SL NO.	DESCRIPTION
ANNEXURE - I	INSTRUCTIONS TO THE TENDER
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CHRISTIAN MEDICAL COLLEGE, IDA SCUDDER ROAD, VELLORE – 4.

TERMS AND CONDITIONS OF TENDER

NAME OF THE WORK: PROVIDING FIRE HYDRANT SYSTEM AND SPRINKLER SYSTEM IN THE RENOVATION OF EXISTING H WARD IN FIRST FLOOR AT CMC TOWN CAMPUS.

****

1.0 INSTRUCTIONS REGARDING SUBMISSION OF TENDER.

1.1 GENERAL

1.1.1 The information found in this tender document comprising of all sections is given in good Faith and is meant to serve as a guide. It is, therefore, imperative that the **TENDERER** shall obtain and examine for himself all the data, information and Particulars required for the satisfactory execution of the work under this inquiry. The **WORK** shall be executed in accordance with the best modern practice and **t**o the complete satisfaction of the **ADMINISTRATION.**

1.1.2 Tender forms for the above work will be issued from the Planning office on payment of **Rs. 300.00 (Rupees Three hundred only)** in the form of Demand Draft drawn from a Nationalized/Scheduled Bank in favor of '**CMC VELLORE ASSOCIATION**.'

1.1.3 Tenders for the above work should be submitted in a sealed envelope super scribed as **NAME OF THE WORK: PROVIDING FIRE HYDRANT SYSTEM AND SPRINKLER SYSTEM IN THE PROPOSED RENOVATION OF EXISTING H WARD IN FIRST FLOOR AT CMC TOWN CAMPUS.** The last date for receipt of completed tenders will be **18/05/2026 at 3.00.p.m**. and the Tenders will be opened on the same day at **3.15.p.m. Planning Office.**

1.1.4 Tenders should be deposited in the Tender Box available in the General Superintendent's Office.

1.1.5 The **ADMINISTRATION** reserves the right to reject any or all tenders without assigning any reason.

1.1.6 The **TENDERER** or their representative is allowed to be presented / represented during opening.

1.1.7 **TENDERS** received after the closing date and time will not be considered and will be returned unopened.

1.1.8 **TENDERS** by cable telegram, e-mail, fax or telex etc. will be rejected.

1.1.9 Transfer of Tender document purchased by one intending **TENDERER** to another is Not permissible.

1.1.10 Tenders and other accompanying documents shall be made out only in the English Language.

1.1.11 **TENDERERS** will not be entitled to claim any costs, charges, expenses of the tender, incidental to or incurred by them, through or in connection with the submission of this tender, even though the **ADMINISTRATION** may elect to withdraw the Tender Notice.

1.1.12 Amendments/ Addenda/Corrigenda to this tender document, if issued by the **ADMINISTRATION,** must be signed by the **TENDERER** and submitted along with the tender document. The **TENDERER** should write clearly the revised quantities in the schedule of items and rates / prices forming part of tender document and should price the work based on the revised quantities, when amendments for quantities are issued as directed.

1.1.13 **ADMINISTRATION** reserves the right to evaluate quotations containing deviations having financial implications after adding the cost for such deviations as determined by **ADMINISTRTION.**

1.1.14 Signatures in the **TENDER** shall be dated, as well as all the pages of the **TENDER DOCUMENT** shall be initialed or signed, by the **TENDERER** or by a person holding power of attorney authorizing him to sign on behalf of the **TENDERER** before submission of **TENDER.**

1.1.15 The **TENDERER** should inspect the site and satisfy himself about the quantities and other details. Any item over and above these which in the **TENDERER'S** opinion will be required, should be separately indicated and individual items quoted for in the same manner as in the schedule.

1.1.16 Cost of the stamp paper for the agreement should be borne by the **CONTRACTOR.**

1.1.17 Incomplete **Tenders** will be rejected.

1.1.18 The scope of **WORK** is generally defined but not limited to what is given in the bills of quantities. **WORKS** of similar nature, within the framework of this contract, shall also have to be executed by the **CONTRACTOR** as per quoted rates or as per other relevant conditions mentioned herein.

1.1.19 All documents including drawings issued to the **Tenderer** shall be returned duly signed.

2.0 SPECIAL CONDITIONS OF CONTRACT.

2.1.1 Water available in the Campus will be made available at one point by the **Administration Free of Cost**. In Every such case, however the Contractor shall, at his own cost, make arrangements for necessary connections, including additional pipe lines, pumping arrangements etc., Complete

2.1.2 Electricity shall be made available at one point near/within the construction premises with metering arrangements and it will be charged in the final bill. The Contractor shall make arrangements to use the Electricity at the site of Construction with proper Safety measures.

As per TANGEDCO norms, for construction purposes a "Temporary Supply" has to be availed from TANGEDCO with separate metering arrangements (Meter provided by TANGEDCO). This reading is taken and energy consumption charges shall be paid to TANGEDCO by the CMC Electrical Department as per the Temporary Supply Tariff applicable and deducted from the Contractor's Bill.

Presently the Temporary Supply units cost Rs.13.25 / Unit (subject to revision from TANGEDCO).

