INDIAN INSTITUTE OF TROPICAL METEOROLOGY
PASHAN, PUNE-411008

Tender No. WS/FADS/50/2012/

TENDER NOTICE

Director, Indian Institute of Tropical Meteorology, Dr.Homi Bhabha Road, Pashan, Pune- 411 008 Invites sealed tenders (Part-I – Technical Bid, Part-II – Commercial Bid) in separate sealed covers from Manufacturers / Suppliers and their accredited selling agents for the Supply, Commissioning and Installation of Fire alarm and Detection System at IITM, Pune.

Tender documents with specifications can be obtained from Workshop of the Institute.

Pre-bid meeting at IITM, Pune : **9 July 2012 at 11:00 hrs.**
Last date of receipt of Tender at IITM, Pune : **18 July 2012 at 12:30 hrs.**
Opening of Tenders (Technical Bids only) : **18 July 2012 at 15:30 hrs.**

The Institute reserves the right to reject any or all tenders without assigning any reason thereof. For further details please visit our Website: **www.tropmet.res.in** / http://www.eprocure.gov.in

Mechanical Engineer
for Director
Email: **ravindra@tropmet.res.in**

TENDER DOCUMENTS

FOR

(TECHNICAL SPECIFICATION- PART I)

FOR ADDRESSABLE FIRE ALARM & DETECTION SYSTEM

AT

INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PASHAN, PUNE

INDEX

ISSUED TO.	: ON
CASH RECEIPT NO.	: DT

TENDER NOTICE

1. Sealed item rate quotations are invited from reputed contractor of Fire Alarm & Detection System work with its supply, installation, testing and commissioning of the system.

Name of Owner	:	**INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE.**
Name of Work	:	**ADDRESSABLE FIRE ALARM & DETECTION SYSTEM**
Cost of Tender documents	:	**Rs. 500 /- Non Refundable.**
Earnest Money Deposits	:	**Rs. 30,000/- (Thirty Thousand) in form of D.D / B.G from Indian Nationalized Bank drawn in favour of "Director Indian Institute of Tropical Meteorology, Pune".**
Date of completion	:	**45 days from the date of LOI.**

2. The tender forms will be available on payment of Rs. 500 /- of tender documents in cash/D.D. from Nationalized Bank at the address given below
The Director,
Indian Institute of Tropical Meteorology
Dr. Homi Bhabha Road, Pashan, Pune - 411 008
Tel. No. 020 - 25904200
Note:-Tender documents also can be download from the Institute website www.tropmet.res.in and D.D of Rs 500 /- as tender fee should be enclosed along with the technical bid.

3. Pre-bid meeting on **09.07.2012 at 11:00hrs.**

4. Duly completed tenders shall be submitted in sealed envelopes at the office of Director IITM Pune on address given below on **18.07.2012 at 12:30hrs.**

Indian Institute of Tropical Meteorology
Dr. Homi Bhabha Road, Pashan, Pune - 411 008
Tel. No. 020 - 25904200

Contact Person: Mr. Ravindra Bankar, Mechanical Engineer

Email: - ravindra@tropmet.res.in

Due Date and Time: - 18.07.2012 at 12:30hrs. and Technical bid will be open on 18.07.2012 at 15:30hrs. The date of commercial bid opening will be intimated to technically qualified venders after evaluation of technical bids.

5. The Director IITM, Pune reserves right to accept or reject any or all the quotations without assigning any reasons.

6. This tender notice shall form part of Contract / Order.

INSTRUCTION TO THE TENDERS

1. The tender is to be filled properly and all relevant information asked for shall be provided for in due format.
2 Technical and commercial bids are to submit in separate envelop. Technical bid is the blank BOQ (without price schedule) along with specifications and highlighted with the makes and material considered; duly signed on each page, super scribing the envelope as technical bid.
3 Commercial bid with price schedule only, super scribing the envelope as commercial bid.
4. The schedule of rates shall be returned in two sets.
5. All section wise total amounts shall be written in words also.
6. The tenderers are requested to furnish information about similar works handled, staff and infrastructure etc in technical bid.
7. All drawings and documents issued to the tenderers are confidential and shall be returned back with the tender.
8. EMD shall be in the form of DD/B.G of Nationalized Bank or as mentioned specifically in Tender Notice and shall be enclosed in a separate envelope along with the tender.
9. The duly completed tender shall be submitted at the following address in a sealed envelope before the time indicated.
10. Preliminary drawings, prints shall be available for reference & discussions at our office.
11. Time is essence of contract, hence contractor has to mobilize proper manpower & material in a short mobilizations period to site. No extension will be given for completion period, without proper and genuine reasons.
12. All bidders should visit site prior to giving quotes to get acquainted with site conditions. No demand shall later be entertained due to site conditions.
13. Pre-bid meeting for technical queries will be held on 09.07.2012 at 11:00hrs at I.I.T.M. Bidders are requested to be present in the meeting. All technical queries will be answered by I.I.T.M and consultants.
14. Bidders are requested to give deviations / comments / assumptions clearly in deviation pages based on the site observations.
15. Bidders are requested to highlight the makes of material considered while quoting in the list of approved makes.
16. Bidders are requested to quote value for supply & installation of material but client may provide some or all capital items free of cost. So while quoting labour / installation rates, material handling charges should be considered accordingly.
17. The Director IITM, Pune reserves the right to accept or reject any or all the quotations without assigning any reasons.
18. Soft copy of covering letter and priced BOQ shall be submitted along with tender in the CD provided. Bidders shall not change format of BOQ. VAT & service tax calculation / supporting shall be kept separate.
19. Duly completed tenders shall be submitted on or before 18.07.2012 at 12:30 hrs.
to addressee to following address :-

Indian Institute of Tropical Meteorology
Dr. Homi Bhabha Road, Pashan, Pune - 411 008
Tel. No. 020 - 25904200

Contact Person: Mr. Ravindra Bankar, Mechanical Engineer
Tel No. :- 020 - 25904200

ARTICLES OF AGREEMENT

Articles of Agreement ----------
made on the ----------day of ----------2012.
Between:

(hereinafter called "The Owner") of the part and ---------- ----------
----
of (or whose registered office is situated at) ----------

(herein after called "The contractor") of the other part.
Where as the owner is desirous of awarding the Work for ----------
----------. Drawing and Bill of Quantities showing and describing the work to be done prepared by under the direction of:

And where as the Contractor has supplied the owner with a Fully priced copy of the said bills of quantities (Which copy herein after referred to as "The Contract Bills"). And where as the said Drawings (herein after referred to as "The Contract Drawings") and the Contract Bills have been signed by or on behalf of the parties hereto and where to and where as the Contractor has deposited the sum of rupees ---------- with the OWNER for the due performance of this Agreement. Now it is hereby agreed as follows:

1. For the consideration herein after mentioned the Contractor will upon and subject to the condition annexed, carry out and complete the work shown upon the contract Drawings and described by or referred to in the Contract Bills and the said Conditions.

   The Owner will pay the Contractor the sum of Rs. ----------
   ----
   (herein after referred to as "Contract sum") or each other sum as shall become payable here under at the time and in the manner specified in the said conditions.

2. The terms "The Consultant" in the said condition shall mean the said or in the event of his death or ceasing to be Consultant for the purpose of this contract, such other persons as the owner shall nominate for that purpose provided always that no person subsequently appointed to be the Consultant under this contract shall be entitled or over rule any certificate or decision or approval or instruction given or expressed by the earlier Consultant.

3. The said condition and Appendix hereto (Sections) Shall be read and construed as forming part of this Agreement, and the parties hereto shall respectively abide by, submit themselves to these Conditions and perform the agreements on their parts respectively in such Conditions contained.
   As Witness the hands of the said parties.

   Signed by the:
   In the presence of:

   Witness :
   Name :
   Address :

SECTION - A

FORM OF TENDER.

To,

Indian Institute of Tropical Meteorology
Dr. Homi Bhabha Road, Pashan, Pune - 411 008
Tel. No. 020 - 25893825

Dear Sir,

Having examined the drawings, specifications and schedule of quantities of Fire Alarm & Detection System work specified below and having visited and examined the site of works for acquiring requisite information. I/We hereby offer to execute the works specified below in the specified time period at the rates quoted in the Schedule of Prices attached in accordance with the drawings, designs, specifications, conditions of contract and in all other respects with such conditions as applicable.

a)	Description of Work	:	**ADDRESSABLE FIRE ALARM & DETECTION SYSTEM**
b)	Earnest Money Deposit	:	**Rs. 30,000/- (Thirty Thousand) in form of D.D / B.G from Indian Nationalized Bank drawn in favour of "Director Indian Institute of Tropical Meteorology, Pune".**
c)	Completion Period	:	**45 days from the date of LOI.**

1. Should this tender be accepted, I/We hereby agree to abide by and fulfill all the terms and conditions of contract as they may be applicable and in the default there of to forfeit and pay to owner sum of money mentioned in the said conditions.

2. I/We agree that this offer shall remain open for acceptance for a minimum period of 120 days.

3. I/We hereby deposit a sum of Rs……. Drawn on bank …….. Dated……as EMD which is not to bear any interest. Should I/we fail to execute the contract when called up to do so, this sum shall be forfeited by me/us.

4. Our Bankers are

5. Names of Owner/Partner of Firm

    1)

    2)

    3)

Name of Partners/Director of
Firm Authorized to Sign.

Name of Person having Power of
Attorney to Sign the Contract.

PLACE :
DATE :

Signature & Seal of
Contractor.

SIGNATURE, NAME & ADDRESSES OF WITNESSES.

1)

2)

SECTION - B

PROJECT INFORMATION:

OWNER	**:**	**INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE.**
PROJECT		**CCCR BUILDING AT PASHAN, PUNE.**
WORK	:	**ADDRESSABLE FIRE ALARM & DETECTION SYSTEM**
AVG. RAIN FALL	**:**	800 mm.
TEMPERATURES	**:**	42^{0} c Max. 8^{0} c Min.

B.1. DETAILED SCOPE OF WORK:

A. The scope of work shall include supply, installation, testing and commissioning of intelligent analogue addressable Fire alarm & detection system including accessories, cables & conduits etc, as required for the satisfactory operation of the system.

B. Supply and installation of all equipment cabinets, panels, data communication network cables needed, and all associated hardware.

C. Supply and installation of all interconnecting cables between Fire Alarm control panel, Repeater panel, Detectors and input/output devices.

D. Provide complete manufacturer's specifications for all items that are supplied. Include vendor name of every item supplied and get approved by IITM / Consultant.

E. Provide as-built documentation & all other associated project operational documentation (such as technical manuals) on approved media, the sum total of which accurately represents the final system.

F. No used components shall be used as any part or piece of installed system.

G. Vendor should ensure warranty of the System for **2 years** and shall give service back up for 7 x 24 hrs of a week against any failure, software / hardware problem etc.

H. Vendor should submit their separate offer for **3 Years AMC** with their terms & conditions.

I. Necessary training for the successful operation & trouble shooting to the IITM responsible staff member is also included in the scope.

J. Vendor should consider all required Liasoning work related to Fire alarm & detection system with State / Municipal authorities for getting Fire NOC.

k. **Contractor should have licence from Maharashtra state / Pune Municipal Corporation for Fire Alarm & detection System work.**

B.2 CIVIL WORKS:

1) Major Civil works is excluded from the scope however necessary excavations if required, making, closing of cutouts in the wall, necessary supports and grouting, drilling etc are included in the scope.
2) All Civil works like chasing & making good the chases making pockets for grouting if necessary, grouting of panels etc. is Included in scope.
3) Fabrication and fixing of supports, frames etc. are included in the scope.

B.3 GENERAL:

Scope includes testing and commissioning of all items installed by contractor.

Contractor has to carry out all works as per respective NFPA & IS standards. All required tools & tackles, testing kits, measuring instruments, safety equipment's shall be provided by contractor with skilled manpower required.

B.4 LIST OF FREE ISSUE ITEMS:

Procurement of all items shall be included in the contractor's scope.
Client reserves right to procure any material if felt necessary by giving proper information to contractor

B.5 POST COMPLETION HANDING OVER DOCUMENTS:

Contractor's scope of work also covers post completion handing over documents, which will cover.

a) As Built Drawings.
b) Installation & maintenance manuals of all equipment.
c) Test & warranty certificates of all bought out items.
d) Test & Commissioning certificates for all installations.
e) Statutory documents required for record.
f) Testing & commissioning Documents in standard forms.
g) Bill of Material

SECTION - C

DEFINITION OF TERMS

C.1 '**Owner/Purchaser'** shall mean the client on whose behalf this enquiry is issued and his authorized representative.

