



SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA

SIDBI Head Office, SIDBI Tower, 15, Ashok Marg, Lucknow-226001

TEL:- 0522 4259700

Web: - www.sidbi.in

TENDER DOCUMENT

NOTICE INVITING TENDER FOR SUPPLY, INSTALLATION, TESTING, COMMISSIONING OF AUTOMATIC FIRE SPRINKLER SYSTEM AT SIDBI TOWER, 15 ASHOK MARG, LUCKNOW

TENDER IDENTIFICATION NO. -314/2024/1771/HO1/PREMISES

LAST DATE OF SUBMISSION OF SEALED TENDER – 07/08/2023 UPTO 15:00 HR

Prepared By:-

MEP CONSULTANT

N.S. Consulting Services

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Issued By: -

The Dy. General Manager [Premises]

SIDBI TOWER, Small Industries Development Bank of India (SIDBI),

1st Floor, Administration and Premises Vertical,

15, Ashok Marg,

Lucknow-226001

Phone No. 0522-4259778/4259773

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GENERAL INFORMATION AND CONDITIONS OF CONTRACT

1. Bid Calendar

1.	Date of commencement of bidding	17/07/2023
2.	Issue of Tender Document	17/07/2023 – 06/08/2023 between 10.30 a.m. to 5.00 p.m. (Working days only)
3.	Pre-Bid meeting with Bidders (date and time)	25/07/2023 1130 Hrs
4.	Last date and time for closure of bidding and receipt of Bid Documents	07/08/2023 1500 Hrs
5.	Date and Time of Technical Bid Opening	07/08/2023 15:30 Hrs
7.	Earnest Money Deposit Amount	Rs. 64,000/- (Rupees Sixty-Four Thousand Only Only)
8.	Estimated Project cost:	Rs. 47,00,000/- (Rupees Forty-Seven Lakhs Only)
9.	Period of completion	Phase – I: 3 months from date of issue of LOI Phase – II: 3 months post handing over of Phase – I or post confirmation to start the work by the Bank.
10.	Place of opening of Bids	Small Industries Development Bank of India (SIDBI), SIDBI Head Office, SIDBI Tower, 15, Ashok Marg, Lucknow-226001

Note: -

- 1. Technical Bids will be opened in the presence of Bidders who choose to attend as above.**
- 2. If holiday is declared on any of the dates mentioned above, the next working day and time shall be the date for the same purpose.**

2. TENDER NOTICE

Sealed tenders on “item rate” are invited in a Two bid system from reputed contractor/ vendors for supply, installation, testing and commissioning etc. of Automatic Fire sprinkler system at SIDBI Tower, 15, Ashok Marg, Lucknow - 226001

M/s. N.S. Consulting Services, Mumbai has been appointed by SIDBI as “MEP Consultant” for the above -mentioned project.

Formats for technical and financial bids may be downloaded from SIDBI’s website **www.sidbi.in** as well as Central Public Procurement (CPP) Portal **<http://eprocure.gov.in>**

The EMD of unsuccessful tenderers will be returned immediately after awarding the work to successful tenderer. The Bank will not be bound to accept the lowest tender and reserves the right to accept or reject any or all the tenders without assigning any reason what’s over.

For Deputy General Manager,

Premises, LHO

SIDBI,
Lucknow

3. INSTRUCTIONS TO TENDERER

1. Sealed tenders on “item rate” are invited in Two bids system from reputed contractor/ vendors for supply, installation, testing and commissioning etc. of Automatic Fire sprinkler system at SIDBI Tower, 15, Ashok Marg, Lucknow – 226001.

VOLUME-1 Technical Bid Containing

1. Tender notice and Instructions to Tenderers,
 2. Prequalification criteria,
 3. General Conditions of Contract,
 4. Technical Specifications.
2. Formats for technical and financial bids may be downloaded from SIDBI’s website www.sidbi.in as well as Central Public Procurement (CPP) Portal <http://eprocure.gov.in/> .
 3. Contractors are advised to attend the pre-bid meeting on the date indicated in the tender notice for seeking any clarifications. Any discrepancies should be brought to the notice of the Bank. Further, it is also advised to furnish the enquiries in advance to enable the Bank to clarify the same.
 4. The Tenderer is required to check the numbers of the pages and should any be found missing or in duplicate, or the figure or writing indistinct, he must inform the Consultant M/s N.S. Consulting Services/SIDBI at once and have the same rectified. Should the Contractor be in doubt about the precise meaning of any item or any provision or if he wants any clarification, he must inform the Consultant/SIDBI in writing before the scheduled date of pre - bid meeting. No claim will be allowed in respect of errors in the Contractor’s tender due to any mistake in the Schedule of Quantities, which should have been but was not rectified in the manner described above.
 5. Tenderers are requested to put their firm’s endorsement on each page of the tender documents as a token of acceptance.
 6. (a) The Contractors are required to quote individual rates for each item excluding GST. (b) All corrections to be initiated.
 7. No alterations or additions are to be made by the Tenderers to the tender document. Violation of this instruction will attract rejection of the tender at the discretion of the Bank.
 8. SIDBI is governed by Public Procurement Policy for Micro and Small Enterprises (MSEs) as circulated by The Ministry of MSME, GoI. MSEs would also be entitled for exemption from payment of earnest money deposit.
 9. Earnest money accompanying the tender will be accepted in the form of Crossed Demand Draft on any of the nationalized / Scheduled Bank, drawn in favor of “**SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA**” and payable at Lucknow.
 10. Any tender, which is not accompanied by Earnest Money Deposit, except those exempted, shall be summarily rejected. EMD of unsuccessful tenderers will be refunded without any interest.
 11. The contract agreement should not be filled. This agreement requires to be executed between SIDBI and the successful bidder/tenderer after award of the contract to him. Contractors are forewarned that no errors whatsoever arithmetical or otherwise will be permitted in their tenders. Tenders containing many errors are liable to be considered as Non-bona fide at the discretion of SIDBI. Tenderers should note that their tenders should remain open for consideration for a minimum period of 90 days from the date of the opening of tenders.
 - a. **The Technical Bid -Volume 1 duly filled in, signed in all the pages and stamped by the tenderer to be submitted giving the necessary details in a separate sealed Envelope COVER -1 with the EMD super scribing as “Technical Bid & Name of the work”.**
 - b. **The Volume -2 –Commercial bid duly filled and signed to be placed in a separate sealed Envelope COVER-2 super scribing as “Price Bid & Name of the work”.**

Both the technical and Price bid to be enclosed within another large Envelope and the same may be superscribed as “Supply, installation, testing and commissioning etc. of Automatic Sprinklers system in SIDBI Head Office at SIDBI Tower, 15 Ashok Marg, Lucknow” and shall be submitted to The Deputy General Manager, (Premises), SIDBI, Lucknow on or before the date specified in the Tender notice.

12. The Sealed Envelopes shall be opened at the specified time in the presence of the tenderers or their authorized representatives if they desire to attend.
13. The Price bid of tenderers whose technical bid is complete and eligible for pre -qualify in all respects only will be opened on the date as may be decided by the competent authority of the Bank.
14. The Bank reserves the right to accept any tender or accept tenders in part or to reject any or all tenders without assigning any reasons thereof and will not be liable to offer any explanation whatsoever.
15. Non -compliance of the above instructions is liable to render the Tender non -bona fide.
16. No conditions should be altered, or new conditions should be put in the tender.
17. Conditional tenders are liable for rejection.

For,

**DGM,
Premises, LHO
SIDBI, Lucknow**

**FORMAT OF COVERING LETTER FOR SUBMISSION OF TENDER
(To be submitted in the letter head of the firm)**

To,
The Deputy General Manager (Premises)
SIDBI Tower, 15, Ashok Marg,
Lucknow-226001

Dear Sir,

Supply, installation, testing and commissioning etc. of automatic fire sprinkler system in SIDBI Head Office at SIDBI Tower, 15, Ashok Marg, Lucknow-226001.

Having examined the Technical Bid, Volume-1, including the scope of works, time frame and all the terms and conditions of the contract, we hereby submit all the necessary information and relevant documents for considering us for bidding for the above -mentioned work.

We understand that "Employer" reserves the right to reject any or all offers without assigning any reason thereof.

Date:
(Signature of tenderer)
Including title and capacity in which offer is made with seal.

OFFER LETTER FROM THE TENDERER TO SIDBI
(To be submitted in the letter head of the firm)

To
The Deputy General Manager (Premises)
SIDBI Tower, 15, Ashok Marg,
Lucknow-226001

Sub: Supply, installation, testing and commissioning of automatic fire sprinkler system in SIDBI Head Office at SIDBI Tower, 15, Ashok Marg, Lucknow-226001.

Dear Sir,

1. Having examined the pre -qualification criteria, drawings, specifications conditions, form of item rate contract, schedule of quantities relating to the above work and having visited and examined the site of the proposed works and having acquired the requisite information relating thereto as affecting the tender invited by you on behalf of the SIDBI.
2. I/We, the undersigned, hereby offer to construct, execute and complete the above work of Supply, installation, testing and commissioning etc. of automatic fire sprinkler system in SIDBI Head Office at SIDBI Tower, 15 Ashok Marg, Lucknow.
3. To the satisfaction of SIDBI on item rate tender in strict accordance with the contract conditions and specifications, for the sum mentioned in price bid or such other sum as may be ascertained in accordance with the said conditions.
4. I/We, undertake to complete and deliver the whole of the works within a period as specified in the General Conditions of Contracts. I/We shall be under the obligation to pay the sum as stated in the said Appendix for the period that the works shall remain incomplete as compensation subject to the condition of contract relating to an extension of the time.
5. In the event of the tender being accepted I/We do agree to pay to SIDBI within fourteen days from the date of acceptance of tender, the sum stated in the said Appendix as initial **Security Deposit** by demand draft or furnish a Bank guarantee of an equivalent amount.
6. We note that earnest money shall be merged with the initial Security Deposit after our tender is accepted and is liable to be forfeited at the discretion of SIDBI, in the event of our withdrawing the tender or modifying the tender or in the event of our failure to furnish the initial security deposit. I / We do agree that EMD may be forfeited if tender is withdrawn /modified by me / us.
7. I/We agree that until a formal agreement on stamp paper is prepared and signed, this tender with your written acceptance thereof shall constitute a binding contract between us.

Name and Signature with
Date of the Contractor with seal.

4. ELIGIBILITY CRITERIA

1. Bidder should have well established own establishment (Enclose Company Registration Certificate)
N.S. Consultants

2. Bidder should have at least 5 (five) years' experience in works related to Fire Fighting including hydrant system and sprinkler system for Central/State Govt. Departments/PSUs/Banks/reputed organizations.
3. The Contractors should have satisfactorily executed one Fire Fighting including hydrant system and sprinkler system work for private/government institution costing at least **Rs. 38 lakhs.**

OR

Two Fire Fighting including hydrant system and sprinkler system work costing at least Rs. 24 lakhs each, in last 3 years (ending with the last date for receipt of applications).

4. Comply following related financial turnover and Profit & Loss account for the last three financial years duly certified by Chartered Accountant.
 - a. Total annual financial turnover combined for the last three years (Fy 2021-22, 2020-21 and 2019-20) should not be less than Rs. 43 lakhs.
 - b. Agency to be in profit, at least in one financial year during the last three financial years (Fy 2021-22, 2020-21 and 2019-20).
5. Earnest Money Deposit (EMD) of Rs. 64,000/- (Rupees Sixty four thousand only) in the form of Demand Draft in favor of "SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA", payable at Lucknow to be submitted in separate envelope in Technical Bid Volume-1.

It is advised that bidder must read all the points of Eligibility criteria carefully and submit documentary proof as applicable against each point.

