

**Tender No: KSCB/ELE/1/2016-17**

**Date: 21/02/2017**

**KERALA STATE CO-OPERATIVE BANK LTD  
THIRUVANANTHAPURAM**

**TENDER DOCUMENT**

***Name of work:* Maintenance and Modernization of Existing  
Firefighting systems at CO-BANK building  
of Kerala State Co-operative Bank Ltd.**

**Cost of Tender form: - R5000 +VAT (5%)**

## TENDER NOTICE

**Tender No: KSCB/ELE/1/2016-2017**

Name of Project: **Maintenance and Modernization of Existing Fire Fighting systems at Co-BANK building of Kerala State Co-operative Bank Ltd.**

The Kerala State Co-operative Bank Ltd., Thiruvananthapuram Invites sealed competitive tenders from experienced Agencies/ Firms/ Companies for the above work for Kerala State Co-operative Bank, Thiruvananthapuram.

**Cost of Tender document : Rs.5,000/- +VAT (5%)**

**E.M.D : Rs.50,000/-**

**Period of Completion : 3 months**

**Sale of Tender Form : From <http://www.keralacobank.com/>**

**Last date of receipt of Tender : Up to 3.00 p.m. On 13.03.2017**

The cost of Tender document and EMD should be remitted separately in the form of demand draft in favour of The Kerala State Co-operative Bank Ltd. Payable at Thiruvananthapuram.

**( DD 1:- Rs.5,250/- , and DD 2 :- Rs.50,000 /-)**

This tender cover superscripted "**Tender for Fire Fighting system** " (If quoted both items otherwise you have to superscripted which item quoted) should be send to **The Managing Director, The Kerala State Co-operative Bank Ltd., Cobank Tower, Palayam, Thiruvananthapuram-695033, Kerala** before the closing date and time given above. The Tenders will be opened at the Head office of The Kerala State Co-operative Bank, Thiruvananthapuram, Kerala. The Opening date will be intimated to the tenders and the tender will open in the presence of such of the tenders or their authorized representatives who may be present at that time. The Kerala State Co-operative Bank Ltd., Thiruvananthapuram reserves the right to accept or reject any or all bids without assigning any reason what so ever.

Sd/-

**The Managing Director,  
KSCB Ltd.**

## **KERALA STATE CO-OPERATIVE BANK LTD**

### **Notice Inviting Tenders for Maintenance and Modernization of Existing Fire Fighting systems at Co-BANK building of Kerala State Co-operative Bank Ltd.**

For Maintenance and modernization of existing firefighting system at Co Bank building of KSCB Ltd on Behalf of the Managing Director, Kerala State Co-operative Bank Ltd., invites sealed tenders in two-bid system (Technical & Financial) from authorized dealers/contractors, firms engaged in installation of security and surveillance systems, herein after referred as 'The Vendor' and having a minimum of Five year experience in this field. The Vendor will submit bids in two separate envelopes. These two envelopes should be sealed in one big envelope. Each envelope must be suitably marked to indicate the type of bid.

#### **Fire Fighting system Specifications**

#### **SPECIFICATIONS FOR THE FIRE FIGHTING SYSTEM**

##### **1. Scope:**

The following specification covers the standard requirements for **Maintenance of existing firefighting system and design, supply, installation of modern Fire protection Systems required for getting NOC/Fire eligibility certificate from the Fire department of Kerala.** The System includes Fire Hydrants, Fire Fighting Pumps. Associated Piping. Valves, Hose Reels, Pressure Vessels, Fire Brigade inlets. Automatic Sprinkler System. Yard Hydrant System, Fire Extinguishers, Fire Buckets, Public Address System, Power Supply Arrangements etc.

2. Standards and regulations: Fire Protection System Installation shall be carried out in accordance with latest editions of relevant Indian Standards and the installation shall fully comply with the requirements of the National Building Code and other Statutory Regulations that are in force at the place of installation in addition to the following.

The Publication listed below form a part of this publication to the extent referenced. The publications and referenced in the text by the basic designation only. The latest version of each listed publication shall be used as a guide unless the authority having jurisdiction has adopted an earlier version.

- a) National Building Code Part 4 – Fire and Life Safety
- b) Kerala Fire & Rescue Services
- C) National Fire Protection Association (NFPA) - USA

The system shall the requirements of the following National Fire Protection Association (NFPA), USA Standards.

- d) NEPA 13 Standard of Installation of Sprinkler Systems.
- e) NEPA 101 Life Safety Code
- f) NEPA 12A Halons
- g) NFPA 170 Standard Fire Safety and Hazmat Symbols

All the Pipes and Fittings used for Firefighting Piping shall be ISI Marked and shall be installed strictly in compliance with the IS Specifications.

- a) IS: 1239 (Part-1)1979 for Piping
- b) IS: 1239 (Part-II) for Pipe Fittings
- c) IS: 5 for Paint Shades
- d) BS 5155/IS 13095 for isolating Valves
- e) IS: 2190 1992 for Fire Extinguishers

### **3. General**

The scope of work shall include all the Maintenance, Supply, Installation, Testing and Commissioning of Fire Protection System comprising of the above listed components. Any foundations, cutting, opening/chasing in the wall/ceiling required to be made for the installation shall be made good in appropriate manner.

The Fire Protection Systems shall be installed, tested, commissioned and maintained, as per all prevailing rules and regulations and to the approval of the Kerala Fire and Rescue Services. The Contractor shall submit and get all the detailed Drawing, Specifications and Technical Details of all the components of the proposed Fire Fighting system to the Consultants/consulting Engineers before commencing fabrication.

Ambient Conditions for Fire Protection System:

Temperature: 0 to 50 degrees centigrade

Relative Humidity (non-condensing type) upto 95%

All the components of Fire Protection System shall be tropicalized and suitable for Installation in the specified ambient conditions.

The Fire Hydrant network shall be installed complete with Firefighting pumps, Water Storage, Fire house reels, Wet riser system, Yard hydrant system, Fire sprinkler system with Automatic control panels for fire pumps, isolating Valves, Non return valves, Foot valves, Pressure tank, Pressure switches, Pressure gauges, 3-way Fire brigade inlet and all accessories required to complete the entire system.

Fire Hose Reels, as details in the technical specifications, shall be provided to cover each floor, in the Fire Stations located at strategic location of each floor, as details in the drawings. The fire hose reels shall be connected to wet risers in the fire ducts. Multiple We Risers and Hose Reels to cover the entire area shall be provided for each floor.

Wet riser system shall comprise of Piping System, Fire Hydrant valves, Isolating valves, Non return valves. Air release valves, Drain valves and Three Way fire brigade inlets with automatic pressurized fire hydrant system, as detailed in the drawings.

Hydrant valves/landing valves shall be deployed to cover the entire building @ one for each floor, in the Fire Stations located at strategic location of each floor, as detailed in the drawings. . One set of 150/100/80/63mm flexible fire hose 50/30mtrs along with male and female instantaneous couplings and one 150/100/80/63mm branch pipe shall be kept inside the bottom cabinet of each fire station.

Yard hydrant system shall be automatic and complete with underground fire lines, yard hydrants, isolating valves etc. and shall be integrated with the proposed, automatic and pressurized fire hydrant system, as detailed in the drawings. Yard hydrants shall be deployed to cover the entire premises of the building, at strategic locations, such as to cover a max. Area of 22.5 mtrs radius around each hydrant. One set of 150/100/80/63mm flexible fire hose 50/30mtrs along with male and female instantaneous couplings and one 150/63mm branch pipe shall be kept inside a Outdoor cabinet near each yard hydrant.

Fire sprinkler system shall be automatic and complete with fire sprinklers, floor control valves, fire sprinkler risers, fire sprinkler branch line, above ground and under ground fire lines, isolating valves, drain valves, air release vales etc. and integrated to the proposed, automatic and pressurized fire hydrant system, as detailed in the drawings. The spacing of fire sprinkles, proposed, shall be almost suitable for light and ordinary hazard group-1.

Appropriate Duty Portable type fire Extinguishers shall be provided at accessible locations for entire area of the building.

When there is high water demand due to the Bursting of fire sprinklers the Fire Sprinkler Pump should start and shall operate continuously. It has to be manually stopped when the demand is over or fire is seized.

When there is high water demand on the Hydrant system due to the operation of one or more Hydrant Valves or Hose Reels the Main and Standby Fire Pumps have to automatically operate as detailed below.

When there is moderate or low water demand the jockey pump shall operate and maintain the Pressure. When the pressure of the system reaches the static pressure (0.5 Bar above the working pressure) the jockey pumps should stop automatically. The above cycle may be repeated depends on the duration of working of the equipment and quantum of water required for the demand. Pressure tanks shall be provided to compensate minor water demand without starting the fire pumps.

#### **4. Fire Fighting Piping System**

##### **4.1 Pipe joining**

All pipes and fittings used for fire fighting shall be Black Mild Steel C Class (Heavy) Grade and shall include Elbows, Tees, Reducers, Reducer Tees, Sockets, Flanges, Unions, Expansion Joints etc provided as per site conditions. Fittings for Pipes up to 50mm. shall be heavy duty forged mild steel Socket welded and pipes above 50mm. shall be heavy duty mild steel Butt welded types. The Welded joints should be good enough to withstand the specified hydrostatic pressure rating.

##### **4.2 Painting**

All Steel members used for firefighting installation should be protected by the following detailed protective system. The installation shall be cleaned by mechanical buffing or emery paper to remove rust and coatings and finally with cotton wastes and approved thinner. The cleaned member, pipe and fittings shall be immediately coated with one coat of approved Zinc Rich Metal Primer (Avoiding areas where cutting and welding are required).

After fabrication and erection the affected areas of pipe work should be immediately cleaned properly to remove dust, rest, welding flux and any other foreign matter, preferably by mechanical buffing, and apply one touch up coat of Zinc rich Primer. The total MS and pipe work, after fabrication and erection, are to be painted with 2<sup>nd</sup> coat of Zinc Rich Primer.

Piping work above ground shall be protected with 2 coats of approved Fire Red Enamel Paint. (Shade No. 536 as per IS 5)

Piping work underground should be protected with 2 coats of approved Bitumen Painting System over 2 coats of Zinc Rich Primer. Underground pipes are further protected with encasement of one layer of 3 mm thick, approved, Self-adhesive Bitumen Based flexile wrapping, having polythene encasement or with polymer based tape by thermo fusion process. The protective paints used shall be compatible, each other.

The protection system shall be carried out as per Consulting Engineers instructions and as per paint manufacture's recommendations. The interval between successive paint coatings shall be 24 to 48 hours (or as per recommendation of the manufacturer). For applying the next coat after 48 hours or a long time, the pre painted surface has to be cleaned completely with suitable size emery paper to clean and roughening the surface to receive the next coating. After removal of dust and loose particles, with cotton waste and light thinner, next paint coating can be applied.

### **4.3 Piping Installation Work**

Piping Installation work for Fire Fighting System shall be done as per relevant Indian Standards and to the complete Satisfaction of the Client, Consulting Engineers and the Statutory Authorities.

The joints to be welded shall be cleaned properly and ensure that such joints are totally free from dust rest, painting etc. Welding work shall be done by qualified and certified welders only. 10% of all the welded joints shall be radio graphically tested by the contractor and got approved by the Consulting Engineers. Rectification of all defective welding joints and re-testing of such joints shall also be on contractors account.

Pipe work shall be fixed in a neat manner as to prove easy accessibility for repair and maintenance and shall not cause obstruction in shafts, passages etc. The vertical risers shall be parallel to walls and columns and shall be straight and plumb.

All the above ground pipe work, inside and outside of the building, shall be properly supported or suspended, from overhead structures, with approved G.I. pipe clamps, saddle clamps, hangers, brackets, fasteners, anchor fasteners, expansion bolts etc. The contractor shall be responsible for the selection and usage of above clamps, supports, brackets, fasteners etc.