C.2 **'Engineers'** shall mean Engineer / Architect / Consultant appointed by Owner for the project.

C.3 '**Bidder'** shall mean party who quotes against this enquiry.

C.4 **'Contractor'** shall mean the successful `BIDDER' whose bid has been accepted by Owner and on whom Purchase/Work Order is placed.

C.5 **'PROJECT'** shall mean the project specified in Section - B.

C.6 '**SITE'** shall mean the actual place of work as detailed in specification / Section B

C.7 **'SPECIFICATIONS'** shall mean collectively all the terms and stipulations contained in those portions of contract as general and special conditions, amendments, deletions, revisions as made in agreement or written agreements made pertaining to method of work.

C.8 **'Month'** shall mean calendar month.

C.9 **'Plant/Equipment'** and 'Works' shall mean respectively the goods to be supplied and services to be provided by contractor.

C.10 **'Contract/Work Order'** shall mean the order specifying works and associated specifications to be executed by "Owner and Contractor".

C.11 **'Contract Period'** shall mean the period during which "Owner" and "Contractor" shall execute the entire contract as agreed.

C.12 **'Guarantee Period'** / "Defect Liability Period" shall mean period during which the plant / equipment and installations shall give same and trouble free performance as guaranteed by contractor.

C.13 **'Engineer's Instructions'** shall mean instruction oral or written, drawings, direction, explanations issued by Consultant / Engineer / Architects on be-half of the owner from time to time during period of contract. (All 'oral' instructions shall be authenticated by written instructions immediately.)

C.14 **'Performance Tests'** shall mean all tests to be carried out by contractor as per specifications prior to installation being taken over by Owner under guarantee

C.15 **'Commissioning'** shall mean integrated activity of carrying out performance tests, initial and trial operations of system.

C.16 **'Drawings'** shall mean all drawings furnished by Engineer / Owner for basis of proposal or for carrying out works, from time to time; all drawing submitted by vendor provided such drawings are acceptable to Engineer/Owner.

C.17 '**UR'** means quote unit rate.

SECTION : D-I

GENERAL CONDITIONS OF CONTRACT

D-I.1 WORK ORDER:

The work order conveys final agreement between owner and contractor on terms and conditions and is exclusive statement of terms of their agreement. In case of discrepancy between general conditions and specifications, drawings furnished by owner, the latter shall take precedence.

D-I.2 MODIFICATION AND VARIATION:

The order may be amended, modified or rescinded only in writing by both the parties and their duly authorized representatives pursuant to terms stated therein.

D-I.3 MATERIALS AND SERVICES:

D-I.3.1 LABOUR & TOOLS TACKLES:

The contractor shall provide at his cost, all necessary material, tools, tackles, skilled manpower for proper execution of works specified in the schedule of the quantities and as per drawings and specifications. Any discrepancy in schedule of quantities and drawings shall be brought to notice of engineer/owner for decision, immediately.

D-I.3.2 ACTIVITY CHART RELATED TO CIVIL WORK:

Contractor shall provide detail Bar chart of activities based on completion period and civil work schedule made on MS project or similar software and get approval prior to starting the work. Mile stones for supply of important material & completion of specific jobs shall be indicated clearly.

D-I.3.3 MAKE OF MATERIAL:

Contractor shall provide all material of specific makes accepted during discussion stage or from approved list of makes.

In case of any problem / difficulties in procurement of such items, alternative makes will be approved by Engineer & owner based on samples and specifications submitted by contractor.

Alternative material shall be procured only after written approval for makes.

Procurement and use of material of makes not in approved list shall be sole responsibility of the contractor. Contractor shall replace all such material at no additional cost within a stipulated period.

D-I.4 AUTHORITIES AND LAWS:

Contractor shall confirm to all provisions of any law pertaining to works and to the regulations and by laws of related authorities and for water/electricity supply. Contractor shall indemnify owner/Engineer from all conflicts arising out of provisions of regulations & laws.

D-I.5 MATERIAL AND WORKMANSHIP:

All the materials to be supplied for execution of works shall be of first quality, new and strictly as per specifications. In case employer procures such items and hands over the same for fixing to the contractor, the contractor will receive the goods, open the crates and report any discrepancies, store it in his custody until required, install and commission it with necessary care and the best workmanship. The contractor shall be responsible for any loss or damages once the materials are supplied to him in good order and condition.

All the installation rates are deemed to include handling, erection, fabrication services & erection hard ware required for all items.

All the works shall be executed with highest quality of workmanship and as directed by owner/engineer. In case of mockups or approved samples, the quality of the same shall be adhered to for all works and any work quality & material below that standard will be rejected.

D-I.6 SUPERVISION:
DELETED

D-I.7 ACCESS TO WORK:
Owner / Engineer or their authorized representative shall have access to works being carried out at all reasonable times. No person, not authorized by owner/engineer except representatives of public authorities shall be allowed at work site at any time.

D-I.8 SUB-CONTRACT:
The complete work included in the contract shall be executed by the contractor and the contractor shall not sub-contract/sub-let work or part thereof without prior written consent from owner/engineer. However, contractor shall not be relieved from the responsibility of execution of works as per contract under any circumstances.

D-I.9 SCHEDULE OF QUANTITIES AND DRAWINGS:
D-I.9.1 SCHDULE OF WORK:
The schedule of quantities indicates nearest approximate quantities of the items works. There is a possibility of upward or downward variation of quantities due to site modifications. Any variation of quantities of the individual items as per schedule and overall cost variation of 25% shall be accepted by contractor without any financial implication. Contractor shall take exact measurements for items like cables, earth strips prior to bringing and cutting the same. If variation is beyond above stipulated limits, such items shall be carried out after written mutual agreement. However no excess payment claims for additional quantities shall be entertained if variation is established prior to deliveries of stipulated quantities.

D-I.9.2 GENERAL INFORMATION ON DRAWINGS:
Rates quoted for all 'Unit Rate' (UR) items shall be deemed as valid for any quantity as may be required for completion of work. The drawings enclosed indicate extent and general arrangement of various equipments. These are for guidance of contractor and exact locations, dimensions; clearance will be governed by site conditions, buildings and statutory rules. Contractor is required to go through the drawing and regulations prior to starting of works. Any discrepancy/changes required shall be reported to consultant and owner. Contractor shall prepare all **`working drawings'** and get them approved from consultants prior to starting the work. The working drawing shall be submitted to consultant within a specific time frame from date of order as mutually decided.

D-I.9.3 PROCURMENT OF MATERIALS:
Contractor shall bring quantities of items like cables, earthing strips, trays etc. after specific measurement. Client will not take over excess quantities of any items unless it is specifically agreed. Contractor shall have to take back all such quantities without any financial burden on client.

D-I.10 SUFFICIENCE OF SCHEDULE:

The contractor shall be deemed to have satisfied himself before tendering as to correctness and sufficiency of his tender for works and prices quoted therein which shall cover all obligations under contract for satisfactory completion of works, and stipulated performance of system/equipment in his preview.

D-I.11 MEASUREMENTS & BILLS:

Measurements and billing shall be done by specific method detailed below.

1. Contractor shall maintain a proper measurement book (Triplicate) on site and take measurement from time to time.
2. Owners representative / Engineer shall check these measurements from time to time. Coordination for checking will be contractor's responsibility.
3. Contractor shall make bills based on checked measurements only.
4. Bills shall be made in standard and cumulative formats only. Non cumulative Bill will not be accepted.
5. Contractor shall submit minimum 3 copies of bill with
   a) Measurement sheets copies duly signed.
   b) Copies of signed challan
   c) Summary sheet.
   d) Site progress photographs.

Measurements will be certified within 7 days. Consultants will certify R.A. Bills within 10 days of submission of correct bills. Contractor will claim extra items vide separate bills only after rate approval of such items.

D-I.12 REMOVAL OF WORKS:

The owner/engineer during the progress of work have power to order in writing removal from the works any material / installations which in their opinion are not as per specifications or instructions, and for carrying out rectification/rework within specified time and contractor shall carry out such removals/rework as per specification at his own cost. The owner/engineer can get such rectifications/rework done from other agencies at the cost of contractor, if the same are not carried out by them in the stipulated and agreed period.

D-I.13 COMPLETION CERTIFICATE:

D-I.13.1 COMMENCEMENT DEFECT LIABILTY PERIOD:

The work shall be deemed to have been completed on written certificate by Engineer that they have been virtually completed. The "Defect Liability Period" shall commence from the date of such certificate.

D-I.13.2 COMPLETION DRAWINGS & DOCUMENTS:

On completion of works, prior to getting completion certificate contractor shall prepare as built drawings in association and to satisfaction of consultant/Engineer giving all particulars.

a) Exact dimensions and clearances.
b) Fuse & switchgear ratings, ratings of equipments.
c) Cable sizes, cable schedule.
d) Earthing details.

Contractor shall submit the as-built drawing in 4 sets of prints and one set of reproducible to the client.

Contractor shall also submit detail drawings, instruction & maintenance manuals & test certificates for all bought out items. Test certificates of all tests carried out at site shall also form part of this.
One set of all handing over documents shall be given to Engineer / Consultant.

D-I.14 DEFECT LIABILITY PERIOD:

Any defects, faults, deterioration in performance of the material and installations which may appear; during the "Defect Liability Period" of twenty four months or any period as agreed by both parties from virtual completion of contract shall be amended/made good by the contractor at his own cost within a reasonable time. In case of default, owner may employ and pay other person to make good the defects and deduct the expenses from the dues payable to contractor on certification from engineer. The defect liability period unless otherwise specifically agreed shall be twelve months.

D-I.15 CONTRACTOR'S RESPONSIBILITY:

Contractor shall be responsible for injury to person animal or things, for all damages caused to property from operations or negligence of himself or his employees/sub-contractors. The contractor shall indemnify owner / Engineer and their employees and hold them harmless in respect of any and all expenses arising from such injury or damage and claims arising there of.
The damages to the property, plant and equipment caused due to such negligence shall be made good by the contractor at his own cost to the satisfaction of the owner / engineer within a specific time. The owner in concurrence with engineer shall be entitled to deduct amount of damage, compensation for loss arising from such damages/injuries/accidents in case of default. All laws related to PF, ESI, Medical insurance etc. shall be adhered to by the contractor. No child labour shall be employed by contractor.

D-I.16 INSURANCE & INDEMNITY:

D-I.16.1 LABOUR LAWS:

Contractor shall have valid PF, ESI registration. All laws related to Labour, PF, ESI, Medical insurance etc, shall be adhered to by contractor. No child Labour shall be employed by contractor.

D-I.16.2 GENERAL INSURANCE:

Contractor shall provide necessary insurance cover for all equipment and material in his scope till the system is handed over. Necessary insurance cover shall also be provided for man power employed on site. Contractor shall indemnify Owner/Engineer and their representatives employed and hold them harm less in case of any damages injuries /accidents and any claims arising out of them.

D-I.17 DATE OF COMMENCEMENT:

The date of commencement of work shall be accounted from the 7^{th} day after receipt of work order by contractor unless otherwise stated specifically.

D-I.18 LIQUIDATED DAMAGES:

The contractor shall pay liquidated damages of 1% per week / subject to a maximum of 10% at value of work order in case of delays beyond the accepted completion period for reasons solely attributed to him.

D-I.19 TIME EXTENTION:

If in the opinion of owner/engineer the work is delayed (a) by force majeure, (b) by reasons beyond control of contractor, extension of time for carrying out the works can

be sanctioned by owner/engineer on written request from contractor with due reasoning / supporting.
Force majeure shall mean & include compliance with statutory laws & regulation, Government order or change in orders, war & war like conditions, acts of civil & military authorities, fires, floods, earthquakes and other acts of God, sabotage, revolt, Strikes & lockout of more than 2 weeks. How ever contractor & owner in such case should devise means of expediting the progress for performance as per contract.

D-I.20 TERMINATION OF CONTRACT:

Owner shall be entitled to terminate the contract in case contractor fails to fulfill one or more conditions of contract or if the engineer/consultant certify to the owner in writing that the contractor;

a) Has abandoned the work.
b) Has failed to commence the work or has without any lawful excuse under contract conditions suspended work progress for more than one week or,
c) Has failed to proceed with the works and failed to make such due progress for timely completion of works or.
d) Has failed persistently to observe and perform works as per specifications and contract conditions or.
e) Has employed services of sub-contractors/sub-let all or part of works without prior permission of owner/engineer.

