

**ENQUIRY NO. CCE (R&D)/ENQ/O&M/99/2017-18**  
**OPERATION & MAINTENANCE OF INTERNAL, EXTERNAL ELECTRIFICATION,**  
**WATER SUPPLY SYSTEM, DG SET, AREA LIGHTING, AIR-CONDITIONERS,**  
**FIRE ALARM SYSTEM, LIFT AND WATER COOLERS FOR DG (AERO),**  
**CEMILAC, STIR HANGER, DEBEL COMPLEX, AT BENGALURU**

Dear Sirs,

Bid for “Operation & Maintenance of Internal, external electrification, water supply system, DG Set Area Lighting, Air-conditioners, Fire Alarm system, Lift, and water Coolers for RCMA CEMILAC, DG (Aero), STIR Hanger, DEBEL Complex, at Bengaluru” are invited by Chief Construction Engineer (R&D), DRDO, Post Box No. 1569, Akbar Road, Secunderabad–500 003. Quotations shall be submitted online at [www.eprocure.gov.in](http://www.eprocure.gov.in). In 2 bid system (Cover 1 & 2) through e-procurement. Cover -1 will be opened on 19 Mar 2018 at 1530 hrs. Cover -2 (Price bid) will be opened after evaluating Cover-1 physically and electronically and the date will be intimated subsequently through mail.

2. Cover-1 should contain copy of enlistment or prequalification documents, Cost of Tender, EMD, confirmation undertaking attached to this enquiry, Tender Cost for an amount of **Rs.500/-** drawn in favour of “Chief Construction Engineer (R&D)S, Secunderabad towards tender cost shall be uploaded online and original shall be submitted offline on or before 19 Mar 2018 at 1530 hrs.

3. The Scope of work and other terms and conditions etc., are given below:

- a) The scope of work to be performed is listed at Annexure-I & II. Inventory of installations and equipments to be operated/maintained are given at Annexure-III, essential maintenance of tools and accessories at Annexure-IV, Consumables form part of scope at Annexure-V and Manpower required at Annexure-VI enclosed. Periodical services are to be carried out by OEM/authorized reps. All break down maintenance including repair/restoration are also to be carried out under the scope as per specific provisions. Scope includes deployment of competent man power and well experienced Electrician cum Operators and having thorough knowledge about the 11 KV substations, MV DG Water supply system, Air conditioners, Fire Alarm system, Lift, internal, External Electrification and its related accessories etc.
- b) The work shall be carried out in accordance with standard engineering practices/codes, specifications and as per drawings and site instructions of the rep of Chief Construction Engineer (R&D), Secunderabad.
- c) The offer shall be valid for a period of 90 (Ninety) days from the date of opening of quotations.

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- d) The operation and maintenance work shall be carried out on all days in a week excluding Sundays & Holidays as per the shifts mentioned at Annexure- I & VI. The timings of duty mentioned are tentative only. The manpower shall be deployed as per the operational requirements and directions of Department.
- e) The operation and maintenance work will be for a period of 11 (Eleven) months. The period is tentative and is liable for increase/decrease as per requirement of the department.
- f) The rates/amount shall be written in figures and in words as applicable in V3 BOQ Format. The rates shall be quoted only in the accounting unit mentioned in this Enquiry, otherwise, the quotation will not be considered.
- g) Consumables which form part of scope to be supplied by the contractor are listed in Annexure-V. Replaceable shall be procured and replaced on prior approval. Cost of the replaceable will be paid along with the monthly maintenance bill on production of purchased bills with profit of 10% over the purchase bills. All replaceable shall be of original make or approved by CCE.
- h) The persons employed for Operation and Maintenance shall follow the discipline and security regulations of the DRDO site office since they have to work inside the Defence Area. They shall be issued with necessary Identity Cards by the employer. They shall also wear approved industrial uniform while on duty.
- j) All persons employed need Police Verification.
- k) All persons employed for the work must be insured and valid insurance policies must be made available within 30 days.
- l) All persons employed shall be paid as per minimum wages Act.
- m) The personnel employed shall be competent of operating all the required installations and equipments and must be familiar with all installations and equipments installed at site and familiar with sequence of operation.
- n) Operation and Maintenance In-charge shall liaise with the PMO CCE (R&D), Bengaluru to carry out maintenance work, for supply of every item of replaceable and obtain proper endorsement to the effect of delivery of replaceable. He shall take permission for special service work, for plant shut down.
- p) Logging of supply Voltage, Current, Power factor installations running hours with readings etc., on hourly basis and maintain the DG set Log sheets. All such records should be got checked and signed by the nominated department official periodically.

