nitrogen to 42 bar at 20⁰C. The cylinder shall be capable of withstanding any temperature between – 30⁰C and 70⁰C.
- 2.2.5 Cylinder shall be mounted according to manufacturer recommendations.
- 2.2.6 The cylinder shall withstand Hydrostatic test pressure of minimum 150 bar and working pressure at 15⁰C shall be 100 bar minimum.

2.3.0 LPCB/UL APPROVED ACCESSORIES

- 2.3.1 **The HFC 227ea systems should be engineered with LCPB/UL listed accessories such as Discharge valve, Solenoid, Manual release liver, Pressure Gauge with Pressure switch, Non**

return valve, Discharge hose, Nozzles. All the gaskets, O-ring, sealant and other valve component shall be constructed of materials compatible with the clean agent.

2.4.0 PIPES & FITTINGS

2.4.1 All Pipes shall be of ASTM- A- 106, schedule – 40 seamless Mild Steel Pipes and fittings shall be as per ASTM-A-105 standard.

2.5.0 LPCB/UL APPROVED DISCHARGE NOZZLE

2.5.1 Nozzle shall control the flow of the HFC 227ea agent to ensure high velocity, proper mixing in the surrounding air and uniform distribution of the agent throughout the enclosure. The number of nozzles and their positions must be chosen so that the design concentration is maintained everywhere in the enclosure. Nozzle shall be located where they can be adequately supported on walls, ceiling or structural members. Software generated calculation supporting the nozzle design shall be submitted by the successful bidder before signing of contract.

3.0.0 DOCUMENTATION

3.1.1 The bidder should be the manufacturer or an authorized, trained and certified reseller of a manufacturer (of a HFC 227ea System). Documentation to validate the same shall be submitted along with bid documents.

3.1.2 The system engineering company should prepare & submit along with the bid documents, the piping Isometric drawing and support the same with a **hydraulic flow calculation** generated by using the manufacture approved agent's design software. The calculation shall validate the fill density assumed by the bidder.

3.1.3 The bidder shall submit copies of the datasheets of the hardware used in the system.

3.1.4 The bidder shall also submit calculations to evidence the qty of agent considered for the system.

3.1.5 The successful vendor must submit, along with the supply invoice, filling certificate along with the Serial numbers of the Cylinder, valve, & other accessories along with the qty. of agent filled from the Manufacturers approved filling station. They should also submit the gas chromatography analysis report of the canister batch to authenticate the agent used.

3.1.6 If so desired by the customer / consultant the successful vendor shall arrange for inspection of the filling process for the system, order and provide evidence of a complete audit trail of the agent and hardware to ensure that it is genuine.

The system Company should provide, as part of handing over, the as-built drawing, operation manual and maintenance manual. The as-built drawing shall exactly match the Isometric drawing submitted with the flow calculation prior to commencement of work.

4.0 Painting : Painting and colour scheme of pipelines, nozzles clean agent storage containers, supports etc. shall be done as per shade required at site in consultation with Engineer-in-charge architect.

5.0 Inspection & testing :

5.1 **Approval of Installation:** Only listed or approved equipment from FM/UL/VDS/LPC/ULC and devices shall be used in the systems. All critical equipments such as cylinders, cylinder valves, directional valves, pressure reducers, nozzles, actuation controls, pressure gauges etc. shall have listing (FM/VL/VDS/ULC) approved companies. To determine that the system has been properly installed and will function as specified the following tests shall be performed.

- a) A check of labeling of devices for proper designations and instruction. Name plate date on the storage containers shall be adhered to specifications.

- b) A test for mechanical tightness of piping and associated equipment to assure that leakage will not occur and that there will be no hazardous pipe movements during discharge.
- c) Vender shall provided suitable safety measures.
- d) Dump test for one room must be conducted with N2 gas the operation electromagnet, direction valve change over valve, check valve with senses devises may be checked.
- e) The complete system after its installation testing and commissioning shall be got approved from Local Fire service Department J&K, whose responsibility lies on execution agency but any fees to be paid to Local Fire Services Department J&K for testing will be borne by the Contractor.

