



PARADIP PORT TRUST

BUDGETARY OFFER

FOR

Supply, Installation, Testing & Commissioning of Fixed High Velocity  
Water Spray System for Fire Protection of Power Transformers.

SUBMISSION ON OR BEFORE 19.03.2018

THE EXECUTIVE ENGINEER (ELECT)

PORT ELECTRICAL DIVISION – II

PARADIP PORT TRUST,

PARADIP, JAGATSINGHPUR,

ODISHA – 754142

Contact No.9777-180-842

Email Id: [rnsahooeppt@gmail.com](mailto:rnsahooeppt@gmail.com)

# **REQUEST FOR BUDGETARY OFFER**

## **(A) GENERAL INFORMATIONS:**

<b>Sl. No.</b>	<b>Item</b>	<b>Details</b>
1.	Name of Work	Supply, Installation, Testing & Commissioning of Fixed High Velocity Water Spray System For Fire Protection of Power Transformers.
2.	Department / Organization	ELECTRICAL & MECHANICAL DEPARTMENT / PARADIP PORT TRUST
3.	Executive Division	Port Electrical Division.
4.	Officer Inviting the Offer	Executive Engineer
5.	Immediate Next Authority	Superintending Engineer
6.	Sanctioning Authority	Dy. Chairman, PPT
7.	Executing Authority	Executive Engineer

## **(B) OTHER INFORMATIONS:**

<b>Sl. No.</b>	<b>Item</b>	<b>Date</b>	<b>Time</b>
1	Publication date	27.02.2018	17:00 Hrs.
2.a)	Document download start date	27.02.2018	17:00 Hrs.
b)	Document download end date	19.03.2018	17:00 Hrs.
3.a)	Start date for seeking Clarification on-line	08.03.2018	17:00 Hrs.
b)	Last date for seeking Clarification on-line	12.03.2018	17:00 Hrs.
4.	Date of uploading response to Clarifications sought	15.03.2018	17:00 Hrs.
5.	Offer Submission end date	19.03.2018	17:00 Hrs.
6.	Offer Validity period	120 days	
7.	Currency of Offer	Indian Rupee	
8.	Language of Offer	English	

“Budgetary offer for the Work “Supply, Installation, Testing & Commissioning of Fixed High Velocity Water Spray System for Fire Protection of Power Transformers”

SCOPE OF WORK

1. This is a turnkey contract and the works, goods, services and incidentals under the scope of this contract shall be in the scope and to the account of the Contractor. The Contractor shall supply all the materials, consumables & spares required for the work.
2. This work envisages Design, supply installation, testing and commissioning of Automatic fixed high velocity water spray fire fighting system for 3 nos. 40 MVA power transformers of 132 kV control Room & 06 nos. of 5 MVA Transformers at main receiving substation of Paradip Port Trust. The Contractor shall carry out and complete the said work in all respect in conformity with the contract documents and with the direction of and to the satisfaction of Engineer- In- Charge of the work following appropriate applicable Standards and standard engineering practice.
3. The fixed high velocity water spray fire fighting system shall comprise the following:
  - (i) Pumping System and Control panel.
  - (ii) Yard Hydrant System.
  - (iii) High Velocity Water Spray System.
  - (iv) Wiring and earthing as per requirement to fire fighting system, control wiring & interlocking.
  - (v) One no 160 KVA DG Set for Motor & other electrical loads.
4. The activities involved for the work are as under:
  - (i) Design, Engineering, Documentation.
  - (ii) Supply of Goods as per specification & BOQ.
  - (iii) Installation, Testing & commissioning of the complete system.
  - (iv) Obtaining statutory Approval/NOC from Local Authorities having jurisdiction.
  - (v) Test reports, list of recommended spares, as built drawings, operation & maintenance manual for the entire fire fighting system.
  - (vi) Imparting training to PPT’s staff, etc.
5. The Contractor shall supply & install the fire fighting system (Automatic fixed high velocity water spray system) with individual deluge valve system & interconnection arrangement for protection of 03 nos. 40 MVA power transformer at 132 kV Control Room & 06 nos. of 5 MVA Transformers at Atharbanki, Paradip in the same premises and submit a schematic, drawings as per requirement and technical details, for approval of Paradip Port Trust. No additional charges shall be paid towards the Contractor designing of the system. It may be noted that the local environment,

climate& surroundings, conditions shall be taken into account while designing the system.

6. The Contractor shall execute the work as per the approved drawings of PPT & any modification if required at the time of execution shall be promptly taken to the notice of EIC & to be executed as per the direction of EIC .