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- q) (i) Payment will be made on monthly basis on completion of operation and maintenance work every month as per Annexure-I duly certified by Users and PMO CCE(R&D) Bengaluru
- (ii) Payment will be made for each item of special service on completion of such work.
- (iii) Income Tax @ 2% will be recovered from the bills.
- (iv) Security deposit of 5% (Five percent) of the value of JWO shall be submitted in the form of BGB/FDR at the time of receipt of JWO. The BGB/FDR shall be issued by Nationalised/Scheduled Bank valid till the end of completion of O&M period. The BGB/FDR shall be in favour of CCE (R&D)S, Secunderabad and the same will be released on satisfactory completion of O&M period. The Bank Guarantee Bond/FDR shall be in favour of Chief Construction Engineer (R&D)S, Secunderabad and the same will be released on satisfactory completion of O&M period and handing over of all installations in good working condition to the Department and on issuance of No Demand Certificate by the Owner and No Claim Certificate by the Contractor.

p) **Earnest Money Deposit:**

Enquiry shall be accompanied by Earnest money as stated below :

i) **Amount of EMD** : Rs. 49000/- (Rupees Forty Nine Thousand Only)

**ii) Form of Earnest Money**

- Demand Draft / Fixed Deposit Receipt (FDR) / Bankers Cheque issued by a Scheduled Bank.
- The bank guarantee submitted as a part of Earnest Money shall be valid for a period of six (06) months or more from the date of submission of the tender.

**iii) Refund of Earnest Money**

- The earnest money given by all the tenderers except the lower tenderer shall be refunded immediately after the opening of the tenders, or latest within a week from the date of receipt of tenders

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**q) Forfeiture of Earnest Money**

- If the tenderer withdraws his tender before the expiry of the validity period, or before the issue of letter of acceptance, whichever is earlier, or makes any modification in the terms and conditions of the tender which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the earnest money absolutely. This provision would naturally apply only to the lowest tenderer once the earnest money of all the tenderers except those of the lowest is refunded.
- If contractor fails to furnish the prescribed performance guarantee within the prescribed period, the earnest money is absolutely forfeited to the President automatically without any notice.
- In case the contractor fails to commence the work specified in the tender documents on the 15<sup>th</sup> day of such time period as mentioned in letter of award, after the date on which the engineer-in-charge issues written orders to commence the work, or from the date of handing over of the site, whichever is later, the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit whole of the earnest money absolutely.
- If only a part of the work as shown in the tender is awarded, and the contractor does not commence the work, the amount of the earnest money to be forfeited to the Government should be worked out with reference to the estimated cost of the work so awarded.
- in case of forfeiture of earnest money as prescribed above paras, the tenderer shall not be allowed to participate in the retendering process of the work.

**4. OFFICIALSECRETS ACT**

Disclosure of restricted information by the contractors/ sub-contractors, consultants, Advisors of employees of contractors will Invite penal consequences under officials secret Act-Section-5, 1923, if they are found for revealing official section.

Yours faithfully,

Sd/-  
(HEM RAJ SHARMA)  
Scientist 'D'  
for CHIEF CONSTRUCTION ENGINEER (R&D)S

Encl : Annexure-I to VI

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**SCOPE OF WORK**

The scope of work includes Operation & Maintenance of Electrical installations substations, internal, external electrifications MV panels, DG Set, internal, external Water supply system, Air conditioners, Fire Alarm system Earth pits, Lift, water coolers and its related accessories etc. on all days excluding Sundays & Holidays. The scope also includes the following:

- a) Positioning of Trained/Experienced Man power and well experienced Electricians/Operators and having through knowledge about the 11 KV Substation MV panels DG Set Water supply system, Air conditioners, Fire Alarm system Earth pits, lift and its related accessories etc
- b) The individual shall have knowledge and capable to handle the Essential Tools & Plants including safety items like hand gloves, earth electrodes portable instrumentation etc.,
- c) Cleaning material like with cotton waste, periodic Grease, shall be carried out.
- d) Supervisory checks by senior level Engineer during service works.
- e) Engage Service Engineer/Mechanics of principal manufacturers for service work.
- f) Organise and carryout periodical services for panels DG Set Air conditioners etc and maintain records.
- g) Maintain record of consumables/replaceable and indent for quarterly supply of replaceable.
- h) Daily clean installations/plant rooms.
- i) Log operating data on printed proforma – Hourly readings should be available. Also record abnormality / fault alarm, if any and Log Books for DG Sets lift etc.
- j) Clean all internally accessible parts of panels by vacuum cleaner at least once in a month.
- k) Check and reset all relays.
- l) Check water/Oil/Acid/Diesel/Battery voltage/Earth pits daily.