Then and in any of the above said cases owner may not withstanding any previous waiver, can terminate the contract after giving seven days notice in writing to the contractor without affecting powers of engineer and obligation and liabilities of the contractor.
If the payment of the amount payable by the owner under certificate of engineer is unpaid for thirty days or if owner interferes or obstructs issue of such certificate or if the works of owner/engineer or by any injunction or other orders by court of law, then and in any of the said cases contractor shall be at liberty to terminate the contract by giving seven days notice to the owner and shall be entitled to recover payment from owner on account of work executed or any loss sustained. Owner shall also be entitled to recover any losses due to default of contractor, incurred by him for carrying out / completing works as certified by consultant.

D-I.21 CERTIFICATION AND PAYMENTS:

The contractor shall be paid by owner from time to time under interim measurements certified by engineer/consultant on account of work executed in accordance with contract & to satisfaction of Engineer with certain retention till the work is completely executed. On virtual completion of the works, contractor shall be paid final installment retaining certain fixed percentage over a period known as "Defect Liability Period" as security. The final balance shall be payable to the contractor after expiry of "Defect Liability Period" and after such certificate is issued by engineer/consultant. Engineer/Consultant shall have power to withhold payment against work or part thereof not carried out to his satisfaction.

D-I.22 The decisions, opinion, direction, certificates with respect to clauses 9,13,17,18 here of shall be final conclusive and binding on the parties without appeal. All other decisions, opinion, direction certificates etc. shall be subject to right of arbitration.

D-I.23 ARBITRATION:

All the disputes of any kind in connection with contract shall be referred to engineer/consultant and settled in writing by him. If any party is dissatisfied with such

decision except for clauses indicated in clause 22 they are entitled to bring such disputes for arbitration.
Both parties shall appoint Arbitrator/s and his/their decision shall be final and binding on both parties.
Consultant/Engineer if necessary will represent the client in case of arbitration.

D-I.24 TECHNICAL SCRUTINY OF FINAL BILL:

The owner shall have right to get works and bills technically scrutinized at the time of payment of final bill. Owner shall be entitled to recover any money found to be over paid or over certified during such scrutiny.

D-I.25 CO-ORDINATION:

Contractor or his authorised representative shall be responsible for co- ordination with all other agencies working at site for smooth functioning and timely completion of works.
The Contractor shall arrange his work program to suit the building progress and priorities given by Owner/Consultancy.
Site meeting: Qualified/responsible representative shall attend necessary site meeting from contractor's side to take site instruction/decision in view of trouble shooting and progress review of works. Consultant/his representative shall attend the meetings as required.

D-I.26 PRICES:

The prices quoted in the schedule of works shall remain firm during the period of contract. Bidder shall be clearly state taxes, statutory duties and levies which he is required to pay. The rates quoted by Bidder for the items in schedule of rates shall inclusive of all taxes, duties etc.

D-I.27 EXTRA ITEMS:

Contractor may be required to carry out extra items due to site requirements or changes. All such items shall be carried out by contractor after written consent from client. Contractor shall submit a rate analysis of these items based on market rates. A margin of 10% shall be allowed over and above the expenses incurred. Escalation shall not be allowed on the extra items.

D-I.28 SECURITY DEPOSIT:

Successful bidder shall have to pay an amount of 5% of the order value at the time of starting the work in terms of bank guarantee of equal amounts in favor of the owner for entire period of contract up to virtual completion period.

D-I.29 PERFORMANCE GUARANTEES:

The contractor shall guarantee performance of plant and equipment and workmanship against fault for a period of 24 (twenty four) months called as "Defect Liability Period".
A certain percentage of work value 5% or as per payment terms shall be retained for the entire "Defect Liability Period" as security. Such retention can be released on furnishing a performance bond in form of bank guarantee of equal amounts for 24 month in favour of owner.

D-I.30 PAYMENT TERMS:

1. 70% of supply value against supply of material at site against invoice.
2. 20% of supply of installation on value against testing and commissioning.
3. Balance 10% Payment can be release on submission of Bank Guarantee from Indian Nationalized Bank of equal amount valid for 24 months from the date of virtual completion certificate.

SECTION : D-II

SPECIAL CONDITIONS OF CONTRACT

D-II.1 STORAGE AND OFFICE SHED:

The contractor has to prepare his own store and office shed. The owner at site will provide the suitable space. The contractor will be responsible for safety of his materials stored on site. The contractor shall make his own arrangements for housing of his staff. The CONTRACTOR **will not** be given space to put up Labour camp. CONTRACTOR shall make his own arrangement outside the premises without causing any hindrances to the OWNER. The cost of putting up the labour camps will be borne by the CONTRACTOR. After completion of work the office & store shed shall be dismantled / removed by the contractor at his own cost.

D-II.2 ELECTRICITY AND WATER:

Indian Institute of Tropical Meteorology, Pune will provide any of these facilities on chargeable basis at one place. Contractor shall have to make his own arrangements for further use of the facility. Unavailability of power & water cannot be deemed as reasons for delay.

D-II.3 MAINTENANCE OF SITE

Contractor should keep the site, building office clean of debris wood pieces etc. during the period of contract & work will not be considered as complete till last particle of debris is disposed off to the satisfaction of the Engineer / owner.

D-II.4 SECURITY RULES:

The contractor shall strictly follow all security rules of **Indian Institute of Tropical Meteorology, Pune** particularly bearing upon the inward & outward movements of his trucks, people and equipment and shall also execute the work in such a manner so as to cause the minimum disturbance to the working of the owner.

D-II.5 DISPLAY OF DRAWINGS AT SITE:

The drawings maintained on the site shall be carefully mounted on boards of appropriate size. They shall be protected from rain, ants or other insects. The contractor shall provide at his own cost a display board for showing the details of work as directed and instructed by the Engineer.

D-II.6 EXAMINATION OF DRAWINGS:

Contractor shall examine the relevant drawings, specifications of work which shall be available at the architect's / consultant's office. No claims shall be entertained for the assumptions made by tenderer, if any. Contractor shall not write any comments / conditions / figures or change the tender by writing on the same in any manner. The tender drawings are meant for guidance only.

D-II.7 BAR-CHART:

Contractor shall prepare bar chart and finalize the same in consultation with project consultants before mobilization advance is paid to the contractor. This bar chart will also indicate inputs from Project Consultants & Clients, Links with other works. Following items shall be included;

a. Time required for each activity and their relationship.
b. Quantities in each activity.

c. Resource planning such as equipment & tools to be employed and manpower to be employed for each activity.
d. Cost of each activity.
e. Schedule of drawings required by him for completing the project as per chart.

Bar charts shall be done in M.S. Project or equivalent software and shall be available on Compact Disc (CD). The Bar chart shall be reviewed in every site meeting.
CONTRACTOR will be bound to provide the minimum resources shown in the bar chart. In case it is found at any interim stage that the PROGRESS OF WORK is slow and completion time of any activity is likely to extend beyond the target dates the CONTRACTOR will have to increase the planned resources.
Provision of time will be made by the CONTRACTOR for other agencies to carry out their part of the work and such lapse of time will be considered by the CONTRACTOR in the planning schedule. No compensation will be paid for idle labour due to work of other contractors.

D-II.8 REQUIREMENT OF DRAWINGS:

Contractor shall indicate the dates on which drawings are required by him before starting the work. Contractor shall give a notice of 15 days to architect/consultant about the requirement of the drawing / decisions required by him to complete the project as per schedule. It is understood that all the drawings are not required at the beginning of the project for completing the project within time.

D-II.9 WORK- PROGRESS:

Contractor shall submit progress report for every site meeting with updated bar-chart marking upto date. Progress upto previous day compared to planned Bar chart and % comparison (lag/lead) with approved bar chart.
Monthly progress reports shall accompany "**selective photographs"** of works carried out at site and showing the progress (postcard size.)

D-II.10 CIVIL – WORK:

Contractor & his site engineers will be responsible for monitoring correctness civil works required for electrical works being executed by civil contractor. Necessary follow up for such work will also be done in view of expediting the works.

D-II.11 SHOP- DRAWING:

Contactor shall prepare his own shop drawing for substation layout as required by Statutory Agencies for submission & approval. Calculation if required for such application shall also be provided. Soft copies of consultant's drawings can be provided.

D-II.12 PAINT & FLOORING:

Contractor should take care of paint & flooring. In case of damage to paint or floor, Contractor shall reimburse the amount for required rectification need to be done.
Work Sequence should be as per given below.

D-II.13 APPROVAL OF DRAWINGS:

As per scope of work contractor shall submit 4 sets of shop / working drawings for approval with softcopy before commencement of work which includes,

a) Shop drawing for Fire Alarm & detection system (as per the scope of work),
b) Cables & Conduit layout details.
c) Detailed cable route layout
d) Standard installation details

Contractor's senior engineer / representative shall be made available at consultant's office for any discussion on above as required.

D-II.14 TENDER DRAWING:

The tender drawings are meant for guidance only & may not represent exact size & shape of the building. However they will give a fair idea of the work involved. Complete list of tender drawings available for inspection is given elsewhere in the tender.

Contractor shall examine the relevant tender drawings (which shall be issued along with the tender documents) & specification of work. No claim shall be entertained for the assumption made by the CONTRACTOR, IF ANY. CONTRACTOR shall not write any comments / conditions / figures on the tender.

In case price of item is quoted as lump sum in the BOQ the work described in the drawing will be added in the work described in the item of work as if it is included in the scope of work where lump sum price is quoted .No extra payment will be made for the work shown in the tender drawings.

D-II.15 PRECEDENCE ORDER:

1. Articles of agreement of IIA
2. Drawings
3. Bill of Quantities
4. Special conditions of contract
5. General specification
6. General condition of contract

D-II.16 VARIATION IN THE CONTRACT SUM: DELETED

D-II.17 DRAWINGS & DOCUMENTS:

"The contractor shall, upon receipt of drawings and documents, study and examine them thoroughly and bring to the notice of the Architect / Consultant any discrepancy found therein before starting work. Failure to do so will be at the risk and consequence of the contractor".

D-II.18 INSURANCE:

Contractor shall insure all the equipment and work in his scope including necessary transit insurance.

D-II.19 QUANTITIES:

Contractor shall, based on shop drawings check the quantities and bring in required quantities after establishing the same.

Abnormal increase or decrease of any quantities compared to BOQ shall be brought to notice of consultant for verification and shall be ordered after verification.

Balance material will not be taken over by client unless specifically discussed.

D-II.20 SPECIAL CONDITIONS FOR SUBMITTAL

Following are the requirements during the submittal of the quote. Vendors should carry the copy of the same during the technical submittal. Non submittal would lead to disqualification.

1) Data sheets of all the products quoted for.
2) Samples of the cables considered along with test certificates
3) System architecture
4) Deviations if any to be specified.
5) All taxes & levies to be mentioned separately. (VAT, Service Tax, Octroi, custom duty, Excise etc.)
6) Vendors to clearly specify any dependencies or details required from Client to run their systems smoothly.

SECTION : D-III

COMPREHENSIVE ANNUAL MAINTENANCE SERVICE

XXXXXXXXXXXXXXXXXXXXXXX. as part of the Comprehensive Annual Maintenance Service offers services for Fire alarm & detection system.

D-III.1.0 Spare Parts Management Services

D-III.1.1 Spare Parts Holding Service

It covers the holding of spare parts service for the installation. This service provides stocking of spare parts at XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. This ensures spares support throughout the service period and minimizes the inventory maintenance costs for spare for IITM. The parts will be replaced either with a functionally compliant spare or with the same part no. and the spare parts, which have been used, shall be replenished. Where there is a requirement of revision update, VENDOR'S shall exchange the part with an updated version.

Parts Replacement Service

The scope covers Unlimited Parts Replacement (exception to Annexure II).

This service provides replacement of parts determined to be defective as a result of normal usage free of cost. Failure due to rat and rodent menace, improper power supply, corrosion, etc. is not covered under this service.
From IITM perspective there is Reduction in Administrative Costs, Shorter replacement cycles (no prior approval required), Improved financial planning (Budget).

D-III.2.0 Maintenance Services

D-III.2.1 Preventive Maintenance Service

This is a preventive maintenance support under which VENDOR'S Maintenance team will visit the IITM site on a scheduled visit as follows

4 Visits per Year

All services are provided during normal working hours unless requested to do differently. The services performed include the following tasks with respect to VENDOR'S system

- System service on all specified hardware (Maintenance schedule) as detailed at Annexure-I
- Technical Assistance on queries
- Control and updating of spare parts stock, system documentation

This will reduce cost of Corrective Maintenance. The liaison understands the application & IITM organization priorities.
Service delivery will be in accordance with the agreed Preventive Maintenance frequency schedule.

Scheduled engineer will be available to IITM during normal working hours.

D-III.2.2 Corrective Maintenance Service

This is breakdown maintenance support with respect to VENDOR'S system. Engineer call out is based on IITM request.