The contractor supply all the components of the system like required nos of pump sets with diesel engine, motors, jockey pumps, DG Set ,cables & panels, pipes, protective meters/ gauges / instruments, valves/hydrants, etc as per the approved design and specification & execute the installation, testing and commissioning of the system. It should satisfy the all the standards followed for automatic fixed high velocity water spray system.

7. All the goods supplied under this contract shall be protected as per relevant standards with suitable painting schedule considering the local climate and environment.
8. Power supply for Site activities shall be provided by Paradip port on chargeable basis, but the Contractor has to fulfil and maintain the formalities. The welding and cutting machines or any other equipment and any tools & tackles required for successful execution of the work are to be arranged by the contractor at his own cost.
9. The Contractor shall be responsible for providing proper earthing to panels and motors ,generator and the system as a whole by supplying all required materials as per relevant standards and executing the same.
10. The Contractor shall engage man & machinery for the installation of intended system at his own cost.
11. The Contractor shall arrange tool & tackles required for the work, PPT shall not provide any tools/ tackles for the work.
12. The transportation charges and all incidental expenditure required during the execution of work shall be borne by the Contractor.
13. The Contractor has to follow our technical information during execution the work accordingly.
14. The Contractor shall supply the materials from the approved vendor list and shall submit routine test certificate of equipments.

15. ASSOCIATED CIVIL WORK:

- (i) All the civil works required including renovation of the existing tank for successful installation of the system is to the scope of the Contractor. The Contractor shall renovate the existing tank and prepare foundation for equipments. The Contractor shall supply all materials like cement, sand, rod, chips & bricks, etc for civil works.

- (ii) The Contractor shall prepare the drainage tank by supplying all the materials like cement, sand, rod, chips & bricks for above said civil work and prepare drainage path to the pit so as to avoid flooding.

Following civil works associated with fire fighting installation are included in the work. Presently, one water tank size of 6m (L) X 4m (W) X 1.5 m (H) is available at the said site but the said tank shall be modified to accommodate 150000 liters of water. Besides that, the room available in the nearby workshop building shall be modified suitably for installation of equipments for fire fighting system. The Contractor has to prepare the foundation structure of fire fighting equipments such as pump, motors, generators etc with supply of required civil materials. The Contractor shall provide wrapping and coating for pipes crossing the wall/floor to avoid corrosion.

- a) Foundation for fire fighting equipments.
- b) RCC work for tanks.
- c) Preparation of drainage pit with drainage line from transformer room.
- d) Modification of existing water tank available in the proposed location of water tank for installation of equipments & pump.
- e) Laying of Hume Pipes NP-2, 450mm dia. at the road crossing zone for safe laying of water pipes.

#### **FUNCTIONAL REQUIREMENT OF THE SYSTEM:**

1. There are 03 nos., 40 MVA, ONAN / ONAF Transformers installed in the premises of 132KV Control room & 06 nos, 5MVA Transformers in the same premises which need to be provided with fire fighting system. All the transformers shall be protected by individual deluge systems and shall be fed by the proposed yard hydrant system.
2. The system shall meet the supply of high velocity water spray at the rate of minimum 12.2 liters per minute per sq. mtr. (Lpm / m<sup>2</sup>) over the transformer external surface as per IS: 3034.
3. Each spray system shall consist of piping network of required nozzles/projectors which shall be connected to water supply mains through deluge valves. The nozzles shall discharge water in the form an expanding cone of evenly distributed stream, which will strike the burning surface with sufficient impact to ensure the formation of an emulsion.
4. The deluge valve shall be automatically actuated by wet pilot type detection system consisting of its piping network with heat sensing Quartzite Bulb (QB) detectors having rated temperature as 93<sup>0</sup> C. This wet pilot line shall be installed around the Transformers (to be protected) and shall be connected with the deluge through proper trimming connection which, gets charged with pressurized water from the up-stream

site. In case of fire, these QB detectors shall be fused due to heat to release water pressure on the deluge valve which in turn shall cause in auto-tripping of the deluge valve, which is normally kept closed, allowing water to flow in to the down-stream side and to get discharged from the nozzles. This will result in drop in water pressure in the system header due to operation of HVW spray system or flow of water from the nozzles, which will in turn start the diesel fire pump in the fire pump house.

5. Each individual system shall also have remote electrical and manual operation provision through a remote control panel and a solenoid valve to be connected to the wet pilot line at the deluge valve. In addition, each system shall also have the provision of mechanical manual operation at the deluge valve through manual push station/hand operated lever.

6. **CODES & STANDARDS TO BE FOLLOWED:**

The proposed system shall be designed and installed as per the Rules for Water Spray Systems set by TAC and NFPA 15/20.

