

## विषय सूची (INDEX)

कार्य का नाम :- **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.**

**NIT No.:- 56/EE(E)/DED-301/2026-27 Recall**

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प्रमाणित किया जाता है कि इस निविदा में कुल 1 से 50 पृष्ठ हैं। (इस पृष्ठ सहित)

**Certified that this N.I.T. contains 1 to 50 pages (including this page)**

**“NIT approved for Rs. 7,57,440/-”**

**Executive Engineer (E)  
DED-301, CPWD,  
(Formerly known as ED-IX),  
R K Puram New Delhi-66**

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

**टैन्डर नोटिस**  
**के०लो०नि०वि०,**  
**ई-निविदा आमन्त्रण सूचना**

भारत के राष्ट्रपति की ओर से कार्यपालक अभियन्ता (वै०), दिल्ली विद्युत मंडल-301, के.लो.नि.वि., ईस्ट ब्लॉक-3, तल-6, आर.के.पुरम्, नई दिल्ली-110066, दूरभाष:-26191980, फैक्स नं०-26100054 निम्नलिखित कार्य के लिए के.लो.नि.वि. में उचित श्रेणी में **Buildings & Roads (Erstwhile Composite/Building/Infrastructure)** में पंजीकृत उपयुक्त पात्र ठेकेदारों से प्रतिशत दर ई-निविदा आवेदन पुन आमंत्रित की जाती है।

नि.आ.सं. **56 / का.अभि(वै) / दि.वै.म.-301 / 2026-27 Recall**, कार्य का नाम:- **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.** अनुमानित लागत रुपये **7,57,440/-**, धरोहर राशि:- **15,149/-** एवं अनुमत्य समय: **3 माह** ऑनलाइन निविदा डालने की अंतिम तिथि व समय: **20-08-2026** को अपराहन **15:00** बजे तक बीड खोलने की तिथि: **20-08-2026 15:30** बजे तक।

इस निविदा सूचना की विस्तृत जानकारी को वेबसाइट [www.etender.cpwd.gov.in](http://www.etender.cpwd.gov.in) से प्राप्त किया जा सकता है। प्रैस नोटिस सूचना को वेबसाइट [www.cpwd.gov.in](http://www.cpwd.gov.in) पर भी उपलब्ध है।

**TENDER NOTICE**

**CPWD**  
**NOTICE INVITING E-TENDERS**

The Executive Engineer (E), DELHI ELECTRICAL DIVISION-301, CPWD, East Block-III, Level-VI, R.K. Puram, New Delhi-110066, 011-26191980, Fax No:- 26100054 on behalf of President of India re-invites Online percentage rate e-tender in single bid system from Registered contractor in CPWD in appropriate class of Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category for the following work:

**NIT No. 56/EE(E)/DED-301/2026-27 Recall, Name of work:- SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi. Estimated Cost Rs. 7,57,440/-, Earnest Money:- 15,149/- and Period of Completion: 3 Months, Last Date and Time of Submission of Tender Online 20-08-2026 15:00 hrs. Date of opening of bid: 20-08-2026 15:30 hrs.**

The bid forms and other details can be obtained from the website [www.etender.cpwd.gov.in](http://www.etender.cpwd.gov.in). The press notice is also available on [www.cpwd.gov.in](http://www.cpwd.gov.in)

**Assistant Engineer (E) (P)**  
**DED-301, CPWD,**  
**(Formerly known as ED-IX),**  
**R K Puram New Delhi-66**

**Executive Engineer (E)**  
**DED-301, CPWD,**  
**(Formerly known as ED-IX),**  
**R K Puram New Delhi-66**

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

## **INFORMATION AND INSTRUCTIONS FOR CONTRACTORS FOR e-TENDERING**

The Executive Engineer (E), DED-301 (Formerly known as ED-IX, CPWD, R K Puram New Delhi. (Phone 011-26191980 e-mail: deleed9.cpwd@nic.in), re-invites on behalf of President of India, online percentage rate e-tender in single bid system from **Registered contractor in CPWD in appropriate class of Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category** for the following work:-

|                                                                                       |                                                                                                    |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| NIT No.                                                                               | 56/ EE (E) / DED – 301 / 2026 - 27 <b>Recall</b>                                                   |
| Name of work & location                                                               | <b>SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.</b> |
| Estimated cost put to tender                                                          | Rs. 7,57,440/-                                                                                     |
| Earnest Money                                                                         | Rs. 15,149/-                                                                                       |
| Period of Completion                                                                  | 3 Months                                                                                           |
| Last date & time of submission of bids, EMD & other documents as specified in the NIT | Upto 15:00 hrs. on <b>20-08-2026</b>                                                               |
| Time & date of opening of bid                                                         | 15:30 hrs. on <b>20-08-2026</b>                                                                    |