The Pipe work shall be supported at a minimum spacing of 3.00 mtrs. Expansion joints, where ever required, shall be provided to control expansion and contraction of pipe work.

The above ground Fire Sprinkler pipe work shall be installed, preferably, at a slope not less of 1:500. The contractor shall include necessary provisions in the tender, for draining arrangement for fire sprinkler system with drain pipes, drain valves etc, for each floor.

All underground pipe work shall be well protected, as specified below, and laid in a neat manner. Underground pipe shall be laid at a minimum depth of 100 Cm. For road crossing and other traffic areas protective encasement, as specified, for underground fire lines shall be required. Thrust blocks, as specified, shall be provided to bends, tees etc, where ever flow direction changes.

Pipes shall be carefully laid to the alignment, levels and gradients shown on the drawings and great care shall be taken to prevent sand, earth or other matter from entering the pipes during laying.

Pipes shall be kept thoroughly clean during the course of laying. The ends of pipes shall be blocked with wooden plugs wedged home, at the end of each days work, to prevent dirt and rodents, insects etc. entering the pipe. Flanged joints for pipe work shall be made with 3 mm thick approved neoprene gaskets. All flanges and drilled bolt holes are as per relevant Indian standards.

Isolating Valves and other appurtenances shall be installed at easily accessible locations with access doors/manhole covers etc. for emergency operation, repairs and maintenance

All pipe work shall be carried out with minimum disturbance to the other services, existing services, building, roads and other structures. The contractor has to coordinate and co-operate with other services, contractors and agencies for an effective and smooth execution of work.

## **5. Fire Hose Reels & Coupling**

Fire Hose shall be conforming to IS 636:88 with 150/63 mm. internal dia. Rubberized fabric reinforced rubber lined (RRL) hose jacketed with circular woven synthetic fiber. The RRL hose shall be with Required Working Pressure 12 Kg/Cm<sup>2</sup>/More, Proof Pressure 22Kg/Cm<sup>2</sup> and Burst Pressure 38 Kg/Cm<sup>2</sup>. The fire Hose shall be with IS: 636 Type-A marking and 50/30 mtrs in length.

Fire Hose Couplings shall be gunmetal, heavy duty, conforming to IS 903:1993, with 150/63 mm. pair of male and female instantaneous couplings, having IS: 903 mark and duly S.S. wounded.

Fire Branch Pipe shall be gunmetal, conforming to IS 903:1993, short type, with 63mm. male instantaneous inlet, male threaded outlet, fitted with 15mm. bore nozzle, having IS: 903 mark and TAC approval.

## **6. Automatic Sprinkler System**

### **6.1 Fire Sprinkler**

Fire Sprinkler shall be automatic, 3/5mm dia. glass bulb type spray sprinkler with fixed temperature rating of 68 or 79 degree, as per requirement. The glass bulb contains liquid having high vapor pressure, which expands when, exposed to heat and expand sufficient to shatter the glass bulb at the rated temperature.



Fire sprinkler shall be of standard response and upright/pendant for car parking areas, pendant for lobbies and corridors and extended coverage side wall for rooms, as detailed in the tender drawings. The fire sprinklers shall be of chrome finish, with K-factors as specified in the B.O.Q. The maximum working pressure shall be 17.2 Bar. The Fire Sprinkler shall be UL Listed and FM approved.

### **6.2 Escutcheon Fire Sprinkler**

Escutcheon shall be for semi recessed sprinkler installation with 2-piece friction fit, stainless Steel/Chrome finish.

### **6.3 Orifice Plate,**

Orifice plates shall used to reduce the hydraulic pressure, from the main installation, to fire fighting equipment, such as hydrant valves, fire hose reels and sprinkler installations, to required levels. The plates shall be of brass or stainless steel with a plain central hole without burrs. The thickness shall be 3 mm. for pipes (into which plate are to be fitted) up to 150 mm.dia. and 6 mm. for pipes upto 150mm.dia.

The orifice diameter of the plates shall be not less than one half of the internal diameter of the pipe into which it is fitted. The pressure reducing rate of orifice plates shall be to 2.5 to 3.5 Kg/cm<sup>2</sup>, as per requirement.

### **6.4 Flow Switch**

Flow Switch shall be suitable for monitoring water flow and with following specifications.

Control Type	: Paddle
Maximum Static Pressure	: 10 Kg./Cm <sup>2</sup> /20 Kg./Cm <sup>2</sup>
Ambient Temperature Limit	: 0 –60 Degree C
Maximum Liquid Temperature	: 100 Degree C
Electric Switch	: SPDT, Rating: 220 VAC, 15 A.
Connection	: Screw Terminals
Protection	: IP 65
Case	: Plastic Cover with ½ Conduit Opening

### **6.5 Fire Sprinkler Alarm Valve**

Fire Sprinkler (Mechanical) Alarm Valve shall be of UL Listed/ FM approved, 150mm. size, complete with following components and features.

150mm dia. Flanged Check Valve  
Complete Trim Set  
Water Motor Gong  
Test valve, drain valve and draining arrangement,  
Pressure Switch, Pressure Gauges

## **7. Fire Fighting Pumps& Accessories**

### **7.1 Electric Fire Hydrant pumps:**

Fire fighting Pump Set shall be approved Fire Pump Set, Electric Motor Driven, with following components and details.

Pumps shall be designed for continuous operation with high efficiency, horizontal, centrifugal, end suction, back pull out type, constructed as per DIN 24256 and ISO 2858, 2900 rpm, strong casing to with stand maximum pressure developed with axial suction and top center line delivery, statically and dynamically balanced enclosed type cast iron impeller, stainless steel shaft, mechanical seal, grease lubricated bearing etc.

The head vs. capacity, input power vs. capacity characteristics etc., shall match to ensure load sharing and trouble free operation throughout the range.

Pumps shall be capable of delivering not less than 150% of rated capacity at 65% of the rated head. The shut off head shall not exceed 120% of rated head.

Electric motor shall be squirrel cage induction motor, 3 Phase, dynamically balanced, totally enclosed fan cooled type with Class F insulation and 2900 rpm.

The motor shall be capable of driving the pumps at 150% of its rated discharge and shall be designed for continuous full load duty. The motor shall be capable of handling the required starting torque of the pumps. Speed of motor shall be compatible with the speed of the pump.

The pump shall couple to the motor with suitable coupling and Coupling guard. The Fire Pump Set shall be assembled to a single unit with proper alignment for smooth starting and working with out any vibrations, on a Common Base Frame. The base frame shall be rigid and fabricated from Mild Steel.

Necessary anti vibration pads, foundation bolts, washers, nuts etc. shall also be treated as essential parts of the Pump Set.

The Fire Pump Set shall be protected with approved painting system to Fire Red Finish (Shade No.536 as per IS: 5)

### **7.2 Standby Diesel Fire Pumps**

Same as the Main Fire Pump, but with 1450/1500 RPM coupled to 1500/1800 RPM, or equal Diesel Engine, radiator water cooled type and complete set shall be mounted on common base frame.

The Fire Pump Set shall be complete with batteries & battery leads with stand, Fuel tank (for 6 Hrs. operations) with stand & gauge glass, fuel piping with valves. The quoted rate shall include radiator water cooling

pipng (if required) coupling guard and other standard accessories, and foundation bolts, etc.

The diesel engine shall be capable of driving of driving the pumps at 150% of its rated discharge and shall be designed for continuous full load duty. The engine shall be capable of handling the required starting torque of the pumps.

The Fire Pump Set shall be coated with approved painting system to Fire Red Finish (Shade No. 536 as per IS:5)

### **7.3 Electric Jockey Pumps**

Pump Set shall be suitable for Pressure Boosting and Fire Fighting applications, Electric Driven, Vertical Multi Stage Centrifugal Pump, 850/2917 rpm. And shall be designed for continuous operation. The pump shall be with Cast Iron housing, cast iron impeller and mechanical seal.

Electric motor shall be squirrel cage induction motor, 3 phase, 2850 rpm, totally enclosed fan cooled type with Class F insulation, IP 55 protection. The motor shall be of continuous rating type and the power rating shall be suitable to ensure non overloading of the motor when the pump is continuously working at the maximum capacity.

The motor shall be capable of handling the required starting torque of the pump. Speed of motor shall be compatible with the speed of the pump.

Necessary anti vibration pads, foundation bolts , washers, nuts etc. shall also be treated as essential parts of the Pump set.

The Fire Pump Set shall be protected with approved painting system to Fire Red Finish (Shade No. 536 as per IS: 5)

### **7.4 Electric Terrace /Booster Pumps**

Pump shall be approved Fire Pump Set, Electric Motor Driven, with following components and details.

Pump shall be designed for continuous operation with high efficiency, horizontal, centrifugal, end suction, back pull out type, constructed as per DIN 24256 and ISO 2858, 2900 rpm, strong casing to with stand maximum pressure developed with axial suction and top center line delivery, statically and dynamically balanced enclosed type bronze impeller, stainless steel shaft, mechanical seal, grease lubricated bearing etc.

The head vs. capacity, input power vs. capacity characteristics, etc., shall match to ensure load sharing and trouble free operation throughout the range

Pumps shall be capable of delivering not less than 150% of the rated capacity at 65% of the rated head. The shut off head shall not exceed 120% of rated head.

Electric motor shall be capable of driving the pumps at 150% of its rated discharge and shall be designed for continuous full load duty. The motor shall be capable of handling the required starting torque of the pumps. Speed of motor shall be compatible with the speed of the pump.

The pump shall be coupled to the motor with suitable coupling and Coupling guard. The Fire Pump Set shall be assembled to a single unit with proper alignment for smooth starting and working without any vibrations, on a Common Base Frame. The base frame shall be rigid and fabricated from Mild Steel.

Necessary anti vibration pads, foundation bolts, washers, nuts etc. shall also be treated as essential parts of the Pump Set.

The Fire Pump Set shall be protected with approved painting system to Fire Red Finish (Shade No 536 as per IS:5)

## **7.5 Pressure Vessels**

The Pressure vessel shall be suitable for pressure boosting/fire protection application, with rated capacity and suitable for a working pressure of 10 Bar at required flow rate. The vessel shall be with replaceable interior air cell, inner shell, outer shell, base, air release valve etc.

## **7.6 Pressure Switch**

The Pressure switch shall be closed type and having range suitable for the operation of proposed pumps, with a differential of 0.2 to 1.0 Bar

## **7.7 Pressure Gauge**

The pressure gauge shall be compound type, 150/100 mm.dia with 0 to 15 Bar range.

## **7.8 Expansion Bellows**

Expansion bellow shall be heavy duty with flanges suitable for delivery lines for fire hydrant and sprinkler system

## **8. Fire Fighting Valves & Accessories**

### **8.1 Isolating Valves:**

Isolating valves for fire lines 50mm dia. and above shall be butterfly valves. Butterfly valves shall be with integrally molded seat to the body and conforming to the following.

Pressure	: PN 10
Body	: Cast Iron to BS 1452 or Equal.
Disc	: Cast Iron to BS 1452 with Nylon coating/SG Iron to BS 2789
Seat	: Black Nitrile
Shaft	: Carbon Steel (EN 8 or ASI 410)
Bearing	: PTFE/Acetal

Isolating valves for fire lines below 50mm. dia. shall be ball valves, conforming to IS 13095 with following features.

Pressure Rating	: PN 10
Body	: Gun Metal/Cast Alloy
Ball	: Stainless Steel 316
Seats	: PTFE/Acetal
Handle	: Stainless Steel 316/Cadmium Plated Steel.

### **8.2 Non Return Valves:**

Non return valves for fire lines shall be hydraulically engineered, tight shut off, self acting, water type swing check valves, conforming to IS 13095 with following features.