The expertise is available on request. This reduces the downtime of the system.
The VENDOR'S engineer performs corrective maintenance services. Where applicable action items and programs shall be agreed to prevent corrective situations.

Three levels of support are available for solution of problems.
First level is available in the region very close to the IITM.
Second level is from the works, which is equipped with a Technical support group consisting of highly train d technical experts who will be providing support to IITM. This is an additional support provided to strengthen the service engineer attending the call incase he requires some technical support for some typical problems. This is for technical support required during emergency. Technical solution on telephone is also covered under this service.

D-III.2.3 Service Report

For every visit covered under preventive maintenance or corrective/break down calls VENDOR'S engineer shall make a service report, which will be signed by both VENDOR'S and IITM.
One copy will be retained by IITM. and one will be with VENDOR'S

ANNEXURE - I

SCOPE OF PREVENTIVE MAINTENANCE VISIT

VENDOR'S engineer will carry out following jobs during the periodic maintenance visit:
Cleaning of panels, cards/modules/detectors sensors etc.
Check the system errors and alarms and rectifying the same
Check and note down the revision no. of various software and hardware. This shall help in identifying correct replacement and for future system upgrade.
Power supply checks.
AC Voltage across – 1. Phase & Neutral 2. Phase & Earth 3. Neutral & Earth
Checking of DC voltage across the DC power supply
Communication cables will be checked for loose terminations
LED indications check in all modules
Sort out any problematic issues concerned with the system and corrective actions for the problem existing

1. During the preventive/ corrective maintenance visit, IITM will provide vacuum cleaner to VENDOR'S engineer
2. IITM. will co-ordinate with other agencies if any interfacing with other equipment not supplied by VENDOR'S is required to be done.
3. All those non-vendor items (bought outs) covered under the comprehensive contract for replacement when found faulty, will not be stock items and the delivery time will be intimated IITM. at the time of failure of those.

ANNEXURE -II

List of Exclusions

Panels, Consoles, Cables, Conduits, Furniture (if any)
Any software updates which covers addition of new features and if desired by IITM will be at extra cost.

SECTION - E

SAFETY REGULATIONS

E.1 Readily accessible **First Aid Kit** including adequate sterilized cotton and dressing shall be provided on site.

E.2 Any injured person shall be taken to nearest public hospital without delay.

E.3 **Open/temporary jointing of the cables** shall be avoided and all connections shall be taken through proper sockets & plug tops, Insulated joints and switches etc.

E.4 **All workmen and supervisors** shall be provided with **helmets / safety caps**. **All visitors / Engineers** shall also **wear helmets** when moving on sites.

E.5 Safety apparatus like hand gloves of appropriate class shall be used for all testing commissioning activities. Proper care through danger notice boards, personal vigil shall be taken during such operation to avoid Injury and damage.

E.6 **Protective switchgear** shall also be used for **all temporary works**.

E.7 The Contractor shall be responsible for all injury to persons, animals or things and for all damage to the structural and or any part of property arising out of his operations or neglect of himself or of any of his approved sub-contractor's employees, whether out of carelessness, accident or whatever cause. This clause will include buildings, roads, cables, drains, and tanks. The contractor shall indemnify the owner and hold him harmless in respect of all any expenses aristae from any such injury or damage to person or property. The contractor shall reinstate at his cost all damages of every sort mentioned in this clause, so as to deliver the whole of the work complete and perfect in every respect and make good or otherwise satisfy all claims for damages to property of third party. The contractor shall indemnify the owner against all claims made against the owner by any member of public or third party arising out of his work or in consequence there of and shall at his own cost arrange to effect and maintain until the virtual completion of work, an insurance policy with an approved nationalize insurance company in joint names of owner and himself against such risk and deposit such policy with the client. The contractor shall also indemnify the owner against all claims, which may be made upon the owner.

Whether under workmen's compensation act or any other against such risks. The contractor shall be responsible for anything which may be excluded from insurance policy and also for all other negligent or defective carrying out of this contract.

The Owner shall be at liberty and is hereby empowered to deduct the amount of any damages, compensation costs, charges and expenses arising from any such claims from any sum due to contractor,

SECTION - F

TECHNICAL SPECIFICATIONS

INTELLIGENT ANALOGUE ADDRESSABLE FIRE ALARM & DETECTION SYSTEM

F.1.0 SYSTEM SPECIFICFTIONS:

F.1.1 DESCRIPTION:

a. This section of the specifications includes the furnishing, installation, and connection of the microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete coordinated system ready for operation. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, control panels, auxiliary control devices, annunciators, power supplies, and wiring as shown on the drawings and specified herein.

b. The fire alarm system shall comply with requirements of NFPA Standard No. 72 / EN 54 Part 2 & 4 for protected premises signaling systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.

c. The fire alarm manufacturer shall be of the highest caliber and quality. The system shall be manufactured by an ISO 9001 certified company and meet the requirements of BS5750: Part 1: ANSI/ASQC Q91-1987.

F.1.2 SCOPE OF WORK:

A. The scope of work covers installation, commissioning and testing of a new intelligent reporting, microprocessor controlled fire detection system in accordance with the specifications and drawings.

The work shall cover:

- Fire Alarm Control Panel (FACP) with 640 Character display
- 40 Character display repeater panels/ Display mimic panels
- Addressable Alarm initiating devices.
- Circuit interface modules
- Hooters / Strobes/sounders
- Audio-visual annunciation devices.

All wiring

- From alarm initiating devices
- From circuit interface modules to various annunciation devices.
- Integration with Access control system
- Integration with Repeater panel

B. FUNCTIONAL OPERATION:

When a fire alarm condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:

- The system alarm LED shall flash.
- A local piezo-electric signal in the control panel shall sound.
- The 640-character LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
- Printing and history storage equipment shall log the information associated each new fire alarm control panel condition, along with time and date of occurrence.

- All system output programs assigned via control-by-event equations to be activated by the particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.

F.2.0 SUBMITTALS:

F.2.1 GENERAL:

Four copies of all submittals shall be submitted (PMC – 1 sets, Client- 1 sets, Design consultant-1set and vendor-1set) for review.

1. System manufacturer and experience.
   All references to manufacturer's model numbers and other pertinent information herein are intended to establish minimum standards of performance, function and quality. Equivalent equipment (compatible UL / EN54 Listed) from other manufacturers may be substituted for the specified equipment as long as the minimum standards are met.
2. System configuration and capability vis-à-vis specifications.
   All substitute equipment proposed as equal to the equipment specified herein, shall meet or exceed the following standards. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

F.2.2 SHOP DRAWINGS:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. 4 Sets of shop drawings shall be submitted (PMC – 1 set, Client- 1 set, Design consultant-1set and vendor-1 set).
3. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
4. Show annunciator layout and main control panel module layout, configurations and terminations

F.2.3 MANUALS:

1. Submit simultaneously with the shop drawings, complete operating and maintenance manuals listing the manufacturer's name(s) including technical data sheets.
2. Wiring diagrams shall indicate internal wiring for each item of equipment and the interconnections between the items of equipment.
3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.
4. Approvals will be based on complete submissions of manuals together with shop drawings.

F.2.4 SOFTWARE MODIFICATIONS:

1. Provide the services of a factory trained and authorized technician to perform all system software modifications, upgrades or changes. Response time of the technician to the site shall not exceed 4/8/24 hours.
2. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power down of the system or loss of system fire protection while modifications are being made.

F.2.5 CERTIFICATIONS:

Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer. Include names and addresses in the certification.

F.2.6 GUARANTEE:

All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least two (2) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one-year period shall be included in the submittal bid.

F.2.7 POST CONTRACT MAINTENANCE:

i) Complete maintenance and repair service for the fire alarm system shall be available from a factory trained authorized representative of the manufacturer of the major equipment for a period of five (5) years after expiration of the guaranty.

ii) As part of the submittal, include a quote for maintenance contract to provide all maintenance, test, and repair described below. Include also a quote of unscheduled maintenance/repair, including hourly rates for technicians trained on this equipment, and response travel costs. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

iii) Maintenance and testing shall be on a semiannual basis or as required by the local authority. A preventive maintenance schedule shall be provided by the contractor that shall describe the protocol for preventive maintenance. The schedule shall include:

iv) Systematic examination, adjustment and cleaning of all detectors, manual fire alarm stations, control panels, power supplies, relays, water flow switches and all accessories of the fire alarm system.

v) Each circuit in the fire alarm system shall be tested semiannually.

vi) Each smoke detector shall be tested in accordance with the requirements of NFPA 72, Chapter 7 / EN 54.

F.2.8 APPROVALS:

1. The system must have proper listing and/or approval from any of the following internationally recognized agencies:

   UL / VDS / LPCB / EN54

2. Onward of the contract and before the placement of orders on sub vendors the following particulars shall be furnished and got duly approved.

3. Detailed performance data of various system modules and drawings.

4. Detailed selection and drawings of various signal initiating devices.

5. Wiring drawings and details and makes of wires and conduits.

6. Floor plans showing locations of various devices.

F.2.9 PRODUCT:

EQUIPMENT:

1. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approval agency for use as part of a protected premises protective signalling (fire alarm) system. The authorized representative of the manufacturer of the major

equipment, such as control panels, shall be responsible for the satisfactory installation of the complete system.

2. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the Riser/Connection diagram for all specific system installation/termination/wiring data.

3. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g. detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

F.2.10 CONDUIT & CABLES:

CONDUIT:

Conduit shall be in accordance with local and state requirements.

1. Where concealed wiring is required, wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit. Cable must be separated from any open conductors of power, or class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors.

2. Wiring for 24 volt control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

3. Conduit shall not enter the fire alarm control panel or any other remotely mounted control panel equipment or back boxes, except where conduit entry is specified by the FACP manufacturer.

4. Conduit shall be 20mm or 25mm minimum.

CABLES:

1. All fire alarm system wiring must be new.
2. All control cables shall be 1100/650 V PVC Insulated, Armoured, Stranded, Twisted, Copper control cables having minimum cross section of 1.5 sq. inner PE with AL Mylar tape. The cables shall be Fire Resistant types. The cables shall be confirming to IS 1554: (Part-1) 1976.and NFPA 70.

3. All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; a trouble signal will be activated until the system and its associated field wiring are restored to normal condition.

4. The Fire Alarm Control panel shall be capable of T-Tapping Class B (NFPA Style 4) Signalling Line Circuits. Systems, which do not allow, have restrictions to, for example, the amount of T-Taps, length of T-Taps etc., is not acceptable.

5. Cables without proper ISI certification shall not be accepted. The make of cables to be used by the contractor shall be subject to Client’s/ Consultant’s approval.

F.3.0 FIRE ALARM SYSTEM:

F.3.1 The main FACP Central Console shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: Analogue addressable detectors, addressable modules, local and remote operator terminals, printers, annunciators, and other system controlled devices. It should be capable of incorporating fire alarm loops as per the interior designs.

F.3.2 The main FACP shall perform the following functions:

a. Supervise and monitor all Analogue addressable detectors and monitor modules connected to the system for normal, trouble and alarm conditions.

b. Supervise all initiating signaling and notification circuits throughout the facility by way of connection to monitor and control modules.

c. Detect the activation of any initiating device and the location of the alarm condition. Operate all notification appliances and auxiliary devices as programmed.

d. Visually and audibly annunciate any trouble, supervisory or alarm condition on operator's terminals, panel display, and annunciators.

e. Cause operation of all notification appliances and auxiliary devices as programmed.

F.3.3 The FACP shall provide:

- Acceptance switch
- Alarm silence switch
- System reset switch
- Walk test switch.
- Lamp test switch.
- Block Acknowledge
- Control-By-Time
- Drift Compensation
- Pre-alarm Control Panel Indication
- NFPA 72 Smoke Detector Sensitivity Test
- Multiple printers' option.
- Alarm Verification, by device, with tally
- Multiple CRT Display Interface
- Non-Alarm Module Reporting
- Periodic Detector Test
- Trouble Reminder
- Upload/Download to PC Computer
- Alarm Verification with Tally
- Smoke Detector Maintenance Alert

F.3.4 The system/FACP shall be designed for 25% future expansion of signal loop interface boards.

F.3.5 The system shall provide the following facilities.

- To enable or disable or adjust sensitivity of any addressable device through the system keypad or operator terminal and also to enable alarm verification of each device.
- To store upto 400 system operations or events in a non-volatile memory.
  To generate system status reports and recall/print each operation at command of operator.

- To interrogate each detector and analyze detector response and to provide display and print abnormal deviation without inhibiting the system performance.
- To provide 'pre-signal alarm' signal when the detector is at 80 % of its alarm threshold.
- To cause the following operations upon activation of any detector, break glass unit or flow switch, unless otherwise specified.
- Activate all programmed notification circuits until silenced.
- Activate all audio-visual annunciation devices until reset.
- Release all magnetic door holders to adjacent zones on the fire door.
- Activation of any pressure (flow) switch shall cause supervisory alarm.