5. COMMERCIAL AND ADDITIONAL CONDITIONS:

1. The works cover supply, installation, testing, commissioning etc. of automatic fire sprinkler system, fire extinguishers, painting of existing and new pipes etc. and testing as may be necessary before dispatch, delivery at site, all preparatory works.
2. Name of Work- Supply, installation, testing and commissioning etc. of Automatic Fire sprinkler system in SIDBI HeadOffice at SIDBI Tower, 15, Ashok Marg, Lucknow -226001
3. The work shall be executed as per codes and Specifications listed in clause no. 1.4.5.
4. The intending tenderers/bidders should only submit their bid if they consider themselves eligible and if they are in possession of all the documents required.
5. Information and Instructions for tenderers/bidders posted on website shall form a part of the bid document.
6. The bid document consisting of plans, specifications, schedule of quantities of various types of items to be executed and the set of Terms and Conditions of the contract to be complied with and other necessary documents can be seen and downloaded from SIDBI website or <https://eprocure.gov.in/eprocure/app> free of cost.
7. The technical bids of only of those tenderers/bidders shall be opened, who have deposited Earnest Money Deposit as specified. And the financial bids of only those tenderers/bidders shall be opened whose technical bids documents are found to be in order.
8. The Tenders are invited under two envelopes system. The first envelope will be named as Technical Envelope & will contain documents of tenderer's/bidder's satisfying the eligibility conditions, copies of tender document fees and EMD, NIT, etc. and the second envelope will be named as Financial Envelope containing Rate Quote Sheet. The bidder shall submit TECHNICAL BID ENVELOPE and FINANCIAL BID ENVELOPE simultaneously. The technical bids will be evaluated first and thereafter financial bids of only the eligible tenderers/bidders shall be opened. These envelopes shall contain one set of the following documents: -
 - a. TECHNICAL BID ENVELOPE shall contain the following documents:
 - Copy of Demand Draft of any Nationalized/ Scheduled Bank towards Earnest Money Deposit (EMD).
 - Filled Annexure 1 to Annexure 5.
 - b. FINANCIAL BID ENVELOPE shall contain:
 - Rate Quote Sheet (BOQ)
 - Bidders may quote their rates in this envelope.
9. Tenders which do not fulfill any of the above conditions or are incomplete in any respect are liable for summary rejection.
10. SIDBI does not bind itself to accept the lowest tender/bid and the right to reject or accept any or all the tenders/bids, tendered items or schedules received without assigning any reason whatsoever.
11. Canvassing in connection with tenders/bids is strictly prohibited and the tenders/bids submitted by the tenderers/bidders who resort to canvassing will be liable for rejection on that ground alone.
12. Tenders incorporating additional conditions are liable to be rejected.
13. The tenderer(s) must declare in writing that neither he nor any of them is in anyway related to any officer in SIDBI, or any of its constituent units.
14. Sales tax or any other tax like Labour Cess etc. or duties on materials, freight & transit Insurance in respect of this contract except GST will be payable by the successful tenderer. Nothing extra will be payable for increase in such taxes or duties even if imposed or levied either before or after the tenders are opened or during currency of contract.
15. Before submitting the tender, the tenderer shall examine all specifications, drawings, conditions of contract and inspect the site if necessary. The tender must be balanced in respect of individual items so that the rates quoted shall remain in force even if the quantities deviate (increase or decrease) to any extent before or during the execution of the work. The successful tenderer/bidder shall be paid at their rate quoted.
16. It may be noted that the Technical Bid Envelope which are not found in order as per SIDBI, Lucknow requirements may be summarily rejected. Price bids not properly sealed shall be rejected.
17. Earnest Money is liable to be forfeited if the successful tenderer/bidder selected for the work fails to sign the formal agreement within 07 days from the date of issue of Letter of Intent to them by the SIDBI.
18. The selected tenderer will be issued a Letter of Intent by the SIDBI and given 07 days mobilization time which shall be counted from the date of issue of the Letter of Intent. Within the mobilization time the tenderer must scrutinize all the working drawings, CPM/PERT/BAR CHART, specifications, etc. and obtain clarifications from the Consultant wherever necessary and submit a revised BAR CHART if required by the SIDBI. During the mobilization

time, the tenderer shall also mobilize all their resources including men and materials, obtain the supply of water and electricity necessary for construction, if necessary and sign an Agreement with SIDBI in approved format at site on a non-judicial stamp paper of proper denomination. The date of commencement of work shall be within 7 days from the date of issue of Letter of Intent.

The validity period of the Tender shall be at least 04 (FOUR) months from the date of opening of Tenders. This period may be extended with mutual consent if the decision regarding issue of Letter of Intent is delayed for any reason. **However, the validity of rates quoted shall be a minimum of 02 years from the date of opening of tender document (Technical bid).**

6. APPENDIX TO NIT

1. SUMMARY CONDITIONS OF CONTRACT:

Defect Liability Period	One year (Twelve months) from the date of completion as certified by the Consultant duly approved by SIDBI.
Time for Completion:	Phase – I: 3 months from date of issue of LOI Phase – II: 3 months post handing over of Phase – I or post confirmation by the Bank to start the work.
Payment Terms	The minimum amount of RA bill that can be raised by the contractor is Rs. 10 lakhs. Further the contractor can also claim payment against material delivered at site. However, the payment shall be only after the recommendations and satisfaction of the Consultant/ Bank.
Earnest Money to be deposited with the Tender:	Rs. 64,000/-
Liquidated damages for non-completion of work in time	1 percent per week of the total cost of the work awarded subject to a maximum of 10% of gross value of work done or cost of the work awarded whichever is greater.

SECTION 1.0 GENERAL DESCRIPTION AND SPECIAL CONDITIONS OF CONTRACT**1.1 Scope:**

- 1.1.1 These specifications together with the general conditions of contract, commercial specifications, bill of quantities and drawings cover the supply, installation, testing and commissioning of Fire Fighting System for Bank's Existing building (SIDBI Tower, 15 Ashok Marg, Lucknow)
- 1.1.2 Scope includes all incidental works connected with the Fire Protection System such as excavation of trenches and back filling, cutting and chasing in concrete and brick and making good, cutting / drilling holes through walls, floors, and grouting for fixing of fixtures / equipment and so forth.
- 1.1.3 The work is proposed to be completed in two phases i.e., Phase-I and Phase -II. All such works which are to be taken up in both the phases are segregated in the commercial bid. The contractor shall strictly carry out the work in phases as per the instructions of the Bank/ Consultant. Phase-I work shall be taken up initially and Phase II shall be taken up after the completion of Phase -I works but not later than two years from the date of issue of contract. **The rates quoted by the bidder shall be valid for 02 years from the date of opening of tender document (Technical bids).**
- 1.1.4 It is the contractor's responsibility to get the NOC from the CFO of the Uttar Pradesh (Lucknow) Fire and Emergency Services department. In addition, it is necessary to provide additional documents to the CFO to get a NOC.

1.2 Definition of Terms:

- 1.2.1 The term 'Contractor' shall mean the Tenderer of the **Fire Protection System** whose tender has been accepted by the Bank and shall include the Tender's heirs, successors and assigns approved by the Bank to whom Works Orders have been issued.
- 1.2.2 The 'Specification' shall mean the specifications annexed to or issued with these Special Conditions of Contract.
- 1.2.3 'Test on completion' shall mean such tests as are prescribed by the specifications or have been mutually agreed to between the Contractor and the Bank, to be carried out before the plant is taken over by the Bank. In case tests are not possible due to climatic conditions at the time of completion, the Contractor shall be bound to carry out tests as prescribed hereinafter, at any time subsequent to the date of completion, but before the end of defects liability period.

1.3 Building:

- 1.3.1 Building consist of 1 basement, Ground, 8th upper floor Terrace

1.4 Codes and Standards:

- 1.4.1 Codes and Standards will be as given in Clause 1.4.5 of these specifications.
- 1.4.2 The system shall also be in conformity with the bylaws and requirements of the local authority in Mumbai in so far as these become applicable to the installation. Wherever this specification calls for a higher standard of materials and /or workmanship than those required by any of the above regulations and standards, then this specification shall take precedence over the said regulations and standards.
- 1.4.3 If any part of the drawings and specifications conflict with the regulations, the regulations shall govern. This shall be referred to the Bank for decision.
- 1.4.4 Unless specifically mentioned otherwise, all the applicable Codes and Standards published by the Bureau of Indian Standards and their subsequent revision / BS Standards shall govern the design, workmanship, quality and properties of materials and method of testing.

- 1.4.5 Standards listed below shall be applicable, in particular:
Uttar Pradesh Fire and Emergency Services Department NOC:

**National Building Code of India 2005 - Part IV for
Fire Protection System**

Tariff Advisory Committee Recommendations

IS-1239 / IS 3589	:	Specification for MS / GI Pipes
API 600 / BS 5163	:	Specifications for Gun Metal gate, globe & IS778/780/2906 check Valves for water supply.
IS-800	:	Specifications for Structural steel
IS-814	:	Specifications for covered electrodes for metal arc welding of structural steel.
BS-5155	:	Specifications for C.I. butterfly valve.
IS-4927	:	Specifications for Canvas Hose Pipes.
IS-903	:	Specifications for Branch pipes Fire hose couplings and auxiliary equipments
IS-5290	:	Specifications for hydrant landing valves.
IS-1200	:	Method of measuring of building & civil Engineering Works (water supply, plumbing drain & sanitary fittings)
IS-4853	:	Recommended practice for radiographic inspection of fusion welded butt joints in steel pipes.
IS-636	:	Synthetic, jacketed hose pipes.
IS-2198	:	Control Panels.
IS-2159	:	Hot dip galvanising of iron and steel
IS-5	:	Specification for painting
IS 9137	:	Specification for horizontal end suction centrifugal pump.
BS-1965 Part I	:	Specification for butt-welded Pipe Fittings.
IS 8423	:	Controlled percolating hose for fire fighting.
IS 2871	:	Branch pipe, universal for fire fighting purposes.
IS 884	:	First aid hose reel for fire fighting
IS 2190	:	Code of practice for selection, installation and maintenance of portable first aid fire extinguishers.
IS 937	:	Specification for washers for water fittings for firefighting system.
IS 9972	:	Specification for automatic sprinkler heads.
IS 2171	:	Dry chemical powder type Fire extinguishers
IS 940	:	Water type CO2 Fire extinguishers
IS 2878	:	Carbon – di – oxide type Fire extinguishers

1.5 **Coverage:**

1.5.1 Fire fighting System shall cover the entire areas

1.6 **Schedule of Requirements & Schedule of Equipment:**

1.6.1 Fire Protection Requirements are shown on the drawings.

1.7 **Technical Data:**

1.7.1 Technical Data of all equipment shall be furnished in the tenders by the Tenderers as required under these specifications.

1.8 **Electric Supply:**

1.8.1 Three phase electric supply will be 415 V $\pm 10\%$, 50 Hz, 4 wire.

1.8.2 Single-phase electric supply will be 240V $\pm 10\%$, 50 Hz.

1.9 **Design Confirmation by Tenderer:**

1.9.1 Tenderer shall confirm in writing that the design on which this tender is prepared has been verified by them and that it meets with the requirements of all Government, Semi-Government, Municipal and other Authorities, whose permission would become necessary for the completion of the Project.

1.9.2 Tenderer shall confirm that the space provided for various **Fire Fighting** equipment are adequate to install our equipment.

1.9.3 Tenderer shall also confirm that in their opinion the design is economical and safe and they have nothing to suggest either by way of effecting further economy or providing additional safety or better performance.

Note:

If the space provided in the tender drawing is inadequate to install the Tenderer's equipment, it shall be clearly indicated in the tender itself.

1.10 **Drawings and Literature:**

1.10.1 Drawings have been prepared by the Consultant showing the equipment and fire protection layouts and the space allocated for Equipment Rooms.

1.10.2 The Equipment Rooms, Piping and Hydrant / Sprinkler Layouts as shown on the drawings represent a feasible scheme. Equipment may be re-arranged in the space allocated subject to the approval by the Consultant before the actual execution.

1.10.3 Within 2 days of the acceptance of the tender, the Contractor shall submit for approval, detailed selection chart marking the selection of all equipment, general layout and assembly drawings and such additional assembly and sub-assembly detailed drawings as are necessary to demonstrate fully that all parts of the equipment / materials to be furnished conform to the specifications.

1.10.4 Within 3 days of the acceptance of the tender, the Contractor shall furnish three (3) prints of the equipment, piping layout, hydrant and sprinkler fixtures / fittings layouts, assembly and erection drawings for approval. If modifications are proposed by the Bank/ Consultant, three (3) further prints of the modified drawings shall be submitted. No modifications shall be made in a drawing after it has been approved by the Bank/ Consultant without their prior consent. All drawings necessary for assembly, erection, maintenance, repair and operation of the system/equipment/materials shall be furnished. Different parts shall be suitably numbered for identification and ordering of spare parts.

1.10.5 Approval by the Bank/ Consultant of the drawings shall not relieve the Contractor of any part of his obligation to meet all the requirements of the Contract or of the correctness of his drawings. The Contractor shall be responsible for and pay for all alterations of the works due to discrepancies or omissions in the drawings or other particulars supplied by him, whether such drawings have been approved by the Bank/ Consultant or not.

1.10.6 After the award of work, all changes in architectural, structural, interior design, facilities planning or any decision of Bank / Architect / Consultant causes re- design of the system, the contractor shall carry out the same in shop drawings and get approved from the Consultant. Consultants will

- advise/ guide the Contractor to carry out such changes but will not provide any drawing further to the tender drawings, issued with these documents.
- 1.10.7 Three sets of catalogues (at least one set original) for all equipment, accessories and materials shall be submitted to the Bank/Consultant for approval within 15 days of acceptance of tender.
- 1.10.8 Contractor shall furnish and install in or near all the machine rooms the following:
- A neatly typed/ stenciled set of operating and maintenance instructions for the relevant equipment.
 - Neatly drawn and well presented schematic diagrams for all the systems viz. fire hydrants, wet risers, sprinklers, control systems etc. All the drawings shall be glazed and securely framed at convenient locations within the machine room.
- 1.10.9 Samples or submittals of materials/fabrications especially fittings shall be submitted for approval to the Bank/ Consultant as required or called for by the Bank/ Consultant before installation.
- 1.10.10 Shop drawings shall be submitted under the following conditions;
- Showing any changes in layout in the contract drawings.
 - Floor plans, schematic showing fire protection works.
 - Pumps/equipment layout, control panel, wiring and piping diagram.
 - Manufacturer's or Contractor's fabrication drawings for any materials or equipment.
- Contractor shall submit four copies of catalogues, manufacturer's drawings, equipment characteristic data or performance charts as required by the Bank.