6.0 Operating Devices:

- a) Operating devices shall include clean agent releasing devices with various discharge controls and shut down equipment necessary for successful performance of the system
- b) The department shall provide electric supply of 240 V/415V+/-10%,50Hz, 3 phase at a convenient point. Converter if required to convert to any other operating voltage shall be in contractor's scope.
- c) The automatic clean agent system shall be of robust design and shall not be rendered inoperative easily. The clean agent system shall be designed to function properly for the temperature range specified NFPA – 2001.
- d) In addition to automatic actuation, there shall be manual control for actuation which shall be located so as to be conveniently and accessible at all times including the time of the fire. This control shall facilitate the complete system to operate in its normal fashion.
- e) Stopping the AC system and shutting off the fire damper shall be within the scope of this specifications any cost required for integration of the system with AC shall be borne by contractor.
- f) Operating instruction shall be displayed on a nameplate fitted permanently, on the clean agent skid.
- g) Clean agent extinguishing system shall incorporate a pre-discharge alarm with a time delay up to 30 seconds or more to allow personnel's evacuation prior & discharge.

7.0 Instrumentation:

Complete instrumentation work including detailed scope of work and supply of instrumentation and control for clean agent system shall be as per technical specification for instrumentation work along with codes and standards attachment in the specification. Interconnection with the alarm module with dry fire fighting shall be done.

FIRE SUPPRESSION SYSTEM

Specific Technical Requirements:

The general system should be FM / VdS approved, comprising a CCOE/PESO approved seamless cylinders and should include following sub-systems:

80 Litre capacity Seamless cylinder fitted with valve assembly and along with mounting straps suitable to operate at 50 bar Pressure complete with safety burst disc, safety cap and with CCOE approval with technical details as below:

- a. The Cylinder should be of size 80 Ltr with size. These cylinders should be with latest seamless technology and must be CCOE/PESO approved. These cylinders should withstand the pressure of 150/200bar.
- b. The valve assembly should be made out from a solid block of brass and manufactured with latest technology on CNC machines with practically zero tolerance to the drawings. The valve assembly along with the cylinder must withstand the max. working pressure is 60 bar.

Fire Suppressant Gas

- a. This fire suppressant gas should be human and environment friendly clean agent approved by FM and UL as safe gas for Green House effect. This gas should be absolutely harmless to human beings and should be extremely safe for Electronic and Electrical Equipment's, Computers, Documents, Telecom Equipment's.
- b. This gas must be Non-toxic, Non-Corrosive, Non-residual, noninflammable, most widely used world over as effective and clean fire suppression agent. Its boiling Point is – 16.5 degrees Centigrade (at1.013 bar).
- c. The concentration of this agent should be 7% at the discharge.
- d. This gas should be chemically inactive.
- e. This gas should not have ozone depletion potential and must meet the Kyoto resolution for the safety of environment.
- f. System designed at 21degree Celsius ambient temp.

24 V DC Solenoid (Electrical) actuator assembly

24 V DC Solenoid (Electrical) actuator assembly suitable to actuate 50 bar system, having independent FM/VdS approval as per detailed technical specifications as below:

The valve assembly with integrated Solenoid Valve (Electrical Actuator) shall be made out from a solid block of brass and manufactured with latest technology on CNC machines with practically zero tolerance to the drawings.

The detailed technical specifications as follow:

Designation.....B0481-B DN49
nominal diameterDN49
(free cross-sectional area at minimum flow path 1515 mm²)
operating temperature-20 °C up to +50 °C
max. working pressure at 50 °C:
-- valve B0481-A DN4960 bar
minimum fill factor400 kg/m³
maximum fill factor:
- FM 200 :- 50 bar 850 kg/m³
to be used for steel cylinderfrom 80,0 l to 180,0 l
valve typetype 2 acc. to EN 12094

Technical data:integrated electrical release:

- voltage24 V DC
- current intensity0,25 A ±10 %
- output6 W
- protection categoryIP 54
- duty cycle100 %