**Other Code and Standard to be followed:**

- UL Listed & FM Approved Fire Pump Set.
- NFPA 20 Standard for Stationery Fire pumps.
- IS 1520/ 5120 for Horizontal Centrifugal pumps.
- ISO 2852 design for Back Pull Out pumps.
- Pump performance as per NFPA 20.
- NFPA 70 Standard for Electrical equipment for Fire Protection.
- ASTM Standard for various materials.

**MINIMUM CRITERIA TO BE TAKEN AS REFERENCE WHILE DSIGNING THE SYSTEM.**

1. **Main Fire Pumps:**

The main electric fire pump shall be FM approved & UL listed. It shall be designed to satisfy the functional requirement and standard. All safety features should be provided. Auto / manual start stop facilities should be provided.

2. **Diesel Engine:**

Diesel Standby pump set shall be FM approved & UL listed. It shall be designed to satisfy the functional requirement and standard. All safety features should be provided. Auto / manual start stop facilities should be provided.

3. **Jockey Pump:**

Electric driven jockey pump shall be CPRI approved. It shall be approved to satisfy the functional requirement.

4. **Diesel Generator Set.**

01 no.160 KVA ,3-Phase ,440 Volt DG Set for providing power supply to electric motors & other associated electrical loads in case power supply failed.

5. **Controller:**

The Fire Pump/Diesel engine / Jockey Controller panel shall be microprocessor based satisfying NFPA-20 standards with following features:

- (i) Auto/manual mode of operation.
- (ii) Local/Remote operation facility.
- (iii) Safety feature and Alarm arrangement.
- (iv) Indication arrangement.
- (v) Window type Fault annunciation panel.
- (vi) Start / stop with Interlocking arrangement.
- (vii) SMPS battery charger to charge main /standby battery trickle/ Boost mode automatically.
- (viii) RS232/RS485 Port facility.

The controller panels shall be CPRI approved.

**Auxiliary alarms:**

The following alarm facilities shall be provided in the panel

ENGINE QUIT FAULT

HIGH ENGINE OIL TEMPERATURE

PRESSURE TRANSDUCER FAULT

LOW JACKET WATER FLOW

PUMP ON DEMAND

LOW JACKET WATER LEVEL

LOW DISCHARGE PRESSURE

LOW HYDRAULIC PRESSURE

HIGH DISCHARGE PRESSURE

GAS DETECTION

REMOTE START SIGNAL

LOW FIREWATER PRESSURE

DELUGE VALVE START

AIR DAMPER CLOSED

HIGH FUEL LEVEL & AIR DAMPER OPEN

5. **DELUGE VALVE MODEL- A (CAST IRON)**

It shall be UL listed. It shall be designed to satisfy the functional requirement and standard. All safety features should be provided. Auto /manual start /stop facilities should be provided.

6. **HIGH VELOCITY WATER SPRAY NOZZLE (BRASS)**

It shall be designed to satisfy the functional requirement and standard and shall be CPRI approved.

LIST OF APPROVED VENDOR

Sl. No.	Name of equipment/ materials	Approved Vendor
1	<b>Electric Motor Driven Main Pump</b> UL listed & FM Approved shall be supplied as per the design.	Kirloskar/Grundfoss/KSB/Crompton/Cumins/Caterpillars
2	<b>Diesel engine driven standby pump</b> UL listed & FM Approved shall be supplied as per the design.	Kirloskar/Grundfoss/KSB/Crompton/Cumins/Caterpillars
3	<b>Diesel Generator Set</b> UL listed or CPRI approved or FM Approved shall be supplied as per the design.	Kirloskar / CG/Cumins/Caterpillars/Sterling Wilson
4	Controller UL listed or FM approved microprocessor based Control panel.	MetronEledyne/Atchut/Nimrti/ Tornatech or reputed make
5	Jockey Pump shall <b>be supplied as per the design.</b>	Kirloskar/Texmo/Lubi
6	Jockey Pump Controller <b>shall</b> be supplied as per the design. It shall be UL listed.	MetronEledyne/Atchut/Nimrti/ Tornatech.
7	<b>Hydrant (Landing) Valve shall be as per standard &amp; design</b>	NEW AGE/EVERSAFE/G- TECH/SHAH
8	<b>Fire delivery hose shall be as per standard</b>	EVERSAFE/GE/BRG
9	<b>Short branch pipe</b> shall be supplied as	EVERSAFE/GE/BRG