The Institutional policy regarding Electricity charges is as given below:

a. For Demand requested below 10KW/KVA (Minor works):

Temporary unit charges @ Rs.13.25/unit ---------- (1)
DG charges @ 5% of the above. ---------- (2)
Electrical Tax @ 5% of (1+2)

b. For Demand requested above 10KW (Major works)

Temporary unit charges @ Rs.13.25/unit ---------- (1)
Demand charges @ Rs.608/KVA ---------- (2)
DG charges @ 5% of (1) above ---------- (3)
Electrical Tax @ 5% of (1+2+3)

2.1.3 The **CONTRACTOR** shall comply with the provisions of any statutes and regulations / byelaws of any local Authority and water and / or electricity supply agencies.

2.1.4 No advance/ Mobilization advance will be paid.

2.1.5 The rates quoted should be firm for the period of **CONTRACT** and no price escalation is applicable to this contract

2.1.6 SECURITY DEPOSIT AND RETENTION:

The total security deposit for this work will be 5% of the value of the work executed. The **EMD** and **ADDL EMD** paid by the **CONTRACTOR** will be retained as a part of the Security Deposit. The balance security deposit will be collected at 5% of the value of each running bill and the total amount collected as Security Deposit will be 5% of the total work executed. The security deposit will be released as stated below. 50% of the security deposit will be released with the final bill, subject to producing necessary approval/clearance from the electrical /inspectorate where applicable and satisfactory commissioning of electrical works. The remaining 50% will be retained during the maintenance period of **6 months** from the date of handing over of the total completed work. The retention money will be released after 6 months provided no defects are noticed during this period. If defects are noticed, the **CONTRACTOR** should rectify the defects at his own cost only after which the retention money will be refunded

2.1.7 TAX:

a. The contractor must quote the contract rate exclusive of GST. The existing GST rate of 18% (CGST @ 9% and SGST @ 9%) will be paid to the contractor as per the composite supply of works contract as defined in Clause 119 of Section 2 of the CGST Act. In case the services are rendered outside Tamil Nadu IGST @ 18% will be paid to the contractor.

b. Proper uploading of outward Supplies / Invoice made to CMC will have to be done by the contractor. In case of any discrepancy due to which any loss of input credit to CMC or any penalty and interest levied on CMC will be recovered from the contractor only.

c. Contractor is required to pay the GST to the Government on time as prescribed in the law on monthly basis. Any loss that CMC would have to face due to non-compliance on the part of the contractor shall be recovered from him only.

d. The Tax Invoice to be raised by the contractor should be in the name of "CMC Vellore Association" below which the name of the department may be specified. It is very much mandatory that the GST number of CMC should be mentioned in the invoice. (GST number of **CMC: 33AAATC1278N1ZN)**

e. The contractor has to be submitting the Tax Invoice even for obtaining the material and mobilization advance from CMC.

f. Any increase in taxes imposed by the Govt., during execution will be reimbursed on production of proof of such payment.

2.1.8 The contractor has to obtain entry token /photo pass for their Workers/supervisor from the administration and has to be renewed time to time. After completion of the work, all the tokens /pass should be returned to the security office by the contractor.

2.2 VARIATION IN QUANTITIES AND ADDITIONAL ITEMS OF WORK:

2.2.1 The items of work and quantities given in the schedule are only approximate.

2.2.2 The variations in quantities if any between the quantity required to be carried out and that given in the schedule of quantities shall not entitle the CONTRACTOR to any compensation or shall it be incumbent on the ADMINISTRATION to have these executed by the CONTRACTOR. The ADMINISTRATION has the right to have the excess quantities done by any other agency and the CONTRACTOR shall co-operate fully in the execution of the works in whatever manner decided by the ADMINISTRATION.

2.2.3 If any items not included in the schedule becomes necessary, the same shall be treated as additional items and the rate for the same shall be arrived as per the following procedure.

2.2.4 Wherever possible the rate shall be derived from the agreement items, in which case no other alternatives will be considered.

2.2.5 For additional items of work for which rates cannot be derived from the agreement rates, the CONTRACTOR shall prepare a detailed rate analysis including materials cost, labour cost and 15% of material and labour cost as margins and get the same approved by the Engineer before carrying out the work. The rate analysis shall be generally based on the CPWD method of rate analysis excluding contractor profit and overhead charges.

2.2.6 Sometimes according to site condition the work will have to be carried out during night hours, nonworking hours, holidays etc. Due to that no additional payment will be paid for the same.

2.2.7 Special caution should be taken to avoid dust enter in to the adjacent rooms. If necessary, the contractor has to cover the adjacent areas and wherever required with plastic sheets at their own cost without any additional payment.

2.2.8 The Contractor has to make his own shed for stocking the materials at site. The contractor is fully responsible for the material till taken over by the CMC after installation.

2.2.9 All items in the tender schedule, quoted rates are inclusive of scaffolding charges and no additional payment will be paid for the same.

2.2.10 The **CONTRACTOR** shall erect at his cost, a suitable distance from the periphery of the building a barricade made of G.I. sheets on approved frame work to a height of 3.60 meters. The **CONTRACTOR** shall also install horizontal safety nets of adequate width and strength at two levels to prevent falling objects from causing injury (or) damage and necessary covering of windows in the lower floors with plastic sheets to prevent dust pollution.