Material / surface:

housing, adapter, screwsbrass
spindles, seal retainerbrass
O-ring / seal of seatNBR
bursting disknickel
springsteel

Safety measures:

Bursting disk operating at 88 bar

Manual Actuator

Manual Actuator suitable to manually actuate 50 bar pressure system having independent UL/ULC/FM/VdS approval as per the detailed technical specifications as below:

It should be made from Brass and suitable for the valve assembly with integrated Solenoid Valve (Electrical Actuator) as per the specifications below:

technical data:

operating temperature range-20 °C to +50 °C

note:the manual actuation must take place at least 5 seconds

application:

Manual actuation of extinguishing agent cylinder valves of type

One extinguishing agent cylinder valve each can be opened

Manually.

Pneumatic actuator

Pneumatic actuator assembly suitable to pneumatically actuate 50 bar pressure system having independent UL/ULC/FM/VdS **approvalas per the specifications below:**

Made out fully from Brass with stainless steel inner components and suitable for the cylinder valve assembly as per specifications below:

Technical data:

Response pressuremin. 21 bar, max. 360 bar

operating temperature range-20 °C to +50 °C

Note: The actuating pressure must be applied for at least 5 seconds.

The release device is equipped with two connections for pilot pipes to allow the control gas to be passed on to additional release devices.

Brass Nozzle:

Brass Nozzle: having independent UL/ULC/FM/VdS approval

It should be made from brass and suitable for the gas discharge from 50 bar system. It should be as per the technical specifications as below:

Medium FM 200 with nitrogen pressure charging
connection thread Rp in accordance with EN 10226

Working pressure
..... min. 9,6 bar, max. 60 bar

UL/ULC/FM min 9.0 bar, max. 60 bar
Coverage Area

..... 30 sq. m Area.
UL/FM/FM 100 sq. m area.

Required storage pressure in extinguishing agent container dependent on
system 25 bar, 42 bar or 50 bar at 21 °C

nozzle body

Ms brass

XCrNi stainless steel

gradation of the bore hole diameters \varnothing in 0,1 mm steps

temperature range -20 °C to +50 °C

Application

The nozzles are used as room protection nozzles in accordance with system approval in MX 200 fire extinguishing systems using the extinguishing agent HFC-227ea (Heptafluoropropane). They are used to supply the extinguishing agent within the calculated flow time and distribute it evenly throughout the extinguishing area.

High Pressure Discharge Hose

High Pressure Discharge Hose suitable for high pressure 50 bar system and suitable for the cylinder valve assembly having independent UL/ULC/FM/VdS approval.

Technical data:

Designation Hose MX 200/1230 DN 40/50 90deg

operating medium FM 200/Novac 1230/ Nitrogen

nominal diameter DN40 / DN50

minimum bending radius DN40 / DN50 500 mm / 630 mm

thread G1 / G2 DN40 ..1.7/8"-12 UNF [B1.1] / R 1.1/2" [ISO 7]

DN50 2.1/2"-12 UNF [B1.1] / R 2." [ISO 7]

technical data:

temperature range -40 °C to +60 °C

working pressure 80 bar

test pressure 120 bar

burst pressure 240 bar

test certificate EN 10204 - 3.1 (pressure test)

Material / surface:

union steel, galvanized, yellow chrome dulled

ferrule steel, galvanized, yellow chrome dulled

flexible hose line with fabric-inserted steel

hexagon nipple steel, galvanized, yellow chrome dulled

Marking:

manufacturer sign, type (DN.. MX200/1230), batch number, operating pressure (80 bar), approval (VdS, CE), date of manufacture (month/year)

Application:

to connect the valve of the extinguishing agent cylinder to the nozzle pipe, the manifold, or the check valve

Pneumatic actuation Hose

Pneumatic actuation Hose suitable for 50 bar pressure having independent UL/ULC/FM/VdS approval.