**\*\*To be filled up by EE(E)**

1. The eligibility criteria for **specialized agency** to be associated by the **Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category** will be as detailed below:

**A) SITC of DG Set :**

Experience of having successfully completed similar works during last seven years ending Last day of month previous to the one in which tender are invited.

- (i) Three similar works each of financial value not less than Rs. **3,02,976/-** (40% of the estimated cost of Rs. **7,57,440/-**) with minimum 50 KVA DG Set Capacity.  
OR
- (ii) Two similar works each of financial value not less than Rs. **4,54,464/-** (60% of the estimated cost of Rs. **7,57,440/-**) with minimum 50 KVA DG Set Capacity.  
OR
- (iii) One similar works each of financial value not less than Rs. **6,05,952/-** (80% of the estimated cost of Rs. **7,57,440/-**) with minimum 50 KVA DG Set Capacity.

Similar work shall mean works of “**SITC of DG Set**”

**Note:-** The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum calculated from the date of completion to previous date of Last day of submission of tender.

2. The **Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category** contractor will have to associate the specialized agency, fulfilling the condition 1 A) for execution of the **SITC of DG Set** work in case not having the experience. The **Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category** contractor is eligible

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

**to carry out himself/ herself any or all of this works without associating any specialized agency provided :**

- (a) He **fulfills** the prescribed eligibility criteria respectively for these work(s)

**OR**

- (b) He directly procures the equipment of approved make from manufacturer and gets it installed from authorized agency / service provider of the manufacturer or specialized agency as per criteria mentioned in NIT.
3. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
  4. Information and Instructions for bidders posted on website shall form part of bid document.
  5. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website [www.etender.cpwd.gov.in/](http://www.etender.cpwd.gov.in/) CPWD or [www.cpwd.gov.in](http://www.cpwd.gov.in).
  6. **But the bid can only be submitted after deposition of original EMD either in the office of of Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi inviting bid or Division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned document such as Insurance surety Bonds, Account Payee Demand Draft or Bankers Cheque or Fixed Deposit Receipt or / and Bank guarantee (A part of earnest money is acceptable in the form of bank guarantee also. In such case, 50% of earnest money or Rs. 20 lakh, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee) from any of the Commerical Banks towards EMD in favour of Executive Engineer (E), ED-IX, CPWD, New Delhi, receipt for deposition of original EMD to Division office of any Executive Engineer, CPWD including NIT Issuing EE / AE, CPWD and other document as specified.**
  7. Those contractors not registered on the website mentioned above, are required to get registered before and. If needed they can be imparted training on online bidding process as per details available on the website.
  8. The intending bidder must have valid class- III digital signature to submit the bid.
  9. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
  10. Contractor can upload documents in the form of JPG format and PDF format.
  11. Contractor must ensure to quote percentage rate of works component as given in template. The column meant for quoting percentage rate in figures appears in pink colour and the moment rate is entered, it turns sky blue.
  12. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO). However, if tenderer does not quote any percentage above or below on the total amount of the tender or any section / sub head in percentage tender, the tender shall be treated as invalid and not consider lowest tender.
  13. The department reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion.
  14. **The lowest tenderer has to submit alongwith the performance guarantee after acceptance of tender an undertaking from the OEM regarding**

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

- a. Written commitment from OEM /OEA to supply the DG Sets and delivery schedule as per requirement of department.
- b. Certificate from OEM/OEA or authorized service provider of engine manufacturer for satisfactory installation and commissioning of DG Set after completion of the work
- c. Required Guarantee of DG Set from OEM/OEA in favour of Engineer-in-charge to cover defect liabilities.
- d. An undertaking that mandatory free service shall be carried out during the guarantee period by the authorized service provider of engine manufacturer.