2.2.11 The **CONTRACTOR** shall deploy skilled workers of the station for attending maintenance work during the period of maintenance/guarantee.

2.2.12 Necessary safety precautions should be taken by the Contractor during executing the works and all other related works. Entire Safety of the workers during working at site will be the Scope of Contractor.

3.0 Determination of variation of Rates quoted:

3.1.0 Certain items have been asked to be quoted against a basic cost for the principal component of the item, as given in the bills of quantity.

3.2.0 The basic rate of materials indicated is the cost of materials only, The rates are inclusive of loading, unloading and Transportation charges but exclusive of taxes as per invoices for supply at Vellore which shall be required to be submitted.

3.3.0 In the event that the cost of the items varies from the basic Rate Given, the difference between the invoiced rate and the basic Rate Indicated in the schedule will be directly deducted / added against the rate quoted without giving any margin.

3.4.0 The other areas near the site will be functional at the time of modification works /New Work. The C**ONTRACTOR** has to ensure that no disturbance occurs to the normal functioning of the premises due to construction activities.

3.5.0 Work has to be carried out during working /non-working hours/Night time and holiday (if necessary).

3.6.0 The scope of work is generally defined but not limited to what is given in the bills of quantities. Works of similar nature within the frame work of this contract shall also have to be executed by the contractor as per quoted rates.

3.7.0 The tenderer should inspect the site and satisfy himself about the quantities and other details any item, one and above these which in the tenderer's opinion should be separately indicated and individual items quoted for in the same manner as in the Schedule.

3.8.0 All rates and prices in the tender covers freight and transport charges to site.

3.9.0 The payment will be made as per the actual work executed and as measured at site. For waste cables payment will not be made.

3.10.0 LIQUIDATED DAMAGES AND COMPENSATION FOR DELAY

3.10.1 If the **CONTRACTOR** fails either to maintain the stipulated time of completion or fails to maintain the stipulated rate of progress he will be liable to pay liquidated damages as per relevant clauses. It shall be clearly understood that failure to meet the interim completion periods shall also attract liquidated damages.

3.10.2 The **CONTRACTOR** shall be liable for any loss / damage caused to any person / property and the **ADMINISTRATION** shall have the power to pay or defend / compromise any claim thereof and charge to the **CONTRACTOR** any such amount paid and / or expenses incurred. The **CONTRACTOR** shall not ask any question into such action taken.

3.10.3 **CONTRACTOR** suffers delay, in the due execution of the contractual obligations due to delays caused by force majeure as defined above, the agreed time of completion of the work covered by this **CONTRACT** or the obligations of the **CONTRACTOR** shall be extended by a period of force majeure, provided that on the occurrence of any such contingency, the **CONTRACTOR** immediately within 15 days reports to the **ADMINISTRATION** in writing, the cause of delay with requisite documentary evidence.

3.10.4 In Case the **CONTRACTOR** fails to complete the works in the stipulated time, he shall be liable to pay to the **ADMINISTRATION** as compensation not in the form of penalty but as liquidated damages an amount equal to **Rs. 5,000.00 per week and subject to a maximum of Rs. 40,000.00/- I**f the overall delay is more than 8 weeks, the **CONTRACT** is liable to be terminated as per the relevant clause.

3.10.5 In case the **CONTRACTOR** completes the works satisfactorily ahead of the stipulated time, the **ADMINISTRATION** shall pay to the contractor as bonus an amount equal to **Rs. 5,000.00/- per week and subject to a maximum of Rs.20,000.00/-.**

3.10.6 The **ADMINISTRATION** reserves to right to determine when the penalty/bonus clause should be enforced and the parties agree that the said amount will be payable on demand without there being any proof of the actual loss or damages caused by such delay / breach.

3.11.0 **SETTLEMENT OF FINAL BILLS**

3.11.1 The **CONTRACTOR** within a period of **two months on COMPLETION** and handing over of the **WORK**, shall prepare and submit the final bill to the **ENGINEER**. On the **ENGINEER'S CERTIFICATE** of **COMPLETION**, based on final measurements recorded, final payment due with reference to the finally measured quantities and the schedule of rates / accepted rates in the case of items not included in the schedule of rates, after making adjustments as may be necessary shall be made to the **CONTRACTOR.** This final payment shall be made only when the **CONTRACTOR** has a recorded **'No Claims'** Certificate on the final bill or has delivered a separate communication certifying "No claims". If the **CONTRACTOR** has made any claim(s) which he proposes to pursue and seek a decision thereon, he shall deliver to the **ENGINEER** at the time of submission of the final bill, a complete list of the claims made by him and certify that he has no other claims against the **ADMINISTRATION** except what has been listed.

3.11.2 After issue of the **COMPLETION CERTIFICATE** and at the time of payment of the final bill, the amount of Security Deposit may be refunded, less any amount of any claims(s) by the **ADMINISTRATION** against the **CONTRACTOR,** retaining an amount equal to two and a half percent of the gross amount as per the "final bill" to ensure due compliance with the stipulation for **PERIOD OF MAINTENANCE** as per the **CONTRACT.**

3.11.3 On the expiration of the **PERIOD OF MAINTENANCE** specified in the **CONTRACT**, the **ENGINEER** may arrange for refund of the **RETENTION MONEY** after adjusting any expenditure incurred by the **ADMINISTRATION** for any maintenance work which after being pointed out by the **ENGINEER** was not attended to by the **CONTRACTOR**.