Designation.....Hose DN4 – MX
200/1230

Technical data:

operating medium.....FM 200/Novec 1230/N2/Co2
Nominal dia.....DN4 (0.16")

Minimum bending radius.....90mm (3.54")
Operating Temp..... -40 C + 60 C.
working pressure160 bar
test pressure240 bar
burst pressure480 bar
Ferrule.....PN 04 AOL conical nipple 24° with O-ring

Application:

To connect:

- the master extinguishing agent cylinder and the pneum. Release devices of the other extinguishing agent cylinder.
- two pneumatic release devices.
- the pneumatic release device and the pilot pipe of multi zone systems.

Pressure Gauge

Pressure Gauge to monitor the health of cylinder suitable for 50 bar system having UL/ULC / VdS approval. It is used at the side of the cylinder valve for monitoring the cylinder pressure.

note switching mode:

break contact (NC) / make contact (NO):

Break contact or make contact by actuation of the indicator counter clockwise at the switch pressure (decrease of pressure).

Technical data:

pressure mediumFM 200, N2
nominal size50
accuracy class1,6
temperature ranges:
product temperature, storage temperature-40 °C up to +60 °C
.....measuring medium max. +60 °C
measuring network, motion workcopper alloy
Electrical data:
switching voltage4,5 – 24 V DC / VAC

switching current5 – 100 mA
 contact loadmax. 3 W, dry contact
 conducting wiretwo-core, 100 cm
 cross-section of conducting wire \varnothing 0,14 mm²
 Design of instrument dial:
 Design of instrument dial..... according to UL 2166
 materialaluminium, white
 indicating range0 to pressure range

Supervisory Pressure Gauge

Supervisory Pressure Gauge for 50 bar system having VdS approval.

switching mode:

break contact (NC) / make contact (NO):

Break contact or make contact by actuation of the indicator counter clockwise at the switch pressure (decrease of pressure).

Technical data:

pressure mediumFM 200, N2
 nominal size50
 accuracy class1,6
 temperature ranges:
 product temperature, storage temperature-40 °C up to +60 °C
measuring medium max. +60 °C
 IP codeIP65 with mounted cable
 markingCE, VdS
 directives, standards ..EN837-1, VdS CEA 4030, EN 12094-10
 measuring network, motion workcopper alloy

Electrical data:

switching voltage4,5 – 24 V DC / VAC
 switching current5 – 100 mA
 contact loadmax. 3 W, dry contact
 conducting wiretwo-core, 100 cm
 cross-section of conducting wire \varnothing 0,14 mm²

Design of instrument dial:

materialaluminium, white
 indicating range0 to pressure range
 indicating range marked:
 - in red0 to switching point
 - in green ...switching point to max. working pressure at 50 °C

Marking:

manufacturer code (WIKA), bar, accuracy class (1,6), type designation (PGS 21.050), switch pressure via set point on dial, year (WW YY), approval sign (VdS, CE)

Note for temperature ranges:

Observe a working temperature from +5 °C up to +25 °C to receive an indication of loss of extinguishing agent in accordance with VdS / CE. The mechanical, electrical function of the contact pressure gauge is guaranteed within the product temperature ranges from -40 °C up to +60 °C.

Check Valves

Check Valves having independent UL/ULC/FM/VdS approval.

Designation:Check valve DN 50 MX – CR/CR NPT

medium	FM 200, Novec 1230 , nitrogen
nominal diameter	DN50
connection thread inlet	Rp 2 EN 10226
outlet	Rc 2 ISO 7
working pressure	60 bar
test pressure.....	90 bar
leakage rate at 20 bar	≤ 20 bubbles / 1 min
temperature range	-20 °C to +50 °C
Material / surface:	
housing	steel, galvanized
internal components	stainless steel
spring	stainless steel
seal	NBR

Application: When using more than one cylinder at a conjointly pipe work a check valve is to be used with each cylinder between cylinder and pipe work. This prevent that extinguishant gets to not operated valves or escapes unaimed with dismounted cylinders.

Adapter

Adapter M12x1,5 - G1/8 MX 1230/200 having independent UL/ULC/FM / VdS approval.