**List of Documents to be scanned and uploaded within the period of bid submission:**

1. Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee from any of the Commercial Banks against EMD in favour of Executive Engineer (E), ED-IX, CPWD, New Delhi.
2. Copy of receipt for deposition of original EMD issued from Division office of any Executive Engineer, CPWD (In Enclosed Performa)

**Note :- EMD is required to deposit in the office of Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi who is inviting bid or Division office of any Executive Engineer, CPWD within the period of bid submission as per CPWD Works Manual-2022 and associated SOP Provision 5/1 (Para-6)/CPWD OM No. DG/SOP/37 dated 04-05-2022). If the EMD is deposited in Sub Division office then it shall not be considered and tender shall be rejected.)**

3. Copy of Certificate of Registration in GST & acknowledgment of upto date filed return of GST. If the bidder has not obtained GST registration as applicable, then he shall scan and upload following undertaking along with bid documents."If work is awarded to me, I/we shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any Payment by CPWD, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CPWD or GST department in this regard".
4. Enlistment Order of the Contractor of the Buildings & Roads (erstwhile Composite / Building /Infrastructure) Category in CPWD.
5. If the Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category contractor doesn't have work experience as per NIT then the said Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category contractor shall upload **An undertaking that if "I/We shall become the lowest tenderer then I/We shall submit the documents of Associated specialized Agencies for specialized E & M Services as per the eligibility criteria mentioned in the "SPECIAL CONDITIONS FOR ASSOCIATION OF SPECIALIZED AGENCIES FOR SPECIALIZED E & M WORK" after acceptance of tender alongwith Performance Guarantee otherwise department shall forfeit the deposited EMD absolutely & shall reject my/our tender and debar me/us from re-tendering for this work" (Undertaking Form Enclosed Pg. 09)**

(It should be noted that only the associated agencies engaged by the contractor for specialized services shall disburse the payment of salaries, EPFO, ESIC and other relevant documents of the workers deployed by it and only the documents submitted by the associated agencies for payment of salary and ESIC & EPFO shall be accepted. The main contractor shall in no way be concerned with the payment and other remuneration of the workers of the specialized/Associated agencies.)

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

Note:- If any agency submits completion certificates instead of above undertaking of as per “special conditions of NIT for association of specialized agencies” then completion certificate should contain clear amount in the completion certificate of E&M Services, otherwise tender shall not be entertained and rejected. Hence it is advised to upload the undertaking as required above to avoid any rejection/ dispute.

6. Self attested copies of completion certificate/ Work experience i.e. **“SITC of DG Set”**
- i) Completion certificate should be issued by the not below the rank of Executive Engineer or authorized signatory of the department, will have to be scanned and uploaded. Incomplete certificate shall be summarily rejected. The completion certificate must clearly indicate the following. (Originals shall also be produced for verification if required)
- a) The date of completion of work.
  - b) Nature and value of the work.
  - c) That the work has been completed satisfactorily.
  - d) Actual work done amount of completion certificate of each specialized component separately i.e for **“SITC of DG Set”**

**Note :** If there are more than one specialized E&M Services in the uploaded completion certificate the amount of” **SITC of DG Set”** should be clearly mentioned in the uploaded completion certificate or any supporting document regarding to find out **“SITC of DG Set”** amount should be uploaded, Otherwise eligibility bid shall be rejected.

7. **ERP training Certificate. (Note: The enlisted contractor will not be allowed to participate in the tendering process without uploading the certificate of ERP training w.e.f. 01.07.2024.)**
8. Valid Electrical Contractor License or undertaking that they will either obtain valid electrical license at the time of execution of electrical work or associate the contractor having valid electrical license of appropriate class. **(Form enclosed for associating contractor)**  
**(Undertaking Form Enclosed Pg. 08)**
9. Email & mobile no. of the firm/ agency on the letter head of firm/ agency (For making correspondence)

Note:- The Lowest Bidder is required to produce original document on or before or at the time of submission of Performance guarantee Money which are uploaded by the bidder at the time of bid submission otherwise Performance guarantee Money shall not be accepted & EMD shall be forfeited.