Pressure Rating	: PN 10
Body	: Cast iron/SGI
Disc	: Cast iron/SGI
Hing Pin	: Cast iron/SS/AI/ASI 304
Seat	: Nitrile "O" Ring
End Facing	: Plain

### **8.3 Pressure Reducing Valves:**

Pressure Reducing Valve shall be with Pressure Regulator and be of trouble free and noise free working, conforming to AFNOR NF 43-006 and BS6765, with following features. .

Max.Inlet Pressure	: 25 Bar.
Outlet Pressure	: 3.5 to 8.0. Bar.
Material of Construction	: Bronze
Diaphragm	: Food Grade Rubber (EPDM)
Max. Water Temperature	: 100 Degree C

The Valve shall have Pressure Gauge connections on both inlet and outlet sides, Flanged Ends, non jamming Stainless Steel Bolts etc.

#### **8.4 Hydrant/ Landing Valve:**

Hydrant/Landing Valve shall be of Gun Metal, IS 318-LTB2 Grade, with 63mm. oblique female instantaneous single outlet, 75mm N.B flanged inlet, brass spindle, cast iron hand wheel, and complete with ABS blank cap and G.I. chain, bearing IS 5290 mark and having TAC approval.

#### **8.5 3-Way Fire Brigade Inlet:**

Fire Brigade Inlet breeching shall be with cast iron body, three nos. of Gun Metal 63mm. male instantaneous inlets, conforming to IS 903, fitted with non-return valves, 220mm. flanged outlet, 25mm. drain valve, rubber blank caps and G.I chains.

#### **8.6 Suction Collecting Head:**

Suction Collecting Head shall be 2-way, conforming to IS 904: 1988, with two nos. of 63mm. male instantaneous inlets, fitted with non-return valves, 100mm. female round threaded connection to fit pump suction, rubber blank caps and G.I. chains.

#### **8.7 Air Release Valve:**

Air release Valve shall be gunmetal, conforming to IS 903:1993, having rubber ball and with 25mm. BSP threaded male inlet.

### **9. Power Supply System for Fire Fighting**

Power supply to the Fire Fighting System shall be connected independent of all other electrical installations in the premises. Standby Generators shall be so configured to provide power to the System while the Main Power Sources are Switched Off in the case of a Fire or Emergency. Where there is more than one source of power for the operation of fire pumps, electrical system shall be designed to ensure that when necessary the fire pumps continue to operate without manual Intervention. The Power Supply to the Fire pumps and Stand by Pumps shall be uninterrupted through out the life of the Installation.

#### **9.1 Cabling and Wiring:**

All Control wiring shall be minimum 1.5sq.mm PVC Insulated Fire Retardant Copper laid heavy duty MS Enameled Screwed Steel conduits.

The Incoming Cable to Fire Pumps shall be terminated with an AC23 Rated Isolating Switch. A direct feeder without any tapings shall be laid from the substation to the pump room.

Power Cables used shall be PVC/XLPE Insulated Armored Aluminum Conductor type.

## **9.2 Fire Fighting Control Panel:**

The Fire Fighting Pumps shall have necessary Electrical Control Gear Including the Isolators, Bus bars, Power and Control Wiring, DOL/Star Delta Starters and all accessories conforming to the relevant standards and as per the detailed Specifications for Design Fabrication and Supply of Electrical Panel boards. The system shall support automatic starting of the fire pumps at 3 different stages. Auto stop for jockey pump, Manual stop for main and Stand by pumps and for functioning of the total system.

The Fire Pump Control Panel Shall be painted with two coats of Zinc Rich Primer and two coats of Fire Red Paint Finish (Shade No. 536 as per IS 5) Automatic Pressurized System shall have Pressure Switch Controlled DOL Starter for Auto Start and Strop of the Fire Hydrant Pumps.

Star Delta Starter shall be provided for the Fire Fighting Sprinkler Pumps, Manual override facility shall also provided for the Sprinkler Pumps. D.C Self Starter with Battery and Battery Charger shall be provided for the Standby Diesel Pump. Pressure switch controlled automatic starting facility shall also be integrated with the Standby Diesel Pump.

The following Switchgear of Adequate Ratings shall be provided for the Fire Fighting Control Panel

1. Income Isolator
2. Incomer Digital Meters-3 Phase Ammeter
3. TPN Aluminum Main Bus bars
4. Feeders DOL/Star Delta Starters with PFC for NO/NC
5. Pushbuttons with Start and Stop Buttons
6. LED Indication Lamps with toggle switch-Pump Run/Pump Trip
7. Alarm Hooter with DC Supply for Pump Trip & Power failure

The Fire Fighting Contractor shall co-ordinate with the Electrical Contractor as well as procure necessary approvals for Control Panel from the Kerala State Electrical Inspectorate and Fire and Rescue Services before Commencement of the work.

## **10. Public Address System**

Following shall be the scope of work:

**A) SUPPLY** : The scope of work of the Bidder includes the complete design, Manufacture, supply, testing, packing, transportation to site, storage, handling of Automatic Fire Detection and Alarm System and its associated equipment's, cables and installation accessories required on a turnkey basis.

System shall broadly consist of following sub systems installed in one free standing

panel of size 2100mm X 800 X 800 mm (H X W X D):

Addressable Fire Alarm Detection Panel

Battery Backup for Fire Alarm System with Stabilizer

Interfaces and Group Alarms to PA system, TAS System and ESD system

Other Systems:

Repeater Panel in Security Cabin and P/L Control room with Mimic Alarm system & Integration with TAS & electric Sirens

**B) ERECTION TESTING & COMMISSIONING:** Transportation to the place of erection from store, erection, testing and commissioning of Fire Alarm System under scope of supply.

The scope shall broadly cover but not limited to the following:

- i. State of art microprocessor based intelligent addressable analog fire detection and alarm system comprising of Addressable analogue intelligent smoke detectors for Admn Bldg/Control room, Electrical / MCC room etc., Manual call points, Response Indicators, Microprocessor based intelligent fire alarm control panel, Hooter and accessories.
- ii. SMF Battery back up for 4 hours and float cum boost charger in – built to the panel.
- iii. All types of cables & cabling accessories.
- iv. GI Pipes / GI Conduits / Metallic trunking and other accessories wherever required for laying of cables.
- v. Minor civil work required for installing fire alarm system equipment.
- vi. All erection accessories, consumables and miscellaneous material not indicated in specification but required for completing the job in all respects.
- vii. Preparation of Design and detailed engineering drawings.
- viii. Submission of operation and maintenance manuals.
- ix. Submission of as built drawings.
- x. Earthing – Extension of nearest available power earth ring to the panel location And connecting the equipment's to the earth ring as per IE rules and safety Guidelines. Provision of special earth for equipment electronics.

**DETAILS:**

- a) The scope of work of bidder shall include all the items as per enclosed "Schedule of Equipment" for each terminal to make the system complete in all respects. In conformity with the technical requirements as spelt out in this specification. Any balance items, which are not explicitly spelt out here, but are required for the completeness of the work, shall also be included in bidder's scope.



Erection materials including pipe fittings, mounting glands, galvanized and perforated cable trays, cable racks, conduits, junction boxes, clamps, cable glands, channels angles and other materials required for completeness of erection shall also be covered under Bidder's scope.

- b) Supply and laying of cables of all types inside suitable conduit / trenches (to be provided by the Bidder) including dressing, ferruling, glanding and termination etc.
- c) The total quantum of all types of cables required to fire detection and alarm system is included in the scope of work of the Bidder on lump – sum basis. They will be supplied and installed as per specification supplied / approved by client.
- d) The Bidder shall estimate the quantum of cables based on the layout of the plant enclosed with the tender document. Any variations of the actual quantity to the estimated quantity will be to the Bidder's account only and no extra claim shall be entertained.
- e) The Bidder shall co – ordinate with agencies doing electrical / instrumentation works for cable trenches.

## **2.00 DESIGN PARAMETERS**

The ambient temperature and relative humidity details are as follows:

- a. Temperature 55°C Max.
- b. Relative humidity 95% Max.

The system shall be designed with following particulars:

- a. Primary Power Supply 240 V + / - 10 %, 50 Hz + / - 5% Single
- b. Operating Temperature 48 deg C max.
- c. Alarm for fire condition two tone distinct audible alarm
- d. Alarm for system fault Condition

Single tone distinct audible alarm. The system shall have in-built facilities for deriving power-supplies required for Operation of the system from the main supply.

Suitable protection shall be incorporated on the input sides of derived supplies against over current, accidental reversal of polarity and over voltage. Automatic recovery „shall be possible or the removal of overload/fault.

Suitable backup power supply system, adequate to supply backup power to the system for a period, not less than four hours (1 hour for alarm condition) in case of normal power failure shall also be provided. Battery used for backup power shall be Sealed maintenance free type.

## 04.00 **GENERAL CONDITIONS**

04.01 The Fire Detection & Alarm System shall be UL certified; designed, manufactured, supplied, erected and tested as per the requirement laid in relevant NFPA/ Indian Standard specifications.

04.02 The Microprocessor based, Analog addressable Fire Detection & Alarm system shall be complete in all respects and any device not included in the specification but essential for proper operation of the system shall be deemed to be within the scope of the Bidder whether specifically mentioned in this specification or not.

04.03 The system shall be designed keeping in view the spare capacity in the hardware wherever possible and logical, in order to accommodate for future expansion and/or modification.

04.04 All nameplates, drawings, operating and maintenance instructions etc. shall be in English language. The dimensions, weights shall be in metric units.

04.05 All equipment, materials and components supplied shall be newly manufactured and without loose or temporary cabling. Wired options used in the system hardware shall be minimum.

04.06 All components shall be rated for continuous operation.

04.07 All metal parts of frames, supports etc, shall be mechanically rugged and constructed of corrosion resistant material or treated with anti-corrosive finish.

04.08 Adequate ventilation and cooling arrangements shall be provided; for heat dissipation.

04.09 All cables for inter bay connection shall be of plug in type.

04.10 All power supply shall be through MCBs with suitable marking for the different ratings to enable easy identification and replacements.

04.11 The system shall be protected against malfunctioning on account of noise from electro magnetic or electrostatic sources like power supplies, radio system, fluorescent tubes, motors,` electric) mechanical relay circuits etc.

04.12 All imported items shall bear UL, USA I FM, USA certificate/ approvals and BIS approval certificate for any Indian Supply. All detectors shall have UL / FM approval

04.13 The detectors shall be located and spaced as per latest NFPA codes.

04.14. For the items not covered in the specification, the Bidder shall furnish the full details of such items that he proposes to offer with the details of the standards followed.

04.15 The Fire Detection & Alarm System equipment shall be suitable-for operating at 240 V + 1.0 +/- 15 %, single phase, 50 Hz + / - 5 % power supply. If the equipment is required to, operate at any other voltage level, then necessary transformation / conversion and distribution of required power supply shall be in Bidder's scope.

04.16 All terminal blocks shall have at least 25% spare terminals (minimum being 4).

04.17 All bought out items like cables and other accessories shall be supplied by the successful Bidder strictly as per the list of preferred makes indicated in the specification.

04.18 Point/ clause-wise compliance of the specification shall be furnished by the Bidder along with his offer

04.19 No separate payment will be made for supply of any material required for installation of equipment like mounting. structures etc., As such the cost of the installation material required shall be included along with respective equipment.

04.20 It is the responsibility of the Bidder to assess the type and magnitude of work involved based on information furnished by the owner in this document and general :field conditions.