F.4.0 SYSTEM CAPACITY AND GENERAL OPERATION:

F.4.1 THE MAIN FIRE ALARM CONTROL PANEL:

a. The control panel shall provide, or be capable of expansion to minimum 198 Analogue addressable devices (any combination) per loop.

b. The Fire Alarm Control Panel shall include a full featured operator interface control and annunciation panel that shall include a backlit, minimum 80 character liquid crystal display, individual, color coded system status LED's, and an alphanumeric keypad for the field programming and control of the fire alarm system.

c. All programming or editing of the existing program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the fire alarm control panel.

d. The panel shall be field programmable or from the operator Terminal with two level password protection
   - Status level changes
   - Actual change in program
   - All changes shall be recorded with date & time stamp and authorization.
   - The panel should have an in-built card to facilitate networking.

F.4.2 CENTRAL PROCESSING UNIT:

1. The Central Processing Unit shall communicate with monitor, and control all other modules within the control panel. Removal, disconnection or failure of any control panel module shall be detected and reported to the system display by the Central Processing Unit.
2. The Central Processing Unit shall contain and execute all control-by-event programs for specific action to be taken if an alarm condition is detected by the system. The control by event programs shall provide the following logical operations on the analogue addressable devices: AND, OR, NOT, CROSSZONE, Etc. Such control-by-event programs shall be held in non-volatile programmable memory, and shall not be lost with system primary and secondary power failure.
3. The Central Processing Unit shall also provide a real-time clock for time annotation of all system displays. The Time-of-Day and date shall not be lost if system primary and secondary power supplies fail.
4. The CPU shall be capable of being programmed on site without requiring the use of any external programming equipment. Systems that require the use of external programmers or change of EPROM's are not acceptable.
5. The CPU and associated equipment are to be protected so that they will not be affected by voltage surges or line transients consistent with UL standard 864.
6. Each peripheral device connected to the CPU shall be continuously scanned for proper operation. Data transmissions between the CPU and peripheral devices shall be reliable and error free. The transmission scheme used shall employ dual transmission or other equivalent error checking techniques.

F.4.3 DISPLAY:

1. The display assembly shall contain, and display as required, custom alphanumeric labels for all Analogue addressable detectors, addressable modules, and software zones.
2. The system display shall provide an minimum 80-character backlit alphanumeric Liquid Crystal Display (LCD). It shall also provide five Light-Emitting-Diodes (LEDs) that will indicate the status of the following system parameters: AC POWER, SYSTEM ALARM, SYSTEM TROUBLE, DISPLAY TROUBLE, and SIGNAL SILENCE.
3. The system display shall provide a 25-key touch keypad with control capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be accessible through the display interface assembly to prevent unauthorized system control or programming.
4. The system display shall include the following operator control switches: SIGNAL SILENCE, LAMP TEST, RESET, SYSTEM TEST, and ACKNOWLEDGE.

F.4.4 SIGNALING LINE CIRCUIT (SLC) INTERFACE BOARD:

1. The SLC board shall monitor and control a minimum of 198 Analogue addressable devices. This includes analog addressable detectors (Photoelectric, or thermal) and monitor or control modules.
2. The SLC interface board shall contain its own microprocessor, and shall be capable of operating in a local mode (any SLC input activates all or specific SLC outputs) in the unlikely event of a failure in the main CPU of the control panel.
3. The SLC interface board shall not require any jumper cuts or address switch settings to initialize SLC Loop operations.
4. The SLC interface board shall provide power and communicate with all analogue addressable detectors and modules connected to its SLC Loop on a single pair of wires. This SLC Loop shall be capable of operation as NFPA Style 4 or Style 6.
5. The SLC interface board shall be able to drive two Class B (NFPA Style 4) circuits each up to 10,000 feet in length, for an effective loop distance of 20,000 feet.
6. The SLC interface board shall receive analog information from all analogue addressable detectors and shall process this information to determine whether normal, alarm, or trouble conditions exist for that particular detector. The SLC interface board software shall include software to automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information may also be used for automatic detector testing and for the automatic determination of detector maintenance requirements.

F.4.5 SERIAL INTERFACE BOARD:

1. The Serial Interface Board shall provide an EIA-232 interfaces between the fire alarm control panel and the UL Listed Electronic Data Processing (EDP) peripherals.
2. The Serial Interface Board shall allow the use of multiple printers, CRT monitors, and other peripherals connected to the EIA-232 ports.
3. The Serial Interface Board shall provide one EIA-485 port for the serial connection to annunciation and control subsystem components.
4. The Serial Interface Board shall have LEDs that will show that it is in regular communication with the annunciators or other EIA 485 connected peripheral device.
5. EIA-232 serial output circuits shall be optically isolated to assure protection from earth ground.

F.4.6 ENCLOSURES:

1. The control panels shall be housed in a cabinet suitable for surface or semi-flush mounting. Cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
2. The back box and door shall be constructed of .060 steel with provisions for electrical conduit connections into the sides and top.
3. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators. For convenience, the door may be hinged on either the right or left side (field selectable).
4. The control unit shall be modular in structure for ease of installation, maintenance, and future expansion.

F.4.7 POWER SUPPLY:

1. The Main Power Supply shall operate on 230 VAC, 50 Hz, and shall provide all necessary power for the FACP.
2. It shall provide 3.0 amps of usable notification appliance power, using a switching 24 VDC regulator.
3. It shall be expandable for additional notification appliance power in 3.0-ampere increments.
4. It shall provide a battery charger for 24 hours of standby using dual-rate-charging techniques for fast battery recharge.
5. It shall provide a very low frequency sweep earth detect circuit, capable of detecting earth faults on sensitive addressable modules.
6. It shall be power-limited using Positive Temperature Coefficient (PTC) resistors.
7. It shall provide meters to indicate battery voltage and charging current.
8. The power supply shall be capable of charging NICAD batteries up to 32 Amp Hours

F.5.0 SYSTEM COMPONENTS:

F.5.1 ADDRESSABLE DETECTORS:

i. Detectors shall be Analogue and Addressable, and shall connect with two wires to the fire alarm control panel signaling Line Circuits. Addressable smoke and thermal detectors shall provide dual (2) alarm and power LED's. Both LED's shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LED's shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. If required, the flashing mode operation of the detector LED's shall be optional through the system field program. An output connection shall also be provided in the base to connect an external remote alarm LED.

ii. Smoke detector sensitivity shall be set through the Fire Alarm Control Panel and shall be adjustable in the field through the field programming of the system. Sensitivity may be automatically adjusted by the panel on a time-of-day basis. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7.

iii. The detectors shall be ceiling-mount with sealed sensing chambers and suitable for stable operation in an ambient temperature of 0 to 49^{O}C and against 7.5mps air velocity. The detectors shall include a separate twist-lock base, which includes a tamper proof feature. Wherever specified, an optional base shall be provided with a built-in (local) sounder rated at 85 dB minimum which will be driven by the system power without the need for an additional supervised power.

iv. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

vi. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device Ionization, Photoelectric,

vii. Thermal: Rated at 135 degrees Fahrenheit (58^{O}C) and have a rate-of-rise element rated at 15 degrees Fahrenheit (9.4^{O} C) per minute.

viii. Fixed temperature detector for applications, which don't require rate-of-rise element .Duct ionization.

F.5.2 REFLECTED TYPE BEAM SMOKE DETECTOR
DELETED

F.5.3 ADDRESSABLE MANUAL CALL POINT (BREAK GLASS / PULL TYPE):

i Addressable MCP / Pull Boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch. They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.

ii. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.

iii. Manual Stations shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches or larger.

iv. Stations shall be suitable for surface mounting or semiflush mounting as shown on the plans, and shall be installed not less than 42 inches, more than 48 inches above the finished floor.

F.5.4 ELECTRONIC SOUNDERS / SPEAKERS:

i. Electronic sounders shall operate on 24 VDC nominal.

ii. Electronic sounders shall be field programmable without the use of special tools, to provide slow whoop, continuous, or interrupted tones with an output sound level of at least 90 dBA measured at 10 feet from the device, with a frequency response of 2000-8000 Hz with a lower power rating and shall also incorporate a suitable microphone for talk back to the control panel. Listed for fire services and protected against temperature effects. Failure of audio amplifiers shall result in a trouble signal.

iii. Shall be flush or surface mounted as shown on plans.

F.5.5 ADDRESSABLE MONITOR MODULE:

i. Addressable Monitor Modules shall be provided to connect one supervised zone of conventional Alarm Initiating Devices (any N.O. Dry contact device) to one of the Fire Alarm Control Panel Signaling Line Circuit (SLC) Loops.

ii. The Monitor Module shall mount in a 4-inch square, 2-1/8" deep electrical box

F.5.6 ADDRESSABLE CONTROL MODULE:

i. Addressable Control Modules shall be provided to supervise and control the operation of one conventional Notification Appliance Circuit (NAC) of compatible, 24 VDC powered, polarized Audio/Visual Notification Appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contract relay.

ii. The Control Module shall mount in a standard 4-inch square, 2-1/8" deep electrical box, or to a surface mounted backbox.

iii. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.

iv. Audio/visual power shall be provided by a separate supervised power loop from the main Fire Alarm Control Panel or from a supervised, UL listed remote power supply.

v. The Control Module shall provide address-setting means using decimal switches and shall also store an internal identifying code that the control panel shall use to identify the type of device. An LED shall be provided that shall flash under normal conditions, indicating that the control module is operational and is in regular communication with the control panel. A magnetic test switch shall be provided to test the module without opening or shorting its NAC wiring.

F.5.7 FAULT ISOLATOR MODULE:

i. Fault Isolator Modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC loop. The Fault Isolator Module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC Loop. At least one fault isolator module shall be provided for each floor or protected zone of the building. If a wire-to-wire short occurs, the Fault Isolator Module shall automatically open-circuit (disconnect) the SLC loop. When the short circuit condition is corrected, the Fault Isolator Module shall automatically reconnect the isolated section. The Fault Isolator Module shall not require any address setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset the Fault Isolator Module after its normal operation.

ii. The Fault Isolator Module shall mount in a standard 4-inch deep electrical box or in a surface mounted backbox. It shall provide a single LED that shall flash to indicate that the Isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

iii. The Fault Isolator Module shall mount in a standard 4-inch deep electrical box or in a surface mounted backbox. It shall provide a single LED that shall flash to indicate that the Isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

F.5.8 ANNUNCIATOR:

i. The annunciator shall communicate to the fire alarm control panel via an EIA 485 (multi-drop) two-wire communications loop. The system shall support two 6,000-ft. EIA-485 wire runs. Up to 32 annunciators, each configured up to 64 points may be connected to either of the two connections, for a system capacity of 2,048 points of annunciation.

ii. An EIA-485 repeater shall be available to extend the EIA-485 w distance in 3,000-ft. increments. An optional (UL 864 listed) Version shall allow the EIA-485 circuit to be transmitted over Fiber optics.

iii. Each annunciator shall provide up to 64 RED alarm and 64 trouble indications using a long-life LED's. Up to 64 control switches shall also be available for the control of Fire Alarm Control Panel functions. The annunciator will also have an "ON-LINE" LED, local piezo sounder, local acknowledge and lamp test switch, and custom zone/function identification labels.

iv. The annunciator may be field configured to operate as a "Fan Control Annunciator". When configured as "Fan Control", the Annunciator may be used to manually control fan or damper operation and can be set to override automatic commands to all fans/dampers programmed to the annunciator.

v. Annunciator switches may be programmed for System control Such as, Global Acknowledge, Global Signal Silence, Global System Reset, and on/off control of any control point in the system.

vi. The system shall offer an interface to a graphic style annunciator and provide each of the features listed above.

F.5.9 BATTERY CHARGER:

- Shall be completely automatic, with constant potential charger maintaining the battery fully charged under all service conditions. Charger shall operate from a 230-volt 50-hertz source.
- Shall be rated for fully charging a completely discharged battery within 48 hours while simultaneously supplying any loads connected to the battery.
- Shall have protection to prevent discharge through the charger.
- Shall have protection for overloads and short circuits on both AC and sides.

F.6.0 EXECUTION:

F.6.1 INSTALLATION:

- Installation shall be in accordance with the NFPA 72, local and state codes, as shown on the drawings and as recommended by the major equipment manufacturer.
- All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
- All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- All wiring shall be carried out with 660 V grade PVC insulated FRLS Cables in galvanized steel conduit. Cable less than 1 sq. mm. shall not be used. Power cables for 400/230 V system shall be drawn in separate conduits. All junction boxes and conduit accessories shall be of galvanized steel.