**Assistant Engineer (E) (P)**  
**DED-301, CPWD,**  
**(Formerly known as ED-IX),**  
**R K Puram New Delhi-66**

**Executive Engineer (E)**  
**DED-301, CPWD,**  
**(Formerly known as ED-IX),**  
**R K Puram New Delhi-66**

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

|                                                                                                                                                                                                   |                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Receipt of deposition of original EMD</b><br><b>(Receipt No. ....../Date.....)</b>                                                                                                             |                                                                                                                                                                                                                                      |
| 1. Name of Work: <b>SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.</b>                                                                               |                                                                                                                                                                                                                                      |
| 2. NIT No. <b>56 /E E(E) / DED – 301 / 2026 – 27 Recall</b>                                                                                                                                       |                                                                                                                                                                                                                                      |
| 3. Estimated Cost. <b>Rs. 7,57,440/-</b>                                                                                                                                                          |                                                                                                                                                                                                                                      |
| 4. Amount of Earnest Money Depsoit Rs. <b>15,149/-</b>                                                                                                                                            |                                                                                                                                                                                                                                      |
| 5. Last date of submission of bids <b>20-08-2026</b> , upto <b>15:00</b> Hrs.<br><i>(*To be filled in by NIT approving authority/ EE at the time of issue of NIT and uploaded along with NIT)</i> |                                                                                                                                                                                                                                      |
| 1. Name of contractor:-<br><br>3. Form of EMD:-<br><br>4. Amount of Earnest Money Deposit:-<br><br>5. Date of submission of EMD:-                                                                 | <div style="border: 1px solid black; height: 60px; margin: 10px auto; width: 80%;"></div> <p style="text-align: center;">Signature, Name and Designation of EMD<br/>Receiving officer (EE/AE(P)/AAO)<br/>Along with office stamp</p> |
| #To be filled in by EMD receiving EE                                                                                                                                                              |                                                                                                                                                                                                                                      |

**Note:-** 1) EMD should be in favour of Executive Engineer (E), ED-IX, CPWD, New Delhi

2) EMD is required to deposit in the office of Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi who is inviting bid or Division office of any Executive Engineer, CPWD within the period of bid submission as per CPWD Works Manual-2022 and associated SOP Provision 5/1 (Para-6)/CPWD OM No. DG/SOP/37 dated 04-05-2022). If the EMD is deposited in Sub Division office then it shall not be considered and tender shall be rejected.)

3) EMD shall be ame / issued only from the account of the bidder / tenderer submitting the bid / tender. EMD made / issued from the account other than that of the bidder / tendere submitting the bid. Shall be not be accepted. ( As per CPWD OM No. DG / SOP – 2024 / 22, Dt. 23-03-2026.)

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

## **Undertaking Form**

### **UNDERTAKING FOR ASSOCIATING VALID ELECTRICAL CONTRACTOR LICENSE HOLDER**

1. Name of Work: **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.**
2. NIT No. **56 / E.E.(E) / DED-301 / 2026 – 27 Recall**
3. Estimated Cost. **Rs. 7,57,440/-**
4. Amount of Earnest Money Depsoit Rs. **15,149/-**
5. Last date of submission of bids **20-08-2026** upto **15:00** Hrs.

**I undertake that I will either obtain valid electrical license at the time of execution of electrical work or associate the contractor having valid electrical license of appropriate class after acceptance of tender alongwith Performance Guarantee otherwise department shall forfeit the deposited EMD absolutely & shall reject my/our tender and debar me/us from re-tendering for this work”**

**Signature :-.....**

**Agency Name :-.....**

**Agency Address :- .....**

**.....**

**.....**

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*



## Undertaking Form

### UNDERTAKING FOR SPECIAL CONDITIONS FOR ASSOCIATION OF SPECIALIZED AGENCIES FOR SPECIALIZED E & M WORK

1. Name of Work: **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.**
2. NIT No. **56 / E.E.(E) / DED-301 / 2026 – 27 Recall**
3. Estimated Cost. **Rs. 7,57,440/-**
4. Amount of Earnest Money Depsoit Rs. **15,149/-**
5. Last date of submission of bids **20-08-2026** upto **15:00** Hrs.

An undertaking that if “I/We shall become the lowest tenderer then I/We shall submit the documents of Associated specialized Agencies for specialized E & M Services as per the eligibility criteria mentioned in the “**SPECIAL CONDITIONS FOR ASSOCIATION OF SPECIALIZED AGENCIES FOR SPECIALIZED E & M WORK**” after acceptance of tender alongwith Performance Guarantee otherwise department shall forfeit the deposited EMD absolutely & shall reject my/our tender and debar me/us from re-tendering for this work”

Signature :-.....