3.11.4 **Period of completion** – work has to be completed within **1 Month** from the date of Handing over of site.

3.11.5 If any damage occurs, the cost incurred towards rectification/replacement should be borne by the Contractor

3.11.6 All works have to be done/carried out as per specification of Tamil Nadu Fire and Rescue Services Department and satisfy the requirements of the Fire safety installations and Life Safety Measures for Various Categories.

3.12.7 The contractor shall not employ workers below the age of eighteen (18) YEARS

4 Instruction for doing Welding works:

- Welding shall be done using Industrial cylinder with pressure gauge and flash back arrestor
- Caution board to be provided in the work area.
- Work area to be cordoned off
- Appropriate PPE such as face shield, goggles, mask, insulated gloves, rubber soled safety shoes to be used by the welder.

5 Work has to be carried out during Night time and holiday (If necessary), and No additional Payment will be paid for the same.

6 The Contractor shall afford all necessary facilities for the Engineer/his Representative to inspect the work including provision of labour, materials, planks, ladders, pumps, appliances etc

7 The Contractor should use only the drilling machine for doing the work. The work has to be executed without disturbance to the normal function of the premises to the possible extent.

8 Experienced technical supervisor has to be arranged by the contractor full time during execution.

9 All materials shall be approved before use.

10 All surrounding areas to be maintained neatly (No spiting/ dropping food waste covers/ smoking etc prohibited)

GENERAL SUPERINTENDENT **CONTRACTOR**

ANNEXURE-III(A)

4.0 PRE-QUALIFICATION/ ELIGIBLE CRITERIA: -

4.1.1 Only those Contractor's Capable of handling similar type of project should apply and submit their Company Profile, description of similar assignments, technical capabilities, Staff profile, financial soundness and any other information if required that certifies their qualification to perform the above project.

4.1.2 In Case a Tenderer is already executing an ongoing process in CMC which is not complete, CMC reserves the right to reject this Tenderer's quote, even if it is lowest, if the tender is for a project which has strict time lines and if the tender Committee decides that a Tenderer executing two projects simultaneously may result in a delay of either of the projects.

4.1.3 Pre-qualification is open to all Civil and Structural Contractors performing similar types of works.

4.1.4 The firm should be registered under relevant statutory provisions and should be an Established organization.

4.1.5 The contractors should have experience in carrying out Civil and Structural Steel Works and only those Tenderer who has the capability for handling similar type of work should apply.

4.1.6 The Tender bids will be considered incomplete if not accompanied by Pre-qualification documents as per Annexure-III A

4.1.7 The tenderer should have adequate infrastructure facilities necessary for executing the Projects.

4.1.8 Only those tenderers with an average annual turnover of Rs. 70 lakhs & above for a minimum period of 3 (three) years shall be eligible to participate in the tender. Audited balance sheet and P&L account for the past five preceding financial years shall be furnished.

4.1.9 The list of clients, present and past should be enclosed. Contact person(s) and Phone No. of the client shall be enclosed

4.1.10 CMC reserves the right to reject any or all the bids at any time without assigning any reasons, whatsoever. The opinion / decision of CMC regarding the acceptance or rejection of the bid shall be final and conclusive.

ANEEXURE III B

PRE-QUALIFICATION DOCUMENT

S.No	Description	Details
1	Name of the Firm	
2	Staff Details	
3	List of Project Completed with Value in Past 3 Years	
4	Lis of Ongoing Project Value of the Project	
5	Financial Turnover last 3 years	

I hereby declare that the information provided is true and correct.

TECHNICAL SPECIFICATIONS: FIRE FIGHTING

1.0 Scope of work

1.1 Supply, Erection, Testing and commissioning of following Fire Fighting System components.

1.2 Getting Approval of drawings and installation from the appropriate Authority.

I. Hydrant System
II. Sprinkler System

I. Hydrant System shall comprise of MS Heavy Grade Land hydrants, Hose reel, Yard Hydrants, valves etc.,
II. Sprinkler System shall comprise of MS Heavy Grade pipes, valves etc.,
III. Submitting of fabrication drawings for approval before executing and "As Built" drawings after completion of work

REFERENCES

IS 3844:1989 Code of Practice for Installation and maintenance of Internal Fire Hydrants and hose reel on premises (First Revision) (Reaffirmed November 1995)

IS 901: 1988 specification for couplings, double male and double female instantaneous pattern for firefighting (third revision)

IS 902: 1992 Specification for Suction hose coupling for fire hose couplings for firefighting Purposes (third revision)

IS 903: 1993 Specification for Fire hose delivery Couplings, Branch pipe, nozzles and nozzle spanner (fourth revision)

IS 905:1980 Specification for delivery breechings, dividing and collecting instantaneous pattern for firefighting purposes (Second revision) (Reaffirmed February 1992)

IS 907: 1984 Specification for Suction strainers, cylindrical type for fire fighting (Second revision) (Reaffirmed November 1995 Amendment No 2)