04.21 Bidder shall clearly indicate deviation; if any, from this specification, in the offer.

## **05.00 SYSTEM FEATURES:**

**05.01** The Fire Detection and Alarm system shall be State of the art microprocessor based, software controlled automatic system with necessary programming functions, annunciation and controls. The system will consist of a UL listed Microprocessor based Fire Alarm Panel, Analog addressable smoke detectors (photo- electric), Analog addressable fixed temperature cum rate – of – rise heat detectors, combination detectors, addressable manual call Points with the necessary enclosures including explosion proof call points, Electronic sounders/ hooters Addressable Fault Isolation Modules, Response indicators, Repeater panel, Control modules and Other units/accessories as required.

**05.02** In the event of fire, detectors shall, sense and transmit the signal to the Main Control Panel. Audio-visual alarms shall be initiated simultaneously on main control panel, repeater panel, if any and locally. Main control panel shall display the address of the detector where the smoke / fire has been sensed: Main fire alarm panel shall be provided with a block type mimic display/ backlit LCD display for indicating fire zones, detector address and LED's for fire and fault conditions.

**05.03** The total area under surveillance shall consist of suitable number of detector loops. Detectors and Local Response Indicators shall be installed depending upon the area under monitoring. Local response indicators shall be provided for detectors installed either above false ceiling or below false flooring, if any, and shall be installed at a place where it is easily visible.

05.04 Various detectors used with the system shall continuously report about the general condition of the area being monitored.

**05.05** Cross zoning, of detectors shall be- provided preferably in all the areas to be covered under fire detection system.

**05.06** Repeater panel shall be provided at the Fire station of terminals, wherever existing. Supply and laying of required cables from Main panel to Repeater Panel shall be included in the scope.

05.07 The system fault audio alarm shall be differentiated from the fire audio alarm.

**05.08** A test switch shall be provided at the main panel to check the proper functioning and healthiness of the system."

**05.09** Provision shall be kept in control panel to add detector loops, if required in future.

**05.10** A number of control modules shall be included in each loop of the system(at least two nos. unless specified for more) so that the system can be suitably interlocked with ventilation / air conditioning system to prevent further spreading of fire.

**05.11** There shall be provision for automatic operation / actuation of fire fighting – system e.g. Water sprinkling systems etc. after detection / confirmation of fire through fire detection and alarm system.

**05.12** In Electrical control rooms, combination type detectors shall be provided. In transformer rooms, rate of rise cum fixed temperature detectors shall be provided.

The fire detection and alarm system shall have following functions/ provisions:

- Detection of fire in the incipient or smouldering stage.
- Facility of interchanging photoelectric and heat detectors.
- Suitable battery back-up and FCBC for un-interrupted performance.
- Dual tone hooters for differentiating between fire and fault audible alarms.
- Fully supervised for all fault conditions i.e. fail safe operation.
- Automatic uninterrupted changeover to backup power source in the event of main supply failure.

- Pinpoint indication of location of fire.
- Exclusive wiring, independent of Mains power and other wiring.
- Decadic/ micro switches on the detectors for addressing.

**06.00 SYSTEM COMPONENTS:**

The Fire detection & alarm system shall broadly consist of the following:

- A. Main control panel (In TAS Control Room)
- B. Manual call stations.(Break Glass Type)
- C. Fault Isolation Modules
- D. Response indicators
- E. Electronic Hooters
- F. Detectors (Photo Electric / Heat / Combination)
- G. Repeater Panel
- H. Integration with TAS & other systems viz. PA System, Electric Siren

**A. MAIN CONTROL PANEL**

Fire alarm, control panel shall be intelligent, with its own Microprocessor and memory. It shall be enclosed, wall / floor mounting type of modular design. Entire panel shall be designed with solid-state circuitry and provision to house required printed circuit -cards. It shall operate on 240V AC mains with a provision for operation through battery backed-up power source during mains failure. ,The control panel as a built in feature shall have one/ two loop modules with 2 loops per module. Each loop shall be able to take at least 90 detectors and 90 devices. Control panel shall have provision for future expansion so that additional loops can be created by addition of loop cards modules.

The control panel shall have necessary hardware and software modules for the following:

- # Alarm output and control output for various control functions.
- # Facility to process the input data received from addressable analogue type detectors addressable interface unit.
- # Electronic filters to ignore false alarm and increase sensitivity to real fires from-sensors. The electronic filters shall recognize the unwanted alarm from detectors due to electrical spikes.
- # Separate backlit display area to indicate the address of each device and clear text about the location of alarm / trouble.
- # The facility to support a graphic workstation comprising of PC, Printer, Keypad, Mouse, Peripherals etc.
- # Printer facility to print out the alarm / trouble occurrences.
- # Modbus communication with TAS system with necessary software

Control Panel shall have the following features –

- Logging and storage of alarms and faults.
- Status checks of disabled alarm addresses before they are restored.
- Programming facility to “create” “add”, “delete”, “modify” the loops and detector addresses. For this purpose an alphanumeric keyboard shall be preferably integrated with the Control panel.
- Programmable activation of control output relays for tripping ventilation system, AC system and closing of fire doors in the event of fire.
- The possibility of connecting to non addressable detectors, manual call points, alarm initiating devices etc.
- The fire alarm control panel display shall have facilities of brief -user guide menu to enable the operator for proper use of various menu functions.
- The sensitivity of each addressable analog detector shall be changeable and readable at the control panel.
- Each addressable detector, interface units-can be disabled from panel for maintenance purpose and restore the same whenever required.
- The status check of each detector, interface units for alarm, prior warning, trouble, disabling shall be possible from control panel

The fire alarm control panel shall be able to provide the following test and operator interface features :

Acknowledge To acknowledge the alarm Automatic day / Night sensitivity Adjust To have higher sensitivity during unoccupied period. Device Blink Control For flashing LED's on, the detector. Drift Compensation For compensating the detector. response due to environmental changes. Pre-alarm control panel Indication For early-indication of fire in the incipient stage. System Status Report Documentation of various system parameters. Alarm Verification, by device To eliminate generation of false alarm due to dust / cigarette smoke. Printer Interface For printer interface which is used for system documentation. Periodic Detector Test For detector testing from the panel which Eliminates the need for testing the detectors in the field every now and then Trouble Reminder To remind the operator of the maintenance required at the individual detectors. Upload /download to PC - For programming the panel in the first power up. Integration with TAS System for monitoring/ troubleshooting/logging of alarm/event. Walk Test The entire loop can be tested by a single person with the print out at the printer.

The system display shall provide a backlit alphanumeric Liquid Crystal Display (LCD) for at least 80 characters and an alphanumeric keyboard for entry of any alphanumeric information and field programming. All system functions shall be controlled from the panel through the keyboard and display unit. It shall also provide five, Light-Emitting- Diodes (LED's) that shall indicate the status of the following system parameters: AC POWER, SYSTEM ALARM, DISPLAY TROUBLE and SIGNAL SILENCE. Two different password levels shall be accessible through the display interface assembly to prevent unauthorized system control or programming. The system display shall include the following operator control, switches: SIGNAL, SILENCE, LAMP TEST, RESET, SYSTEM and ACKNOWLEDGE.

The following indications shall be provided in the main control panel:

- # Fire condition.
- # Pre - alarm indication.
- # System test.
- # System Fault.
- # System isolation.
- # Alphanumeric display for fire address, function menu etc.
- # Stand by Battery Low.
- # AC failure.
- # others as required.
- # The panel shall be dust and vermin proof and shall be fabricated of CRCA sheet of not less than 2 mm thickness and conform to IP : 42 protection class.
- # Paint shade of the panel shall match with that of the walls of the room and other equipments in the room.
- # The front door of the panel shall be provided with transparent glass for easy monitoring to the status of the system. There shall be provision for locking up of the panel: All the controls and indication shall be mounted on the front side of the panel and all circuitry and equipment for the working of the system shall be housed within the unit.
- # Suitable terminal blocks shall be provided for termination of external cables and provision shall be made for mounting of cable glands or conduits whichever is applicable.
- # Facility shall be provided for connection of external hooters, which shall be energized in case of fire within any of the area under surveillance.
- # Provision shall also be made for connection of a Repeater panel(s).
- # The Main FA Panel shall be Floor mounted of size 800mmx800mmx2100mm height. The Main Panel shall be installed in the TAS Control Room along with other TAS Panels.

**B. MANUAL CALL STATIONS :**

Manual call stations shall be wall structure mounting break-the-glass/pull-down cover type and shall be located near the exits, staircases or lift so that in case of fire being spotted by the personnel in the premise, they can actuate the alarm. The unit shall be addressable and communicate with the FAP like other detectors. In case of break glass type, the unit shall be supplied along with a hammer chained with the unit for breaking the glass marked, "In case of fire break glass." Manual call points for outdoor mounting shall have IP-65 enclosure protection and in explosion hazardous areas shall have explosion proof protection. The explosion proofness shall be certified by either CMRI or any other recognised organizations

**C. FAULT ISOLATION MODULE :**

Fault Isolation Module shall be used in the detector and device loops to detect a wire-to-wire short and electrically isolate that condition from the circuit so that communication is maintained with unaffected devices on the same circuit. Fault Isolation Modules will be provided at an interval of 12 detectors in a loop for isolating the faulty detectors.

**D. RESPONSE INDICATORS :**

Response indicators shall be Visual indicating type and shall start flashing when the detector in that particular area / zone has been activated due to smoke or fire. This is to be connected with individual detector installed at places where they are not easily visible e.g. above false ceiling or below false flooring, to give repeat indication of the particular detector state. During normal polling the LED shall blink at a lesser rate same as that of detector. The LED's of the response indicators shall be housed on aesthetically designed PVC/ FRP bases with matching colour of mounting surface. The response indicators for a group of detectors in a premise may be placed on a common base. The control room shall be provided with red LED response indicators at the entrance for easy identification and one hooter shall also be provided.

**E. ELECTRONIC HOOTER :**

Electronic hooters shall be used for audio alarm to alert people in case of fire and shall be fully solid state with audio output sufficient to be heard at a distance not less than 50m. The hooters shall have facility for adjustment of volume as per requirement at site. The units shall be located at vital places and shall have minimum audible level of 65 dB or 5 dB above noise level of the working area and in the plant area also. Hooters shall preferably be connected to the detector loop using addressable control module and shall be powered from the panel using same detector loop.



The unit shall be of rugged construction, have weatherproof protection and suitable for outdoor mounting. The hooters required for outdoor mounting shall have rain canopy for protection from rainwater and direct sun.

## **F. DETECTORS :**

### **i. PHOTOELECTRIC TYPE SMOKE DETECTORS :**

Photoelectric type smoke detectors shall be low voltage, two wire, solid-state devices that provide for integral communication with microprocessor based fire detection system. The detectors shall be able to communicate with the control panel regarding individual address, sensor type and analogue signals. The main control panel shall analyse the signal value to determine the status of the detector e.g. "alarm, pre alarm, fault etc."

Detectors shall be ceiling / wall mounting type and shall be used to detect visible and invisible smoke particles produced during the incipient stages of a developing fire. Fire may include smouldering and fast burning fires of wood, paper, rubber, natural and synthetic fabrics, plastics and common liquid hydrocarbons.

The detectors shall have the following features.

- # Early detection of fire conditions.
- # Continuous monitoring of sensor status.
- # Fast response.
- # Corrosion resistant coating.
- # Dual LED's to provide 360 – Degree viewing.
- # Easy disassembly for cleaning.
- # Sealed sensor head to prevent entry of dust, dirt, insect's etc. to reduce nuisance alarms.

### **Technical Particulars**

- a. Operating Voltage : 15 – 28 V dc
- b. Operating Temperature : 0 to 45 Deg. C
- c. Humidity : 0 to 90% RH
- d. Approval / Listing : FM / UL Photoelectric smoke detectors will be used for Electrical control rooms, MCC Rooms, Computer Rooms etc.