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- m) Check/clean/replace fuses and lamps whenever required.
- n) Check and clean the entire out door installations, switch boards etc., to be free from dust and moisture.
- o) Check earth resistance of pits and ensure correct values periodically (say once in a month).
- p) Keep recording the energy consumption.
- q) Fuse blown out at LT panel may be attended by providing suitable fuse.
- r) Attend breakdowns provide maintenance as may be required.
- s) Log books shall be maintained for receipts/issue of items supplied.
- t) Check and adjust clearance, tightening of rubber hoses, bolts nuts alignment etc.,
- u) Liasen with department and co-ordination with other agencies.

**PREVENTIVE MAINTENANCE OF LIFT (OTIS ELEVATOR MAKE):**

- 1. Checking and servicing of Lift once in a 03 month as OEM Recommendation..
- 2. Quaterly servicing consist of :
  - a) Cleaning of Worms, brake magnet, coils, brake, shoes, bushes, rotating elements, contacts, coil resistances, hoisting motor and other mechanical parts or any other Abnormal noise and wear & tears of the components of entire system.
  - b) Greasing for ropes.
  - c) Checking for any other ítems as recommended by original manufacturer of the equipment .
- 3. **BREAK DOWN MAINTENANCE** : (Any number of visits as per requirment).

Sd/-  
(HEM RAJ SHARMA)  
Scientist 'D'  
for CHIEF CONSTRUCTION ENGINEER (R&D)S

**ENQUIRY NO. CCE (R&D)/ENQ/O&M/99 /2017-18****LIST OF INSTALLATIONS AND EQUIPMENTS AT DG (AERO) BENGALURU**

Sl. No.	Description	Unit	Qty
	<b><u>INTERNAL ELECTRIFICATION</u></b>		
I	Point wiring,Lgihitng fixtures, Ceilings Fans, Exhaust fans, sockets & DBs	Lot	1
2	Power Wiring	Lot	1
3	Shop Electricals	Lot	1
4	UPS wiring	Lot	1
5	Telephone wiring/LAN Concocting	Lot	1
6	Maintenance free Earth stations	Lot	1
A	<b><u>EXTERNAL POWER SUPPLY</u></b>		
1	Extension Panel with 400A, 50 KA TPN MCCB with Resin cast CTs Operated Ammeter	No	1
2	Building Panel	No	1
	Incoming: 1 &2: 400A, 50 KA TPMCCB with 160A, 3 Pole neutral Contactor and ELR with CBCT- 2Sets		
	Electrical Mechanical Interlocking for both incomers		
	Bus Bars: 400A TP with 100% neutral aluminum bas bar		
	Outgoing: 160A 25 KA TP MCCB with neutral link – 2 sets		
	125KA TP MCCB with neutral link- 1 set		
	100 A 25 KA MCCB with neutral link- 3 sets		
	46/63A 25 KA TP MCCB with neutral link-4 sets		
	63A 5KA FP MCCB with TVSS – 1 set		
	32 A10KA TP MCCB with neutral link -12 sets		
	40A 10KA TP MCB with neutral link – 10 sets		
	63A 10 KA TP MCB with neutral link -15 sets		
	20A 10 KA TP MCB with neutral link – 2 sets		
	20A 10 KA DP MCB – 3 sets		
3	3.5C x 240 Sqmm XLPE insulated armoured Aluminum cable including end terminations.	Lot	1
4	4 C X16 Sqmm XLPE armoured Aluminum cable including end terminations	Lot	1
5	4 C X 6 Sqmm armoured cable including end terminations	Lot	1