F.7.0 TYPICAL OPERATION:

Actuation of any manual station, smoke detector, heat detector shall cause the following operations to occur unless otherwise specified:

- Activate all programmed notification circuits until silenced.
- Actuate all strobe / sounder units until the panel is reset.
- Annunciate the active initiating devices and zones.
- Release all magnetic door holders to doors to adjacent zones on the floor from that the alarm was initiated.
- In addition to the above functions shut down the ventilation system or close associated control dampers as appropriate.
- Shut down / Trip all Ventilation Fan Mechanism.

F.8.0 TEST:

The system shall be tested and commissioned by a qualified competent, trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system.

1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation. No wiring installation offering a resistance of less than 1.0 mega ohm shall be energized.
2. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
3. Verify activation of all flow switches.
4. Open initiating device circuits and verify that the trouble signal actuates.
5. Open signaling line circuits and verify that the trouble signal actuates.

6. Notification appliances circuit and verify response of trouble signals.
7. Check presence and audibility of tone at all alarm notification devices.
8. Check installation, supervision, and operation of all Analogue addressable smoke detectors during a walk test.
9. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
10. When the system is equipped with optional features, the manufacturer's manual should be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

F.9.0 POST COMPLETION HANDING OVER DOCUMENTS:

Contractor's scope of work also covers post completion handing over documents, which will cover.

f) As Built Drawings.
g) Installation & maintenance manuals of all equipment.
h) Test & warranty certificates of all bought out items.
i) Test certificates for all equipment.
j) Statutory documents required for record.
f) Testing & commissioning Documents in standard forms.

Final Inspection:
At the final inspection a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the systems function properly in every respect.

Instruction:
Provide instruction as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

The contractor and/or the systems manufacturer's representatives shall provide a typewritten "sequence of operation" to the owner.

F.11.0 CABLE SPECIFICATIONS:

For Fire Device/Detection Loop:
ATC conductor stranded, PVC insulated to form a core, Cores laid up, overall shielded with Alu-mylar tape with tinned copper drain wire of size 0.5 Sq. mm, PVC inner sheathed G.I. Wire armoured, PVC sheathed cable.

Sr.	Description
1	2 Core X 1.5 Sq. mm Multi Stranded Copper, FRLS Armoured cable (**Red in Colour**)
2	4 Core X 1.5 Sq. mm Multi Stranded Copper, FRLS Armoured cable

SECTION G

APPROVED LIST OF MATERIAL

NOTE: CLIENT RESERVES RIGHT TO ASK FOR ANY OF THE FOLLOWING APPROVED MAKES TO BE USED DURING DISCUSSIONS.
CONTRACTOR SHALL INDICATE WHICH MAKE HAS BEEN CONSIDERED WHILE QUOTING THE RATES.

I. FIRE ALARM SYSTEM		
Fire Alarm Control Panel	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Repeater Panel	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Smoke Detector	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Multi Sensor Detector	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Heat Detector	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Strobe Cum Sounder	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Sounder / Hooter	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Manual Call point	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Monitor Module	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
Addressable Control Module	:	Secutron / Notifier / Edward / Bosch / Cooper / Siemens / Morley
FRLS Armoured Cable	:	Finolex / Neolex / Polycab / KEI / Ravin / Thermoflex / RPG / RR Kabel / Lapp

SECTION H

LIST OF STANDARD

1. National Fire Protection Association (NFPA) Standards:
2. IS 2189
3. NFPA 70 National Electric Code
4. NFPA 72 National Fire Alarm Code
5. BS 5839
6. Underwriters Laboratories, Inc. (UL) Publication
7. Uniform Building Code (UBC), including local amendments.
8. FCC Part 15, Subpart J, Class A.

SECTION – I

DEVIATIONS FROM GENERAL CONDITIONS OF CONTRACT

All deviations from general condition of contract shall be filled in hereby the bidder.

SECTION	CLAUSE NO.	DEVIATION

The bidder hereby certificates that the above mentioned are only deviations from general conditions of contract of enquiry.

DATE **Signature And Seal of Bidder**

SECTION – J

DEVIATIONS FROM TECHNICAL SPECIFICATIONS

All deviations from specification shall be filled in hereby the bidder.

SECTION	CLAUSE NO.	DEVIATION SPEC. NO.

The bidder hereby certificates that the above mentioned are only deviations from technical specifications of this enquiry.

DATE **Signature And Seal of Bidder**

SECTION – K

LIST OF DRAWINGS

Sr.No.	Description	Drawing No.
1	Fire Alarm System Layout for Ground Floor	1109/FAS/01
2	Fire Alarm System Layout for First Floor	1109/FAS/02
3	Fire Alarm System Layout for Second Floor	1109/FAS/03
4	Fire Alarm System Layout for Basement Floor	1109/FAS/04

SECTION - L

DETAILS OF CONTRACTORS

1.	Name & Address	:	
2.	Banker	:	
3.	Solvency	:	
4.	Turn over of last Three Years	a)	
		b)	
		c)	
5.	Type of Firm	:	Proprietor / Partnership / Pvt. Ltd. / Ltd.
6.	No. of Employees		
i)	Directors / Partners	:	
ii)	Managers	:	
iii)	Sr. Engineer	:	
iv)	Jr. Engineer	:	
v)	Supervisors	:	
vi)	Skilled Technicians	:	
vii)	Unskilled Workers	:	

TENDER DOCUMENTS

FOR

(PRICE BID- PART II)

FOR ADDRESSABLE FIRE ALARM & DETECTION SYSTEM

AT

INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PASHAN, PUNE

CLIENT : - INDIAN INSTITUTE OF TROPICAL METROLOGY, PUNE

PROJECT : - PROPOSED CCCR BUILDING AT IITM

WORK : - ADDRESSABLE FIRE ALARM & DETECTION SYSTEM

SUMMARY SHEET- 1

	SYSTEM DESCRIPTION			Supply	Installation
				AMOUNT Rs. Ps.	AMOUNT Rs. Ps.
	SECTION - 'I' Addressable Fire Alarm & Detection System	:	RS.		
	SUB TOTAL	:	RS.		
	TOTAL (Supply + Installation)				
	VAT	:	RS.		
	Service Tax	:	RS.		
	GRAND TOTAL	:	RS.		

CLIENT : - INDIAN INSTITUTE OF TROPICAL METROLOGY, PUNE

PROJECT : - PROPOSED CCCR BUILDING AT IITM

WORK : - ADDRESSABLE FIRE ALARM & DETECTION SYSTEM

Bill of Quantity

Item No.	Description	Unit	Qty.	Supply		Installation	
				Rate Rs. P s.	Amount Rs. Ps.	Rate Rs. Ps.	Amount Rs. Ps.
	SECTION - I						
	Addressable Fire Alarm & Detection System						
1.0	Supply, installation, testing & commissioning of 4 Loop Networkable Intelligent Analogue Addressable Fire Alarm Control Panel with minimum 80 characters LCD display including **4 Loop driver cards**, network card, in-built battery backup for 24 hrs.in standby mode & 30 min in alarm condition mode and with required accessories.	No.	1				
2.0	Supply, installation, testing & commissioning of Active Repeater Panel with 40 characters LCD display & required accessories.	No.	1				
3.0	Supply, installation, testing & commissioning of Analogue Addressable Photoelectric type Smoke detectors with detector mounting base & required accessories.	No.	148				
4.0	Supply, installation, testing & commissioning of Analogue Addressable Multi-Sensor detectors combined (Photo + Thermal) with detector mounting base & required accessories.	No.	22				
5.0	Supply, installation, testing & commissioning of Analogue Addressable Rate of Rise Thermal (Heat) detectors with detector mounting base & required accessories.	No.	2				
6.0	Supply, installation, testing & commissioning of Addressable Manual Call Points (**Break Glass Type / Pull Station Type**). The same shall be made of ABS plastic, square in shape Surface / Flush Mounting with mounting base & required accessories. It shall have a "Break glass" message embedded on the glass (In case of break glass type MCP). The addressable module shall be enclosed along with the break glass in a junction box.	No.	13				
6.1	Supply of Additional break glasses (In case of break glass type MCP)	No.	10				
7.0	Supply, installation, testing & commissioning of Ceiling mounted Addressable Sounder. The Sounder shall be made of ABS plastic material & have the Db level of 90 dBs and a multi tone facility, complete with mounting base & required accessories. The addressable module shall be enclosed / fitted in a junction box.	No.	6				

Item No.	Description	Unit	Qty.	Supply		Installation	
				Rate Rs. P s.	Amount Rs. Ps.	Rate Rs. Ps.	Amount Rs. Ps.
8.0	Supply, installation, testing & commissioning of Ceiling mounted Addressable Strobe cum Sounder. The strobe cum sounder shall be made of ABS plastic material & have the Db level of 90 dBs and a multi tone facility, The strobe shall be ajustable to 110 candelas. complete with mounting base & required accessories. The addressable module shall be enclosed / fitted in a junction box.	No.	4				
9.0	Supply, installation, testing & commissioning of Addressable Fault / Loop isolator module with Surface mounting backbox & required accessories.	No.	11				
10.0	Supply, installation, testing & commissioning of Addressable Zone Monitor Module with Surface / wall mounting box & required accessories.	No.	UR				
11.0	Supply, installation, testing & commissioning of Addressable Control Module with surface/ wall mounting box & required accessories. **(for Access triping off)**	No.	4				
12.0	Supply and laying of 2C x 1.5 Sq.mm, Multistranded Copper, FRLS Armoured cable laid on surface with GI saddle-spacers every 0.4 meters. Complete with GI Junction Box, lugs, cable compression glands, cable tags, ferruling and end termination. (**Red in Colour**)	Rmt.	2000				
13.0	Supply and laying of 4C x 1.5 Sq.mm, Multistranded Copper, FRLS Armoured cable laid on surface with GI saddle-spacers every 0.4 meters. Complete with GI Junction Box, lugs, cable compression glands, cable tags and Ferruling. (**For interconnection between Fire Alarm Panel & Repeater Panel**)	Rmt.	100				
14.0	Supply & Installation of 2 mm thick FR PVC conduit of following sizes including all accessories e.g. deep junction box, bends etc. for concealing in slab / wall & spacer saddles for open on slab / wall.						
14.1	25 mm dia FRPVC.	Rmt.	75				
	TOTAL OF SECTION - I						