1.11 Variation of Works and Extra/Non-Tendered Items:

- 1.11.1 Consultant shall have the power from time to time in the execution of work by notice in writing to instruct the Contractor to make any alteration, omission, addition or variation in the work (herein after referred to as 'Variation'). The difference in cost of such variation shall be added to or deducted from the contract price as the case may be in accordance with the rates applicable in the Contract. In case these rates are not available in the contract, they shall be agreed between the Bank and the Contractor. If the variation required by the Consultants in the opinion of the Contractor involves a claim for additional payment or prevents him from meeting any of his obligations to guarantees in the Contract, he shall immediately notify the Consultant in writing failing which he shall not be entitled to any modification in his obligation or for additional payment. If Consultant do not admit that the variation required by him involves additional payment to the Contractor or modification in the obligations of the Contractor, the variation required shall nevertheless be carried out and the matter of difference settled between the Bank and the Contractor.
- 1.11.2 The Consultant shall give a reasonable notice to the Contractor to enable him to make arrangements for variations in work required by him.
- 1.11.3 The variation required by the Consultant shall except with the consent in writing of the Contractor be such as not to involve variation in the total contract price of more than 25% at the unit rates agreed to originally.
- 1.11.4 Bank reserves the right to omit or alter some or all the items at any stage of the work and the contract value will be adjusted accordingly.
- 1.11.5 In case the approved design requires items which are not covered in the bill of quantities, such items will be considered as extra items. The rates for extra or non-tendered items will be finalised as per the method given in Part-I – General Conditions of Contract. If no such method is given in Part-I – General Condition of Contract, then it will be finalised as follows:

Rate = (Material cost + labour cost + taxes/duties) x 1.15 NOTE: Contractor

shall submit vouchers/bills in support of
material and labour costs.

The requirements of extra/non-tendered items shall be approved from the Bank before procurement.

1.12 Manufacturers' Instructions:

1.12.1 Where manufacturers have furnished specific instructions relating to the materials used in this job and methods of construction that are not specifically mentioned in these documents, such instructions shall be followed in all cases.

1.13 Inspection and Testing at Contractor's premises:

1.13.2 All equipment/materials covered in the Contract shall be offered for inspection of the Bank, prior to despatch. The Bank or his authorised representative shall have full power to inspect any portion of the work or examine the materials and workmanship of the plant and equipment at the Contractor's works or at any place from which the materials or equipment are obtained. Acceptance of any material or equipment shall in no way relieve the Contractor of this responsibility for meeting the requirements of the specifications. The cost of any special tests and/or analysis not called for in these specifications shall be borne by the Bank in case the equipment proves satisfactory but shall have to be paid by the Contractor in case the equipment or work is found defective or of inferior quality. Tenderer shall submit Quality Assurance plan.

1.14 Testing:

1.14.1 All equipment and the whole system shall be tested as required by the various sections of the specifications and test data as required under Section 'Test Readings' shall be furnished.

1.14.2 All pipe installations shall be tested at 2 times the working pressure and test results submitted. Routine tests for the various items of equipment shall be performed at the Contractor's works and test certificates furnished. If required by the Bank/ Consultant, the Contractor shall permit the Bank's authorised representative to be present during any of the tests. After notification of the Bank/ Consultant that installation has been virtually completed, the Contractor shall conduct under the direction and in the presence of the Bank/ Consultant, such tests and inspection as have been specified or as the Bank/ Consultant shall consider necessary to determine whether or not the full intent of the requirements of the drawings and specification have been fulfilled. In case the work does not meet the full intent of the specifications and further tests considered necessary, the Contractor shall conduct such tests and bear the expenses thereof.

1.14.3 Contractor shall operate, test and adjust all Fire Protection System equipment, motors, control equipment, other electrical equipment provided in connection with this installation.

1.14.4 All equipment and systems shall be tested after installation and test readings submitted as specified in these Technical Specifications.

1.15 Rejection of Defective Equipment:

1.15.1 If the completed equipment/ materials/installation or any portion thereof, before it is taken over or during the guarantee and defects liability period, be found defective or fails to fulfil the intent of these specifications, the Contractor shall on receipt of notice from the Bank/ Consultant forthwith remove the defective equipment/materials / installation.

1.15.2 Should he fail to do so within a time considered reasonable by the Bank/ Consultant, the Bank may reject and replace at the risk and expense of the Contractor the whole or any portion of the equipment/ materials/installation, which is defective or fails to fulfil the requirements of the contract. Contractor shall replace the defective equipment / material within 15 days of intimation by the Bank / Consultant.

1.5.3 The Bank shall have the right to operate all equipment/materials /system if in operating condition whether or not such they have been accepted as complete and satisfactory. Repairs and alterations shall be made at such times and as directed by the Consultants.

1.16 Work and Services to be provided by the Bank:

1.16.1 Unless otherwise agreed to, the following works and services shall be provided by the Bank to the Contractor for carrying out the work:

- a) Building works and foundations for equipment.
- b) Cut outs /openings in structural beams/slabs.
- c) False ceiling work as shown on the Consultant drawings. Any additional false ceiling required for Fire Protection system shall be indicated by the Contractor before tendering.
- d) Electricity and water as required for the erection, testing and commissioning. Electricity and

water for erection will be charged at the usual rates applicable to such supply. The meters for electricity and water will, however, have to be provided by the Contractor.

1.17 Performance Guarantee & Defects Liability Period:

1.17.1 The Contractor shall guarantee that all equipment / materials and the complete system shall be free from any defect due to defective materials and/or bad workmanship and that the equipment/materials shall operate satisfactorily and the performance and efficiencies of the system /equipment/materials, individually and as a whole, shall not be less than the guaranteed values. The guarantee shall be valid for a period of 12 months after taking over and issue of certificate of completion and any part found defective during this period shall be replaced free of all costs by the Contractor. This period shall be known as the Defects Liability Period and shall be reckoned from the date the Consultant certifies the completion of the system. The services of the Contractor's personnel if requisitioned during this period for such work shall be made available free of any cost to the Bank.

1.17.2 If the defects be not remedied within a reasonable period of time the Bank may proceed to do so at the Contractor's risk and expense without prejudice to any other rights.

1.17.3 The Contractor shall guarantee the performance of the various equipment / materials individually shall not be less than the specified ratings when working under the operating conditions given for the respective items.

1.18 As-built Drawings and Operation & Maintenance Manuals:

1.18.1 After completion of installation, testing and commissioning and before taking Over the system by the Bank, the Contractor shall submit complete as-built drawings of the whole system, which shall include plans, sections, specific details, schematic diagrams, riser diagrams, control diagrams and any other drawing as directed by the Bank / Consultant.

1.18.2 As-built drawings shall be submitted in 2 CDs and 3 sets of hard prints on A-1 sizesheets.

1.18.3 Along with the as-built drawings, Contractor shall submit complete Operation & Maintenance Manuals of all equipment, components switch guard etc., in 2 CD's and 3 sets of spiral bound hard prints.

1.18.4 The O & M Manuals shall contain the following also, in addition to the normal information.

- Step by step direction.
- Provision of alarms and their sequences.
- Do's and Don'ts in operation.
- Fault location and remedy chart.
- Schedule of spares.

1.19 Maintenance and Training of Personnel:

1.19.1 The Contractor shall without any extra cost carry out for a period of 12(twelve) months, after the installation is taken over by the Bank, all routine and special maintenance of the system and attend to any difficulty or defect that may arise in the operation of the system. The Contractor shall associate with him during the installation and commissioning, the Bank's maintenance staff to familiarise them with the operation and maintenance of the system. If required by the Bank/ Architects/ Consultant, the Contractor shall also train members of the Bank's maintenance staff either at his or his sub-Contractor's work or at such other place or places as may be considered suitable by the Bank/ Architect/ Consultant.

1.20 Direct Purchase of Equipment/Materials:

1.20.1 Bank reserves the right to directly import or locally purchase any equipment/material. Contractor shall assist the Bank in identifying and purchasing such equipment/ materials and install/ test/ commission the same at a separate rate to be arrived at after such items are identified.

1.21 Safety Code :

1.21.1 There shall be maintained in a readily accessible place first-aid appliances including adequate supply of sterilized dressing and cotton wool.

1.21.2 The injured person shall be taken to a public hospital without loss of time.

1.21.3 Suitable and strong scaffolds shall be provided for workmen for all works that cannot be done

- safely from the ground.
- 1.21.4 No portable single ladder shall be over 8 metres in length. The width between the side rails shall not be less than 30 cm (clear) and the distance between the two adjacent rungs shall not be more than 30 cm. When a ladder is used an extra mazdoor shall be engaged for holding the ladder.
- 1.21.5 Every opening in a floor of a building or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one metre.
- 1.21.6 No floor, roof or other part of the structure shall be so over-loaded with debris or materials as to render it unsafe.
- 1.21.7 Workers employed on mixing and handling material such as asphalt, cement mortar, concrete or lime mortar shall be provided with protective footwear and hand-gloves.
- 1.21.8 Protective gear such as safety helmets, boots, belts, etc. shall be provided by the Contractor at his own cost to all his manpower at site. The Contractor shall impose such requirements on all Sub-Contractors also. It shall be the responsibility of the Contractor to ensure that such protective gear is worn at all times by all personnel working at site. The Project Manager/ Engineer shall have the right to stop any person not wearing such protective gear from working on the site.
- 1.21.9 Those engaged in welding works shall be provided with welder's protective eye-shields and gloves.
- 1.21.10 No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
- 1.21.11 Suitable facemasks shall be supplied for use by the workers when the paint is applied in the form of spray or surface having lead paint dry rubbed and scrapped.
- 1.21.12 Overalls shall be supplied by the Contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.
- 1.21.13 In case the Contractor fails to make arrangements and provide necessary facilities as aforesaid, the Bank shall be entitled to do so and recover the costs thereof from the Contractor. The decision of the Bank in this regard shall be final and binding on the Contractor
- 1.21.14 Use of hoisting machines and tackle including their attachments, anchorage and supports shall be in perfect condition.
- 1.21.15 The ropes used in hoisting or lowering material or as a means of suspension shall be durable and in perfect condition.

Date: -----

(Tenderer's Signature)

SECTION 2.0 FIRE HYDRANT SYSTEM**2.1 Scope**

2.1.1 Scope of work under this section comprises of furnishing all labour, materials, equipment and appliances necessary and required to install/ modify Wet Riser Fire Hydrant System/ Components as required by the drawings, specified herein or given in the schedule of quantities.

2.1.2 Without restricting to the generality of the foregoing the Fire Hydrant System shall include the following: -

- a) G.I. heavy class (wrapped and coated for Underground piping) mains including valves, fittings, yard hydrants and appurtenances, as specified.
- b) G.I. heavy class Pipe mains/risers including valves, fittings, flanges and appurtenances, as specified.
- c) Landing valves, hose reels, hose cabinets, hose pipes, branch pipes, fire brigade connection and connections to pumps and appliances.
- d) Fire Pumps, Jockey Pump, Electric Motor, Control Panel, Air Vessel, Cabling and accessories, as specified.

2.2 General Requirements

2.2.1 All materials shall be conforming to specifications and subject to the approval of the Bank/ Architect/Consultant.

2.2.2 Pipe and Fittings shall be fixed truly vertical, horizontal or in slopes as required in a neat workman like manner.

2.2.3 Pipes shall be fixed in a manner as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shafts, passages etc.

2.2.4 Pipes shall be securely fixed to Brick/RCC walls and ceilings by suitable clamps/hangers/brackets at intervals specified. Only approved type of anchor fasteners shall be used.

2.2.5 Valves and other appurtenances shall be so located that they are easily accessible for operations, repairs and maintenance.

2.2.6 No additional payment shall be made for cutting holes or chases in walls or floors or columns and making good the same to the satisfaction of Bank/ Consultant and making connections to pumps, various equipment and appliances or for making channels/ trenches to complete the work.

2.3 Pipes and Fittings

2.3.1 Underground pipes shall be Galvanised Iron conforming to IS:1239 (heavy class) duly wrapped and coated as per IS:10221 with welded joints. The coating / wrapping protection shall be tested. The thickness of tapes shall be 3 mm shall be provided.

2.3.2 Pipes for risers and headers inside the building shall be Galvanized Iron conforming to IS:1239 (heavy class) with welded joints, upto 150 mm dia. Pipes 200mm dia. and above shall conform to IS 3589 with 6 mm thick walls.

2.3.3 All pipes above ground and in exposed locations shall be painted with two coat of Etching type primer and two or more coats (each of 75 microns) of synthetic enamel paint of approved shade. Pipes shall be initially brushed to remove all foreign matter before applying paint / primer.

2.3.4 Pipes (buried) shall be initially brushed to remove all foreign matter and apply the primer over the pipe. Primer shall be allowed to dry until the solvent evaporates and surface becomes tacky. Tape 4mm thick and 150/250mm wide shall then be wound in a spiral fashion and bonded completely to pipe by thermo fusion process. Overlap shall be maintained at 15mm.

2.4 Jointing

2.4.1 Joints of M.S./ G.I. pipe of size 50 mm and above shall be butt welded or flanged. Joints of M.S./ G.I. pipes less than 50 mm dia. shall be with conventional heavy class forged steel (ASTM A 105) socket welded fitting like Tee, Socket, Elbow, Reducers etc. All flanges shall

conform to IS: 6392-2003 Table 17 / 18 as applicable.

2.5 Excavation

- 2.5.1 Excavation for underground pipe lines shall be in open trenches to levels and grades shown on the drawings or as required at site. Pipe lines shall be buried to a minimum depth of one meter.
- 2.5.2 Wherever required, Contractor shall support all trenches of adjoining structures with adequate timber supports.
- 2.5.3 On completion of testing and coating & wrapping trenches shall be refilled with excavated earth in 150 mm. layers and consolidated to restore ground condition to original status. Prior to excavation contractor shall ensure that no adjoining structure or pipeline is affected/damaged.
- 2.5.4 Contractor shall dispose of all surplus earth within a lead of 200 M or as directed by Bank/ Architect /Consultant.