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<b>B</b>	<b><u>EXTERNAL POWER SUPPLY</u></b>			
1	Sub-station Extension Panel with 250A TP MCCB with neutral Link, Digital Voltmeter -01, Digital Ammeter - 01 with all accessories	No	1	
2	Building Main Panel Incoming: 250A, TP MCCB with Neutral link Outgoing: 125A TP MCCB with neutral link-02 Nos 63A/40A 4P MCBs-09 Nos Digital voltmeter – 01 Digital Multi data meter -01 with all accessories	No	1	
3	Capacitor bank with all accessories	Set	1	
4	3.5C x 95 Sqmm XLPE Insulated armored Aluminum Cable including end terminations	Lot	1	
5	GI Earth stations with GI strips	Nos	4	
6	4.5 Kgs capacity CO2 fire Extinguishers	Nos	4	
	<b><u>DG SET</u></b>			
1	250 KVA DG Set of 415V, 3 phase 50 HZ wire radiator cooled with acoustic enclosure with Electrical Control Panel, 2Nos 12 V batteries, instrument panel with RPM indicator, Exhaust silencer (Residential), inbuilt fuel tank, MS exhaust pipe, with 500 thick glass wool insulation and 24 gauge aluminum cladding			
2	3.5C x 120 Sqmm Aluminum XLPE cable			
3	4 C x 2.5 Sqmm 1.1 KV grade PVC insulated armoured aluminum cable including end terminations			
4	Maintenance free earth stations			
	<b><u>ARE ALIGHTING</u></b>			
1	70W HPSV Post top lantern with 3.0 mtr GI pole with FRP Junction box consisting 6A MCCB	Nos	9	
2	4C x 6 Sqmm XLPE insulated armoured Aluminum Cable	Lot	1	
3	Spiral coil Earthing with 8 SWG GI Wire	Nos	9	
4	45 W LED Lamp Post top lantern over 3.0 mtr pole with FRP terminal box and MCB control	Nos	17	1
5	9W LED Bollard light fixture	Nos	6	2
6	150 W LED flood light fixtures	Nos	6	3
7	4C x 6 Sqmm armoured aluminum XLPE cable	Nos	1	4



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	<b><u>EXTERNAL WATER SUPPLY</u></b>			
1	50mm dia class B GI pipe line	Lot	1	
2	40mm dia class B GI pipe line	Lot	1	
3	32 mm dia class B GI pipe line	Lot	1	
4	32 mm dia Gun metal non return valves	Nos	3	
5	32 mm dia CI valves	Nos	1	
6	50 mm dia GM gate valves	Nos	2	
7	40 mm dia GM gate valve	Nos	1	
8	CI water consumption meter	Nos	1	
9	3 Phase Monobloc pump with DOL starter	No	1	
10	32 mm dia GM gate valves	Nos	06	
11	50 mm dia GM gate valves	Nos	05	
12	80 mm dia GM gate valves	Nos	01	
13	Open Well type monoblock type submersible pumps	Nos	02	
14	DOL starter panel for above pumps	Nos	01	
15	32mm dia medium grade GI pipe line	Lot	01	
16	50mm dia medium grade GI pipe line	Lot	01	
17	80mm dia medium grade GI pipe line	Lot	01	

**INTERNAL WATER SUPPLY**

Sl. No.	Description	Unit	Qty	
1	GI Pipes			
	a) 15mm dia	Lot	01	
	b) 20mm dia	Lot	01	
	c) 25mm dia	Lot	01	
	d) 32mm dia	Lot	01	
2	Gun Metal Gate valves			
	a) 25mm dia	Nos	01	
	b) 32mm dia	Nos	01	
3	1000 Ltrs Capacity HDPE tank	Each	12	
4	CPVC Pipes with Valves of following dia			
	a) 25 mm dia	Lot	1	
	b) 32mm dia	Lot	1	
	c) 40 mm dia	Lot	1	
5	Polyethylene Sintex water tankS	Job	1	