CLIENT : - INDIAN INSTITUTE OF TROPICAL METROLOGY, PUNE

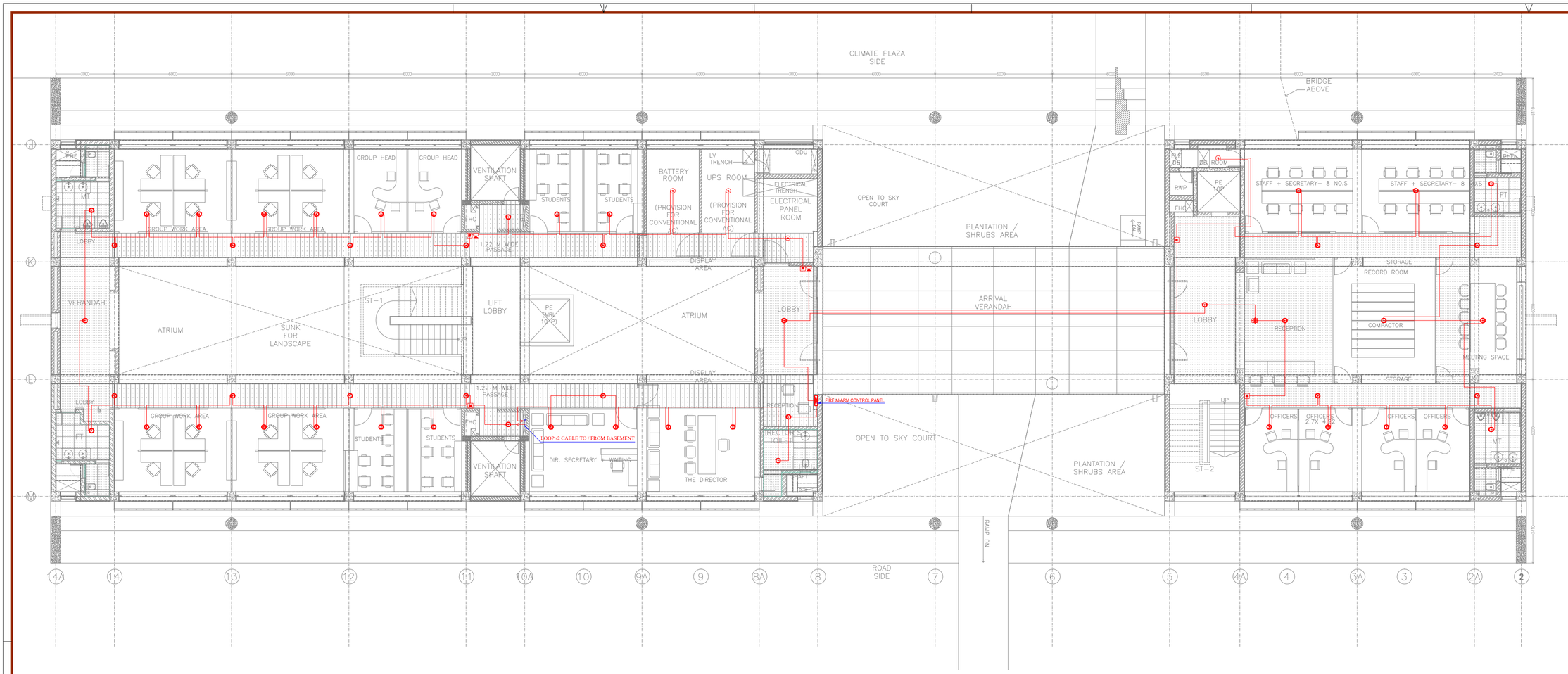
PROJECT : - PROPOSED CCCR BUILDING AT IITM

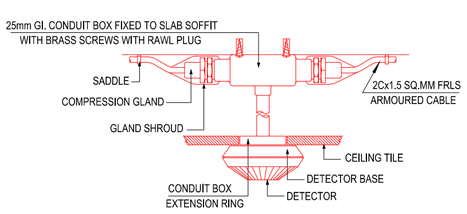
WORK : - ADDRESSABLE FIRE ALARM & DETECTION SYSTEM

SUMMARY SHEET- 2

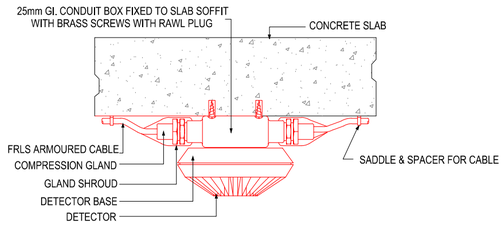
ANNUAL MAINTANENCE CONTRACT

	Charges for comprehensive ,all inclusive annual maintanence contract rate after the expiry of warranty period for 2 years for above mentioned systems			
1	AMC rate for 3rd Year	:	**RS.**	
2	AMC rate for 4th Year	:	**RS.**	
3	AMC rate for 5th Year	:	**RS.**	
	SUB TOTAL OF AMC	:	**RS.**	
	TOTAL	:	**RS.**	

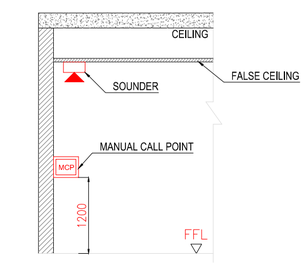




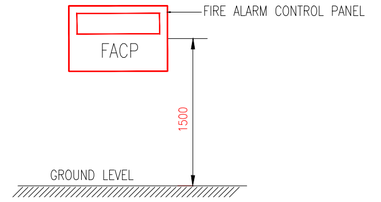
TYPICAL MOUNTING ARRANGEMENT OF DETECTORS BELOW FALSE CEILING



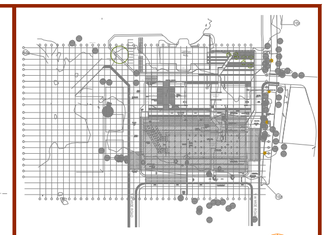
TYPICAL MOUNTING ARRANGEMENT OF DETECTORS RECESSED MOUNT



TYPICAL MOUNTING DETAILS OF MCP & SOUNDER



MOUNTING HEIGHT OF FIRE ALARM CONTROL PANEL



K E Y P L A N

LEGEND– FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION	QTY.
	ADDRESSABLE FIRE ALARM CONTROL PANEL	01
	ADDRESSABLE PHOTO ELECTRIC SMOKE DETECTOR	52
	ADDRESSABLE MULTI SENSOR DETECTOR	04
	ADDRESSABLE MANUAL CALL POINT	05
	ADDRESSABLE SOUNDER	02
	ADDRESSABLE STROBE CUM SOUNDER	01
	2C X 1.5 SQ.MM, MULTISTRANDED COPPER, FRLS ARMOURED CABLE LAID ON SURFACE WITH GI SADDLE & SPACERS EVERY 0.4 METERS. COMPLETE WITH GI JUNCTION BOX, LUGS, CABLE COMPRESSION COMPRESSION GLANDS, CABLE TAGS AND FERRULING. (FOR FIRE LOOP–1)	

NOTE :

1. THE DETECTORS LOCATED ON TRUE CEILING/SLAB SHALL BE MOUNTED ON 4" x 4" x 1 1/2" GANG BOX.
2. MANUAL CALL POINT SHALL BE MOUNTED AT A HEIGHT OF 1.2 METER FROM FFL.
3. ALL SOUNDERS / STROBE CUM SOUNDERS SHALL BE MOUNTED ABOVE MCP ON CEILING.
4. FIRE ALARM CONTROL PANEL SHALL BE MOUNTED AT A HEIGHT OF 1.5 METER (CENTRE OF BOX) FROM FFL.

A2 PAPER SIZE

SUFFIX	DATE	REVISIONS
R0	25-06-2012	FOR TENDER ONLY

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CLIENT
INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE

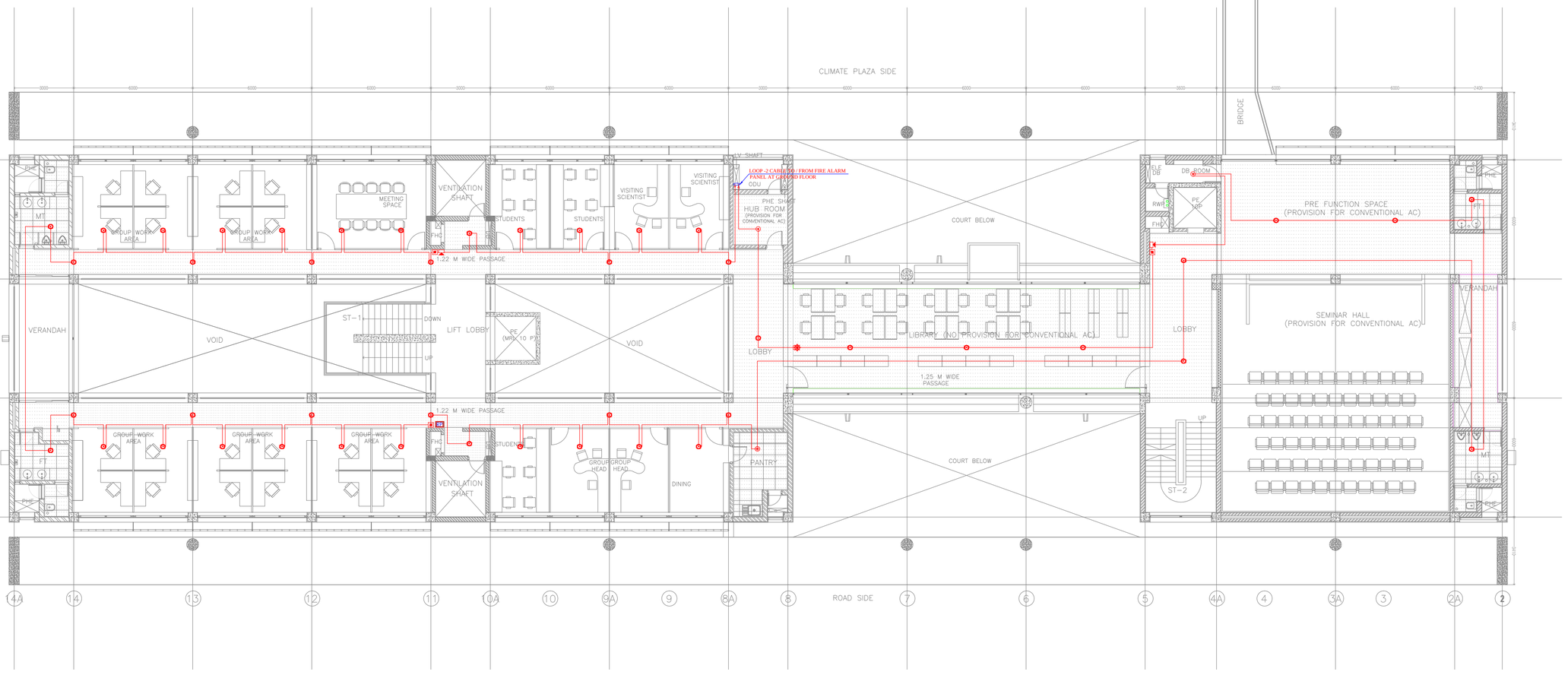
PROJECT
PROPOSED CCCR BUILDING AT IITM

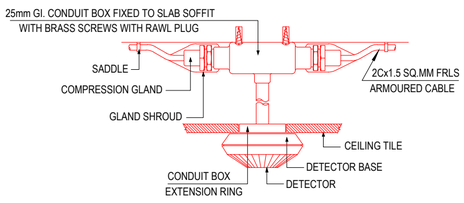
TITLE
FIRE ALARM SYSTEM LAYOUT FOR GROUND FLOOR

SCALE : NTS	DATE : 10-05-2012	DRAWN R.K.S
DWG.NO. 1109/FAS /01	SUFFIX R0	CHECKED R.K.S
		APPROVED N.P.NAGLE

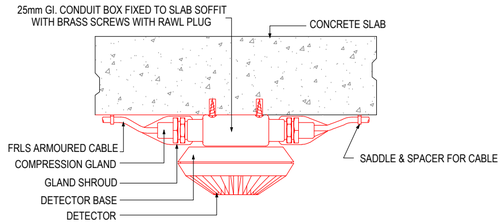
REF. DWG

ARCH DWG REF:

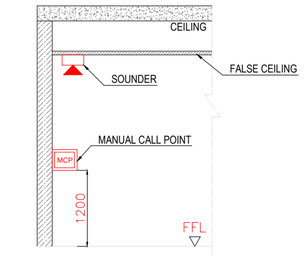




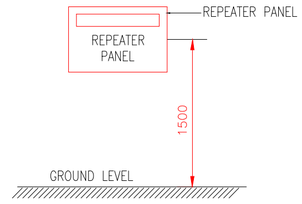
TYPICAL MOUNTING ARRANGEMENT OF DETECTORS BELOW FALSE CEILING



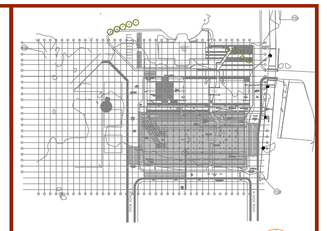
TYPICAL MOUNTING ARRANGEMENT OF DETECTORS RECESSED MOUNT



TYPICAL MOUNTING DETAILS OF MCP & SOUNDER



MOUNTING HEIGHT OF REPEATER PANEL



KEY PLAN

LEGEND– FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION	QTY.
RP	REPEATER PANEL	01
	ADDRESSABLE PHOTO ELECTRIC SMOKE DETECTOR	46
	ADDRESSABLE MULTI SENSOR DETECTOR	02
	ADDRESSABLE HEAT DETECTOR	01
	ADDRESSABLE MANUAL CALL POINT	03
	ADDRESSABLE SOUNDER	02
	ADDRESSABLE STROBE CUM SOUNDER	01
	2C X 1.5 SQ.MM, MULTISTRANDED COPPER, FRLS ARMOURED CABLE LAID ON SURFACE WITH GI SADDLE & SPACERS EVERY 0.4 METERS, COMPLETE WITH GI JUNCTION BOX, LUGS, CABLE COMPRESSION COMPRESSION GLANDS, CABLE TAGS AND FERRULING. (FOR FIRE LOOP–2)	

NOTE :

1. THE DETECTORS LOCATED ON TRUE CEILING/SLAB SHALL BE MOUNTED ON 4" x 4" x 1 1/2" GANG BOX.
2. MANUAL CALL POINT SHALL BE MOUNTED AT A HEIGHT OF 1.2 METER FROM FFL.
3. ALL SOUNDERS / STROBE CUM SOUNDERS SHALL BE MOUNTED ABOVE MCP ON CEILING.
4. REPEATER PANEL WILL BE MOUNTED AT A HEIGHT OF 1.5 METER (CENTRE OF BOX) FROM FFL.