Agency Name :-.....

Agency Address :- .....

.....

.....

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

## CPWD-6

भारत सरकार **GOVERNMENT OF INDIA**  
केन्द्रीय लोक निर्माण विभाग **CENTRAL PUBLIC WORKS DEPARTMENT**

### निविदा आमंत्रण सूचना **NOTICE INVITING e-BID**

(ई-निविदा के लिए/For e-tendering)

1. ~~Item rate/~~ Percentage rate bids are re-invited on behalf of President of India from the CPWD enlisted contractors of appropriate class in **Registered contractor in CPWD in appropriate class of Buildings & Roads (Erstwhile Composite/Building/Infrastructure) Category** and those of appropriate list of M.E,S, BSNL, Railways and ..... State P.W.D. (B&R) or State Govt.'s Department ..... (Strike out as the case may be) dealing with building and roads, if there is no state PWD (B&R) for the work **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.**

The enlistment of the contractors should be valid on the last date of submission of bids.

In case only the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.

- 1.1 The work is estimated to cost **Rs. 7,57,440/-** This estimate, however, is given merely as a rough guide.
2. Agreement shall be drawn with the successful bidders on prescribed Form No. CPWD 7 (or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website [www.cpwd.gov.in](http://www.cpwd.gov.in) Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
3. The time allowed for carrying out the work will be **3 Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.
4. The site for the work is available.

The architectural and structural drawings shall be made available in phased manner, as per requirement of the same as per approved programme of completion submitted by the contractor after award of the work.

5. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website [www.etender.cpwd.gov.in](http://www.etender.cpwd.gov.in), [www.cpwd.gov.in](http://www.cpwd.gov.in) free of cost.
6. After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.
7. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified.
8. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.
9. **Earnest Money in the form of Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee (for balance amount as prescribed) from any of the Commerical Banks (drawn in favour of Executive Engineer (E), ED-IX, CPWD, New**

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

Delhi.) shall be scanned and uploaded to the e-tendering website within the period of bid submission.

The original EMD should be deposited either in the office of Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi inviting bids or Division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer shall issue a Receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT.

A part of earnest money is acceptable in the form of bank guarantee also. In such case, 50% of earnest money or Rs 20 lakh, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee of any Commercial Bank having validity for 6 months or more from the last date of Receipt of bids which is to be scanned and uploaded by the intending bidders.

- 9A The contractors registered prior to 01.04.2015 on e-tendering portal of CPWD shall have to deposit tender processing fee at existing rates, or they have option to switch over to the new registration system without tender processing fee any time.

**The bid submitted shall be opened at 03:30 PM on 20-08-2026**

10. The bid submitted shall become invalid if:
- (i) The bidders is found ineligible.
  - (ii) The bidder does not deposit Earnest Money deposit declaration proforma as per page 15 of NIT.
  - (iii) The bidder does not upload all documents (including GST registration) as stipulated in the bid documents.
  - (iv) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder in the office of tender opening authority.
11. The contractor whose bid is accepted, will be required to furnish 5% of tendered value or Estimated Cost Put to Tender (ECPT) (whichever is higher). Where the tendered amount is less than eighty percent (80%) of the Estimate Cost put to tender (ECPT), the performance guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tendered amount in Schedule 'E' and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, then EMD submitted shall be forfeited automatically without any notice to the contractor. The Earnest Money deposited alongwith the bid shall be returned after receiving the aforesaid Performance Guarantee. The Contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC, and BOCW Welfare Board including Provident Fund Code No. if applicable and also ensure the compliance of aforesaid provisions by the sub contractors, if any engaged by the contractor for the said work and Programme Chart (Time and Progress) within the period specified in Schedule F.
12. The description of work is as following:  
Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water,

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidders implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

13. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bid in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.
14. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bid submitted by the contractors who resort to canvassing will be liable to rejection.
15. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
16. The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer to Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the Central Public Works Department or in the Ministry of Urban Development. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.
17. No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the previous permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.
18. The bid for the works shall remain open for acceptance for a period of 30 Days from the date of opening of Eligibility/Technical/Price bid if any bidder withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid 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 said earnest money as aforesaid. Further the bidder shall not be allowed to participate in the rebidding process of the work.
19. This notice inviting Bid shall form a part of the contract document. The successful bidders/contractor, on acceptance of his bid by the Accepting Authority shall within 7 days from the stipulated date of start of the work, sign the contract consisting of:-
  - a) The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
  - b) Standard C.P.W.D. Form 7 or other Standard C.P.W.D. Form as applicable.