2.6 Valves

2.6.1 General:

Valves shall be provided on branch pipe connections to mains and at connection to equipment where indicated. All valves are to be located for easy access. All valves shall be supported wherever necessary with MS brackets. Valves shall comply with IS: 780 (Class I) for C.I sluice valves and IS: 778 for G.M valves and tested.

2.6.2 Gate Valve:

The contractor shall provide 15 mm dia. Gan metal/Cast Carbon Steel Globe Valve / Gate Valve with G.I. Pipe as per IS: 1239 medium class for testing and draining any water in the system in low pockets wherever required. This item shall be measured by numbers and shall include 15mm dia. Gate / globevalve, 15mm dia. G.I. pipe (max. 6M length), fittings, tees, elbows, unions, supports, hangers and all other items necessary and required to complete the work.

2.6.3 Foot Valves:

Foot valves shall be cast iron body, brass disc and strainer of approved quality as specified in BOQ. Foot valves shall be of spring loaded or flapper type depending on the requirement. Valves shall be tested physically for free operation before being mounted or assembled to the pipeline.

2.6.4 Butterfly Valves:

- a) BF Valves 40 mm dia. and above shall be Carbon steel as per BS 5155. BF valve has a fully nitrile rubber lined single piece body with a centric disc construction & is available in wafer type body pattern. BF Valves shall conform to and marked Class PN-16 and tested to 16 Kg/sq.cms pressure. Non-Return Valves shall be of Cast carbon steel.
- b) Valves on M.S. Pipes 63 mm and below shall be heavy pattern cast iron steel Gate valves (with cast iron wheel) tested to 20 kg/sq.cm pressure.

2.6.5 Check Valves (Non-Return Valves):

- a) C.I. Check Valves /NRV's 80 mm dia. and above shall be Cast Carbon Steel Double flanged type with non-rising spindle. Sluice Valve below ground shall be provided with caps suitable for operation by a wheel. Sluice Valves in exposed locations e.g. pump house etc. shall be provided with Cast Iron Wheels.
- b) Valves shall be measured by numbers and shall include matching flanges, rubber gaskets, bolts, nuts, washers and all items necessary and required and as given in the specifications to complete the work to the satisfaction of Bank/ Consultant.

2.6.7 Y-Strainers:

Strainers shall be preferably of the approved 'Y' type with C.I. construction of class PN 20. Strainers shall have a removable stainless steel screen with 3mm perforations and a

permanent magnet. Strainers shall be provided with flanges. They shall be designed so as to enable blowing out accumulated dirt and facilitate removal and replacement of all screens without disconnection of the main pipe.

Pressure Reducing Valve:

- a) Pressure relief valves shall be provided to keep the pressure in the line below a given value within the reasonable limits in the downstream side of the pipeline when the pressure builds up beyond the design value. Pressure reducing valves shall be of high pressure type of specified sizes. Valves shall be suitable for mounting between flanges and threading connections. Valve body shall be of gun metal. Valves shall be of spring loaded, direct operation, metallic diaphragm type, as required for the particular usage.
- b) Pressure reducing valves shall be manufactured in conformance with ASA-150,300,600,800,900 and 1500, or to BS10- table- D,E,F,H or DIN- ND-16 & ND-40.

Air Release Valves

Air release valve shall be 25 mm screwed inlet GM single acting type and shall be fixed on all high points in the system (wet riser) with ball valves or as shown on drawings.

Pot strainers have been specifically designed to meet all customer requirements including for high pressure applications. Designed and fabricated to ASME B16.34 as standard. Standard features include low pressure drops at high velocities, stainless steel perforated baskets as standard, vents and drains with the possibility to supply davit lifts, quick open closures, DP gauges.

2.7 External Hydrants

2.7.1 External Hydrants (Yard Hydrants) shall conform to and marked IS:5290 (type 'A'). External hydrants shall consist of a stand post 80mm NB, duck foot bend, a single headed oblique pattern hydrant valve of 63mm NB, instantaneous female type coupling, gun metal cap and chain. Alongside each hydrant, there shall be a hose box to accommodate two numbers of C.P. collapsible hoses each of 63mm dia. and 15 M long conforming to IS:8423 complete with instantaneous ISI marked Gun-Metal Male & Female couplings (IS:903) and 1 No. 63mm dia. ISI marked Gun-Metal Short Branch Pipe with nozzle (IS:903).

2.8 Internal Hydrants

2.8.1 Contractor shall provide on each landing, internal hydrant consisting of one no. double headed gun-metal oblique pattern landing valve with 63 mm dia. outlets and 100 mm inlet conforming to and marked IS:5290 (Type 'A') with Cast Iron Wheels. Landing Valves shall have flanged inlet and instantaneous female type outlets.

2.8.2 Instantaneous outlets for Fire Hydrants shall be of standard approved pattern and suitable for Fire Brigade hose of 63 mm with couplings conforming to and marked IS:903.

2.8.3 Contractor shall install orifice plate flanges on all hydrants having excessive pressure (more than 7 bar), Orifice plates shall be fabricated from 6 mm thick brass plates with plain central hole without burrs. The bore of the orifice shall be designed by the Contractor and calculations to be submitted to Bank/ Consultant for approval.

2.9 First Aid Hose Reels

2.9.1 Contractor shall provide standard First-aid Hose Reel dia 560mm with 20 mm dia. high pressure braided rubber hose 36 M long with gun-metal adjustable jet spray nozzle and manual operating valve, all mounted on circular hose reel of heavy mild steel construction with Cast Iron Bracket having a swivel hinge. Hose reel drum shall strictly confirm to IS:884-1969. A lock shield type isolating valve shall be installed on the fire hose reel supply piping adjacent to each hose reel.

2.10 Cabinets

- 2.10.1 900x1200HT Cabinets shall be cold-rolled steel boxes, sized to accommodate valve(s), hose reel assembly hoses, multipurpose, dry chemical extinguisher and fire accessories. Or It shall be fabricated as per the site requirements.
- 2.10.2 Cabinets shall be surface mounted, recessed or semi-recess mounted or mounted on self supporting legs, as required.
- 2.10.3 External cabinets shall be primer-coated, cold-rolled sheet steel, or anodized extruded aluminium construction.
- 2.10.4 All fire cabinets shall be painted 'Fire Red' from outside. The inside of the cabinet shall be white baked enamel.

2.11 Fire Brigade Connections

- 2.11.1 Contractor shall provide four numbers of 63mm NB gunmetal Fire Brigade type instantaneous inlets with built in check valves and 150 mm dia. flanged outlet connection. The collecting heads shall be connected to Fire water wet risers for the use of local Fire Brigade. The fire brigade connection shall be enclosed in a suitably sized glass fronted box mounted at a suitable position.
- 2 way Siamese connection 2 Nos 65mm dia. Outlets, connecting to wet riser as shown in SLD complete with double flange joints, G.I. bolts, nuts, washers and gaskets, butterfly valve/NRV inclusive of testing etc. as complete.
- 2 way draw out connection 2 Nos 65mm dia. outlets, connecting to tanks shown in SLD complete with double flange joints, G.I. bolts, nuts, washers and gaskets, butterfly valve/NRV inclusive testing etc. as complete.

2.12 Drain Valves

- 2.12.1 Contractor shall provide 50 mm dia. G.I. Pipe as per IS:1239 medium class with 50mm gun-metal full way drain valve (ball valve) for draining any water in the system at the base of all risers and elsewhere required. Pipe upto a length of 5 M should be included in this item.

2.13 Valve Chambers

- 2.13.1 Contractor shall provide suitable brick masonry chamber of size as indicated in schedule of quantities in cement mortar 1:4 on cement concrete foundation 150mm thick of PCC 1:2:4 mix, 15mm thick cement plaster inside and outside finished with a floating coat of neat cement with Cast Iron heavy duty frame and cover approved by Fire Brigade including excavation, back filling complete.

2.14 Pipe Protection

- 2.14.1 All pipes above ground and in exposed locations shall be painted with one coat of red oxide primer and two or more coats of synthetic enamel paint of fire red shade.
- 2.14.2 All underground G.I. Pipes must be protected with anticorrosive treatment as per IS:10221 to the satisfaction of Bank / Architect / Consultant. The thickness of tapes shall be 3 mm up to be provided.
- 2.14.3 All underground piping shall be provided with appropriately designed concrete thrust blocks at all bends and tees.

2.15 Pipe Supports

- 2.15.1 Piping shall be properly supported on or suspended from stands, clamps, hangers as specified and as required. Contractor shall adequately design all the brackets, saddles, anchors, clamps and hangers and be responsible for their structural stability. Pipe work and fittings shall be supported by hangers or brackets so as to permit free expansion and contraction. Risers shall be supported at each floor with galvanised steel clamps. To permit free movement of common piping, support shall be from a common hanger bar fabricated from galvanised steel sections.
- 2.15.2 Pipe hangers shall be provided at the following maximum spacing:

Pipe Dia (mm)	Hanger Rod Dia (mm)	Spacing between Supports (m)
Upto 25	6	2
32 to 50	10	2.7
80 to 100	12	2.7
125 to 150	16	3.6
200 to 300	19	5.3

The end of the steel rods shall be threaded and not welded to the threadedbolt.

- 2.15.3 Pipe work shall be carried out causing minimum disturbance to the existing services, buildings, roads and structure. Entire piping work shall be organised in consultation with the work of other agencies.
- 2.15.4 Cutouts in the floor slab for installing the various pipes are indicated in the drawings. Contractor shall carefully examine the cut outs provided and clearlypoint out if the cut-outs shown in the drawings do not meet with the requirements.
- 2.15.5 Pipe sleeves, larger diameter than pipes, shall be provided wherever pipes pass through walls and slab and annular space filled with fibreglass and finished with retainer rings.
- 2.15.6 Contractor shall make sure that the clamps, brackets, saddles and hanger provided for pipe supports are adequate or as specified/ approved by Consultants. Piping layout shall take due care for expansion and contraction inpipes and include expansion joints where required.
- 2.15.7 All pipes shall be accurately cut to the required sizes in accordance with relevant IS codes and burrs removed before laying. Open ends of the piping shall be closed as the pipe is installed to avoid entry of foreign matter. Where reducers are to be made in horizontal runs, eccentric reducers shall be used for the piping to drain freely. In other locations, concentric reducers may be used.
- 2.16 Testing**
- 2.16.1 All piping in the system shall be tested in the presence of Bank / Architect / Consultant to a hydrostatic Pressure of 14 kg/sq.cm. or twice the design pressure (whichever is higher) without drop in pressure for at least 2 Hours and thereafter at 3.5 kg/cm² above the pump shutoff pressure or 12 kg/cm² (whichever is higher) for 24 hours without any drop in pressure.
- 2.16.2 Contractor shall rectify leakages, if any, and replace all defective components and retest the system as per above requirements to the satisfaction of Bank / Architect / Consultant.
- 2.16.3 If required by the Consultant, at least 10% of all the welded joints shall be radio graphically tested by the Contractor and half the joints radiographed shall be field joints. It will be contractors responsibility to arrange radiography.

SECTION 3.0 AUTOMATIC SPRINKLER SYSTEM**3.1 Scope**

3.1.1 Scope of work under this section comprises of furnishing all labour, material, equipment and appliances necessary and required to install/ modify Automatic Sprinkler System as required by the drawings, specified herein or as given in the Schedule of quantities.

3.1.2 Without restricting to the generality of foregoing, the sprinkler system shall include the following:

- a) G.I. heavy class mains / risers / distribution piping complete with screwed, forged steel fittings, flanges, supports, hangers all required accessories and appurtenances.
- b) Installation of control valves, drain valve, test valve and all connecting pipes and fittings.
- c) Sprinkler heads, nozzles and spare sprinklers.
- d) Connections to risers, pumps and appliances.
- e) Pumps, Electric Motor, Control Panel, Air Vessel, Cabling and accessories, as specified.

3.2 General Requirements

3.2.1 All materials shall be conforming to specifications and subject to the approval of the Bank/ Architects/Consultants.

3.2.2 Pipes and fittings shall be fixed truly vertical, horizontal or in slopes as required in neat workman like manner.

3.2.3 Pipes shall be fixed in a manner as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shaft, passages etc.

3.2.4 Pipes shall be securely fixed to brick/RCC walls and ceilings by suitable steel clamps at intervals specified and to the satisfaction of Bank/ Consultant. Only approved type of anchor fasteners shall be used.

3.2.5 Valves and other appurtenances shall be so located that they are easily accessible for operations, repairs and maintenance.

3.2.6 No additional payment shall be made for cutting holes or chases in walls or floors or columns and making good the same to the satisfaction of Bank/ Consultant and making connections to pumps, various equipment and appliances or for making channels/ trenches to complete the work.

3.3 Pipes and Fittings

3.3.1 Pipes for header shall be Galvanised Iron conforming to IS:1239 (heavy class) and shall have flanged/welded joints. Flanges shall be provided at regular intervals not exceeding 12 M.

3.3.2 Pipes for sprinkler system network shall be Galvanised Iron conforming to IS:1239 (heavy class) with screwed/ welded joints having flanges at regular intervals not exceeding 12 M.

3.3.3 Fittings shall be of heavy class forged steel having tapered pipe threads. However, for pipe sizes 63 mm and above, fitting of socket weld construction may be used with prior approval.

3.3.4 Valves and other appurtenances shall be so located that they are easily accessible for operations, repairs and maintenance.