IS 908: 1975 Specification for Fire Hydrants, Stand post type (Second revision) (Reaffirmed November 1995 Amendment No 2)

IS 2871:2012 Specification for Branch pipe, Universal for Firefighting Purposes

IS 5290: 1993 Specification for landing valves (Third Revision)

IS 5714: 1981 Specification for Hydrant, Stand Pipe for firefighting (First Revision) (Reaffirmed February 1992)

IS 8090: 1992 Specification for Couplings, Branch pipe, Nozzle used in hose reel tubing for firefighting (First revision) (Reaffirmed November 1995 (Amendment No1)

IS 3844: 1989 code of practice for installation and maintenance of internal fire hydrants and hose reels on premises (first revision)

IS 13039: 1991 code of practice for provision and maintenance of external hydrant system

IS 13039: 2014 External hydrant systems – provision and maintenance – code of practice

IS 2175 – 1988 Specification for Heat Sensitive for Fire Detectors for use in Automatic fire alarm system

IS 2189:1988 Code of Practice for Selection, Installation and maintenance of Automatic Fire Detection and Alarm System (Second Revision)Amendment No 1)

IS 2175:1988 Specification for Heat sensitive Fire Detectors for Fire Detectors for use in Automatic fire alarm System (Second revision) (Reaffirmed November 1995)

IS 11360:1985 Specification for Smoke detectors for use in automatic electrical fire Alarm system (Reaffirmed November 1995)

All the selection of materials, Installation, Testing and commissioning shall be strictly in accordance with Indian Standard Specification and also Local Fire Force rules shall also be considered.

IS 9972:2002 Specification for automatic sprinkler heads (first revision)

ISO 6182-1 automatic sprinkler fire extinguishing system

IS (20) 15105:2002 Design and installation of fixed automatic sprinkler fire extinguishing system

IS 9668:1990 Code of practice for provision and maintenance of water supplies and fire stop (Reaffirmed November 1995)

All the selection of materials, Installation, Testing and commissioning shall be strictly in accordance with Indian Standard Specification and also Local Fire Force rules shall also be considered.

1. HYDRANT SYSTEM

A. MATERIALS & EQUIPMENT
B. PROCEDURE OF WORKS
C. TESTING AND COMMISSIONING

1.1 MATERIALS & EQUIPMENT :

The material and Equipment shall include following:

i. MS Heavy Grade pipes & fittings.
ii. Valves: Butterfly valves, Non return valves, hydrant valves etc.,
iii. Single headed Hydrants
iv. RRL type B synthetic Hose
v. Stand Post

1.1.1 Piping

Pipes of following types are to be used:

Mild steel black class C pipes as per IS:1239 heavy grade suitably lagged on the outside to prevent soil corrosion as per IS:10221. M.S pipes buried below ground shall also be suitably be lagged with 2 layers of 400 micron polythene sheet over 2 coats of bitumen.

Mild steel pipelines up to 150 mm dia shall be as per IS:1239, Part II (heavy grade) while pipe line above 150mm dia shall be as per IS: 3589.

All pipe clamps and supports shall be fabricated from MS steel sections. Welding of galvanized clamps and supports shall not be permitted.

Clamps shall be fastened by galvanized nuts and bolts. The selection of support shall be capable of carrying the sum of all concurrently acting loads. They shall be designed to provide required supporting effects and allow pipeline movements as necessary.

The piping system shall be tested for leakages at 2 times the operating pressure or 1.5 time shut off pressure, whichever is highest including testing for water hammer effects.

Flanged joints shall be used for connections for vessels, equipment, flanged valves and also on two straight lengths of pipelines of strategic points to facilitate erection and subsequent maintenance work.

For pipes underground installation the pipes shall be buried at least one meter below ground level. Pipe above ground level shall be supported at regular intervals not exceeding 3.0 mts.

1.1.2 PIPING INSTALLATION & SUPPORT

Tender drawings indicate schematically the size and location of pipes. The contractor, on the award of the work, shall prepare detailed working drawings, showing the cross- Sections longitudinal sections, details of fittings, locations of isolating and control valves, drain and air valves and all pipe support. Pipe work and fittings shall be supported by brackets with Galvanised steel clamps so as to permit free expansion and contraction.

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

Automatic air valves shall be provided at all high points in the piping system for venting. All valves shall be of associated with an equal size ball valves.

1.1.3 PIPE FITTINGS

Pipe fittings mean tees, elbows, couplings, unions, flanges, reducers etc and all such connecting devices that are needed to complete the piping work in its totality.

1.1.4 JOINTING

WELDED JOINTS

Joints between MS pipes and fittings shall be made with the pipes and fittings having V groove and welded with electrical resistance welding in an approved manner. But welding without V groove shall not permitted.

FLANGED JOINTS (65 MM DIA AND ABOVE)

Flanged joints with flanges conforming to IS:6392 shall be provided on

Straight run sat intervals not exceeding 25-30m on pipe lines of 50mm dia and above and as directed.

For jointing all types of valves, appurtenances, pumps, connections with other type of pipes, to water tanks and other places necessary and as required for good engineering practice.

Flanges shall be with GI bolts and nuts and 3mm insertion gasket of natural rubber conforming to IS:11149.