## **SPECIAL CONDITIONS FOR ASSOCIATION OF SPECIALIZED AGENCIES**

1. The main contractor shall have to associate with other agency(s)(Joint ventures are not accepted) for the execution of each of these specialized work(s), who fulfills the eligibility criteria as defined below.

### **DG Set**

Experience of having successfully completed works during last seven years ending Last day of month previous to the one in which tender are invited.

#### **A) DG Set**

- (i) Three similar works each of financial value not less than Rs. **3,02,976/-** (40% of the estimated cost of Rs. **7,57,440/-**) with minimum 50 KVA DG Set Capacity.  
OR
- (ii) Two similar works each of financial value not less than Rs. **4,54,464/-** (60% of the estimated cost of Rs. **7,57,440/-**) with minimum 50 KVA DG Set Capacity.  
OR
- (iii) One similar works each of financial value not less than Rs. **6,05,952/-** (80% of the estimated cost of Rs. **7,57,440/-**) with minimum 50 KVA DG Set Capacity.

Similar work shall mean works of “SITC of DG Set”

**Note:-** The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum calculated from the date of completion to Last day of month previous to the one in which tender is invited.

2. However the main contractor shall also be eligible to carry out himself any or all of the above specialized works without associating any specialized agency provided :-

- i) The main agency fulfills the prescribed eligibility criteria respectively for the above specialized work(s).

The intending bidder shall upload an undertaking that if **“I/We shall become the lowest tenderer then I/We shall submit the documents of Associated specialized Agencies of the specialized E&M services as per the eligibility criteria mentioned in the special conditions of NIT for association of specialized agencies after acceptance of tender alongwith Performance Guarantee otherwise department shall forfeit the deposited EMD absolutely & shall reject my/our tender and debar me/us from re-tendering for this work”**

3. The main contractor shall have to submit documents such as self attested copies of Certificates of Work Experience/Completion issued by client department clearly indicating

- 1.Name of work
2. Scope of Work
3. Agreement No.
4. Estimated Cost
5. Tendered Cost
6. Final Value of Work Done
7. Date of Start
8. Stipulated date of Completion
9. Actual date of completion
10. Nature of the Work etc.

(In case some of above said details are not mentioned in the Completion certificate, the firm shall attach sample proof in support of above details), self attested copy of valid Electrical contractor license, GST

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

registration of the proposed associated specialized agencies for verification (if required) and for approval of the department as per eligibility requirement mentioned in above condition no. 1 after acceptance of tender alongwith Performance Guarantee. Main contractor shall also be required to furnish either copy of applicable licenses/registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board of proposed associated specialized agencies / OEM alongwith above documents.