3.4 Jointing

3.4.1 Joints for steel pipes and fittings shall preferably be metal to metal tapered thread joints. A small amount of red lead may be used for lubrication and rust prevention. Joints for less than 50 mm dia. pipes shall not be welded or caulked. Joints for 50 mm dia. and above, however, may be of butt-welded type using heavy class butt welded fittings. However, sprinkler heads shall be screwed with Teflon or equal bonding tape.

3.4.2 Joint between C.I. or steel pipes and valves and other flanged appurtenances, pumps etc. shall be made with M.S. flanges with appropriate number of bolts. Flanged joints shall be made with 3 mm thick 3 ply rubber insertion gasket. All flanges shall conform to IS:6392-2003

Table 17/18, as applicable.

Vane type Flow switch / drain test assembly on sprinkler distribution header on each floor with 2 SPDT contacts suitably rated, capable of the high pressure system and connected to fire alarm panel through cable.

S.S. Water curtain nozzle (open sprinkler) with 15 mm screwed end connection, K 23, orifice shall not be less than 9.5 mm. Sprinklers shall be UL Listed /FM approved.

3.5 Valves

3.5.1 General:

Valves shall be provided on branch pipe connections to mains and at connection to equipment where indicated. All valves are to be located for easy access. All valves shall be supported wherever necessary with MS brackets. Valves shall comply with IS: 780 (Class I) for C.I. sluice valves and IS: 778 for G.M valves and tested.

3.5.2 Gate Valve:

The contractor shall provide 15 mm dia. GCast Carbon Steel Globe Valve / Gate Valve with G.I. Pipe as per IS: 1239 medium class for testing and draining any water in the system in low pockets wherever required. This item shall be measured by numbers and shall include 15mm dia. Gate / globe valve, 15mm dia. G.I. pipe (max. 6M length), fittings, tees, elbows, unions, supports, hangers and all other items necessary and required to complete the work.

3.5.3 Foot Valves:

Foot valves shall be cast iron body, brass disc and strainer of approved quality as specified in BOQ. Foot valves shall be of spring loaded or flapper type depending on the requirement. Valves shall be tested physically for free operation before being mounted or assembled to the pipeline.

3.5.4 Butterfly Valves:

- a) BF Valves 40 mm dia. and above shall be Carbon steel as per BS 5155. BF valve has a fully nitrile rubber lined single piece body with a centric disc construction & is available in wafer type body pattern. BF Valves shall conform to and marked Class PN-16 and tested to 16 Kg/sq.cms pressure. Non-Return Valves shall be of Cast carbon steel.
- b) Valves on M.S. Pipes 63 mm and below shall be heavy pattern cast iron steel Gate valves (with cast iron wheel) tested to 20 kg/sq.cm pressure.

3.5.5 Check Valves (Non-Return Valves):

- a) C.I. Check Valves /NRV's 80 mm dia. and above shall be Cast Carbon Steel Double flanged type with non-rising spindle. Sluice Valve below ground shall be provided with caps suitable for operation by a wheel. Sluice Valves in exposed locations e.g. pump house etc. shall be provided with Cast Iron Wheels.
- b) Valves shall be measured by numbers and shall include matching flanges, rubber gaskets, bolts, nuts, washers and all items necessary and required and as given in the specifications to complete the work to the satisfaction of Bank/ Consultant.

3.5.6 Y-Strainers:

Strainers shall be preferably of the approved 'Y' type with C.I. construction of class PN 20. Strainers shall have a removable stainless steel screen with 3mm perforations and a permanent magnet. Strainers shall be provided with flanges. They shall be designed so as to enable blowing out accumulated dirt and facilitate removal and replacement of all screens without disconnection of the main pipe.

Pressure Reducing Valve:

- a) Pressure relief valves shall be provided to keep the pressure in the line below a given value within the reasonable limits in the downstream side of the pipeline when the pressure builds up beyond the design value. Pressure reducing valves shall be of high pressure type of specified sizes. Valves shall be suitable for mounting between flanges and threading connections. Valve body

shall be of gun metal. Valves shall be of spring loaded, direct operation, metallic diaphragm type, as required for the particular usage.

- b) Pressure reducing valves shall be manufactured in conformance with ASA-150,300,600,800,900 and 1500, or to BS10- table- D,E,F,H or DIN- ND-16 & ND-40.

Air Release Valves

Air release valve shall be 25 mm screwed inlet GM single acting type and shall be fixed on all high points in the system (wet riser) with ball valves or as shown on drawings.

Pot strainers have been specifically designed to meet all customer requirements including for high pressure applications. Designed and fabricated to ASME B16.34 as standard. Standard features include low pressure drops at high velocities, stainless steel perforated baskets as standard, vents and drains with the possibility to supply davit lifts, quick open closures, DP gauges.

- 3.5.7 Y-Strainers:
Strainers shall be preferably of the approved 'Y' type with C.I. construction of class PN 100. Strainers shall have a removable stainless steel screen with 3mm perforations and a permanent magnet. Strainers shall be provided with flanges. They shall be designed so as to enable blowing out accumulated dirt and facilitate removal and replacement of all screens without disconnection of the main pipe.
- 3.5.8 Globe Valves
The contractor shall provide 15 mm dia. Gun-Metal Globe Valve with G.I. Pipe as per IS:1239 medium class for testing and draining any water in the system in low pockets wherever required. This item shall be measured by numbers and shall include 15mm dia. globe valve, 15mm dia. G.I. pipe (max. 6M length), fittings, tees, elbows, unions, supports, hangers and all other items necessary and required to complete the work.
- 3.6 Air Vessels (Air Cushion Tank):**
- 3.6.1 Air vessel (air cushion tank) shall be of size and capacity indicated in schedule of quantities. It shall be provided at the top most point/points or in pump house (as specified). The tank shall be complete with 20mm dia. Brass Air Valve (Ball type), Stop Valve (20mm dia), Drain Valve (20mm dia) and pressure gauge including 20mm dia. Mild Steel Galvanized pipes and fittings as required to complete the work as per site conditions.
- 3.6.2 Air Cushion tank shall be measured by numbers and shall include Air Valve, Pressure Gauge, Globe Valves for testing and draining, M.S. Clamps, Pipes, Fittings, Tees, Elbows, Union and all other items required to complete the work.
- 3.7 Sprinkler Heads**
- 3.7.1 Sprinkler heads (IS-9972) shall be provided at appropriate spacing to cover 12-21 sq.m. per sprinkler head. The spacing shall however be in conformity with Section 1.0 'General Description', the drawings and properly co-ordinated with electrical fixtures and air-conditioning ducts, diffusers and grills and other ceiling services. The detailed layout drawings for sprinkler system shall be prepared by Contractor and submitted to Bank/ Consultant for approval before starting the work.
- 3.7.2 Sprinkler heads shall be of gun-metal quartzoid bulb/ fusible link type with a temperature rating of 68 °C. Sprinkler head shall be of type and make approved by the Consultant. The inlet shall be screwed for 15mm dia. as specified. The sprinkler head shall have TAC/ FOC/ UL/ FM approval or listing.
- 3.7.3 Contractor shall supply spare sprinkler heads and one spanner neatly installed in a wooden cabinet with glass shutters as approved by the Bank/ Consultant.
- 3.7.4 The Sprinkler heads installed in the system shall be measured by numbers. However spare sprinklers and cabinet with spanner shall be measured as one item.

3.8 Installation Control Valve:

N.S. Consultants

- 3.8.1 Installation Control Valve for Sprinkler system shall consist of a vertical alarm valve complete with 50mm dia. drain & 15mm test valve with a provision to install water operated turbine alarm. A cast Iron Sluice Valves shall be provided on upstream of alarm valve. The Sluice Valve shall be strictly as per clause 3.7 above. The size of alarm valve & sluice valve shall be as indicated in BOQ.
- 3.8.2 One water operated turbine alarm motor with gong to be provided for each sprinkler installation control valve on the sprinkler main. The alarm shall operate and sound a gong on the drop of pressure and flow of water in the mains. Turbine alarm shall be approved by the Consultant and installed at approved locations. The alarm shall be provided with suitable test cock. Both alarm valve and turbine alarm must have TAC/FOC/UL/FM approval/ listing.
- 3.8.3 Installation Control valve shall be measured by numbers and shall include upstream C.I. Sluice Valve, Alarm Valve, Alarm Motor and gong, Drain Valve, Test Valve, Drain Piping (50 mm dia G.I. upto 5 M) and all fittings including 2 Nos. pressure gauges required to complete the work.

3.9 Pipe Protection

- 3.9.1 All pipes above ground and in exposed locations shall be painted with one coat of red oxide primer and two or more coats of synthetic enamel paint of approved make & shade.
- 3.9.2 All underground G.I. Pipes must be protected with anti- corrosive treatment as per IS:10221 to the satisfaction of Bank/ Consultant. The thickness of tapes shall be 3 mm to be provided.
- 3.9.3 All underground piping shall be provided with appropriately designed concrete thrust blocks at all bends and tees.

3.10 Pipe Supports

- 3.10.1 Piping shall be properly supported on or suspended from stands, clamps, hangers as specified and as required. Contractor shall adequately design all the brackets, saddles, anchors, clamps and hangers and be responsible for their structural stability. Pipe work and fittings shall be supported by hangers or brackets so as to permit free expansion and contraction. Risers shall be supported at each floor with galvanised steel clamps. To permit free movement of common piping, support shall be from a common hanger bar fabricated from galvanised steel sections.

- 3.10.2 Pipe hangers shall be provided at the following maximum spacings:

Pipe Dia (mm)	Hanger Rod Dia (mm)	Spacing between Supports (m)
Upto 25	6	2
32 to 50	10	2.7
80 to 100	12	2.7
125 to 150	16	3.6
200 to 300	19	5.3

The end of the steel rods shall be threaded and not welded to the threaded bolt.

- 3.10.3 Pipe work shall be carried out causing minimum disturbance to the existing services, buildings, roads and structure. Entire piping work shall be organised in consultation with the work of other agencies.
- 3.10.4 Cut-outs in the floor slab for installing the various pipes are indicated in the drawings. Contractor shall carefully examine the cut-outs provided and clearly point out if the cut-outs shown in the drawings do not meet with the requirements.
- 3.10.5 Pipe sleeves, larger diameter than pipes, shall be provided wherever pipes pass through walls and slab and annular space filled with fibreglass and finished with retainer rings.
- 3.10.6 Contractor shall make sure that the clamps, brackets, saddles and hanger provided for pipe

supports are adequate or as specified/ approved by Consultants. Piping layout shall take due care for expansion and contraction in pipes and include expansion joints where required.

- 3.10.7 All pipes shall be accurately cut to the required sizes in accordance with relevant IS codes and burrs removed before laying. Open ends of the piping shall be closed as the pipe is installed to avoid entry of foreign matter. Where reducers are to be made in horizontal runs, eccentric reducers shall be used for the piping to drain freely. In other locations, concentric reducers may be used.

3.11 Testing

- 3.11.1 All piping in the system shall be tested in the presence of Bank/ Consultant to a hydrostatic pressure of 14 kg/ sq.cm. or twice the design pressure (whichever is higher) without any drop in pressure for at least 2 Hours and thereafter the entire system shall be hydraulically tested at 3.5 Kg/cm above the pump shut-off pressure or 12 kg/cm² (whichever is higher) for 24 hours without any drop in pressure.
- 3.11.2 Contractor shall rectify leakage, if any, and replace all defective components and retest the system as per above requirements to the satisfaction of and Bank/ Consultant.
- 3.11.3 If required by the Consultant, at least 10% of all the welded joints shall be radio graphically tested by the Contractor and half the joints radiographed shall be field joints. It will be contractors responsibility to arrange radiography.

SECTION 4.0 FIRE PUMPS AND ANCILLARIES

4.1 Scope

- 4.1.1 Scope of work under this section comprises of furnishing all labour material, equipment and appliances necessary and required to completely install electrically operated centrifugal pumping sets for Fire Hydrant installation as required by the drawings and specified hereinafter or given in the schedule of quantities.
- 4.1.2 Without restricting to the generality of the foregoing the pumps and ancillary equipments shall include the following:
- Electrically operated horizontal centrifugal pumps with motor, baseframes, flexible couplings and all accessories as specified.
 - Pressure switches, pressure gauges, pump control valves, test valves, drains, exhausts air vessels etc.
 - Electrical Control Panel, all cabling, wiring, automatic level control and annunciation system, earthing etc.

4.2 General Requirements

- 4.2.1 All pumps shall be installed true to level on suitable concrete foundations. Base frames shall rest on vibration isolation mountings as specified, to avoid vibrations.
- 4.2.2 Pumps and motors shall be truly aligned to the satisfaction of Bank/ Architect/Consultant.
- 4.2.3 All pump connections shall be of Indian Standard flange type with appropriate number of bolts.
- 4.2.4 Manufacturer's instructions regarding installation, connections and commissioning shall be followed with respect to all pumps, switchgears and other accessories.

4.3 Fire Pumping Sets (UL listed /FM approved)

- 4.3.1 Contractor shall provide and install electrically operated fire pumps of capacity and head indicated in the drawings/ schedule of Quantities.
- 4.3.2 Pumps shall be horizontal for diesel engine, rest are vertical, centrifugal single/ multistage meeting the duties as specified in the bill of quantities with closed grain cast iron body, bronze impellor and stainless steel shaft. The pump shall be coupled with motor by means of a flexible tyre type coupling.
- The pumps shall be of type approved by TAC and capable of furnishing not less than 150%

of rated capacity at a head of not less than 65% of the rated head. The shut-off head of pumps shall not exceed 120% of the rated head.