Technical data

Operating mediumFK-5-1-12, HFC-227ea,
.....argon, nitrogen, CO2, IG55, IG541

Operating temperature range:
.....-20 °C to +50 °C (-4 °F to 122 °F)

UL / ULC / FM-18 °C to +50 °C (0 °F to 122 °F)

Working pressure360 bar (5221 psi)

Materialbrass

Application

To the connection of the hose DN4 / pilot pipe with:

- Valves type B0481, valves type B0482
- Valves type B0480, BAS
- Release device MX 1230/200 pneumatic/manual
- Release device MX 1230/200 pneumatic

INSTALLATION

- The bidder shall install the system in accordance with the manufacturer’s recommendation.
- Where false ceilings are available, the sampling pipe shall be installed above the ceiling, and Capillary Sampling Points shall be installed on the ceiling and connected by means of a capillary tube.
- The minimum internal diameter of the Capillary tube shall be 5mm, the maximum length of the capillary tube shall be 2 m unless the manufacturer in consultation with the engineer have specified otherwise.
- The Capillary tube shall terminate the ceiling Sampling Point specifically approved by the Client. The performance characteristics of the sampling points shall be taken into account during the system design.
- Air Sampling piping network shall be laid as per the approved pipe layout. Pipe work calculations shall be submitted with the proposed pipe layout design for approval.

FUNCTIONAL TEST

- Introduce Smoke into the Detector Assembly to provide a basic functional test.
- Introduce smoke to the least favourable Sampling Point in each Sampling Pipe. Transport time is not to exceed 90 Sec.

HIGH SENSITIVITY SMOKE DETECTION SYSTEM

This specification covers the requirements of design, supply of materials, installation, testing, and commissioning of Air sampling Smoke Detection System. The system shall include all equipment's, appliances and labour necessary to install the system, complete with suitable highly sensitive technology providing sensitivity of the order of minimum 0.0015–20%obs/m or better with aspirators connected to network of sampling pipes.

- Air sampling system is provided to give early warning of smoke in critical areas, ceiling high areas.

CODES AND STANDARDS

The entire installation shall be installed to comply with NFPA Standards, USA.

FUNCTIONALTEST

- Introduce Smoke into the Detector Assembly to provide a basic functional test.
- Introduce smoke to the least favourable Sampling Point in each Sampling Pipe. Transport time is not to exceed 90 Sec.

List of Makes of Materials		
S.NO	ITEM	PREFERRED MAKE
1	Addressable Fire Alarm Panel	Honeywell /GE / Notifier / Ravel/GST
2	Photoelectric Smoke Detector	Honeywell / GE / Notifier / Ravel/GST
3	Electronic Hooter.	Honeywell /GE / Notifier / Ravel/GST
4	Other addressable fire alarm components	Honeywell GE / Notifier / Ravel/GST
5	Copper Armoured Cable.	Polycab / Neolex /Finolex AKJ
6	Seamless Cylinders(duly approved by PESO/CCOE).	EKC / WORTHINGTON/RAMA/Siemens'
7	Cylinder Valves	Honeywell / Fike / Tyco/UTC/MX
8	HFC 227ea Gas	Dupont
9	Master Actuation Package	Honeywell / Fike / Tyco/ UTC/MX/ Siemens'
10	Slave Actuation Package	Honeywell / Fike / Tyco/ UTC/MX/ Siemens'
11	Manifold & Cylinder Rack with straps.	Fabricated
12	M.S. Seamless pipes.	Parkash Surya / Jindal / TATA/Maharashtra
13	Gas Release Module	Agni / Ravel/ Honeywell
14	Aspirating Smoke detector	VESDA/ System Sensor/HONEYWELL/Notifier
15	Discharge Nozzle	Siemen's/UTC/MX

Note:-All the items connected with the cylinder should be of one make duly approved by UL/FM for better fitment and compatibility.

(Er. K.K.Padotra)
Dy. Deputy General Manager,
Mechanical unit
JKPCC Ltd. Jammu.

BOQ

Supply installation Testing and Commissioning of Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200 in Server Room of SCADA Centre at Panama Chowk , Jammu.