4. **Consent letter of such selected associated specialized agencies for association shall also be enclosed in the prescribed format as per “FORM-A – Consent Letter” and “FORM-B MOU” alongwith documents mentioned at sl.no-3 after acceptance of tender alongwith Performance Guarantee otherwise department shall forfeit the deposited EMD absolutely & shall reject my/our tender and debar me/us from re-tendering for this work”**
5. If the main contractor fails to submit all the documents of the proposed associated specialized agency(s) as mentioned at Sl No. 3 & 4 above, after acceptance of tender alongwith Performance Guarantee then department shall reject his/her tender & shall forfeit the deposited EMD absolutely & debar him from re-tendering for this work.
6. **The main contractor will submit MOU signed with the associated specialized agency as per FORM-B in shape of affidavit on stamp paper duly attested by notary in original alongwith performance Guarantee. The MOU shall be signed by both the parties" i.e. main contractor as 1st party and associated specialized Agency as 2nd party, independently for all specialized work(s).**
7. All technical discussions during currency of the contract, shall be attended by the associated specialized agencies / OEM and the main contractor. Commercial/Technical submissions for the specialized work(s) shall be signed and submitted by the associate specialized agencies along with the main contractor.
8. The associated specialized agencies and the main contractor shall attend the site during inspection of the work by the Engineer-in-Charge or higher authority.
9. The main contractor shall be entirely responsible and answerable for all the works done by his associated specialized agency regarding their quality, adherence to the laid down specification, terms and conditions, warranty/guarantee etc as per the agreement and he shall be liable to bear any compensation that may be levied by the department under any of the clauses of the agreement.
10. In the event of the concerned Associated specialized Agency not performing satisfactorily or failure to complete the specialized works(s), the main contractor on written directions of the Engineer-in-charge, shall remove the Associated specialized Agency deployed on the work and shall submit name of new associated specialized Agency as per eligibility criteria mentioned in the NIT to execute the left over specialized work(s) without any loss of time after completion of all formalities mentioned as above .
11. Also if main contractor wants to change the associated specialized agency during the currency of the contract he shall submit name of new associated specialized Agency as per eligibility criteria mentioned in the NIT to execute the left over specialized work(s) after completion of all formalities mentioned as above.
12. The main contractor shall be responsible and liable for proper and complete execution of the all works including specialized work(s) and ensure coordination and completion of all associated specialized works.
13. Running payment for the work shall be made to the main contractor. In case main contractor fails to make the payment to the associated specialized agency(s) by him within 15 days of receipt of each running account payment then on the written complaint of any associated specialized agency(s) for such work, Engineer-in-Charge shall serve the show cause to main contractor and after considering the reply of the same he may make the payment directly to the concerned associated specialized agency(s) for the work as per the terms & conditions of the agreement/M.O.U. drawn between main contractor and associated specialized agency(s) fixed by him, if reply of main contractor either not received or found unsatisfactory. Such payment made to the associated specialized agency(s) shall be recovered by Engineer-in-Charge from the next RA/final bill due to main contractor as the case may be.

**Form -A**

**CONSENT LETTER BETWEEN MAIN AGENCY AND ASSOCIATED  
SPECIALIZED E & M WORK AGENCY (FOR EACH SPECIALIZED  
WORK SEPARATELY)**

Name of work: **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.**

1. I / We hereby give my consent to associate with M/s ....., for executing the work of ..... (Mention specialized work(s)).
2. I / We will execute the work as per specifications and conditions of the agreement and as per directions of the Engineer-in-Charge for the corresponding specialized work(s) till the completion of the work.
3. I / We will be responsible for necessary action to handover the installations and for rectification of defects and repair during the maintenance / warranty period.
4. Also I / We will employ full time technically qualified Engineer / supervisor for the specialized work(s) component of the work as required for the work. I / We will attend inspection of officers of the department as and when required.

Date:

Signature with date of Main Agency/Contractor

Signature with date of Associate  
Specialized Agency

Address

Address

1. Witness with address

(From main contractor side)

2. Witness with address

(From associated agency side)

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*



## **Form-B**

### **MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN MAIN AGENCY AND ASSOCIATED SPECIALIZED E & M WORK AGENCY / OEM (FOR EACH SPECIALIZED WORK SEPARATELY)**

1] M/S [Name of the firm/agency with full address]

Enlistment Status

Valid Upto:

[Henceforth called the main contractor]

And

2] M/S [Name of the firm/agency with full address]

Enlistment Status

Valid Upto:

[Henceforth, called Associated specialized Agency]

For the execution of Specialized Work(s) “ **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.** as per schedule, specifications, terms and conditions of the agreement.

We state that M.O.U between us will be treated as an agreement and has legality as per Indian Contract Act [amended upto date] and the department [CPWD] can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits. In case of any dispute, either of us will go for mediation by the EE (E), DED-301, CPWD, East Block-3, R K Puram, New Delhi-110066. Any of us may appeal against the mediation to the CE, NDZ III, CPWD, Sewa Bhawan, New Delhi-110066. His decision shall be final and binding on both of us.

We have agreed on under:

- 1] The associated specialized agency will execute all specialized work(s) in a wholesome manner as per the terms and conditions of the agreement and as per the direction of the Engineer-in-charge.
- 2] That the Associated specialized agency has gone through the contract and has understood the scope of work required for executing the specialized work(s).
- 3] All the machinery and equipment, tools and plants, and special T&P required for the execution of the specialized work(s), as per agreement, shall be the responsibility of the associated specialized agency.
- 4] The site staff required for the specialized work(s) shall be arranged by the associated specialized agency as per the terms and conditions of the agreement.
- 5] The site order book maintained for the said work shall be signed by the authorized representative of the main contractor as well as the Associated Specialized Agency.
- 6] All the correspondence regarding the execution of the specialized work(s) shall be done by the Department with the Associated specialized agency with a copy to the main contractor. In case of non-compliance with the provisions of the agreement, the main contractor, as well as the associated agency shall be responsible. The action under clauses 2 and 3 shall be initiated and taken against the main contractor.