	per requirement.	
10	<b>Hose cabinet</b> shall be supplied fabricated and as per standard & design	NEW AGE/ EVERS SAFE/G-TECH/SHAH
11	<b>Sluice valve FM approved</b> as per standard & design size shall be supplied.	Kirloskar/Divine/Upadaya
12	<b>Non-return valve</b> shall be supplied as per design and standard.	Kirloskar/Divine/Upadaya
13	<b>Fire service inlet- 4 way fire service inlet</b>	SE/Newage
14	<b>Alarm Valve</b> shall be supplied as per design and standard.	HD Fire/ VIKING/ NEW AGE/ EVERS SAFE
15	<b>Sprinkler</b> shall be as per relevant standard & design	HD Fire/Viking/ Tyco
16	<b>Deluge Valve</b> with auto resetting facilities shall be supplied as per design and standard. <b>It shall be UL listed</b>	HD Fire/VIKING/ KIDDIE/TYCO
17	<b>Pressure Gauge</b> shall be supplied as per design and standard.	Indfoss/Danfoss/HD Fire
18	<b>PRESSURE SWITCH</b> shall be as per relevant standard & design.	Indfoss/Danfoss/HD Fire
19	<b>HIGH VELOCITY WATER SPRAY NOZZLE</b> shall be as per relevant standard & design	HD Fire/Viking/ Tyco
20	<b>Piping</b> The system piping shall be MS Heavy duty pipe conforming to IS 1239	Jindal/Bansal/Tata
21	<b>Y strainer</b> CI body with stainless steel mesh inside	Veeson/ Any reputed make
22	Cables shall be supplied as per requirement & standard.	Polycab/KEI / Universal / CCI / Gloster
23	Flow meter as per requirement & standard(FM approved)	Gerend Engineering/GVI

**FOR EQUIPMENTS& MATERIALS**

**Other Commercial Conditions:**

### 1) **Payment Terms:**

The payment will be made as follows:

- i) 70% of material cost will be paid on supply and delivery of materials at Paradip Port in good condition and verification & acceptance thereof by the Engineer In-charge (EIC). However, the Contractor must ensure that the materials are delivered to site in parallel with the progress of site activities and approved BAR chart otherwise the payment shall not be released.
- ii) Balance 20% of material cost and 90% of installation and commissioning charges will be paid after successful commissioning of the Automatic fixed high velocity water spray firefighting system & acceptance thereof by the Engineer-In-charge (EIC).
- iii) Balance 10% of the total contract value shall be retained by PPT towards Performance Security Deposit. The Performance Security Deposit shall be released after successful completion of the warranty period only. The Contractor may furnish a Bank Guarantee of equal value valid till one month after expiry of the warranty period in which case the balance 10% money will be released for payment.

### 2) **Security Deposit:**

A sum of 10% of accepted value of the tender shall be deposited by the successful bidder (Contractor) as Security Deposit (SD). This will be deposited initially 1% value of the contract as initial security deposit (ISD) in shape of a Bank Guarantee or Demand Draft (DD) / Banker's Cheque drawn in favour of FA&CAO, Paradip Port Trust (DD/ Banker's cheque shall be payable at Paradip) within 15 days of issue of Letter of Intent (LOI). After deducting the EMD and ISD from the stipulated security deposit, the balance amount will be recovered in instalment through deduction at the rate of 10% of the value of each running account bill subject to attaining the required amount by the last running bill. In case of exemption of EMD, the successful bidder has to deposit initially 3% of the contract value as ISD instead of 1% of contract value.

The Contractor may submit Bank Guarantee for the balance amount after deducting the EMD and ISD from the stipulated security deposit in which case there will be no deduction from the running bills towards security deposit.

EMD of the successful bidder may be refunded to the bidder after receiving an equivalent amount of Bank Guarantee only after issue of work order and signing of agreement.

The Contractor may also submit Bank Guarantee for a sum of 10% of accepted value of tender as Security Deposit (SD) within 15 days of issue of Letter of Intent (LOI) in which case (i) deposit of 1% ISD will not be required; (ii) there will be no deduction from the running bills towards security deposit; and (iii) EMD of the successful bidder will be refunded to the bidder after issue of work order and signing of agreement.

The security deposits shall be returned to the Contractor within 45 days of successful execution and acceptance of the work. The BG shall be valid till 45 days after the scheduled date of completion of the work.

### 3) **Execution Period:**

The execution period of the work shall be 240 days from the date of issue of work order.

**4) Warranty:**

The warranty period shall be valid up to 01 (One) year on the entire work inclusive of the supply items with effective from date of acceptance of the work.