1.2.1 BUTTERFLY VALVE

The butterfly valve shall be suitable for water works. The Butterfly valves shall withstand hydrostatic test pressure of 15 kg/sqcm. Or 1.5 times the Working pressure whichever is higher

The body shall be of cast iron to IS:210 in circular shape and of high strength to take the water pressure. The disc shall be heavy duty cast iron with anti-corrosive epoxy or nickel coating.

The valve seat shall be of high grade elastomer or nitrile rubber. The valve is closed position shall have complete contact between the seat and the disc throughout the perimeter. The elastomer rubber shall have a long life and shall not give away on continuous applied water pressure. The shaft shall be EN 8 grade carbon steel. The valve shall be fitted between two flanges on either side of pipe flanges. The valve edge rubber shall be projected outside such that they are wedged within the pipe flanges to prevent leakages.

Butterfly valve with SS disc

The body shall be of cast iron to IS:210 in circular shape and of high strength to take the water pressure. The disc shall be heavy duty stainless steel to IS 3444 Gr.6

The valve seat shall be of high grade elastomer or nitrile rubber. The valve is closed position shall have complete contact between the seat and the disc throughout the perimeter. The elastomer rubber shall have a long life and shall not give away on continuous applied water pressure. The valve shall be fitted between two flanges on either side of pipe flanges. The valve edge rubber shall be projected outside such that they are wedged within the pipe flanges to prevent leakages.

1.2.2 BALL VALVE

The ball valve shall be made forged brass and suitable for test pressure of pipe line. The valve shall be internally threaded to receive pipe connections.

The ball shall be made from brass and machined to perfect round shape and subsequently chrome plated. The seat of the valve body-bonnet gasket and gland packing shall be of Teflon.

The handle shall be provided with PVC jacket. The handle shall also indicate the direction of open and closed situations. The gap between the ball and the Teflon packing shall be sealed to prevent water seeping.

The handle shall also be provided with a lug to keep the movement of the ball valve within 90 degree. The lever shall be operated smoothly and without application of any unnecessary force.

1.2.3 Non-return valve

Non-return valve shall be cast iron double flanged with cast iron body and bronze internal parts conforming to IS: 5312

1.3.1 FIRE HYDRANTS

EXTERNAL HYDRANTS

Contractor shall provide external hydrants. The hydrants shall have instantaneous type 63mm dia outlets. The hydrants shall be double outlet conforming to IS:908 with CI duck foot bend and flanged riser or required height to bring the hydrant to correct level above ground.

Contractor shall provide for each external fire hydrant two numbers of 63mm dia 15m long RRL type B synthetic hose pipe with stainless steel male and female instantaneous type couplings machine wound with copper wire (hose to IS:636 type certification), stainless steel branch pipe with nozzle to IS: 903,

External hydrant hose cabinet shall be provided with a drain in the bottom plate.

The hose shall be capable of withstanding a bursting pressure of 35.7 Kg/sq.cm without undue leakage or sweating. Hose shall be provided with instantaneous spring lock, type couplings.

1.3.2 Branch pipe, Nozzle

Branch pipes shall be of SS and to be fit into the instantaneous coupling. Nozzle shall be spray type of diameter of not less than 16mm and not more than 25mm. Nozzle shall be of instantaneous pattern conforming to IS:903.

1.3.3 HOSE CABINET

Hose cabinet shall be provided for all external fire hydrants. Hose cabinets shall be fabricated from 14-gauge thick MS sheet and spray painted to shade No.536 if IS:5. The hose cabinet with hinged double front door partially glazed (4mm glass panel) with locking arrangement. Cabinet surfaces in contact with the wall shall not be powder coated but instead two coats of anti-corrosive bitumastic paint. The hose cabinet shall be accommodating the following

RRL Type B synthetic hose set – 2 Nos
Branch pipe with nozzle – 1 No

1.3.4 Stand Post: The stand post shall be of M.S pipe of 80 mm dia with M.S Bend and flanges. The height shall be 1200 mm or as directed by the Engineer in charge.

1.4 PRESSURE SWITCH

The pressure switches shall be employed for starting and shutting down operation of pumps automatically, dictated by line pressure. The set pressure shall be adjustable.

The switch shall be suitable for consistent and repeated operations without change in values. It shall be provided with water protection

1.5 PRESSURE GAUGE

Pressure gauge shall be installed at appropriate height for easy readability Pressure gauge shall be 100 mm dia SS bourden type with ball valve, tapping and connecting pipe and nipple.

1.6 PAINTING

All Hydrant shall be painted with post office red colour paint. All MS pipe shall first be cleaned thoroughly before application of primer coat. After application of primer coat two coats of enamel paint shall be applied. Each coat shall be given minimum 24 hours drying time. No thinner shall be used. Wherever required all pipe headers shall be worded indicating the direction of the pipe.

Painting shall be expertly applied, the paint shall not over run on surfaces not requiring painting such as walls, surfaces etc. Nuts and bolts shall be painted black, while valves shall be painted blue.

1.7 EXCAVATION

Excavation for pipe lines shall be buried with a minimum cover of 1 meter.