A2 PAPER SIZE

SUFFIX	DATE	REVISIONS
R0	25-06-2012	FOR TENDER ONLY

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PROJECT
PROPOSED CCCR BUILDING AT IITM

TITLE
FIRE ALARM SYSTEM LAYOUT FOR FIRST FLOOR

SCALE : NTS	DATE : 10-05-2012	DRAWN R.K.S
DWG.NO. 1109/FAS/02	SUFFIX R0	CHECKED R.K.S
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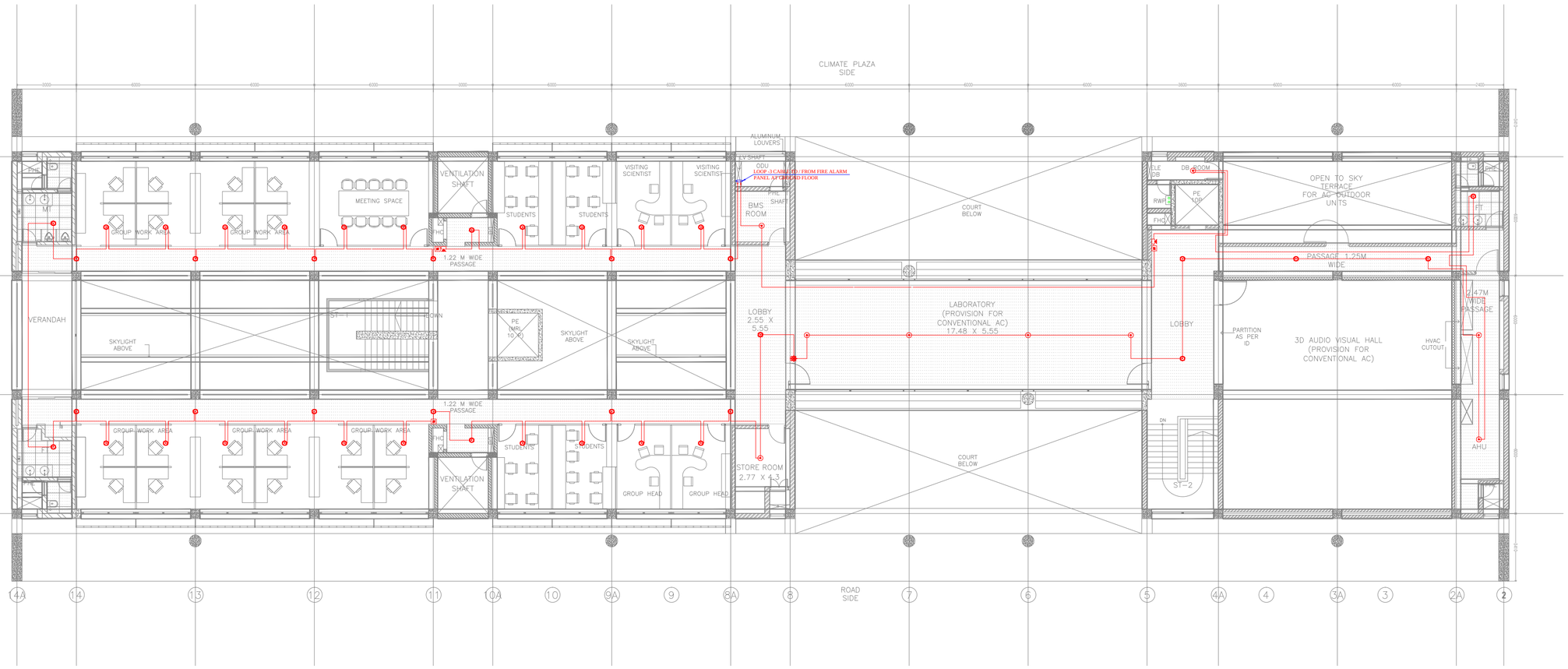
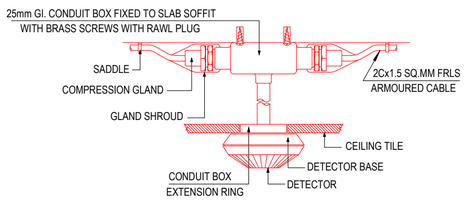
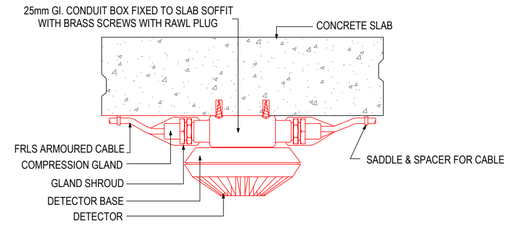
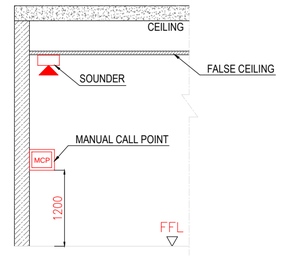




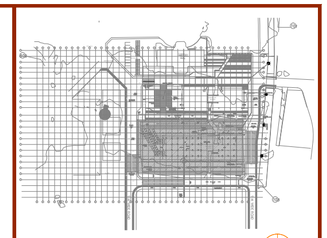
TYPICAL MOUNTING ARRANGEMENT OF DETECTORS BELOW FALSE CEILING



TYPICAL MOUNTING ARRANGEMENT OF DETECTORS RECESSED MOUNT



TYP. MOUNTING DETAIL OF HORN CUM STROBE



KEY PLAN

LEGEND– FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION	QTY.
	ADDRESSABLE PHOTO ELECTRIC SMOKE DETECTOR	43
	ADDRESSABLE MULTI SENSOR DETECTOR	09
	ADDRESSABLE MANUAL CALL POINT	03
	ADDRESSABLE SOUNDER	02
	ADDRESSABLE STROBE CUM SOUNDER	01
	2C X 1.5 SQ.MM, MULTISTRANDED COPPER, FRLS ARMOURED CABLE LAID ON SURFACE WITH GI SADDLE & SPACERS EVERY 0.4 METERS, COMPLETE WITH GI JUNCTION BOX, LUGS, CABLE COMPRESSION COMPRESSION GLANDS, CABLE TAGS AND FERRULING. (FOR FIRE LOOP–3)	

NOTE :

1. THE DETECTORS LOCATED ON TRUE CEILING/SLAB SHALL BE MOUNTED ON 4" x 4" x 1 1/2" GANG BOX.
2. MANUAL CALL POINT SHALL BE MOUNTED AT A HEIGHT OF 1.2 METER FROM FFL.
3. ALL SOUNDERS / STROBE CUM SOUNDERS SHALL BE MOUNTED ABOVE MCP ON CEILING.

A2 PAPER SIZE

SUFFIX	DATE	REVISIONS
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PROJECT
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TITLE
FIRE ALARM SYSTEM LAYOUT FOR SECOND FLOOR

SCALE : NTS	DATE : 10-05-2012	DRAWN R.K.S
DWG.NO. 1109/FAS/03	SUFFIX A	CHECKED R.K.S
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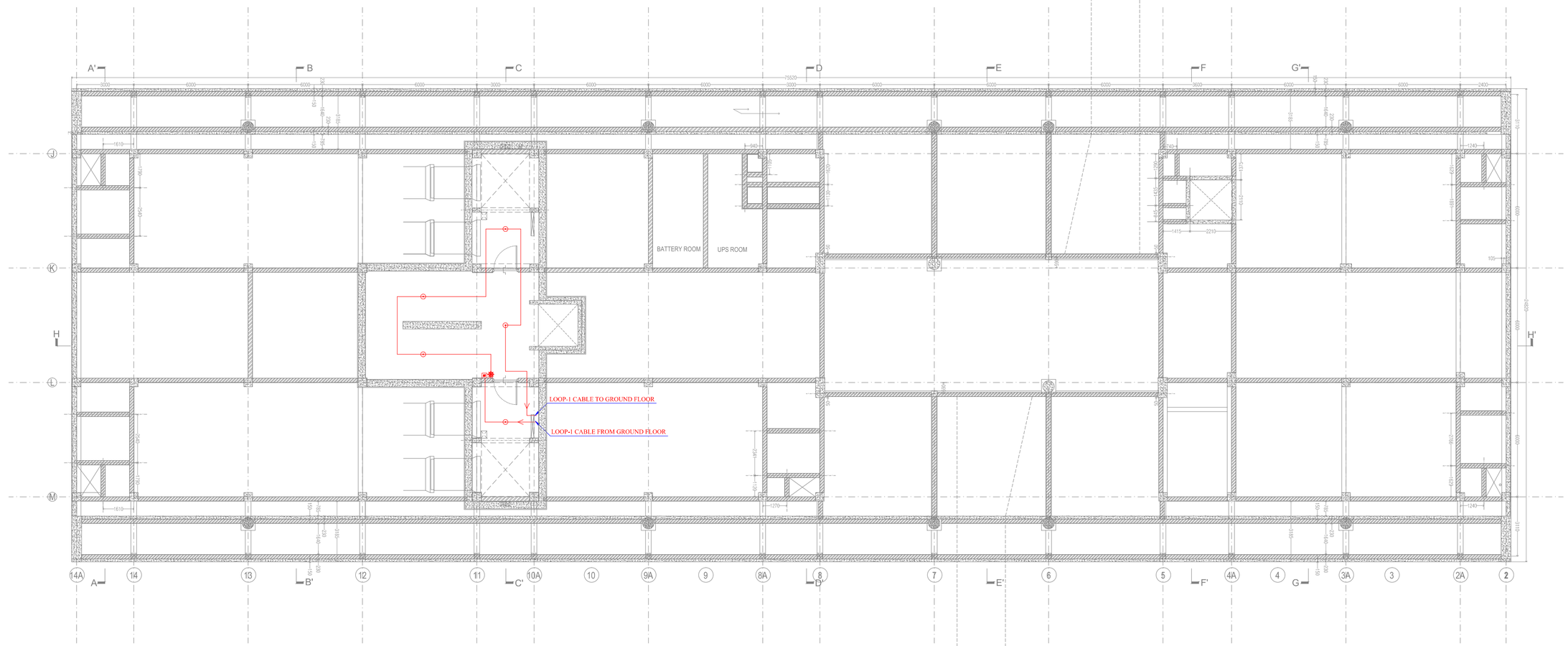
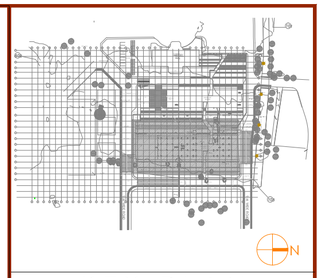




KEY PLAN

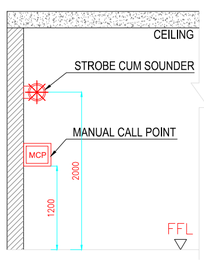
LEGEND– FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION	QTY.
⊙	ADDRESSABLE MULTI SENSOR DETECTOR	05
▣	ADDRESSABLE MANUAL CALL POINT	01
✱	ADDRESSABLE STROBE CUM SOUNDER	01
——	2C X 1.5 SQ.MM, MULTISTRANDED COPPER, FRLS ARMOURED CABLE LAID ON SURFACE WITH GI SADDLE & SPACERS EVERY 0.4 METERS. COMPLETE WITH GI JUNCTION BOX, LUGS, CABLE COMPRESSION COMPRESSION GLANDS, CABLE TAGS AND FERRULING. (FOR FIRE LOOP–1)	

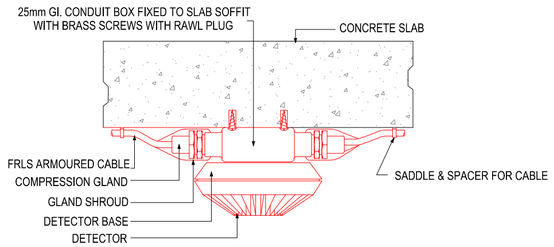
NOTE :

1. THE DETECTORS LOCATED ON TRUE CEILING/SLAB SHALL BE MOUNTED ON 4" x 4" x 1 1/2" GANG BOX.
2. MANUAL CALL POINT SHALL BE MOUNTED AT A HEIGHT OF 1.2 METER FROM FFL.
3. STROBE CUM SOUNDERS SHALL BE MOUNTED AT A HEIGHT OF 2.0 METER FROM FFL.

A2 PAPER SIZE



TYP. MOUNTING DETAIL OF HORN CUM STROBE



TYPICAL MOUNTING ARRANGEMENT OF DETECTORS RECESSED MOUNT

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PROJECT
PROPOSED CCCR BUILDING AT IITM

TITLE
FIRE ALARM SYSTEM LAYOUT FOR BASEMENT FLOOR

SCALE :	DATE :	DRAWN
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