- The Contractor shall warrant the Board that the goods and services under this contract will comply strictly with the contract, shall be first class in every particular case and, shall be free from defects. The Contractor shall further warrant the Board that all materials, equipment and the supplies furnished by him/her will be new and fit for their intended purposes.
- The Board shall promptly notify the Contractor in writing of any claim arising under this Warranty. Upon receipt of such notice, the Contractor shall promptly repair or replace the defective goods and/or services at no cost to the Board.
- If the Contractor, having been notified, fails to remedy the defects in accordance with the contract, the Board may proceed to take such remedial action as may be necessary, at the Contractor's risk and cost.

**5)** Any query in this regard may be raised to the following email id prior to dt.12/03/2018 to 17:00 hrs) which will be clarified by dt.15/03/2018 by uploading in the website for facilitating submission of a competitive budgetary offer.

**Note:** Budgetary offers shall be submitted to the following address (through email or by Registered Post):

Executive Engineer (Elect),  
Port Electrical Division – II,  
Paradip Port Trust.

PO:- Paradip,

Dist:-Jagatsinghpur

Odisha – 754142

Contact No. 9777-180-842

Email Id: [rnsahooeppt@gmail.com](mailto:rnsahooeppt@gmail.com)

## BILL OF QUANTITY

Name of the Work: Supply, Installation, Testing and Commissioning of Fixed High Velocity Water Spray System for Fire Protection of Power Transformers.

Sl. No.	ITEM DESCRIPTION	Unit	Qty.	Rate (in Rs.)	Amount (in Rs.)	Remarks
<b><u>SUPPLY PART (A):</u></b>						
1.0	Supply of MS pipe Heavy Grade as per IS: 3589/IS:1239 with required fittings like bends, tee, reducers, flanges and hardware etc of Forged socket welded / Threaded type as required.					
1.01	250 mm dia	Mtrs.	18			
1.02	200 mm dia	Mtrs.	24			
1.03	150 mm dia	Mtrs.	400			
2	Supply of GI pipe Heavy Grade as per IS: 1239 with required fittings like bends, tee, reducers, flanges and hardware etc of Forged socket welded / Threaded type as required. All pipes below 50 mm dia shall be threaded type only and above dia shall be fabricated by welding (Downstream Side).					
2.01	80 mm dia	Mtrs.	105			
2.02	50 mm dia	Mtrs.	360			
2.03	15 mm dia	Mtrs.	1800			
3.0	Supply of 150 mm NB Deluge Valve for vertical inlet and horizontal outlet mounting, cast iron material, Flanged end to ANSI B 16.1, Class 125, with Wet Pilot (hydraulic) actuation trim complete with test & alarm trim with water motor alarm gong, UL listed.					
3.01	150 mm dia	Nos.	9			
4.0	Supply of C.I. Sluice valves as per IS:14846 (PN 16 Rating,) and rising spindle type with flanges, bolts, nuts, washers, gaskets etc.					
4.01	250 mm dia	Nos.	14			
4.02	200 mm dia	Nos.	4			
4.03	150 mm dia	Nos.	4			
4.04	50 mm dia	Nos.	2			
5.0	Supply of Butter fly valves with nitrile rubber lining as per IS:13095 ( PN 16 Rating,) with flanges, bolts, nuts, washers, gaskets etc.					
5.01	150 mm dia	Nos.	12			

5.02	80 mm dia	Nos.	2			
6.0	Supply of C.I.flanged "Y" type Strainer with SS mesh,suitable flanges, nuts, bolts, gaskets etc. complete.					
6.01	250 mm dia	Nos.	1			
6.02	150 mm	Nos.	9			
7.0	Supply of C.I. wafer type Non-return valves PN 10 as per with required flanges, nuts, bolts and gaskets etc. complete.					
7.01	150 mm dia.	Nos.	4			
7.02	50 mm dia.	Nos.	1			
8.0	Supply of Gun metal chrome finished Ball valves with fittings of screwed end type with required fittings,siphon tubes etc all complete					
8.01	25 mm dia	Nos.	4			
8.02	15 mm dia	Nos.	18			
9.0	Supply of Brass Finish HVWS Nozzle with 90 deg spray pattern and 3/4" BSPT thread connection of K factor -32 with fittings of screwed end type.	Nos.	210			
10.0	Supply of chrome finished Quartzite bulb detector operational temperature of 93 deg and 1/2" BSPT.	Nos.	210			
11.0	Supply of Deluge valve Local control panel to be located near to the deluge valve with Auto manual actuation, push button switch.	Nos.	9			
12.0	Supply of pressure switch IPS-100 in the sprinkler line & Pump delivery line with required fittings to make the system complete.	Nos.	2			
13.0	Supply of pressure Gauge in the sprinkler line, Spray line & Pump delivery line with the required fittings to make the system complete.	Nos.	9			
14.0	Supply of solenoid valve (220V AC) to be connected with the sprinkler line for deluge operation with the required fittings to make the system complete.	Nos.	9			
15.0	Supply of 3Cx2.5 sqmm copper, PVC armored cable to Deluge valve control panel with required fittings to make the system complete.	Mtrs.	500			