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**AIR-CONDITIONERS**

Sl. No.	Description	Unit	Qty	Remarks
1	1.5 TR Inverter type Split Air-conditioners	Nos	11	
2	2.0 TR Inverter type Split Air-conditioners	Nos	14	
3	2.0 TR Inverter type cassette Air-conditioners	Nos	8	
4	3.0 TR Inverter type cassette Air-conditioners	Nos	11	
5	Copper piping with insulation of following:-			
	a) 1/2" Dia	Lot	01	
	b) 1/4" Dia	Lot	01	
	c) 3/4"Dia	Lot	01	
	d) 5/8"Dia	Lot	01	
6	Armoured copper cable of following size			
	a) 3C x 2.5 Sqmm	Lot	01	
	b) 4C x 2.5 Sqmm	Lot	01	
7	2.0 TR High wall mount type Split Air-conditioners with 5.0 KVA stabilizer	Nos	07	
8	1.5 TR High wall mount type Split Air-conditioners with 4.0 KVA stabilizer	Nos	02	
9	Copper piping with insulation of following dia:			
	a) 3/8" dia	Lot	1	
	b) 3/4" dia	Lot	1	
	c) 1/4" dia	Lot	1	
10	Unarmoured copper power cable following size			
	a) 3C x 2.5 Sqmm	Lot	1	
	b) 3C x 1.5 Sqmm	Lot	1	
11	25mm dia Drain piping	Lot	1	

**LIFT**

Sl. No.	Description	Unit	Qty	Remarks
1	Lift of 680 Kg capacity with automatic Rescue Device system	Set	01	

**WATER COOLERS**

Sl. No.	Description	Unit	Qty	Remarks
1	Portable type Hot & Cold water unit with pre-filter inbuilt RO water purifier of Make: LG and model No.WHD 714 B 4RP	Set	04	
2	WATER COOLER OF STORAGE TANK CAPACITY 40 LITERS INLCUIDNG MULTISTAGE RO PURIFIER WITH 2.0 KVA VOLTAGE STABILIZER	Nos	01	

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**FIRE ALARM SYSTEM**

Sl. No.	Description	Unit	Qty	Remarks
1	Microprocessor type single Loop fire alarm control panel	Nos	01	
2	2C X 1.5 Sqmm FRLS insulated shielded copper conductor cable	Lot	01	
3	3C X 1.5 Sqmm FRLS insulated shielded copper conductor cable	Lot	01	
4	Addressable analogue type loop sounders	Nos	06	
5	Addressable analogue type manual Call points	Nos	08	
6	Weather proof addressable analogue type manual call points	Nos	03	
7	Fault isolators module	Nos	02	
8	3.15 Km Range with weather proof motor with control	Nos	01	

**LIST OF INSTALLATIONS AND EQUIPMENTS AT CEMILAC (ENGINE) DIVISION**  
**BENGALURU**

Sl. No.	Description	Unit	Qty	Reamrks
	<b><u>INTERNAL ELECTRIFICATION</u></b>			
I	Point wiring,Lgihitng fixtures, Ceilings Fans, Exhaust fans & sockets	Lot	1	
2	Power Wiring	Lot	1	
3	UPS wiring	Lot	1	
4	Telephone wiring/LAN Concocting	Lot	1	
	<b><u>EXTERNAL POWER SUPPLY</u></b>			
1	Sub-station Extension Panel with 250A TP MCCB with neutral Link, Digital Voltmeter -01, Digital Ammeter - 01 with all accessories	No	1	
2	Building Main Panel Incoming: 250A, TP MCCB with Neutral link Outgoing: 125A TP MCCB with neutral link-02 Nos 63A/40A 4P MCBs-09 Nos Digital voltmeter – 01 Digital Multi data meter -01 with all accessories	No	1	
3	Capacitor bank with all acessories	Set	1	
4	3.5C x 95 Sqmm XLPE Insulated armored Aluminum Cable including end terminations	Lot	1	
5	GI Earth stations with GI strips	Nos	4	
6	4.5 Kgs capacity CO2 fire Extinguishers	Nos	4	
	<b><u>ARE ALIGHTING</u></b>			
1	70W HPSV Post top lantern with 3.0 mtr GI pole with FRP Junction box consisting 6A MCCB	Nos	9	
2	4C x 6 Sqmm XLPE insulated armoured Aluminum Cable	Lot	1	
3	Spiral coil Earthing with 8 SWG GI Wire	Nos	9	

	<b><u>EXTERNAL WATER SUPPLY</u></b>			
1	50mm dia class B GI pipe line	Lot	1	
2	40mm dia class B GI pipe line	Lot	1	
3	32 mm dia class B GI pipe line	Lot	1	
4	32 mm dia Gun metal non return valves	Nos	3	
5	32 mm dia CI valves	Nos	1	
6	50 mm dia GM gate valves	Nos	2	
7	40 mm dia GM gate valve	Nos	1	
8	CI water consumption meter	Nos	1	
9	3 Phase Monobloc pump with DOL starter	No	1	