4.4 Electric Motors

4.4.1 The electric motors to operate the above pumps shall be of totally enclosed fan cooled (TEFC) type. The rating and design of motors and switchgears shall confirm to the relevant Indian Standard Specification. The motor shall be of continuous rating type and its rating shall be atleast equivalent to the horse power required to drive the pump at 150% of its rated discharge.

CI diffuser to count with mechanical seal arrangement. Motor shall have IP-55rating

4.4.2 The power factor of each motor shall not be less than 0.85 lagging under any conditions of load and capacitors of suitable size to raise the inherent power factor to this figure shall be included

4.5 Pressure Gauges

4.5.1 All pressure gauges (HSN Code 9026) shall be of dial type with Bourdon tube element of SS 316. The gauges shall be of reputed make. The dial size shall be 150 mm dia. and scale division shall be in metric units marked clearly in black on a white dial. The range of pressure gauge shall be 0 to 14 kg/cm.sq.

4.5.2 All pressure gauges shall be complete with isolation cock, copper tube, nipples, tail pipes etc.

4.6 Pressure Switches

4.6.1 The pressure switch IP-55, working pressure shall be 10 bar. The same shall be Industrial type single pole double throw electric pressure switch designed for starting or stopping of equipment when the pressure in the system drops or exceeds the pre-set limits. It shall comprise of a single pole change-over switch, Bellows element assembly and differential spindle.

4.6.2 All the pressure switches shall have 1/4" B.S.P.(table F) inlet connection & screwed cable entry for fixing cable gland.

4.6.3 The Electrical rating of the Switch shall be as under:
TYPE OF SUPPLY VOLTAGE NON-INDUCTIVE INDUCTIVE A.C. 430 V, 3 ϕ , 50 Hz.

4.7 Switchgear Cubicle

4.7.1 Supply and installation of switchgear cubicle required for the firepumps shall be provided by other agency.

Fuse switch units or circuit breakers as specified in the B.O.Q. shall be incorporated. Shrouds shall be provided for live terminals in each module. Each terminal shall have spring washers. Cam operated rotary switches with adequate terminal adaptors upto 25 AMP are acceptable but higher ratings switch shall be heavy duty conforming to IS 13947. Minimum phase to phase and phase to earth clearances of 25 mm and 20 mm respectively shall be provided. Phase barriers shall be provided, where appropriate clearances are not available.

4.8 Earthing

4.8.1 Earthing for the fire pump installation shall be carried out by other agency.

4.9 Cabling

4.9.1 Cabling for fire pump installation shall be carried out by other agency.

4.10 Testing

4.10.1 All piping in the system shall be tested to a hydrostatic pressure of 14Kg/sq.cm. without any drop in pressure for at least 2 hrs. in the presence of Bank / Architect / Consultant and thereafter the entire system shall be hydraulically tested at 4.5kg./ cm² above the pump shut-off pressure or 12kg/ cm² (whichever is higher) for 24hrs.without any drop in pressure.

4.10.2 In case of any leakage, all defective parts shall be rectified/replaced and re- tested as required and directed.

4.11 Commissioning

4.11.1 Commissioning of the system shall be done to the satisfaction of Bank/ Consultant and concerned inspecting agency and shall commence only after:

- a) All piping, accessories, pumping sets, fire alarm etc. have been completely installed and tested to the satisfaction of Engineer-In- charge/Consultant.
- b) The electrical connections have been made and direction of motor rotation checked.
- c) Related work by other agencies has been completed in all respects.
- d) Water supply is available in adequate quantity in the underground tank.

4.11.2 On completion of all related works given in para 4.11.1 above, start pumping set and develop desired pressure in the system.

4.11.3 By opening one hydrant or test valve in Sprinkler System first the jockey pump shall start automatically at desired drop in pressure and then on further fall of pressure the main pump(s) shall start. If required, make adjustment and retest. Similarly, the stand-by pump shall also be tested for Automatic starting at desired drop of pressure. While main fire pump(s) shall be suitable for manual shut-off, the jockey pump shall start and stop automatically by drop of pressure and build up of pressure respectively.

SECTION 5.0 PORTABLE FIRE EXTINGUISHERS

5.1 Fire Extinguisher Cabinets

5.1.1 Fire extinguisher cabinets shall be constructed as per specifications previously described under clause 2.10 Cabinets, except that the door shall be of the duopanel type, with a glass panel located in the upper third of the full width of the door. The lower two-thirds of the door shall be sheet steel, or anodized aluminium.

5.2 Hand Fire Extinguishers

5.2.1 Hand fire extinguishers shall be enamel alloy steel cylinder, provided with a trigger or seat type valve locking pin or a seal and discharge horn.

5.2.2 The contents of the extinguisher may be carbon dioxide, halon, powder, or foam, depending on fire class and storage location. The contents shall be such that no poisonous fumes or dangerous acids will be produced in any case.

5.2.3 Size and type of hand fire extinguishers shall be subject to approval by the Local Authority.

5.2.4 Fire extinguishers shall be bright red finished and provided with labels indicating dates of filling and renewal.

ABC (Powder Type) Fire Extinguisher. In HP Mild Steel Cylinders ISI marked / TAC approved fitted with pressure indicating gauge, internal tube, squeeze lever type valve fully charged with ABC powder (Mono Ammonium Phosphate) pressured by Nitrogen complete in all respects including wall suspension bracket and conforming to IS:1349-1993

ISI marked (IS:2878) portable CO2 type fire extinguisher type. Including valve, discharge hose of not less than 10mm dia & 1m long complete in all respects including initial filled with CO2 gas conforming to IS:307-1966 & filled to a filling rate of not more than 0.667 and wall suspension bracket.

Mechanical Foam type fire extinguisher Capacity, with initial filling in brand new cylinder with powder coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, hose and ABS type branch pipe and wall mounting bracket etc.

SECTION 11.0 LIST OF PREFERRED MAKES OF EQUIPMENT/MATERIAL

Preferred makes of equipment and materials are given below. Although the preferred makes are given, the Contractor shall submit samples of all materials other than heavy equipment and obtain prior approval of the Consultants (whose decisions shall be binding) for the make of each item before ordering the same. This N.S. Consultants

condition is also applicable to all items of equipment and material for which makes are not given in this specifications:

(A) Fire Fighting System

Sr. NO	Item	Standard	Make
1.	Pumps	IS:1520,	Kirloskar/Johnson/IS:5120/TAC Mather & Platt
2.	Electrical Motors	S:325	Kirloskar/Siemens/ABB/NGEF/ Crompton
3.	Anti-Vibration Pad		Dunlop/Resistoflex /Mounting Polybond
4.	Diesel Engine	IS:10000	Ashok Leyland /Greaves /Cumins
5.	Fire Pump EE/Siemens Control Panel		Relevant IS/L&T/ Custom Build Components of
6.	MS Black/ GI Pipes	IS:1239 (marked)	Tata/ Jindal (Hissar)/Sail
7.	Galvanised Malleable	IS:1879 (marked)	R'Brand/ Kirti/K.S/ Fittings Zoloto Iron
8.	Sluice Valves	IS:780/IS:2906 (marked)	Kirloskar/IVC/(CI) Upadhaya/Sarkar
9.	Butterfly Intervalve/Valves	IS:13095	Audco/CRI/keystoneKSB/ Monsher PN 25
10.	Non-Return Valves (CI)	IS:5312 (marked)	Kirloskar/IVC/Upadhaya Sarkar
11.	Landing Valves Agni/Double Headed Headed (GM)	IS:5290 (marked)	Minimax/Newage/ Shah Bhogilal &Single
12.	Fire Brigade	IS:904	Minimax/Newage/InletsAgni/ Shah Bhogilal

13.	Hose Reel (Drum & Bracket)	IS:884	Minimax/Newage/ Monsher/Firex Swastik/ Gaurav
14.	(a) Standard MS Fittings (b) Forged Steel Fittings		VS/JK/Leader/Swastik
15.	Fire Extinguishers	(IS marked)	Minimax/Safex/Firex/ Ceasefire/Nitin Fire/ Safe Gaurd
16.	Rubber Hose for	IS:5132	Dunlop/ EQ/MonsherFirst Aid Hose Reel
17.	GM Gate/ Globe/	IS:778 (marked)	Leader/ Sant/ CheckValves Zoloto/ Monsher
18.	GM Automatic Air		Vent Valve OR/ Wartsila
19.	Flex Canvas	IS:4927	Hose TAC Indian Rayon/ Newage/Sharp-UL
20.	C.P. Hose	IS:8423 (marked)	Indian Rayon/ Newage/TAC Chatariya
21.	R.R.L. Hose	IS:636 (Type-A) (marked)	Indian Rayon/ Newage/ / TAC Chatariya
22.	Hose Coupling, Branch Pipe & TAC Nozzle (GM)	IS:903 (marked)	Minimax/Newage/ Shah Bhogilala/ Agni
23.	Pressure Switches		Danfoss/ Switzer
24.	Pressure Gauge	IS:3624 (Class I) H	Guru/ Fiebig
25.	Quartz Bulb/ LPC/UL/FM/TAC Fusible Link/ Sprinkler Heads sensor Gem/Viking/Newage/System		Star/Ascoa/Tyco Spraysafe/Grinnell/
26.	Installation Control Valve LPC/UL/FM/TAC		Star/ Gem/ Spraysafe/ Grinnell/Viking/HD/Senji
27.	PVC Insulated & IS:1554 (Part I) PVC Sheathed Aluminium Conductor Armoured power cable of 1.1 Grade.		KEI/ RR Kabel/ Polycab/ Finolex



28. Water Flow Switch

System Sensor
/Firelite/ Notifier/Senji

29. Anchor Fastners

Hilti/ Fisher/ Arrow

30. Flexible Droppers

Flexdrop



SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA

SIDBI Head Office, SIDBI Tower, 15, Ashok Marg, Lucknow-226001

TEL:- 0522 4259700

Web: - www.sidbi.in

TENDER DOCUMENT

**NOTICE INVITING TENDER FOR SUPPLY, INSTALLATION, TESTING, COMMISSIONING OF AUTOMATIC FIRE
SPRINKLER SYSTEM AT SIDBI TOWER, 15 ASHOK MARG, LUCKNOW**

TENDER IDENTIFICATION NO. -314/2024/1771/HO1/PREMISES

Priced Bid (Part-II)

The Dy. General Manager [Premises]

SIDBI TOWER, Small Industries Development Bank of India (SIDBI),

1st Floor, Premises Cell,

15, Ashok Marg,

Lucknow-226001

Phone No. 0522-4259778/773

Price Bid
SCHEDULE OF RATES AND QUANTITIES

Supply, installation, testing & commissioning of the following equipment & materials as per specifications and drawings.

NOTES:

- 1) I.R or R.O. means Item Rate Only
 - 2) In case of any discrepancy between the drawings, specifications and the BOQ, the BOQ shall be considered for the tender.
 - 3) Description of the items here in are brief. Contractor shall supply and install all accessories, supports, consumables as per specifications and / or as required to complete the system. Rates shall include provision of all such components.
 - 4) All supports shall be prefabricated **hot deep galvanised** only.
 - 5) 'S' under Rate and Amount shall mean Supply only. 'ITC', under Rate and Amount shall mean Installation, Testing, Commissioning including supply of installation accessories and consumables.
 - 6) All sprinkler & hydrant line at each outlet point need to be provide PRV's or orifice plats as required.
 - 7) All sprinkler & hydrant motor need to be provide as per class 'F' insulation with TEFC & IP
- 54.