16.0	Supplying of 4Cx120 sqmm Aluminium, PVC armoured power cable for power supply to motor control center.	Mtrs.	250			
17.0	Supply of 3½Cx 10 sqmm,Aluminium, PVC armoured power cable from motor control center to Jockey pump motor.	Mtrs.	100			
18.0	Supply of 3½Cx 95 sqmm,Aluminium, PVC armoured power cable from motor control center to main pump motor.	Mtrs.	100			
19.0	Supply of 2C x 1.5 sqmm stranded Copper armoured PVC cable from pressure switch main control panel with required fittings to make the system complete.	Mtrs.	500			
20.0	Supply of Required Pylon supports made from MS channel, angle, clamps, nut bolt etc complete to support the network of piping.	KGS	3000			
21.0	Supply of single headed GM hydrant valve IS 5290 with 80 mm dia flanged inlet and 63 mm dia out let with cap & chain.	Nos.	4			
22.0	Supply GM branch pipe with nozzle.	Nos.	4			
23.0	Supply of Single jacketed EPDM rubber lined Polyester Hose with GM male/female coupling).	Nos.	4			
24.0	Supply of 4 way CI body Fire inlet connection with SS coupling arranged on 150 mm pipe with wafer type NRV & butterfly valve 150 mm NB.	Nos.	4			
25.0	Supply of 20" x 24" x 10") size Ms FRP box with two front doors) external type to be mounted on stand post and shall accommodate 2 nos Fire hose and one branch pipe with nozzle.	Nos.	4			
26.0	Supply of UL listed/FM approved Water Flow meter on the delivery header.	Nos.	1			
27.0	Supply of Pressure relief valve 100 mm NB	Nos.	1			
27.1	Supply of Pressure relief valve 3/4" NB	Nos.	1			
28.0	Supply of all materials and Construction of 150000 Capacity water tank above to ground level to provide positive suction to the pumps.	Nos.	1			
29.0	Supply of all materials and Construction of over flow sump tank for transformers	Nos.	2			
30.0	Supply of all materials and Construction for PCC foundations pylon supports and pedestals for external above ground pipe laying.	CUM	6			

31.0	Supply of 1/2" Air Release Valve with upstream ball valve of 25 mm NB in the hydrant line.	Nos.	4			
32.0	<b>Pump for FHVWS :</b>					
32.01	Supply of UL LISTED/FM APPROVED horizontal split casing type electrical motor driven main fire pump of discharge capacity minimum 2280 LPM 70 Mtrs head with 2950 rpm. The motor shall be of 75 KW / 2 poles/ 415 V / 50 Hz / 3 phase supply /Continuous duty with class 'F' insulation. Totally Enclosed Fan cooled in enclosure class IP-55 (Non-FLP). The pump and motor shall be mounted on a common skid. The pump shall be capable of discharging 150% rated discharge capacity at head not less than 65% of the rated head. The pump shall be supplied with auto air release valve/ pressure gauges at delivery and compound gauge at suction side (as per NFPA-20), auto air release valve (Listed) and all accessories as per the technical specifications complete in all respect.	Nos.	1			
32.02	Supply of UL LISTED/FM APPROVED horizontal split casing typedieselengine driven back up fire pump of discharge capacity minimum 2280 LPM at 70 Mtrs head with 2100 rpm .Thediesel engine shall be 111 HP multi cylinder & heat exchanger cooling type . The pump should be capable of discharging 150% rated discharge capacity at head not less than 65% of the rated head and shall have pressure gauge on delivery side & compound gauge on suction side as per (NFPA 20) design , auto air release valve (Listed). The pump shall be supplied with its control panel 500ltrs diesel tankhaving magnetic oil level indicator, magnetic gauge, mounting stand and 2 nos of Dry batteries. The pump and engine and the pump should be mounted on a common skid and with UL/FM controller, Wiring harness for the interconnection between engine & controller & battery cables. All other accessories and fittings as per the technical specifications complete in all respect.	Nos.	1			
32.03	Supply of UL LISTED/FM APPROVED 160 kVA, 3phases, 440Volt, 50 Hz DG Set with AMF panel and all accessories.	Nos.	1			