### **ii. HEAT DETECTOR (ELECTRONIC THERMAL SENSOR) :**

These shall be analog addressable, fixed cum rate of rise type and designed to operate when the ambient temperature rises beyond a fixed temperature or if the rate of rise is faster than the pre-determined rate and allowing the increase/ rise for a specified period. The detector shall be low voltage, two wire, solid-state device that provides for integral communication with microprocessor based fire detection system. The detectors shall be able to communicate with the control panel regarding

individual address, sensor type and analogue signals. The main control panel shall analyse the signal value to determine the status of the detector e.g. "Alarm, prealarm, fault etc.

The detectors shall have the following features:

- # Dual thermistors for fast response to temperature increases.
- # Continuous monitoring of sensor status.
- # Corrosion resistant coating.
- # Dual LED's to provide 360-degree viewing.
- # Easy plug in of sensor heads to common base
- # Sealed sensor head to prevent entry of dust, dirt, insects etc to reduce nuisance alarms:

### **Technical Particulars**

- a. Operating Voltage : 15 – 28 V dc
- b. Operating Temperature : 0 to 45 Deg. C
- c. Humidity : 0 to 90% RH
- d. Approval / Listing : UL
- e. Alarm temp. : Preferably within 10 Deg. C of max Operating temp.

### **iii. COMBINATION DETECTORS :**

Combination of heat detector and photoelectric detectors are envisaged for premises where safety of property is involved such as Battery/ Battery charger room, Transformer room, Control room etc.

## **07.00 CABLES AND CABLE LAYING:**

### **A. GENERAL :**

- # The detector wiring shall be of CLASS A type.
- # All detector loop cables shall normally be two core, multistranded, annealed copper conductor, armoured with PVC insulation, FRLS outer sheath as per IS1554 Part-1 and 10853 Part-53. Other specific requirement of detector cables, if any, shall be clearly mentioned by the Bidder. Power cables shall be 3 x 2.5 sq.mm, Cu conductor, PVC/PVC cable conforming to IS 1554, Part-I.
- # All detector circuit cables shall be armoured and inside premises the same shall be clamped to the wall / ceiling.
- # In general out-door cables shall be laid on cable trays/ trenches and shall be armoured.
- # For road crossing GI Pipes shall be used, if owner provided Cable crossing are not in the vicinity.

## **B. CABLE LAYING:**

# Cables shall be laid in underground/ trenches, ducts, channels, tunnels, racks, trays, in GI pipes and PVC conduits as per site conditions and plant practice. Trenches shall be made exclusively for cables of this package and shall not be combined with any other cables.

# Trenches shall be 700mm deep and 300mm wide. 100mm thick river sand cushion layers shall be provided above and below the cables. One layer of good quality burnt bricks shall be provided above the sand cushion.

# All cables shall be tested for proper continuity and insulation before laying.

# Care shall be taken that kinks, twists or mechanical damage do not occur to the cables during laying.

# All cable bends shall be made with due consideration to the minimum permissible bending radius of the cables.

# Care shall be taken that during laying of cables, loops are not formed.

# While pulling of cables, they shall not be allowed to be dragged along the ground or over a second cable already laid.

# Cable markers shall be provided on either side of rail / road crossing, at each turnings and at regular interval of 30 meters on straight runs for underground cables.

# Joint markers shall be provided at every joint on the cable. Normally joints are not permitted.

# Where cables are required to cross under roads, railway lines, surface drains and pipe lines they shall be taken through GI pipes.

# Special care shall be taken for; protection of cables against chemical and mechanical damage.

# All cables shall be tested for the healthy condition after laying.

# All cables shall be tagged for proper identification.

# Where cables leave panel for external buildings making use of structures available shall support it.

Public Addressing System shall be designed to address the entire building to convey clear and audible instructions to all peoples on all floors of the building in case of event of fire, or other emergency. The system shall also be with facilities for playing music, if required.

The system shall be complete with, Amplifier(s), Zone Selector Panel, Microphone, Speakers, Call/Call Back Facilities, and Fire Resistant Cable Net Work etc.

The speakers shall be located in strategic location of all floors as indicated in the drawings. The System shall be configured in different zones. The announcement can be made in zone wise or to all speakers simultaneously in ALL CALL mode. Fire Alarm shall be announced immediately on receipt of Fire Signal from the Fire Alarm Panel to all zones.

### **10.1 Speaker System for Public Address:**

P.A Speakers shall be especially designed for necessary Power (Wattage) and shall be integrated with fire alarm signals and Voice communications. Speakers shall be Wall mounted type complete with Enclosure and necessary mounting brackets Speakers shall have a line-matching transformer for direct connections to amplifier(s).

### **10.2 P.A System Cabling:**

P.A System Cables shall be wired using 2C x 1.5sq.mm PVC Insulated Fire Retardant Copper conductor, laid in 20mm Dia Screwed MS Enameled conduits. The Speakers in each zone shall be connected in parallel and connected to respective outputs. The cables from each zone shall be separately routed and terminated in the P/A Amplifier.

### **10.3 Audio Amplifier:**

Audio Amplifiers shall be of solid state and of mixing type for combining speech and music. The Amplifier shall have adequate continuous (RMS) power out put to meet the requirement of the configuration. The unit shall be capable of delivering the rated output with less than 0.05% harmonic distortion in the design bandwidth. The amplifier shall have a broad band frequency response of 20 Hz to 20 KHz. The output voltage and impedance shall meet with the system requirement. Amplifier(s) shall be protected against overloads and output shorts and shall have a thermal overload on the heat sink. Amplifier(s) shall be magnetically coupled switch mode type with two input signal sources selectable manually or automatically by the fire alarm system. Output power shall be as required to meet the needs of the PA system. Audio amplifiers shall be mounted in suitable wall mounted/floor standing enclosure.

### **10.4 Zone Selection Panel:**

The user interface to the entire public address system shall be the Zone Selection Panel. It shall be able to address necessary zones. The panel shall have one microphone for announcements. The selection of announcement shall done through the Panel. The announcement/fire tone can be made zone wise. The panel shall have individual zone selection switches as well as ALL CALL switch.

The zone selection panel shall also be with a tone generator that serves the purpose of generating a unique fire tone in case of fire.

### **11. Testing and Commissioning of Fire Fighting System**

All the pipe work shall be pressure tested in parts with water to 15 Kg/Cm<sup>2</sup> at least for 2 hours or to 11 Kg/Cm<sup>2</sup> for a period of 24 hours. The Complete Fire Piping Work shall be again pressure tested to 11 Kg/Cm<sup>2</sup> for a minimum period of 24 hours, as instructed by the Consulting Engineers before commissioning of the Fire protection System.

All Tests and Inspection procedures as per the all the component manufacturer's specifications and standards shall be carried out by the Contractor as part of the Installation work prior to commissioning of the system. If the Owner or the Consulting Engineer may ask for additional tests to determine that the installed equipment complies with the specifications, the Contractor shall carry out these additional tests also without extra cost.

All Fire Fighting Pumps, Sprinklers, Valves and Hose Reels shall be tested by the Contractor to verify operation in all the perceived conditions.

On successful testing of the Installation the Installation shall be tested and procured approval by the Kerala Fire and Rescue Services Authorities.

#### **APPROVED MAKES OF MATERIALS FOR FIRE PROTECTION SYSTEM**

Sl.No	NAME OF THE PRODUCTS	MAKES
1	Fire/Sprinkler Main Pump/Jockey	Kirloskar/Wilo/KSB/Grundfoss
3	Motor	ABB, Siemens, Greaves, KOEL
4	GI/MS Pipes(IS:3589)	Jindal Hissar/Jindal Star, Tata Steel
8	Paints	Asian Paints, ICI, Berger
9	Double/Single Headed Landing Valve	Newage, Safeguard, Shah Bhogilal,Hawa,Marck,Intervalve
10	Controlled Pressure Landing Valve etc	Newage,Kartar,Atam,Kailash,Bhoj
11	Siamese Breaching Connection/Fire Service Inlet/ Adopter Connection	Newage, Sageguard, Shah Bhogilal
12	Fire Hose	CRC, Eversafe, Jayashree, Newage
13	Hose Box(ISI Marked)	Geetech, Safeline
14	Rubber Hose Reel	Dunlop, Swastic, Mitras, eversafe
15	Rubber Hoses	Dunlop, Swastik, Hilton, Mitras
16	First Aid Hose Reel(LPCB Approved)	Eversafe, Newage, Safeguard, Shah Bhogilal, Safex, Mitras
17	Hose Reel Drum (ISI marked)	Newage, geetech, Safeline, Mitras
18	Gun Metal Brach Pipe	Newage, Sageguard, Shah Bhogilal, Minimax
19	Fireman Axle	New Age, Sageguard
20	Alarm Control Valve	HD, Tyco, Viking
22	Water Curtain Nozzles	HD Fire, Viking

21	Sprinkler Heads	HD, Tyco, Viking, Newage, Sharp, SHJD
23	Fire Extinguishers	Minimax, CEASFIRE
24	Water Flow Switch	Honeywell, Viking-Potter, System-Sensor
25	Fire Protection Wrapping Coating	IWL-Pypkote, Rustech-Coatek
26	GM/Forged Brass Valves	Audco, Danfoss, Leader, Zoloto
27	Sluice Valve	Indian Valve Comany, Kirloskar, Zoloto
28	Butterfly valve	CRI, CIM, Advance, Monsher
29	Check Valve-Wafer Type	Advance, Danfoss, Honeywell, Kirloskar
30	Check Valve-Dual Plate	Advance, Honeywell
31	Pressure Switch	Danfoss, infoss, Viking
34	Foot Valve	Normex
35	Deluge Valve	HD Fire, Viking
36	Solenoid Valve	Danfoss, Viking
37	Pressure Reducing Valve	Tyco, Honeywell, Zoloto
38	Air Release Valve	Newage, Zoloto
39	Ball Float Valve	Zoloto, HBD
40	Y-strainer	Emerald, Zoloto, Vking
41	Anti-Vibration Mounting & Flexible Connections	Easy flex, Dunlop, CORI
42	Pressure Gauge	Emarld, Fiebig
43	Level Controller and Indicator (Water)	Technika, Techtrol,, Pumptrol
44	Welding Rods	ADOR, Cosmos, Esab, Super Bond(S)
45	Fastener	Fisher, Hilti, OM
46	Mechanical Seal	Burgmann, Sealol
47	Fire Sealant	Birla 3M, Hilti, Promat
51	Cables	Havells/Polycab/Gloster/Finolex`
52	Isolating Valves, Non-Return Valves	Inter Valve
53	Expansion Bellows	Kanwal CORI Easy Flex

### **SUBMISSION OF TENDER:**

- 1) Separate envelopes should be used for Technical and Financial Bids and indication to that effect may be superscripted on the envelopes.
- 2) All the pages of the Tender Notice should be signed with the name and designation of the signing authority, with date and the seal of the company affixed at last page, in confirmation of having read, understood and agreeing with the terms and conditions of the Tender Notice and should be submitted with the bids. This is important and essential.
- 3) The envelopes superscripted 'Technical Bid' should contain the tender form (General terms & conditions, Technical & tender Memorandum) without the 'Bill of Quantities' part, duly signed and stamped along with all relevant documents establishing the credibility of the firm. The Technical Bid will not contain any price implication.

4) All envelopes containing the tender should be properly sealed.

5) The envelope containing Technical Bid must contain the Earnest Money Deposit (EMD) of Rs. 50000/- (Rs. Fifty thousand Only) and tender fee of Rs.5250/- ( Rs.Five Thousand two Hundred and Fifty Only) in the form of Demand Draft in favour of Kerala State Co-operative Bank, Thiruvananthapuram payable at Thiruvananthapuram.