TESTING AND COMMISSIONING:

All the piping system shall be tested at 1.5 times the working pressure for four hours. The test shall be conducted in the presence of Architects, Consultants or their representatives.
A record shall be maintained for having been done the Test, the loss of head shall be absolutely zero. In case of any leakage or bursting of pipes, Defective section shall be rectified and tested again.

2. SPRINKLER SYSTEM

A. MATERIALS & EQUIPMENT
B. PROCEDURE OF WORKS
C. TESTING AND COMMISSIONING

MATERIALS & EQUIPMENT :
The material and Equipment shall include following:

i. MS Heavy Grade pipes & fittings.
ii. Valves: Butterfly valves, Non return valves, etc.,
iii. Sprinklers head

2.1 Piping

Pipes of following types are to be used:

Mild steel black class C pipes as per IS:1239 heavy grade suitably lagged on the outside to prevent soil corrosion as per IS:10221. M.S pipes buried below ground shall also be suitably be lagged with 2 layers of 400 micron polythene sheet over 2 coats of bitumen.

Mild steel pipelines up to 150 mm dia shall be as per IS:1239, Part II (heavy grade) while pipe line above 150mm dia shall be as per IS: 3589.

All pipe clamps and supports shall be fabricated from MS steel sections. Welding of galvanized clamps and supports shall not be permitted.

Clamps shall be fastened by galvanized nuts and bolts. The selection of support shall be capable of carrying the sum of all concurrently acting loads. They shall be designed to provide required supporting effects and allow pipeline movements as necessary.

The piping system shall be tested for leakages at 2 times the operating pressure or 1.5 time shut off pressure, whichever is highest including testing for water hammer effects.

Flanged joints shall be used for connections for vessels, equipment, flanged valves and also on two straight lengths of pipelines of strategic points to facilitate erection and subsequent maintenance work.

For pipes underground installation the pipes shall be buried at least one meter below ground level. Pipe above ground level shall be supported at regular intervals not exceeding 3.0 mts.

2.1.2 PIPING INSTALLATION & SUPPORT

Tender drawings indicate schematically the size and location of pipes. The contractor, on the award of the work, shall prepare detailed working drawings, showing the cross sections, longitudinal sections, details of fittings, locations of isolating and control valves, drain and air valves and all pipe support.

Pipes may be laid over ground on exclusive supports. Pipes shall be of material conforming to IS 1239 Part I and IS 1978 with welded, threaded or flanged joints and supported adequately at regular intervals

Hangers should not be welded or fastened directly to the pipe work.
The supports on which the pipe work rests should be secured firmly in position.

The pipe should be supported from noncombustible building elements

The distance between the pipe supports measured along the line of connected pipes (whether the pipes run horizontally, vertically or at an angles) shall not be less than that given below.

1. Up to 65 mm dia - Spacing 4.0 m
2. 65mm to 100mm - Spacing 6.0 m
3. 100mm to 250mm - Spacing 6.5 m

The first support on a nominally horizontal distribution pipe shall not be more than 2m from the main distribution pipe.

The last support on a nominally horizontal distribution pipe shall not be more than 450mm from the end.

Drop or rise pipes shall be secured to the building structure either directly or indirectly at the adjacent nominally horizontal part of the pipe within 300mm of the drop or rise

2.1.3 PIPE FITTINGS

Pipe fittings mean tees, elbows, couplings, unions, flanges, reducers etc and all such connecting devices that are needed to complete the piping work in its totality.

2.1.4 JOINTING

WELDED JOINTS

Joints between MS pipes and fittings shall be made with the pipes and fittings having V groove and welded with electrical resistance welding in an approved manner. But welding without V groove shall not permitted.

FLANGED JOINTS (65 MM DIA AND ABOVE)

Flanged joints with flanges conforming to IS:6392 shall be provided on
Straight run sat intervals not exceeding 25-30m on pipe lines of 50mm dia and above and as directed.
For jointing all types of valves, appurtenances, pumps, connections with other type of pipes, to water tanks and other places necessary and as required for good engineering practice.
Flanges shall be with GI bolts and nuts and 3mm insertion gasket of natural rubber conforming to IS:11149.

2.2.1 BUTTERFLY VALVE

The butterfly valve shall be suitable for water works. The Butterfly valves shall withstand hydrostatic test pressure of 15 kg/sqcm. Or 1.5 times the Working pressure whichever is higher

The body shall be of cast iron to IS:210 in circular shape and of high strength to take the water pressure. The disc shall be heavy duty cast iron with anti-corrosive epoxy or nickel coating.

The valve seat shall be of high grade elastomer or nitrile rubber. The valve is closed position shall have complete contact between the seat and the disc throughout the perimeter. The elastomer rubber shall have a long life and shall not give away on continuous applied water pressure. The shaft shall be EN 8 grade carbon steel. The valve shall be fitted between two flanges on either side of pipe flanges. The valve edge rubber shall be projected outside such that they are wedged within the pipe flanges to prevent leakages.

2.2.2 Butterfly valve with SS disc

The body shall be of cast iron to IS:210 in circular shape and of high strength to take the water pressure. The disc shall be heavy duty stainless steel to IS 3444 Gr.6

The valve seat shall be of high-grade elastomer or nitrile rubber. The valve is closed position shall have complete contact between the seat and the disc throughout the perimeter. The elastomer rubber shall have a long life and shall not give away on continuous applied water pressure. The valve shall be fitted between two flanges on either side of pipe flanges. The valve edge rubber shall be projected outside such that they are wedged within the pipe flanges to prevent leakages.