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
1.0	<u>PUMPS AND EQUIPMENTS:</u>						
1.1	Electric motor driven fire sprinkler pump set, suitable for automatic operation consisting of the following :						
	18.1(A) Supplying, installation, testing and commissioning of Electric driven Main Fire Pump - 2850LPM @ 75mt head suitable for automatic operation and consisting of following, complete in all respects, as required: (B)Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal conforming to IS 1520. (C)Suitable HP Squirrel cage induction motor, TEFC, synchronous speed 1500 RPM, suitable for operation on 415 volts, 3 phase 50 Hz, AC supply with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325. (D)M.S. fabricated Common base plate, coupling, coupling guard, foundation bolts etc. as required. (E)Suitable cement concrete foundation duly plastered with anti-vibration pads.	1	0	0	Nos		
1.2	Electric motor driven automatic pressurisation (jockey) pump sets consisting of following :						
	18.3(A) Supplying, installation, testing and commissioning of electric driven pressurisation pump- 180 LPM@75mt head , suitable for automatic operation and consisting of following, complete in all respects, as required : (Jockey Pump) (B)Horizontal type, multistage, centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal conforming to IS : 1520. (C)Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase 50 Hz AC supply with IP 55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS : 325. (D)M.S.fabricated Common base plate, coupling, coupling guard, foundation bolts etc. as required. (E)Suitable cement concrete foundation duly plastered and with anti vibration pads.	1	1	0	Nos		
1.3	Electrically operated Booster pump set at terrace level.consisting of following :						
	18.4(A) Supplying, installation, testing and commissioning of electric driven terrace pump suitable for automatic operation and consisting of following, complete in all respects, as required: (Terrace Pump) (B)Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS : 1520 (C)Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325. (D)M.S. fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required. (E)Suitable cement concrete foundation duly plastered and with anti vibration pads.	0	0	0	Nos		
	(Optional Subject to CFO requirement)						

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
1.4	<u>Control Panel for Fire Pumps.</u>						
	Design, fabrication, assembling, wiring and supply, installation, testing and commissioning of Fire MCC Panel fabricated out of (load bearing member of 2mm and non load bearing member 1.6 mm thick) CRCA sheet steel in cubicle compartmentised modular 3b construction, free standing floor mounted with bottom cable entry, dust and vermin proof with reinforcement of suitable size angle iron, channel, 'T' sections and / or flats wherever necessary. 3 mm thick cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before powder coating as per specifications and final approved shade. 2 Nos. earthing terminals shall be provided for all distribution panels. Panels shall be suitable for 415V, 3 phase, 4 wire, 50 HZ supply system. Lifting hooks shall also be provided in case of large panels. Approval shall be taken in the form of shop drawings before fabrication. Galvanised hardwares with zinc passivation shall be used in fabrication of panels.						
	<u>Notes:</u>						
	All Motors should have suitable Star/Delat Starter with all required protections as per client requirement.						
	1) All the components shall be housed in a common cubicle made of 16 swg.M.S. sheet with required stiffners (if required). Panels shall be powder coated of approved colour both inside & out side. Panels shall have both bottom & top cable entry provisions and panel shall be mounted on Pedastal of 300 mm height.						
	2) Panels shall have sufficient NO/NC contacts for extending the status(annunciation) of fire pumps to the Fire alarm panel.						
	3) Incoming cable to the panels will be in the scope of the Electrical Contractor and terminations to the panel will be in the scope of the fire Contractor.						
	4) Fire Protection Contractor shall decide cable sizes and quantities as per actual requirement at site and shall be subject to approval from Consultant.						
	5)Emergency Start / Stop Push Button station weather proof type for Booster pump at terrace levelincluding earthing to be considered.						
	6) Contractor shall submit GS, SLD and Schematic drawings for approval of the consultants before fabricating the panel.						
	7)The Panel shall be designed conforming to Electrical Specifications covered in the Fire Protection Tender Documents.						
	6) 1100 V Grade Power / Control Cables to match with pump rating to be included						
	7) G.I. Earthing strips -(25mm x 6mm thick strip, strip/10 SWG), GI wires shall run on floor / ceiling / walls, from the equipment to the nearest Earth pit with neccessory accessories G.I.as required. (Earth pit will be executed).						
	Incomer comprising of :						

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
a	200A -25kA TPN MCCB with Thermal magnetic based release unit for O/L and S/C protection- 1 Set						
b	Multifunction meter for VAF, PF, Power & eneregy with RS - 485 port equivalent to Schneider make EM6436H with 100/5 15 VA, CL 1, 3 No. CTs- 1 Set						
c	ON / OFF / TRIP indicating lights with control MCB -1 Set						
d	RYB Phase indicating light protected by 2 amps MCB's - 1 Set.						
e	Class – 2 surge arrestor (Lines to Neutral) & (Neutral to Earth) suitable for 3 phases with protection fuse.						
	Bus Bar comprising of :						
a	200 Amps TPN Aluminium Bus Bar with colour coded heat shrinkable sleeves						
	Outgoing comprising of :						
i.	160A-25kATPN MCCB with Thermal magnetic release for SC and OL protection with suitable Star/Delta starter with all required motor protections - 1 Set						
ii.	25 amps TPN MCB - with suitable Star/Delta starter with all required motor protections - 1 Set						
iii.	32 amps TPN MCB - with suitable Star/Delta starter with all required motor protections - 1 Set						
iv.	32 amps TPN MCB - 1 Set (Spare)						
v.	32 amps 4 Pole MCB - 1 Set (Spare)						
	FIREFIGHTING PANEL as per SLD described as above	1	1	0	Nos		
1.5	<u>LT CABLES & CABLE TRAYS:</u>						
	The rate shall also include the following :						
	Effecting adequate and proper connections at terminations.						
	Providing all fixing accessories such as clamping devices nuts, bolts and screws.						
	Excavation laying of cable filling of sand, brick protection, back filling of earth, watering, ramming and making good.						
	Wherever the cables are of aluminium and bus bars of copper bimetallic lugs shall be used.						
	All cable shall be laid with one diameter gap.						
	All cables shall be IS approved.						
	Fire retardent paint one meter on both side of wall penetration and at termination as per specifications.						
	Buried LT cables to be laid atleast 750 mm below ground.						
	All cutouts / Sleeves shall be sealed with fire redardant sealent as per specification.						
	All cuts/perforations/folded sections where contact with wires/cables is expected shall be burr free.						
	Zinc coating shall be 120 gm / square meter or more. The materials shall conform to relevant IS / BS standards for the category / application specified.						
	The cable tray / ducts / trunking shall be factory built. Only cutting to achieve assembly system length shall be permitted at site.						
	Accurate fabrication formed section with tolerances of ± 2 mm on width and ± 5 mm on length expected.						

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
	Dimensional and general arrangement drawing of the system are expected to be provided by tenderer / cable tray / duct supplier.						
	The system shall be designed for installation with a temperature classification of + 60 deg.C.						
	The cable tray/duct systems shall be suitable for against corrosion.						
	Details of fixing supports etc. shall be submitted for approval.						
a	Supply, installation, testing & commissioning of following sizes of 600V/1000V Grade Fire Survival galvanised steel wire Armoured cable in the standard aluminium/Copper conductor,constructed / designed as per BS 7846. Cable shouldbe suitable to retain the circuit integrity as per BS 8519 and certified for CWZ for F 120 fire test as per BS 8491 Standard on existing cables tray / hume pipe etc as required complete in all respect as per site requirement.						
1	3.5 core 150 sq. mm Al arm.	55	55		RM		
2	3 core 95 sq. mm Al arm.	60	60		RM		
3	3 core 6 sq. mm Cu arm.	60	60		RM		
4	3 core 4 sq. mm Cu arm.	60	60		RM		
b	Supplying and making Cable end termination of the following XLPE insulated PVC sheathed Aluminium / copper conductor armoured fire returant cables of 1100 volt grade including supplying and fixing of bimettalic crimping flame proof lugs , double compression glands with earthing testing and commissioning complete in all respect as required as per site conditions.						
1	3.5 core 150 sq. mm Al arm.	2	2		RM		
2	3 core 95 sq. mm Al arm.	4	4		RM		
3	3 core 6 sq. mm Cu arm.	8	8		RM		
4	3 core 4 sq. mm Cu arm.	4	4		RM		
1.6	<u>EARTHING SYSTEM</u>						
	Rates shall also include the following :						
	All fixing accessories such as brass saddles, brass screws rawl plugs etc.						
	Jointing by rivetting and brazing after rivetting in case of copper and welding / bolting in case of GI earthing.						
	Cutting chases holes and making good the same wherever required.						
	Effecting adequate and proper interconnections.						
	Use of copper thimbles.						
	Earthing system shall comply to IS:3043-2018.						
	All earthing pits shall be interconnected.						
	All equipment motors, DB's, panels to be connected on either ends (double earthing) with suitable strip / wires.						
	Copper earthing shall be provided for UPS & equipment / LV system only.						
	GI earthing shall be provided for Main LT panel, etc.						

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
1	Supply, Testing & Commissioning, fixing of following bare Copper / GI tapes / wires including all necessary fixing accessories, insulators and effecting connections as per specifications.						
1.1	25 x 6 mm thick Copper tape with heat shrinkable sleeves	30	30		RM		
1.2	25 x 3 mm thick GI tape	30	30		RM		
1.3	8 SWG GI wire	40	40		RM		
2	Supply, installation, testing and commissioning of lockable terminal box in 1.6mm thick with MS enclosure with transperant cover with 1 no. (300 mm length) 50 x 6 mm copper strip on epoxy insulators with 20 no. 8mm dia holes with 8mm x 25mm dia brass nut bolt with double washer.	1	1		No.		
3	Providing and laying of advance maintainance free earthing consisting of 14.35 mm dia and 3 meter length copper bonded earth rod in 150 mm dia. in an augured hole in ground , surrounded by ground enhancement material as per specification. Inspection chamber shall be of 400 x 500 mm with concrete base CI manhole cover with frame painted with bitumastic paint. 2 Nos. of 50 x 6 mm cross section & 300 mm long copper strip to be clamped with copper claded rod electrode have sufficient nos (But not less than 4 Nos.) of 10 mm dia. GI nuts & bolts for connection to the equipment / interconnection to the other pits to form equi-potential bonding .The pH value of ground enhance material shall be 6.9 to 7.2 of 1000gm / lit @ 20 deg.c.The minimum 30 Kg of ground enhancement material shall provided for each electrode. The complete earthing system shall be in accordance with IS 3043 and be provided with required material complete in all respect as per site requirement. Note : Warrantly of Minimum 20 years shall be provided for maintaining the resistance.	2	2		No.		
1.7	Cable Tray						
	Providing & erecting Hot dipped Galvanised perforated type Cable tray manufactured from 16 swg (1.6 mm thick) GI sheet of 500 mm width & 100 mm height comprising all required standard accessories.						
a)	450 mm	10	10	0	RMT		

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
1.8	M.S. heavy duty 'C' class pipes conforming to IS 3589/IS 1239 Pt - I heavy grade with painting, suitable type of supports, anchor fasteners, bolts, nuts (Galvanised), clamps, U bolte, malleable specials such as reducers, tees, elbows, flanges,including cutting, grinding in 'V' shape, welding, fixing in / on walls, ceiling by using suitable supports etc, as per drawings. Rate shall include for chasing / chipping walls, making bore holes in walls / floor and making them good with filler material and finished in cement mortar etc (Pump Room)						
a)	25mm nominal dia						
b)	50mm nominal dia						
c)	65mm nominal dia	5	5	0	RMT		
d)	80mm nominal dia	10	10	0	RMT		
e)	100mm nominal dia	5	5	0	RMT		
f)	150mm nominal dia	8	8	0	RMT		
a)	200mm nominal dia (Wall thickness -6.3mm)	8	8	0	RMT		
1.9	20mm dia. automatic air release valve with unions, ball valve etc.	2	2	0	Nos		
1.10	Air cushion tanks (air vessel) 250 mm dia. X 1200 mm long with dished top, made of minimum 8 mm thick plate complete with brass air valve(ball type), 25 mm inlet and drain nozzles with valves, pressure gauges with brass stop cocks, dain valve and all accessories.	1	1	0	Nos		
1.11	C.I. Nonreturn valves as per IS:5312 (PN 20) swing check type with required flanges, nuts, bolts and gaskets etc. (Pump Room)						
a)	65 mm nominal dia	1	1	0	Nos		
b)	100 mm nominal dia						
c)	150mm nominal dia	1	1	0	Nos		
d)	200 mm nominal dia	1	1	0	Nos		
1.12	Gunmetal/Bronze butterfly valves as per IS 13095 (PN 20) slim seal standared lever operated type with required flanges, nuts, bolts etc. complete.(Pump Room)						
a)	65mm nominal dia	2	2	0	Nos		
b)	80mm nominal dia						
c)	100mm nominal dia						
d)	150mm nominal dia	2	2	0	Nos		
1.13	Y- type Strainers in 1.6mm thick S.S. grade 304 construction of class (PN 20) rating with SS mesh, suitable flanges, nuts, bolts, gaskets etc.						
a)	65 mm nominal dia	0					
b)	80 mm nominal dia	1	2	0	Nos		
c)	150 mm nominal dia	1	2	0	Nos		

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
1.14	Gate Valves in C.I. construction of (PN 20) rating with suitable flanges, nuts, bolts,gaskets, etc.						
a)	150 mm nominal dia						
b)	200 mm nominal dia						
c)	250 mm nominal dia						
1.15	Gun metal chrome finished Ball valves (PN 10) with fittings of screwed end type.						
a)	25 mm dia	2	2	0	Nos		
1.16	S.S. double flanged flexible coupling (PN20) at suction and delivery of pump.(Pump Room)OPTIONAL						
a)	65 mm nominal dia	2	2	0	Nos		
b)	150 mm nominal dia	2	2	0	Nos		
c)	200 mm nominal dia						
	Note- Contractor to prepare shop drawing as per existing site condition and submit it for consultant for approval						
	TOTAL OF 1.0 - PUMP ROOM EQUIPMENT						
2.0	<u>FIRE HYDRANT AND WET RISER SYSTEM- ONLY REPAINT WORK</u>						
		<u>Only painting work</u>	<u>Only Painting Work</u>				
2.1	G.I. `C' class pipes (IS:1239 Part-I) including cutting, threading, welding etc.complete with butt weld fittings such as tees, elbows, bends, flanges, reducers including excavation (upto 1.5 M deep), PCC (1:2:4) pedestals / supports, require concrete thrust blocks, back-filling with excavated earth, removal of surplus soil and providing anti-corrosive treatment (coating & wrapping) as per IS:10221 complete as required. (External Piping- buried and on compound wall- only painting)						
a)	150mm nominal dia	400	280	0	RMT		
b)	100 mm nominal dia						
c)	80 mm nominal dia						