### **INTERNAL WATER SUPPLY**

Sl. No.	Description	Unit	Qty	Remarks
1	CPVC Pipes with Valves of following dia			
	d) 25 mm dia	Lot	1	
	e) 32mm dia	Lot	1	
	f) 40 mm dia	Lot	1	
2	Polyethylene Sintex water tankS	Job	1	

### **AIR-CONDITIONERS**

Sl. No.	Description	Unit	Qty	Remarks
1	2.0 TR High wall mount type Split Air-conditioners with 5.0 KVA stabilizer	Nos	07	
2	1.5 TR High wall mount type Split Air-conditioners with 4.0 KVA stabilizer	Nos	02	
3	Copper piping with insulation of following dia:			
	d) 3/8" dia	Lot	1	
	e) 3/4" dia	Lot	1	
	f) 1/4" dia	Lot	1	
4	Unarmoured copper power cable following size			
	c) 3C x 2.5 Sqmm	Lot	1	
	d) 3C x 1.5 Sqmm	Lot	1	
5	25mm dia Drain piping	Lot	1	

### **WATER COOLER**

Sl. No.	Description	Unit	Qty	Reamrks
1	WATER COOLER OF STORAGE TANK CAPACITY 40 LITERS INLCUIDNG MULTISTAGE RO PURIFIER WITH 2.0 KVA VOLTAGE STABILIZER	Nos	01	

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**LIST OF INSTALLATIONS AND EQUIPMENTS AT STIR COMPLEX BENGALURU**

Sl. No.	Description	Unit	Qty	Remarks
	<b><u>INTERNAL ELECTRIFICATION</u></b>			
1	Point wiring, Light fixtures, Ceiling fans, exhaust fans, sockets and DBs			
2	Power Wiring, Sockets and DBs			
3	UPS wiring, Sockets and DBs			
4	Telephone wiring/LAN Conducting an wiring			
	<b><u>EXTERNAL POWER SUPPLY</u></b>			
1	Building Main Panel Incoming: 125A,25KA TPMCCB With neutral link Outgoing: 40A, 16KA, TP MCCB with neutral link- 9 Sets 63A, 16KA, TP MCCB with neutral link- 5 Sets 63A, 25KA, FP MCCB with TVSS - 1 set Digital Voltmeter – 01 Digital Ammeter- 01	No	1	
2	3.5C x 70 Sqmm XLPE insulated armored Aluminium Cable including end terminations	Lot	1	
3	4C x 10 Sqmm Sqmm XLPE insulated armoured Aluminium Cable including end terminations			
	<b><u>EARTH STATIONS</u></b>			
1	Maintenance free earth stations with strips	Nos	2	
	<b><u>ARE ALIGHTING</u></b>			
1	70W HPSV Post top lantern with 3.0 mtr GI pole with FRP Junction box consisting 6A MCCB	Nos	4	
2	2C x 6 Sqmm Sqmm XLPE insulated armoured Aluminium Cable including end terminations	Lot	1	
3	Spiral Coil earthing with 8 SWG GI Wire	Nos	4	
	<b><u>INTERNAL WATER SUPPLY</u></b>			
1	PN-16 pipe of 20mm OD	Lot	1	
2	32mm dia heavy duty screw down Gun Metal valves	Nos	3	
3	1000 Ltrs capacity polyethylene sintex water tank	Nos	1	
	<b><u>EXTERNAL WATER SUPPLY</u></b>			
1	Medium grade GI pipes			
	a) 50mm dia	Lot	1	
	b) 32mm dia	Lot	1	
2	32NB Cast Iron Butter fly valve	Nos	2	
	<b><u>AIR CONDITIONERS</u></b>			

1	2.0 TR High wall mount type Split Air Conditioners with 5.0 KVA stablizer	Nos	4	
2	Copper piping with insulation of following dias:-			
	a) 5/8" Dia	Lot	1	
	b) 3/8" Dia	Lot	1	
3	Unarmoured copper power cable of following size			
	a) 3C x 2.5 Sqmm	Lot	1	
	b) 3C x 1.5 Sqmm	Lot	1	
4	25mm dia Drain piping	Lot	1	