**Call for Clarification:** Suppliers are urged to promptly notify the Bank of any ambiguity in or discrepancy between any of the documents of this Call for Tender which may be discovered upon examination of the documents. Bidders may submit any written requests for clarification concerning this Call for Tender to e-mail address [kscb.adm@gmail.com](mailto:kscb.adm@gmail.com) following it up by a telephone call to number **9946951643(AE-Electrical) or 0471-2547241(Manager Estate)** to ensure its receipt, until the deadline stipulated, specifying the publication reference and the title of this Call for Tender. Any requests after this date will not be accepted. Any clarifications from the Bank in response to any requests for clarification will be addressed and sent before the deadline stipulated.

The items and sub-heads of works to be done are enumerated in the subjoined schedule. Unless otherwise specified, the tender must be for the whole work. Any individual work and part tenders are liable to rejection.

All works shall be done in conformity with the specifications and conditions of contract in force in the Kerala State Co-operative Bank Ltd. The rates quoted shall be in figures and words and covering all the operations contemplated in the specifications and tender schedules and all incidental work necessary for such operations. "The rates quoted shall be inclusive of sales tax".

When tenders are delivered based on contractor's alternated designs such tenders should be accompanied by a schedule of quantities of materials to be used for each item of work with complete detailed specifications and data. In such cases the benefit of any savings in the quantities of materials actually used up under each item of work during execution will accrue to the department.

Tender sealed and endorsed as such with the name of the work clearly written thereon, should be delivered at the office of the Kerala State Co-operative Bank Ltd before **3.00pm on 13-02-2017**. The Bank will not be responsible for any postal delay. The Technical Bid will be opened at the office of delivery on the **same day at 3.30 PM**. by the Dy. General Manager (P&E) or such officer as may be authorized in this behalf in the presence of such of those tenderer's or their authorized agents as may be present. In case it is not possible to open the tenders on the specified date due to any valid reason the same will be opened on the next working day of the Bank.

The total amount of each tender will be read out, the tender and all corrections in the tender will be attested by the tender opening officer with dates and initials and by the tenderer, present. A list of corrections, which remain unattested by the tenderer, will be made out and pasted in each tender. A receipt should accompany each tender for an Earnest Money Deposit (EMD) of Rs 50000/-. The Earnest money may be produced in the form of demand draft of any Nationalized/Scheduled Bank payable at Thiruvananthapuram in favour of the Kerala State Co-operative Bank Ltd. Cash remittance is not normally accepted. The officer receiving the tender may, if he considers necessary, relax this rule and permit cash being received in special cases. Tenders not accompanied by such deposit receipt will not be considered.

Selected contractor will be required to produce Income tax and Sales tax clearance certificates before payment is made for the work.

The contractor will examine the site condition and satisfy themselves of the difficulties that may arise during execution etc before submitting tenders for the work.

The tenderer's particular attention is drawn to the sections and clauses dealing with-

1. Test, Inspection and rejection of defective materials of work.
2. Cleaning up during progress and for delivery.
3. Accidents

Delays

Particulars of payment.

The contractor should closely peruse all the specification clauses, which govern the rates, which he is tendering.

In consideration of the tender being allowed to quote for the work, the tenderer should keep the tender form for a period of two months from the date of opening the tender during which period or till the tenders are decided whichever is earlier, he will not be free to withdraw the tender. Any such withdrawal will entail forfeiture of the earnest money deposited for the work.

Due to departmental or administrative reasons it is found necessary to keep the tender open for a further period, prior consent of the lowest two bidders shall be obtained in writing for further period of one month or more as required. In case lowest or any bidder refuses to extend the firm period that tender cannot be considered.

Execution of agreement for works shall be made within the time limit prescribed as follows.

**Time allowed for executing agreement without fine will be 14 days from the date of registration of the communication (selection notice) in the post office.**



**Further time of 10 days shall be allowed to execute agreement by realizing a fine of 1% of the PAC subject to a minimum of Rs 1000/- and maximum of R25,000/-**

In case of failure to execute the agreement within the above period (24 days), the offer of contract shall be cancelled, forfeiting the EMD and taking such other actions as mentioned in the bidding document. After canceling, the offer of contract, the tendering authority will negotiate with the next lowest bidder and award the work to him if he expresses his willingness in writing to execute the work at the negotiated rate. Otherwise the work will be re-tendered.

The Contractor shall take over charge of the site within 10 days after execution of agreement and commence the work. If the contractor does not turn up, the acknowledgement form for handing over the site duly signed by the site officers shall be sent to the contractor through registered post, it shall be deemed that the contractor has taken over the site from the date of posting.

The Selected bidder shall produce a security deposit equal to 5% of the contract amount in the form of Bank Guarantee from any nationalized or scheduled Bank/ Cash remittance, which shall remain valid till 28 days from the completion of the defect liability period. He shall execute an agreement for the work in the Bank's Schedule form. If as a result of such measure due to the default of the tenderer to pay the requisite deposit, sign contracts or take possession of the work any loss to Bank results the same will be recovered from him as arrears of revenue, but should it be a saving to Bank, the original contractor shall have no claim, whatever be the difference. Recoveries of this or any other account will be made from the sum that may be due to the contractor on this or any other contracts or under the Revenue Recovery Act, or otherwise the Bank may decide.

**Retention:-5% of the executed amount for contracts.**

The conditions stated herein are binding upon the contractor and shall be construed as a preliminary agreement between the successful tenderer and Bank.

The tenderer should submit along with this tender an agreement executed and signed in Kerala stamp paper worth R 200/- (Rupees hundred only). A specimen form of the agreement is given as annexure to this tender. Tenders without the agreement in stamped paper will be summarily rejected. The acceptance of the tender vests with the Bank or any officer authorized by Bank who does not undertake to accept the lowest or any particular tender. The Managing Director, KSCB reserves the right to reject any tender or all the tenders without assigning any reason thereof.

The right to carry out the work in conformity with or in a manner entirely different from the terms of this invitation that may be considered most suitable before or subsequent to the receipt of tenders due to exigencies of work is reserved with the Bank.

It shall be definitely understood that the Bank does not accept any responsibility for the correctness or completeness of the schedule, that the schedule is liable to alteration by discretion of the competent departmental officer or as set forth in the conditions of contract. The tenderer will however base this tender amount in the case of lump sum tender on the basis of those quantities, etc.

Tenders not submitted in such printed forms or submitted incomplete in any respect whatever such as unattested errors and corrections in rates, quantities, units or amounts (figures not expressed in words), totals of contract not entered, etc., shall be liable to summary rejection.

The earnest money deposit of the unsuccessful tenderer's will be refunded immediately after tabulating tenders, keeping only the earnest money of the first 3 lowest tenderer's.

The Earnest Money Deposit of the remaining unsuccessful tenderer's will also be refunded within a week from the date of acceptance of the tender.

**The quantities provided for in the schedule may vary and the contractor should be prepared to do excess up to 25% over the schedule quantities at his quoted rate for the works and up to 1% of the contract price.** For excess beyond this limit, and for the extra items the agreement authority shall fix the rate by negotiation with the contractor for works within their powers of Technical Sanction.

Any further information necessary can be obtained at the office of the undersigned on all working days during office hours.

The work should be completed in all respects in 2 months from the date of order to start work is issued and in any case not later than 3 months. The tenderer on execution of agreement shall take instructions from the Managing Director, KSC Ltd, or the subordinate officers of Bank

**Payments:-**Payment shall be made by The Kerala State Co-operative Bank, Thiruvananthapuram, Kerala against bill raised by the supplier as follows:  
30% Mobilization advances against Bank Guarantee.

30% (Total 60%) against supply of materials at site after preliminary verification and certification.

35% (Total 95%) on Commissioning.

**Balance 5% after 1 year Guarantee period or against submission of performance Bank Guarantee.**

Items of work not expressly or impliedly described in the schedule, plans or specifications will be treated as 'extras'. They will include only items of works, which though highly necessary for the proper execution of the work and for its completion, were not provided for in the original contract.

**1) The execution of an extra item of work and payment therefore will be based on the following conditions:-**

**There shall be an order in writing to execute the extra item of work duly signed by an Engineer not below the rank of an Assistant Engineer before its commencement.**

**If the contractor finds, after examining the specifications and plans that extras are involved, he should give notice to the Engineer to this effect and shall proceed with the execution of the extra item, only after receiving instructions in writing from the Engineer.**

**Extra items may be classified as additional, substituted or altered items, depending on their relation or otherwise to the original item or items of work**

The rates for extra items shall be worked out as below.

2). In the case of all extra item whether additional, altered or substituted, for which similar items exists in the contract, the rates shall be derived from the original item by appropriate adjustment of cost of affected components. The percentage excess or deduction of the contract rate for the original item with reference to the departmental estimated rate shall be applied in deriving the rates for such items.

3).In the case extra items, whether altered or substituted, for which similar items exists in the contract, the rate shall be derived from the original item by appropriate adjustment of cost of affected components. The percentage excess or deduction of the contract rate for the original item with reference to the departmental estimated rate shall be applied in deriving the rate for such items.

## **Measurements**

The measurements shall be generally recorded by the Engineer or by the employee of the Bank, specially authorized for the purpose, jointly with the contractors authorized representative. The contractor shall then prepare the detailed bill, in duplicate in the name of Bank (Original & duplicate, based on the certified measurements and the accepted rates applicable for each item), There shall be an abstract of the value of works measured for each annexure. The quantities given herein shall be the total up to date quantities. The deduction to be made as such on the contract such as Retention Money, Income tax, VAT, Workers welfare fund other statutory deductions etc.. Advance already made on earlier bills will be made and the net amount will be arrived at.

The Bank Shall verifies the bills, incorporate necessary corrections, wherever deemed necessary, get it audited and arrange for the payment.

Extra items, which are not ordered in writing by the bank, should not be included in the "Measurement".

Arbitration shall not be a means of settlement of disputes of claims arising out of the contract relating to this work. All disputes and differences arising out of the Contracts that may be executed, in pursuance of the contract shall be referred to the arbitration clause under the Co-operative Societies Act 1969. The findings decisions of the Arbitrator shall be binding on both parties.

No part of the contract shall be sublet without written permission of the Managing Director, KSCB nor shall transfer be made by power of attorney authorizing other to receive payment on the contractor's behalf.

**The Managing Director, KSCB reserves the right to reject any tender or all the tenders without assigning any reason therefore.**

The contractor will provide his own tools and plant store sheds to store his own materials as well as those supplied by the department and will be entirely responsible for the proper use and safe custody of the latter and also for any loss, damage, theft, mishandling weathering or any cause whatsoever.

The contractor shall be responsible for the safety of the labor employed by him and he shall be liable to pay the necessary compensation in case of accidents, as per the Workmen's Compensation Act. The contractor will also be liable to abide by the fair wage clause condition attached separately.

The contractor shall be liable for all damages caused to public amenities such as Electric wires, Telephone cables, water mains and private property which should be repaired and restored with least delay.

If the Bank undertakes to supply particular materials no claim for extra payment on account of delay in the supply of materials will be entertained.

The contractor shall make his own arrangements to extricate himself from any legal action instructed against him by other agencies.

Time is the essence of the contract. The contractor shall submit the chronological programme for execution of each stage of work before executing agreement, which shall be examined by the agreement authority and approve programme form part of the agreement. Undue and avoidable delay in the execution of the work will render the contractor liable to penalty.

The Managing Director, KSCB reserves the right to terminate the contract at risk and cost of the contractor at any time in case of bad work, slow progress or violation of rules in other ways. An amount equal to 30% of the cost of the remaining works at agreed rates of the terminated contract shall be recovered from the defaulted contractor towards the risk & cost. The contractor shall be directed to remit the risk and cost amount within 3 months. There is no need to wait till the work is arranged alternatively through another contractor and the loss sustainable due to the default of the original contractor be assessed. Such loss, if any, shall be realized after completion of the work. If he fails to remit the amount within this periods following steps can be adopted for realization of loss. The amount can be realized from the following.

EMD/Security ,Bill amount/rates to on if any due to the contract.

Any dues from department to the contract.