S.N.	Description	Qty	Unit	Unit Rate	Amount
A	FM 200 FIRE SUPPRESSION SYSTEM (SERVER ROOM)				
1	80 Ltrs Seamless FM200 Cylinder –CCOE/PESO Approved, complete with valve assy and integrated solenoid and pressure gauge	2	No.		
2	FM-200 Gas (HFC227ea agent)	150	Kgs		
3	Pneumatic operated slave actuation with high pressure discharge hose.	2	No.		
4	FM 200 Piping, Sch 40; ASTM A106 Gr B	1	Lot		
5	FM200 nozzles for gas Discharge	4	Nos		
6	Manual actuation with high pressure discharge hose complete	2	Lot		
7	Manifold check valve with manifolds fabricated from seamless pipe	2	nos		
8	Cylinder straps	2	Nos		
9	Discharge pressure switch	1	No.		
10	Manual Abort switch	1	No.		
11	Manual Release switch	1	No.		
12	4- zone conventional Gas Release Panel with battery back up	1	No.		
13	Warning sticker	2	No.		
14	Conventional Smoke detector with base	6	No		
15	Electronic hooter cum Strobe	2	No		
16	2Cx1.5 Sq mm cable with conduit	120	Mtr		
VESDA SYSTEM					
1	<p><u>ASPIRATION SMOKE DETECTION SYSTEM: consisting of :-</u></p> <p>a) SITC of Laser-Based Absolute Smoke Detection system with Single pipe inlet aspiration detector for Up to 250 m² (2500 sq. ft.) coverage; Networkable over 2 core wire, Programmable Alarm Thresholds; Offline/online configuration capability; Instant Fault Finder; AutoLearn Smoke; AutoLearn Flow; Multiple Event Logging in separate logs; Event log – up to 18000 events. Alarm Threshold Setting Range: 0.025 - 20.00% obs/m (0.008 - 6.25% obs/ft). Approvals- UL, ULC, FM, CFE, LPCB, VdS, CE - EMC and CPD, EN 54-20.</p> <p>b) SITC of Power Supply units - UL approved power supply unit with 230VAC input and 18 to 29VDC output. The power supply unit has the</p>	1	Lot		

	<p>indications for AC input Power. Power supply unit should have capacity to operate on battery backup in case of AC mains failure & should have built in charging circuit for batteries.</p> <p>c) SITC of Sampling Pipe having Smooth bore PVC Pipe 25mm Outer Dia & 19 to 21mm Inner Dia with all required accessories.</p> <p>d) SITC of 2 core twisted pair shielded cable for networking - 24 AWG Stranded (7x32) tinned copper conductor in suitable PVC conduit.</p> <p>e) SITC of Trunk Adaptor, Capillary Tube Connector, Capillary Tube, Capillary Sampling Point, Sampling point label red (complete set) for air sampling in room voids for area having false ceilings. (Complete Job)</p>				
2	<p><u>Dumb Test</u> Dumb Test for the complete system which includes cost of Gas and other consumable items</p>	1	job		
<p>Measurable quantities shall be paid as per actual at the time of execution of the job within the estimated cost.</p>					Total Rs.

Note:-1) The tenderer is required to quote their prices for the Supply installation Testing and Commissioning of Fire Suppression and High Sensitivity Fire Alarm and Smoke Detection System, FM-200 in Server Room of SCADA Centre at Panama Chowk, Jammu as per the technical specifications of this tender document valid for complete one year after approval of rates and **any item not specified in the scope of work shall be deemed to be included to meet the intent /purpose of the complete job.**

- 2) The prices/rates quoted shall be inclusive of all taxes, Entry tax, duties, packing, forwarding, freight, transit insurance and all other levies as applicable by the Central as well as State Government. The contractor's rates shall remain firm and fixed during the currency of the contract.

Signature of Tenderer
Firm Seal

(**Er. K. K. Padotra**)
Deputy General Manager,
Mechanical unit
JKPCC Ltd Jammu.