### **LIST OF INSTALLATIONS AND EQUIPMENTS AT DEBEL BENGALURU**

Sl. No.	Description	Unit	Qty	Remarks
	<b><u>INTERNAL ELECTRIFICATION</u></b>			
1	Point wiring, Light fixtures, Ceiling fans, exhaust fans, sockets and DBs	Lot	1	
2	Power Wiring, Sockets and DBs	Lot	1	
3	UPS Wiring, Sockets and DBs	Lot	1	
4	Telephone Wiring/LAN Conduiting and wiring	Lot	1	
	<b><u>EXTERNAL POWER SUPPLY</u></b>			
1	Buiding Main Panel Incoming : 200A, 35 KA, TP MCCB with neutral link Outgoing: 63A, 10 KA TP MCB - 06 Nos 40A , 10 KA TPN MCBs - 08 Nos Digital Voltmeter - 01 Digital Multi data meter - 01	No	1	
2	3.5C x 120 Sqmm XLPE insulated armoured Aluminium Cable including end terminations	Lot	1	
3	Earth stations with GI/Copper strips	Nos	2	
	<b><u>EXTERNAL WATER SUPPLY</u></b>			
1	40mm dia class B GI pipe line	Lot	1	
2	32mm dia class B GI pipe line	Lot	1	
3	40mm dia heavy duty screw down Gun Metal valves	Lot	1	
4	32mm dia heavy duty screw down Gun Metal valves	Lot	1	
	<b><u>INTERNAL WATER SUPPLY</u></b>			
1	GI pipes a) 15mm dia b) 20mm dia c) 25mm dia	Lot Lot Lot	1 1 1	
2	25mm dia heavy duty screw down Gun Metal valves	Nos	2	
3	1000 Ltrs capacity PVC sintex water tank	Nos	1	
	<b><u>AIR-CONDITIONERS</u></b>			

1	2.0 TR High wall mount type Split Air Conditioners with 5.0 KVA stabilizer	Nos	5	
2	Copper piping with insulation of following dias:- a) 3/8" Dia b) 3/4" Dia c) 1/4" Dia	Lot Lot Lot	1 1 1	
3	Unarmoured copper power cable of following size			
	a) 3C x 2.5 Sqmm	Lot	1	
	b) 3C x 1.5 Sqmm	Lot	1	
4	25mm dia Drain piping	Lot	1	
	<b><u>WATER COOLER</u></b>			
1	Water cooler of storage tank capacity 80 Ltrs including multistage RO purifier with 2.0 KVA voltage stabilizer	Nos	3	

Sd/-  
(HEM RAJ SHARMA)  
Scientist 'D'  
for CHIEF CONSTRUCTION ENGINEER (R&D)S

**ANNEXURE – IV**

**ENQUIRY NO. CCE (R&D)/ENQ/O&M/ 99 /2017-18**

**ESSENTIAL MAINTENANCE TOOLS AND ACCESSORIES**  
**TO BE MAINTAINED BY THE CONTRACTOR**

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(i)	Earth Megger	-	1 No.
(ii)	Multimeter	-	1 No.
(iii)	Tongue Tester	-	1 No.
(iv)	Electrician Tool kit	-	2 Sets
(v)	All special spanners	-	1 Set
(vi)	Screw drivers	-	1 Set
(vii)	Allen keys.	-	1 Set
(viii)	HT & MV insulation resistance- Megger		1 Set (each)
(ix)	Pipe Wrench	-	1 Set

**Apart from the above the necessary tools may kept for smooth maintenance.**

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**ANNEXURE – V**

**ENQUIRY NO. CCE (R&D)/ENQ/O&M/ 99 /2017-18**

**CONSUMABLES**

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Consumables to be supplied by the Contractor.

- (i) Carbon tetra chloride (CTC) solution
- (ii) Cotton Waste
- (iii) Emery paper
- (iv) Wire brush
- (v) Insulation tape
- (vi) Acid & distilled water for battery
- (vii) Grease

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**ANNEXURE – VI**

**ENQUIRY NO. CCE (R&D)/ENQ/O&M/99/2017-18**

**SCHEDULE OF MANPOWER**

Sl.No.	Designation	Gen Shift
1	Skilled Technician/Electrical/Lineman	04
2	Helper	04

Skilled Technician - 04      General Shifts :      09:00 AM to 06:00 PM  
Helpers - 04

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