2.2.3 BALL VALVE

The ball valve shall be made forged brass and suitable for test pressure of pipe line. The valve shall be internally threaded to receive pipe connections.

The ball shall be made from brass and machined to perfect round shape and subsequently chrome plated. The seat of the valve body-bonnet gasket and gland packing shall be of Teflon.

The handle shall be provided with PVC jacket. The handle shall also indicate the direction of open and closed situations. The gap between the ball and the Teflon packing shall be sealed to prevent water seeping.

The handle shall also be provided with a lug to keep the movement of the ball valve within 90 degree. The lever shall be operated smoothly and without application of any unnecessary force.

2.2.4 Non return valve

Non return valve (ball type) shall be cast iron double flanged with cast iron body and bronze internal parts conforming to IS: 5312.

2.2.3 SPRINKLER HEADS

The sprinkler heads shall be UL listed fixed temperature type with a quartzoid bulb containing liquid having high vapour pressure held in position by a forged GM yoke and deflector. The rated temperature of quartzoid bulb shall be 68 deg C. The spacing shall however conform to the detailed drawing, in Co-ordination with electrical and other allied services at the ceiling level. Contractor shall supply spare sprinkler heads.

2.3 PAINTING

All sprinkler pipes shall be painted with post office red colour paint. All MS pipe shall first be cleaned thoroughly before application of primer coat. After application of primer coat two coats of enamel paint shall be applied. Each coat shall be given minimum 24 hours drying time. No thinner shall be used. Wherever required all pipe headers shall be worded indicating the direction of the pipe.

Painting shall be expertly applied, the paint shall not over run on surfaces not requiring painting such as walls, surfaces etc. Nuts and bolts shall be painted black, while valves shall be painted blue.

PROCEDURE OF WORKS

The pipes shall be fixed true to plumb and levels. All the piping system shall be easily accessible and shall have minimum bends so as to avoid loss of head. Every alternate joint shall be of Flanged joints. All the piping system shall be coated with Fire Red synthetic enamel paint two coats over one coat zinc chromate primer. The pipes shall be properly supported on M.S Brackets and clamps firmly secured walls and capable of withstanding vibrations due to water hammer and other pressures.

TESTING AND COMMISSIONING:

All the piping system shall be tested at 1.5 times the working pressure for four hours. The test shall be conducted in the presence of Architects, Consultants or their representatives. A record shall be maintained for having been done the Test, the loss of head shall be absolutely zero. In case of any leakage or bursting of pipes, Defective section shall be rectified and tested again.

Scope of work

The sprinkler system shall be designed and installed as per tender specifications. The scope include the following: Sprinkler main, branch and internal piping complete with valves, supporting arrangements. Sprinkler heads with spare sprinklers. Connections to riser etc., all material shall be of the best quality conforming to specifications and subject to the approval of the Engineer-in-charge. Pipes and fittings shall be fixed truly vertical/horizontal or on slopes required in a neat manner. Pipes shall be fixed I such a manner so as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shafts, passage etc., pipes shall be securely fixed to walls and ceilings by suitable clamps at intervals specified. Only approved types of anchor fasteners shall be used for RCC ceilings and walls. Valves and other equipment shall be so located that they are easily accessible for operation, repairs and maintenance.

GENERAL SUPERINTENDENT **CONTRACTOR**

4.0 APPROVED MAKE OF MATERIALS	
MS PIPE	: TATA / JINDAL
BUTTERFLY VALVE	: ZOLOTO/AUDCO
HYDRANT VALVE	: WINCO
HOSE REEL	: OMEX/SRI
HOSE	: CRC FLEXILINE – RRL TYPE 3
PRESSURE GAUGE	: HIEBIG/FIEBIG
PRESSURE SWITCH	: DANFOSS/INDFOS
SPRINKLER HEAD	: TYCO/TUNA
BRANCH PIPE	: WINCO
AIR RELEASE VALVE	: LEADER
CABLE	: POLY CAB /FINOLEX (FRLS FIRE ALARM COPPER ARMOURED CABLE
ENAMEL PAINT FIRST QUALITY	: ASIAN/BERGER/ICI DULUX
ZINC CHROMATE METAL PRIMER	: ADDISON /APPROVED EQUIVALENT

5.0 DECLARATION FORM

1.I _____ aged _____ having address _____ _____ have gone through and understood BOQ specifications, drawings and terms & Conditions in the tender quotation dated _____. Based on that only, I have quoted my rates.

2.I have visited the site and location of all other criteria of the site before participating in the Tender.

3.I assure to inform that, I will execute the work within my Quoted rates after negotiation till the end of Contract Period.

4.I agree to execute the work within the time schedule specified in the Tender schedule.

5.During execution I will not request for revision in rates ,difference in cost pertaining to the item and the same will be executed within my quoted rate using with equivalent approved material after necessary approval obtaining from CMC.

6.In case of non availability of approved make during the contract period due to any reason alternate material will be used after obtaining approved from CMC administration and will be treated as additional item.

CONTRACTOR