Bank guarantee/Performance guarantee or by filing civil suits against the contractor

The Managing Director, KSCB reserves the right to abandon the work at any stage if he finds such a course necessary and the contractor will be paid only for the finished items of works.

Tenders, which are not in conformity with this tender notice, are liable to rejection. This tender notice with the conditions stated herein will form part of the contract documents.

In the case of schedule contracts when the rates quoted for particular item in figures and words disagree, the rates quoted in words will be taken for the purpose of the settlement of the contract. The contractor is bound to accept these rates if the contract is awarded to him.

The entries in the tender schedule issued by the Bank are in no way to be corrected by the tenderers and if the tenderers have to note anything, they should note the same as a foot note in the bottom of the page. If the tenderer makes any correction in the tender schedule the tenders are likely to be rejected.

It is also open to the agreement authority to refuse sanction to a modified programme or extension of time if such modification or extension is wholly or partly due to default on the part of the contractor. In such cases the agreement authority cancels the contract and arranges the balance work at the risk and cost of the contractor within ninety days from order of termination.

Sd/-  
Managing Director  
KSCB, TVM.

**Part-I**

**TECHNICAL BID**

1. Cost of tender form. : Rs.5250.00 (Non Refundable)  
a) Bank Draft No. : - - - - -  
b) Date of issue of BD : - - - - -  
c) Name of the issuing authority : - - - - -
2. Name,address of the Firm/Agency : - - - - -  
- - - - -  
- - - - -  
- - - - -
- Telephone No. : - - - - -  
Fax No. with Agency profile if any : - - - - -
3. Name of Authorized person of : - - - - -  
Firm / Agency to deal with  
Designation : - - - - -  
Address :- - - - -  
- - - - -
- Telephone Number, Fax number : - - - - -  
- - - - -
- Email address : - - - - -
4. Name of the Bank(s) where the agency has account(s):  
Address of the Bank : - - - - -  
- - - - -
- Telephone number : - - - - -  
Fax number : - - - - -
5. Service Tax Registration No. : - - - - -
6. PAN/GIR No. : - - - - -

7. Annual turnover for the last three year i.e.

2013-2014 : -----  
2014-2015 : -----  
2015-2016 : -----

8. Experience: (enclosed relevant documents for authentication as undertaken similar projects in past)

9. Details of Earnest Money Deposited:

a) Amount : -----  
b) Bank Draft/Pay order : -----  
c) Date of issue of BD/PO : -----  
d) Name of the issuing authority : -----

Place : \_\_\_\_\_

Signature

Date : \_\_\_\_\_

Name

Seal of the firm and signature

**DECLARATION**

1. I, -----Son  
/Daughter of Shri -----  
----- Proprietor / Partner / Director / Authorized  
Signatory of -----competent to sign this Declaration  
and execute this tender document.

2. I have carefully read and understood all the terms and conditions of the tender and hereby convey my acceptance of the same.

3. The information / documents furnished along with above declaration are true and authentic to the best of my knowledge and belief. I/we am / are well aware of the fact that furnishing of any vague / false information / fabricated document would lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law.

Signature of authorized person

Full Name : \_\_\_\_\_

Company's Seal: \_\_\_\_\_

**CRITERIA FOR TECHNICAL EVALUATION OF BIDS OF BIOMETRIC ATTENDANCE SYSTEM /CCTV SURVEILLANCE SYSTEM**

Bidders to submit information against the following sub criteria for assessment of their technical competency

1. No. of years of existence of the company in installation/Maintenance of firefighting system in Kerala. Bidder may give information on letter head and also proof in the form of Website/ Registration certificate etc indicating the year of establishment.
2. List of Govt./Semi Govt./Private institutions where the installation/ Maintenance job was Conducted. Please enclose as a proof of P.O. or job completion certificate from each organization.
3. Feedback report from at least 3 organizations mentioned above on their



letter head.

4. Sales and Service Centers in Kerala & turnaround time for servicing.
5. A list of service Centers with address & contact No. is to be submitted.
6. Presentation on vendor's strength in Firefighting System.
7. Accreditation from the renowned Accrediting Agency. Give details and copy of certificates and OEM letter authorizing supplier for participation in this tender.
8. Annual Turnover of the company during last 3 years, for firefighting system installation work.

sd/-  
Managing Director  
KSCB Ltd

### **Technical Evaluation Process:**

All the technical bids will be examined in terms of matching the listed specifications of individual equipments, offered by bidders. Financial Bids will be opened only for the bidders, whose Technical Bids have been found to be acceptable. Financial bid opening date and time will be intimated later on. In the financial bids, the tenderer shall fill in the rates both in words and figures. The amount against each item is also to be filled in. In case of any discrepancy, the rates quoted by bidder in words shall be taken as correct. The quoted price shall be inclusive of VAT, Sales Tax, Excise Duty, or any other taxes and duties prevailing in respect of this contract shall be payable by the contractor. The Bank will not entertain any separate claim whatsoever in respect of the same. Transportation, installation or any other charges whatsoever are to be borne by the vendors hence the price quoted should be inclusive of all such expenses. Equipments are to be installed at the centers as per the details given in the Annexure.

The comparison of the bids for the award of the order will be based on Technical & Financial criteria. Evaluation by the Technical Expert & Purchase Committee will be treated as final.

## **KERALA STATE CO-OPERATIVE BANK LTD SPECIFICATION**

The rates tendered by a Contractor for the Work shall include the cost of all labour and supervision thereof all materials, tools implements and plants of every description, ladders, cordage, Tackle etc. as well as the provision of safe and-substantial scaffolding required for the proper execution of the work in conformity with the specifications for the various items of work.

Supplying the requisite agency with necessary equipment, to set out the work as well as to afford facilities for such examination of the work, as the Bank's Engineers may, at any time consider desirable, as also to count, weigh and assist in the measurement or check measurement of the work or materials.

Providing and maintaining all temporary fences, shelters, lights, watchmen and danger signals and such other precautions as are necessary for the protection of the work or materials as well as to protect the public and those connected with the work from accidents at the site of, or on account of the work.

All fees and royalties of materials

1. Finally clearing away of all rubbish, surplus materials plant etc. on completion of the work and dressing and leveling off and restoring the site to a tidy condition prior to handing over the work to the Managing Director or his authorized assistant and also its maintenance until so taken over.
2. The Contractor shall be bound to bear the expense of defense of any action or law proceedings that may be brought by persons for any injury sustained owing to neglect of above precautions in connection with the execution of the work, and to pay any damages and cost which may be awarded in consequence.
3. The Contractor shall also help himself out of any difficulties of penalties arising from Interference, with private property in execution of the contract.

4. The contractor shall be responsible for the proper use and bear the cost of protection of materials made over to him by the Bank for use on the work and bear any loss from deterioration or from faulty workmanship or any other cause. The cost of materials thus allowed to deteriorate amounting as it does to an excess issue over-sanctioned quantities, will be recovered at rate 20 percent over the actual cost. The orders of the Consulting Engineer in the matter shall be final and binding on the Contractor
5. Any material brought to the site of-work, or any work done by the Contractor but rejected by the Officer-in-charge as being not up to the specifications shall in the case of materials supplied be then and there removed from or broken up at the site of work, and in the case of work done be dismantled or rectified at the expense of the contractor as may be ordered by the officer-in-charge.
6. In all cases whether so specified in the contract or not, the work shall be executed in strict accordance with the contractor's accepted tender and these specifications and with such further drawings and specifications and orders as may from time to time be issued by the Bank.

Whenever the contractor is ordered by the Managing Director KSCB or his authorized assistant or subordinate to execute any item of work which is not in the tender, it shall be the Contractor's duty to get a special price arranged for the item and to see that it is written in the work spot order book (which shall be provided by the Managing Director, KSCB and kept in the work by the subordinate in charge) and that this order is initialed and dated by the contractor and the officer ordering that particular item of work. For any extra item executed by the contractor and not so entered in the work spot order book and initialed both by the contractor and the Bank's Officer ordering such extra item that contractor shall have no claim for extra payment.

Signature of Tenderer

MANAGING DIRECTOR  
KSCB Ltd

Date:

**FORM OF DECLARATION**

I \_\_\_\_\_ do hereby declare that none of my relations as per the list given in Section 6 and Schedule 1A of the Companies Act, 1956 is in charge of the above work or are having control over it.

I \_\_\_\_\_ do hereby distinctly and expressly declares and acknowledge that I have read the Madras detailed standard specifications and the preliminary specifications therein of the NIT and do hereby admit that those conditions are binding on me and I shall abide by the terms and conditions as stipulated therein in respect of work .....  
.....

..... I am enclosing preliminary agreement in stamp paper worth R.200/- (Rupees Two hundred only)

I \_\_\_\_\_ do hereby certify that no conditions are enclosed with the tender.

Place

CONTRACTOR

Date

Note. If the Contractor is found at any stage, to have suppressed any information required, his earnest money for the work is liable to be forfeited and contract entered into, will stand cancelled.

MANAGING DIRECTOR  
KSCB Ltd.

**KERALA STATE CO-OPERATIVE BANK LTD**

**FORM OF TENDER**

Name of work: **Maintenance and Modernization of Existing Fire Fighting systems at Co-BANK building of Kerala State Co-operative Bank Ltd**

Sir,

I/We do hereby tender to execute the works enumerated in the Schedule accompanying in accordance with the terms in your tender notification dated . . . . . and specifications and conditions of contract in force in Kerala State Co-operative Bank Ltd.

Copy of the specifications duly signed is also enclosed.

I/We further agree to complete the whole work in ..... weeks/months from the date of receipt of order to start work, and maintain the minimum rate of progress specified in the Tender Schedule

I/We do/do not agree to accept and carry out such portions of the work included in my/our tender as may be allotted to me/us if the work be not given to me / us-

In consideration of I/We being registered as a contractor in Kerala State Co-operative Bank Ltd and invited to tender, I/We agree to keep the tender open for acceptance ..... days from the due date of submission thereof and not make any modifications in its items and conditions which are not acceptable to the Kerala State Co-operative Bank Ltd.

A sum of Rs ..... is hereby forwarded in as earnest money I/We fail to keep the tender open as aforesaid or make any modifications in the terms and conditions of the tender which are not acceptable to the Kerala State Co-operative Bank Ltd.

OR

If after the tender accepted, I/We fail to execute the agreement as provided in clause 11 of Tender Notification or to commence the execution of the works as provided in the conditions. I/ We agree that Kerala State Co-operative Bank Ltd shall, without prejudice to any other right of remedy, be at liberty to forfeit the said earnest money absolutely.

Yours faithfully,

(Signature of Tenderer)  
Full Name:

Place of Residence  
Date of Submission.

Acc: 1. Tender Scheme... \_\_\_\_\_  
2. Earnest money Rs. \_\_\_\_\_  
Signed copy of specification

**ANNEXURE - AGREEMENT**

**AGREEMENT TO ACCOMPANY IN STAMP PAPER TO THE VALUE OF  
Rs. 200/- ALONG WITH THE BID**

Article of Agreement executed on this the.....Day of two thousand .....

Between the Kerala State Co-operative Bank Ltd Acting through (the designation of the officer who has invited this tender) (hereinafter referred to as "the Bank") of the one part and

Shri.....

..... (Name address of the tenderer)

(Hereinafter referred to as "the contractor "of the other part.)

Whereas in response to the invitation for tenders, contained-in Notifications No.....dated inviting tenders the contractor has submitted to the Bank a tender for the . . . . .

Specified therein subject to the terms and conditions contained in the said tender.

WHEREAS the contractor has also deposited with the Bank a sum of Rs.....(Rupees.....) as earnest money for execution of an agreement under taking the due fulfillment of the contract in case his tender is accepted by the Bank.

NOW THESE PRESENTS WITNESS AND IT IS HEREBY MUTUALLY  
AGREED AS FOLLOWS.