32.04	Supply, Installation, testing and commissioning of vertical inland type multistage electrical motor driven Jockey Pump having discharge capacity 180LPM at head 70 Mtrs. The motor capacity shall be of 04 KW. The pump and motor should be supplied mounted on a common skid and with all accessories as per the technical specifications complete in all respect.	Nos.	1			
32.05	Supply of Motor Control Centre Panel suitable for above mentioned Electric Main Pump & Jockey Pump of CPRI approved or UL listed.	Set	1			
33.0	Supply of NP 2 Hume pipe 450mm dia for road crossing zone for safe laying of pipes	Mtr	40			
34.0	Supply of initial spares for the system	Lot	1			
<b>TOTAL:</b>						
<b><u>INSTALLATION, TESTING &amp; COMMISSIONING PART (B):</u></b>						
1.0	Installation, Testing and Commissioning of MS pipe Heavy Grade with painting as per IS: 1239 with required fittings like bends, tee, reducers, flanges and hardware etc of Forged socket welded / Threaded type as required.					
1.01	250 mm dia	Mtrs.	18			
1.02	200 mm dia	Mtrs.	24			
1.03	150 mm dia	Mtrs.	400			
2	Supply of GI pipe Heavy Grade as per IS: 1239 with required fittings like bends, tee, reducers, flanges and hardware etc of Forged socket welded / Threaded type as required. All pipes below 50 mm dia shall be threaded type only and above dia shall be fabricated by welding (Downstream Side).					
2.01	80 mm dia	Mtrs.	105			
2.02	50 mm dia	Mtrs.	360			
2.03	15 mm dia	Mtrs.	1800			
3.0	Supply of 150 mm NB Deluge Valve for vertical inlet and horizontal outlet mounting, cast iron material, Flanged end to ANSI B 16.1, Class 125, with Wet Pilot (hydraulic) actuation trim complete with test & alarm trim with water motor alarm gong, UL listed.					



3.01	150 mm dia	Nos.	9			
4.0	Supply of C.I.Sluice valves as per IS:14846 (PN 16 Rating,) and rising spindle type with flanges, bolts, nuts, washers, gaskets etc.					
4.01	250 mm dia	Nos.	14			
4.02	200 mm dia	Nos.	4			
4.03	150 mm dia	Nos.	4			
4.04	50 mm dia	Nos.	2			
5.0	Supply of Butter fly valves with nitrile rubber lining as per IS:13095 ( PN 16 Rating,) with flanges, bolts, nuts, washers, gaskets etc.					
5.01	150 mm dia	Nos.	12			
5.02	80 mm dia	Nos.	2			
6.0	Supply of C.I.flanged "Y" type Strainer with SS mesh,suitable flanges, nuts, bolts, gaskets etc. complete.					
6.01	250 mm dia	Nos.	1			
6.02	150 mm	Nos.	9			
7.0	Supply of C.I. wafer type Non-return valves PN 10 as per with required flanges, nuts, bolts and gaskets etc. complete.					
7.01	150 mm dia.	Nos.	4			
7.02	50 mm dia.	Nos.	1			
8.0	Supply of Gun metal chrome finished Ball valves with fittings of screwed end type with required fittings, siphon tubes etc all complete .					
8.01	25 mm dia	Nos.	4			
8.02	15 mm dia	Nos.	18			
9.0	Supply of Brass Finish HVWS Nozzle with 90 deg spray pattern and 3/4" BSPT thread connection of K factor -32 with fittings of screwed end type.	Nos.	210			
10.0	Supply of chrome finished Quartzite bulb detector operational temperature of 93 deg and 1/2" BSPT.	Nos.	210			
11.0	Supply of Deluge valve Local control panel to be located near to the deluge valve with Auto manual actuation, push button switch.	Nos.	9			
12.0	Supply of pressure switch IPS-100 in the sprinkler line & Pump delivery line with required fittings to make the system complete.	Nos.	2			