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
2.2	G.I. 'C' class pipes conforming to IS 1239 Pt - I heavy grade with painting, suitable type of supports, anchor fasteners, bolts, nuts (Galvanised), clamps, U bolte, malleable specials such as reducers, tees, elbows, flanges,including cutting, grinding in 'V' shape, welding, fixing in / on walls, ceiling by using suitable supports etc, as per drawings. Rate shall include for chasing / chipping walls, making bore holes in walls / floor and making them good with filler material and finished in cement mortar etc. (Riser and floor hydrant system-only painting)						
a)	150 mm nominal dia	80	70	0	RMT		
b)	100 mm nominal dia	25	15	0	RMT		
c)	80 mm nominal dia	25	20	0	RMT		
d)	25mm nominal dia						
	TOTAL OF 2.0 - FIRE HYDRANT AND WET RISER SYSTEM						
3.0	AUTOMATIC SPRINKLER SYSTEM						
3.1	M.S. heavy duity 'C' class pipes conforming to IS 3589/IS 1239 Pt - I including cutting, threading, welding etc.complete with butt weld fittings such as tees, elbows, bends, flanges, reducers including excavation (upto 1.5 M deep) and PCC (1:2:4) pedestals / supports , require concrete thrust blocks, back-filling with excavated earth, removal of surplus soil and providing anti-corrosive treatment (coating & wrapping) as per IS:10221 complete as required. (Burried pipes)						
a)	200 mm nominal dia	0					
b)	150 mm nominal dia	0					
3.2	M.S. heavy duity 'C' class pipes conforming to IS 3589/IS 1239 Pt - I heavy grade with painting, suitable type of supports, anchor fasteners, bolts, nuts (Galvanised), clamps, U bolte, malleable specials such as reducers, tees, elbows, flanges,including cutting, grinding in 'V' shape, welding, fixing in / on walls, ceiling by using suitable supports etc, as per drawings. Rate shall include for chasing / chipping walls, making bore holes in walls / floor and making them good with filler material and finished in cement mortar etc. (Riser and floor sprinkler system)						
a)	25mm nominal dia	650	310	340	RMT		
b)	32mm nominal dia	105	50	55	RMT		
c)	40mm nominal dia	140	75	65	RMT		
d)	50 mm nominal dia	195	45	150	RMT		
e)	65 mm nominal dia	165	100	65	RMT		
f)	80 mm nominal dia	150	100	50	RMT		
g)	100 mm nominal dia	20	20	0	RMT		
h)	150 mm nominal dia	80	80	0	RMT		

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
3.3	Gun metal chrome finished Ball valves (PN 20) with fittings of screwed end type.						
a)	40mm dia.						
b)	32 mm dia						
c)	25 mm dia						
3.4	Gunmetal/Bronze butterfly valves as per IS 13095 (PN 20) slim seal standard lever operated type with required flanges, nuts, bolts etc. complete.						
a)	50mm nominal dia						
b)	65mm nominal dia	9	9	0	Nos		
c)	80mm nominal dia	9	9	0	Nos		
d)	100mm nominal dia						
e)	150mm nominal dia						
3.5	Conventional sprinkler quartzoid bulb type with 15mm screwed end connection, of 68 deg. C. temperature rating. UL Listed / FM approved and Chrome finished.						
a)	Pendent type@ 68 Deg.C with rosette plate(Quick response type =k-5.6)	380	117	263	Nos		
b)	Upright type	0					
c)	Side wall type @ 68 Deg.C	6	6	0	Nos		
d)	Concealed type@ 68 Deg.C	0					
3.6	Hydraulically operated sprinkler control valve (ICV), with water motor, gong bell and trims as required, pressure gauges, drain valves, ball valves, check valves, strainers etc. Alarm valve shall be UL Listed / FM approved.						
a)	150 mm dia	1	1	0	Nos		
3.7	Supplying & erecting vane type water flow detector /flow switch suitable for detecting flow of water in wet sprinkler pipe of main line or branch lines of 100 mm dia having following features 1) Visual Switch Activation 2) Rugged Switch Assembly 3) Heavy Duty Alluminium pipe Saddles 4) Durable Metal Encloser 5) Steel U Bolts For Secure Mounting 6) Two SPDT (Single Pole Double Track) Synchronised Switches 7) Serviceable Without Draining Pipes. Including drain test assembly						
a)	150 mm dia	0			Nos		
b)	100 dia	0			Nos		
c)	80 dia	9	9	0	Nos		
d)	65 dia	9	9	0	Nos		
e)	50 dia	0			Nos		

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
3.8	Gun metal Orifice plate of 6mm thickness on sprinkler outlet including distance piece and suitably sized for adjustment and delivery pressure, complete with necessary flanges, reducers, tees, elbows, cutting, grinding, welding, identification tags, rubber insertions, nuts bolts, washers etc.						
a)	50 mm dia.	0			Nos		
b)	65 mm dia.	3	3	0	Nos		
c)	80 mm dia.	3	3	0	Nos		
d)	150 mm dia	0			Nos		
e)	100mm dia.	0			Nos		
3.9	Providing & fixing testing and commissioning of UL Rated braided type SS Flexible pipe	380	117	263	Nos		
3.10	Providing & fixing testing and commissioning of pressure switch in M.S. pipe line including connection etc required	3	3	0	Nos		
3.11	Supplying and installing pressure gauge of 100 mm ϕ ., 0-300 PSI or 0-14 kg per cm square fitted with 12/15 mm ϕ . pad cock valve, and G.I. pipe, elbow etc.	14	14	0	Nos		
	Note- Contractor to prepare detail shop drawing as per existing site condition and submit it for consultant for approval						
	TOTAL OF 3.0 - AUTOMATIC SPRINKLER SYSTEM						
4.0	<u>PORTABLE FIRE EXTINGUISHERS- (Existing Available to be refill)</u>						
	Item no 4.1 a) to c) all portable fire extinguishers should be ordered/procured after the completion of all work and before the CFO approval (at the time of building OC) by the permission of Project head only.						
4.1	Supplying and installing Portable Fire extinguishers of following type and capacity.						
a)	Dry chemical powder (ABC) type fire extinguisher, with initial filling in brand new seamless cylinder with powder coated finish, fitted with gun metal union, discharge hose, wall mounting bracket etc. conforming to IS:2171.						
i)	9 kgs. - Lower Ground and Upper Ground						
ii)	6 kgs.						
iii)	4 kgs.	20	20	0	Nos		
b)	Carbon-di- oxide type fire extinguisher of 4.5 kgs. capacity, CO2 gas filled in brand new seamless cylinder with powder coated finish, made out of manganese steel, with wheel type valve, discharge nozzle, bend and horn, wall mounting bracket etc. conforming to IS: 2878.	10	11	0	Nos		

SR.NO.	DESCRIPTION	TOTAL- QTY	PHASE-I- QTY	PHASE-II- QTY	Unit	Rates (₹)	Amount (₹)
c)	Mechanical foam type (FM-200) fire extinguisher 9 Lts. capacity, with initial filling in brand new seamless cylinder with powder coated finish, fitted with gun metal union, high pressure gas cartridge, hose and ABS type branch pipe, wall mounting bracket etc. conforming to IS: 10204.						
c)	K-type fire extinguishers						
4.2	Fire buckets round bottom type, enamel painted, white inside & red out side and Letter "FIRE" in black out side and handle with mounting bracket.						
4.3	Providing Floor mounting stand including bucket for keeping 4 Nos. of FIRE buckets 1500mm in length, 900mm in height frame made out of 30x30x4 mm angle iron with cross supports for legs, welded with 4 hooks and duly painted with one coat of red lead and two coats of silver paint.	8					
ii)	UGT Area -4	4	4	0	Nos		
iii)	Substation Area-4	4	4	0	Nos		
	Notes- 1.) Dedicated fire suppression system for UPS & batter rooms/ Server rooms shall be as per specilised vendor to match with equipment placement. The same is not part of the tender 2) Singanges shall be part of the interior design.						
	TOTAL OF 4.0 - PORTABLE FIRE EXTINGUISHERS						
5.0	<u>STATUTORY APPROVAL-by third party</u>						
5.1	Liasoning work with Statutory Authorities (CFO/etc.) for obtaining approval by preparing plans for submittal etc.incidental expenses connected with approval from Statutory Authorities (CFO) (All official fees/ deposits will be paid by Client)				Lum sum		
	TOTAL OF 5.0 - STATUTORY APPROVALS						
	GRAND TOTAL (ITEM NO 1 TO 5)						
	GRAND TOTAL in words						

GENERAL NOTES	
1	The items given in this schedule are provisional. The Contractor shall be paid for the actual quantity of work executed as measured at the site at the rates tendered. The Bank reserves the right to increase or decrease any of the quantities, or to omit totally any item of work. Any claim by the Contractor on these accounts will not be entertained.
2	All the items of work given in this schedule of quantities shall be executed strictly in accordance with the latest Indian Standard Specifications.
3	The Contractor shall visit the site and shall satisfy himself as to the conditions under which the work is to be performed. He shall also check and ascertain the location of any existing structure or equipment or any other situation which may affect the work. No extra claim as a consequence of ignorance or on ground of insufficient description will be allowed at a later date.
4	All equipment and material shall be IS approved.
5	All approvals shall be obtained from Bank / Consultant
6	All equipment and material shall be inspected at manufacturer's works as per relevant IS by the Bank or his representative before despatch to site.
7	All vendor drawings shall be approved by the Bank/Consultant before fabrication work starts.
8	All Testing and Commissioning shall be as per relevant details covered in the specifications. All these testing records are to be maintained and submitted to Bank.
9	All items of work under this Contract shall be executed strictly to fulfill the requirements laid down under "Basis of Design" in the specifications. Type of equipment, material specification, methods of installation and testing and type of control shall be in accordance with the specifications, approved shop drawings and the relevant Indian Standards, however capacity of each component and their quantities shall be such as to fulfill the above mentioned requirement.
10	The unit rate for all equipment or materials shall include cost in INDIAN RUPEES (INR) for equipment and materials including all taxes and duties and also including forwarding, freight, insurance and transport into Contractor's store at site, storage, installation, testing, balancing, commissioning and other works required.
11	The rate for each item of work included in the Schedule of Quantities shall, unless expressly stated otherwise, include cost of followings:
a	All materials, fixing materials, accessories, appliances tools, plants, equipment, transport, labour and incidentals required in preparation for and in the full and entire execution, testing, balancing, commissioning and completion of work called for in the item and as per Specifications and Drawings.
b	Wastage on materials and labour.

c	Loading, transporting, unloading, handling/double handling, hoisting to all levels, setting, fitting and fixing in position, protecting, disposal of debris and all other labour necessary in and for the full and entire execution and for the job in accordance with the contract documents, good practice and recognize principles.
d	Liabilities, obligations and risks arising out of Conditions of Contract.
e	All requirements of Specifications, whether such requirements are mentioned in the item or not. The Specifications and Drawings where available, are to be read as complimentary to and part of the Schedule of Quantities and any work called for in one shall be taken as required for all.
f	BOQ shall be read in conjunction with technical specification, drawings, In the event of conflict between Bill of Quantities and other documents including the Specifications and drawings, the most stringent shall apply. The interpretation of the Consultant/Project Manager shall be final and binding.
12	The Contractor shall procure and bring Materials/Equipment to the site only on the basis of drawings approved for construction and shop drawings and not on the basis of Bill of Quantities which are approximate only. This also applies to the Contractor's requisition for Bank supplied materials.
13	The contractor shall cooperate with all trades and agencies working on the site. He shall make provision for hangers, sleeves, structural openings and other requirements well in advance to prevent hold up of progress of the construction schedule. All supports to the civil structure shall be provided with anchor fasteners.
14	On award of the work, contractor shall submit a schedule of construction in the form i.e BAR chart for approval of the Project Manager.
15	On award of the work the contractor shall be issued three (3) sets of shop drawings based on consultant's drawings with changes require as per site condition/liasion authority if any.
16	Shop drawings are detailed working drawings coordinated with other trading work, which incorporate the contractor's details for execution of the work and incorporate equipment manufacturer's details and dimensions to ensure that the same can be installed in the space provided.
17	All shop drawings will be made on AutoCAD and colored prints has to be produced for site work.
18	This Schedule shall be fully priced and the extensions and totals duly checked. The rates for all items shall be filled in INK including NIL items.
19	No alteration whatsoever is to be made to the text or quantities of this Schedule unless such alteration is authorised in writing by Consultant. Any such alterations, notes or additions shall, unless authorized in writing, be disregarded when tender documents are considered.

20	In the event of an error occurring in the amount of the Schedule, as a result of wrong extension of the unit rate and quantity, the unit rate quoted by the tenderer shall be regarded as firm and the extensions shall be amended on the basis of rates.
21	Any error in totaling in the amount column and in carrying forward total shall be corrected. Any error, in description or in quantity, omission of items from this Schedule shall not vitiate this Contract but shall be corrected and deemed to be variation required by the Consultant/Project Manager.
22	Rates have been called for a number of items of works, as alternatives which, for the present do not form part of the total value of tender. However the rates for these items shall be quoted, with due care so that in the event of choice of an alternative item of work, said rate shall form part of the contract and shall not violate the contract any way.
23	The contractor shall , from time to time, clear away all debris and excess materials accumulated at the site failing which the same shall be done by Project Manager at contractor's risk and cost and cost of clean up shall be deducted from the contractors prorata bill.
24	After the devices and equipment have been installed and commissioned, contractor shall cleanup the same and remove all plaster, paints, stains, stickers and other foreign matter or discoloration leaving the same in a ready to use condition.
25	On completion of all works, contractor shall demolish all stores, remove all surplus materials and leave the site in a broom clean condition, failing which the same shall be done by the Project Manager at the Contractor" risk and cost. Cost of the cleanup shall be deducted from the contractor's bills on pro-rata basis in proportion to his contact value. Rate shall be valid for 24 months.
26	Contactor to prepare detailed shop drawings for consultant approval and prepare as built layout to submit to client.