1. In case the tender submitted by the contractor is accepted by the Bank and the contract for ..... is awarded to the contractor, the contractor shall within 15 days of acceptance of his tender execute an agreement with the Bank incorporating all the terms and conditions under which the Bank accepts his tender.

2. In case the contractor fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, the Bank shall have power and authority to recover form the contractor any loss or damages caused to the Bank, by such breach as may be determined by the inadequate the

deficit amount may be recovered from the contractor and his properties movable and immovable and also in the manner herein after contained.

3. All sums found due to the Bank under by virtue of this agreement shall be recoverable from the contractor and his properties, movable and immovable under the provisions of the Arbitration clause as contemplated under the Kerala co-operatives societies Act 1969 and also in such other manner as the bank may deem fit.

In witnesses where of Shri .....(Name and designation) for and on behalf of the Bank and Shri.....the contractor have here unto set their names that day and year shown against their respective signatures.

Signed by Shri.....

(Date)

In the presence of witness:

1.

2.

Signed by Shri.....

(date)



**SCHEDULE OF QUANTITIES & RATES FOR FIRE FIGHTING SYSTEMS**

Sl No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
(A)	<b><u>Fire Pump &amp; Accessories</u></b>				
1.0	<b><u>Main Pump</u></b> Overhauling, testing & recommissioning of Electrical Motors driven fire pump of 75HP capacity as per the OEM standard. The operating voltage is 415V 3 phase 50 Hz. The pump set is of foot mounted type including all accessories such as standard coupling, coupling guard common base frame, foundation bolts etc ( 1 main pump - stand by )	Nos	2		
1.1	Rewinding of Electric motor for the above pump ( if required)	Nos	1		
<b>2.0</b>	<b><u>Jockey Pump ( 20HP)</u></b>				
	Overhauling testing & recommissioning of Electrical Motors driven Jockey pump of 20HP capacity as per the OEM standard. The operate voltage is 415V 3 phase 50 Hz. The pump set is of foot mounted type including all accessories such as standard coupling, coupling guard common base frame, foundation bolts etc.	Nos	1		
2.1	Rewinding of Electric motor for the above pump ( if required)	Nos	1		
<b>3.0</b>	<b><u>Fire Pump Panel</u></b>				
	Rectification, testing & commissioning of existing Motor control panel (fire	Nos	1		

	hydrant panel) for fire pumps, incorporating starter & switch gear for the motors. The control panel shall be duly painted with 2 coats of anticorrosive primer & Epoxy paint of fire Red colour with all accessories as required etc. Complete with controls, switchgears, lamps etc as per Kerala Electrical inspectorate standards.				
4.1	<b><u>Supply &amp; laying of cables</u></b>				
	Rectifying, laying, testing & commissioning of existing cable system for fire pumps, control panels with fixing of clamps, nuts & bolts, screws, Aluminum identification tags, route workers etc required for clamping intervals as necessary (if required)	Mtrs	25		
4.2	Rewiring of cable system for the above pumps/panels etc (specification of cable same as that of existing) ( if required)	Mtrs	25		
4.3	<b><u>Cable Termination</u></b>				
	Rectifying, laying, testing & commissioning of existing pre insulated armored Aluminum AYYF/ equivalent LT Cable using single/double compression type cadmium plated brass cable glands, copper crimped type cable lugs, cable identification tags & including gland earthing using copper conductor of adequate size. Al-Cu-strip for termination of cables etc ( if required)				

	Designing, installation, labour etc				
4.3.1	3.5C x 95 sq mm AYFY/ equivalent cable 3.5C x 70 sq mm AYFY/ equivalent	Nos	2 2		
4.3.2	3.5C x 16 sq mm AYFY	Nos	2		
<b>4.4</b>	<b><u>Earthing Conductors</u></b>				
	Rectifying, laying & clamping at site of existing copper Earthing conductors inclusive of providing Earthing terminations & bracing of the terminations of Motor, panets, cables structures etc ( if required)				
4.4.1	10 SMG copper wire supply/ labour/ installation/Erection	Mtrs	25		
4.4.2	4 SWG copper wire/ship supply/ labour/ installation/ Erection	Mtrs	25		
<b>TOTAL FOR PUMPS &amp; ACCESSORIES</b>					
<b>B)</b>	<b><u>FIRE HYDRANT SYSTEM</u></b>				
5.0	Above Ground piping : supply, erection, testing & commissioning of GI heavy class pipe confirming to IS : 1239 part-I with malleable specials confirming to IS 1239 Part II such as elbows, reducers, flanges etc including trading, cutting, welding fixing in /on walls ceiling by using suitable supports. The pipe shall be painted with two coats of zinc chromate primer & two coats of epoxy print of fire Red colour/shade.				
5.1	150 mm Dia	Mtrs	50		
5.2	100 mm Dia	Mtrs	150		
5.3	80 mm Dia	Mtrs	100		

5.4	65 mm Dia	Mtrs	UR		
6.0	underground piping : supply just above				
6.1	150 mm Dia	Mtrs	50		
6.2	100 mm Dia	Mtrs	100		
6.3	80 mm Dia	Mtrs	75		
6.4	65 mm Dia	Mtrs	UR		
7.0	Servicing, maintenance, testing & commissioning of existing sluice valves with required flanges nuts & bolts, gaskets etc complete				
7.1	200/150 mm Dia	Nos	2		
7.2	100 mm Dia	Nos	2		
7.3	80 mm Dia	Nos	1		
8.0	Servicing, maintenance, testing & commissioning of CI Non – Return valve slim seal with required flanges, nuts & bolts, gasket etc complete				
8.1	150 mm Dia	Nos	1		
8.2	100 mm Dia	Nos	UR		
9.0	Supply, Installation, testing & commissioning of CI Butterfly valve slim seal standard lever operated type confirming to IS: 13039 with required flanges, nuts bolts etc complete				
9.1	200 mm Dia	Nos	UR		
9.2	150 mm Dia	Nos	3		
9.3	100 mm Dia	Nos	2		
9.4	80 mm Dia	Nos	2		
9.5	65 mm Dia	Nos	2		
10.0	Supply, Installation, testing and commissioning of Brass/cast iron Ball valves confirming to standards with fittings of screwed & type etc completed				

10.1	25 mm Dia	Nos	2		
10.2	20 mm Dia	Nos	2		
11.0	Supply, Installation, testing and commissioning of Air release valve confirming to standards Gun Metals body 25 mm dia spring loaded type etc completed	Nos	2		
12	Supply, Installation, testing and commissioning of stainless, steel, double leaded type fire hydrant valve 80% confirm to IS:5290 with ISI Mark, oblique type with instantaneous huge coupling adaptor with ISI Mark ( IS 903) complete with SS orifice plate of standard bore to reduce the pressure to 3.5kg/sq.CM PVC blank cap & chain etc and made functioning	Nos	2		
13	Supply, Installation, testing and commissioning of fire fighting delivery hoses, compelled percolating type 35.7kg/sq.cm burst pressure, 22 kg/cm proof pressure 14kg/sq.cm working pressure, in 15mtrs, 65mm inside coupled with stainless steel lose coupling adaptors of instantaneous pattern, pair of male & female parts, 63 mm dia & made functional.	Nos	20		
14	Supply, installation, testing and commissioning of first aid hydrantic hose reel complete with swing type	Nos	4		

	drum, fitted in vertical rising mains/ walls/ structures with U Bolts or with M12 anchor bolts including 20 mm dia PVC rigid braided hose in 30 m length, fitted with 19 mm bore shut off nozzle and all other necessary fixing materials				
15	Servicing & Maintenance of Existing Hose Reel Drum, completed	Nos	16		
16	Supply, Installation, Testing & Commissioning of Double door Hose cabinets to accommodate two piece of hose pipe along with one pair of male & female couplings and one branch pipe. The Cabinet is made up of MS/FRP sheet with glass fronted hinged doors and lock.	Nos	5		
17	Supply, installation, Testing & Commissioning of stainless steel short branch pipes 63 mm, Confirms to IS: 903, Completes with 20mm bore hexagonal based nozzle & complete.	Nos	20		
<b>TOTAL FOR FIRE HYDRANT SYSTEM.</b>					
C)	<b>ANALOGUE ADDRESSIBLE FIRE DETECTION &amp; ALARM SYSTEM</b>				
18	Supply, installation, Testing & Commissioning of UL listed 8/12 LOOP analogue Addressible Fire alarm control panel capable of handing more than 99 devices/detectors per loop. The panel shall have Hazing icons indicating the presence of explosive gas, liquids,	Nos	1		

	<p>poison, fumes etc and UL listed 32 bit Central Processor with 6" touch screen LCD display supporting smart degrade mode operation and not limited with characters.</p> <p>UL listed 12 Amps inbuilt power supply UL listed 100AH of Lead Acid battery charging capacity.</p> <p>UL listed Fire Fighter Touch Screen Graphical Display panel to inform and guide Fire Fighter for carrying out Fire Fighter operation. UL listed network card is included inside the panel for RS485 communication with other display devices like graphic scree, repeater panel etc.</p>				
19	Supply, installation, Testing & Commissioning of UL listed intelligent Addressable Multi type sensor with built in Smoke and heat element & complete	Nos	200		
20	Supply, installation, Testing & Commissioning of UL listed intelligent Addressable microprocessor based, rate of rise and fixed temperature Heat detector with base & complete	Nos	50		
21	Supply and installation of Wall Mounted Manual Pull Station/Manual call point as per UL standards & complete	Nos	14		
22	Supply, installation, Testing & Commissioning of Electronic dual tone Hooter (Sounder cum Strober) as per standard specification and complete.	Nos	14		

23	Supply, laying of approval make 2C x 1.5sq.mm PVC copper armoured FRLS cable with necessary terminal lugs etc. complete.	Mtr	1000		
24	Supply, installation, Testing & Commissioning of UL listed intelligent Addressable input module for monitoring purpose & complete	Nos	12		
25	Supply, installation, Testing & Commissioning of UL listed intelligent Addressable output module having facility to activate sounders, AHU Trippings etc.	Nos	18		

26	Supply, installation, Testing & Commissioning of UL listed Line Isolator	Nos	20		
<b>TOTAL FOR FIRE ALARAM/DETECTION SYSTEM</b>					
D)	<b>EXIT WAY SIGNAGES /DRAWINGS ETC</b>				
27	Supply and fixing in position exit signages photoluminscent type with indication arrows self illuminated Exit signs with independent source of power supply the following words				
27.1	FIRE PUMP ROOM	Nos	1		
27.2	FIRE ORDER ( With standard instructions)	Nos	2		
27.3	FIRE EXIT	Nos	30		
27.4.	FIRE DUCT /FIRE STATION	Nos	30		
27.5	Floor Identification number ( GROUND FLOOR/FIRST FLOOR Etc)	Nos	30		
27.6	IN CASE OF FIRE DO NOT USE LIFT	Nos	30		



	USE STAIRS				
27.7	DANGER BOARD 11 KV	Nos	1		
	DANGER BOARD 440 VOLTS	Nos	6		
<b>TOTAL FOR EXIT WAY SIGNAGES</b>					
E) 28	DOCUMENTS & APPROVAL Preparation of necessary documents, forms, drawings, (Civil, Fire, Floor level) schemes, certificates etc. procuring approvals for the drawings, coordinating site inspections and statutory sanction from the state fire authority for the installation. All expenses except statutory charges shall be paid by the contractor.	LS	1		
F) 29	<b>AMC CHARGES</b> 2 <sup>nd</sup> Year of installation	Years	1		
29.1	3 <sup>rd</sup> Year of installation	Years	1		
29.2	4 <sup>th</sup> Year of installation	Years	1		
	<b>TOTAL COST</b>				
<b>GRAND TOTAL</b>					