13.0	Supply of pressure Gauge in the sprinkler line, Spray line & Pump delivery line with the required fittings to make the system complete.	Nos.	9			
14.0	Supply of solenoid valve (220V AC) to be connected with the sprinkler line for deluge operation with the required fittings to make the system complete.	Nos.	9			
15.0	Supply of 3Cx2.5 sqmm copper, PVC armoured cable to Deluge valve control panel with required fittings to make the system complete.	Mtrs.	500			
16.0	Supplying of 4Cx120 sqmm Aluminium, PVC armoured power cable for power supply to motor control center	Mtrs.	250			
17.0	Supply of 3½Cx 10 sqmm, Aluminium, PVC armoured power cable from motor control center to Jockey pump motor.	Mtrs.	100			
18.0	Supply of 3½Cx 95 sqmm, Aluminium, PVC armoured power cable from motor control center to main pump motor.	Mtrs.	100			
19.0	Supply of 2C x 1.5 sqmm stranded Copper armoured PVC cable from pressure switch main control panel with required fittings to make the system complete.	Mtrs.	500			
20.0	Supply of Required Pylon supports made from MS channel, angle, clamps, nut bolt etc complete to support the network of piping.	KGS	3000			
21.0	Supply of single headed GM hydrant valve IS 5290 with 80 mm dia flanged inlet and 63 mm dia out let with cap & chain.	Nos.	4			
22.0	Supply GM branch pipe with nozzle.	Nos.	4			
23.0	Supply of Single jacketed EPDM rubber lined Polyester Hose with GM male/female coupling).	Nos.	4			
24.0	Supply of 4 way CI body Fire inlet connection with SS coupling arranged on 150 mm pipe with wafer type NRV & butterfly valve 150 mm NB.	Nos.	4			
25.0	Supply of 20" x 24" x 10") size Ms FRP box with two front doors) external type to be mounted on stand post and shall accommodate 2 nos Fire hose and one branch pipe with nozzle.	Nos.	4			
26.0	Supply of UL listed/FM approved Water Flow meter on the delivery header.	Nos.	1			

27.0	Supply of Pressure relief valve 100 mm NB	Nos.	1			
27.1	Supply of Pressure relief valve 3/4" NB	Nos.	1			
28.0	Supply of all materials and Construction of 1, 50,000 Capacity water tank above to ground level to provide positive suction to the pumps.	Nos.	1			
29.0	Supply of all materials and Construction of over flow sump tank for transformers	Nos.	2			
30.0	Supply of all materials and Construction for PCC foundations pylon supports and pedestals for external above ground pipe laying.	CUM	6			
31.0	Supply of 1/2" Air Release Valve with upstream ball valve of 25 mm NB in the hydrant line.	Nos.	4			
32.0	<b>Pump for FHVWS :</b>					
32.01	Supply of UL LISTED/FM APPROVED horizontal split casing type electrical motor driven main fire pump of discharge capacity minimum 2280 LPM 70 Mtrs head with 2950 rpm. The motor shall be of 75 KW / 2 poles/ 415 V / 50 Hz / 3 phase supply /Continuous duty with class 'F' insulation. Totally Enclosed Fan cooled in enclosure class IP-55 (Non-FLP). The pump and motor shall be mounted on a common skid. The pump shall be capable of discharging 150% rated discharge capacity at head not less than 65% of the rated head. The pump shall be supplied with auto air release valve/ pressure gauges at delivery and compound gauge at suction side (as per NFPA-20), auto air release vale (Listed) and all accessories as per the technical specifications complete in all respect.	Nos.	1			

32.02	Supply of UL LISTED/FM APPROVED horizontal split casing type diesel engine driven back up fire pump of discharge capacity minimum 2280 LPM at 70 Mtrs head with 2100 rpm The diesel engine shall be 111 HP multi cylinder & heat exchanger cooling type. The pump should be capable of discharging 150% rated discharge capacity at head not less than 65% of the rated head and shall have pressure gauge on delivery side & compound gauge on suction side as per (NFPA 20) design , auto air release valve (Listed). The pump shall be supplied with its control panel 500ltrs diesel tank having magnetic oil level indicator, magnetic gauge, mounting stand and 2 nos of Dry batteries. The pump and engine and the pump should be mounted on a common skid and with UL/FM controller, Wiring harness for the interconnection between engine & controller & battery cables. All other accessories and fittings as per the technical specifications complete in all respect.	Nos.	1			
32.03	Supply of UL LISTED/FM APPROVED 160 kVA, 3phases, 440Volt, 50 Hz DG Set with AMF panel and all accessories.	Nos.	1			
32.04	Supply, Installation, testing and commissioning of vertical inland type multistage electrical motor driven Jockey Pump having discharge capacity 180LPM at head 70 Mtrs. The motor capacity shall be of 04 KW. The pump and motor should be supplied mounted on a common skid and with all accessories as per the technical specifications complete in all respect.	Nos.	1			
32.05	Supply of Motor Control Centre Panel suitable for above mentioned Electric Main Pump & Jockey Pump of CPRI approved or UL listed.	Nos.	1			
33.0	Laying of NP 2 Hume pipe 450mm dia for road crossing zone for safe laying of pipes with excavation and refilling.	Mtr	40			

34.0	Painting of pipe lines with supply of epoxy paint & primer including labour charges.(02 coat of self-priming epoxy ,one coat of intermediate epoxy & one coat modified polyurethane of post office Colour)	Lot				
<b>TOTAL(A+B)</b>					<b>0.00</b>	

**Note: GST percentage to be mentioned extra against each item.**