SIGNATURE OF MAIN CONTRACTOR  
AGENCY.

Date:

Place

SIGNATURE OF ASSOCIATED SPECIALIZED

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*



**On Non-Judicial Stamp Paper Of Minimum Rs. 100**  
**(CPWD, OM No.DG/CON/311 dated 20.10.2020)**  
**(Guarantee Offered By Bank To Cpwd In Connection With The Execution Of Contracts)**

**Form of Bank Guarantee for Earnest Money Deposit/Performance Guarantee/Security  
Deposit/mobilization Advance**

1. Whereas, the **Executive Engineer (E), ED-9, R K Puram New Delhi-66.** on behalf of the President of India (hereinafter called "The Government") has invited bids under .....(NIT Number).....dated.....for.....(Name of work : **"SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi."** The Govt. has further agreed to accept irrevocable Bank Guarantee for Rs. .... (Rs..... only) valid upto.....(date)\*.....as Earnest Money Deposit from.....(name and address of the contractor).....(hereinafter called "the contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.

OR\*\*

- Whereas, the **Executive Engineer (E), ED-9, R K Puram New Delhi-66.** on behalf of the President of India (hereinafter called "The Government") has entered into an agreement bearing number.....with.....(name and address of the contractor).....(hereinafter called "the contractor") for execution of work.....(Name of work: **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.** The Government has further agreed to accept an irrevocable bank Guarantee for Rs.....(Rupees.....only) valid upto.....(date).....as Performance Guarantee/Security Deposit/Mobilization Advance from the said contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.
2. We, .....(indicate the name of the bank).....(hereinafter referred to as "the Bank"), hereby undertake to pay to the Govt. an amount not exceeding Rs..... (Rs.....only) on demand by the Govt. within 10 days of the demand.
3. We, .....(indicate the name of the bank)..... do hereby undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Govt. stating that the amount claimed is reqd. to meet the recoveries due or likely to be due from the Said contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....(Rupees.....only)
4. We, .....(indicate the name of the bank)....., further undertake to pay the Govt. any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the Contractor shall have no claim against us for making such payment.
5. We, .....(indicate the name of the bank)....., further agree that the Govt. shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the Govt. against the said contractor and forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor or for any forbearance, act of omission on the part of the Govt. or any indulgence by the Govt. to the said Contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. We, .....(indicate the name of the bank)....., further agree that the Govt. as its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee the Govt. may have in relation to the contractor's liabilities.
7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.
8. We, .....(indicate the name of the bank)....., undertake not to revoke this guarantee except with the consent of the Govt. in writing.
9. This Bank Guarantee shall be valid upto.....unless extended on demand by the Govt. notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs.....(Rupees..... Only)

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

DATE .....

WITNESS .....

1. Signature....  
Name and Address

Authorized signatory  
Name  
Designation  
Staff Code No.  
Bank Seal

2. Signature....  
Name And Address

\*Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for two/three bid system from the date of submission of tender.

\*\*In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for earnest money or for performance guarantee/security deposit/mobilization advance, as the case may be.

**(CPWD, OM No.DG/SOP/14 dated 20.10.2020)**  
(Proforma for encashment of BG to be issued 14 days before its expiry)

भारत सरकार  
केन्द्रीय लोक निर्माण विभाग  
दि.वै.मं-301 आर.के.पुरम, नई दिल्ली

To

The Manager

...(Name & Address of Bank)...

.....

.....

Subject : Request for encashment of Bank Guarantee number.....dated..... for Rs.....valid up to..... towards earnest money deposit/performance guarantee/security deposit/mobilization advance (As applicable)

Name of Contractor:

Dear Sir,

The above mentioned Bank Guarantee number .....dated..... is valid up to..... In terms of paragraph 2 of the said Bank Guarantee, the Govt. of India hereby demands a sum of Rs.....(Rupees.....only) payable under this Bank Guarantee since this amount is required to meet the recoveries due from.....(name of the contractor)..... The amount shall be paid latest by.....(give date).....by transfer to account number.....

The aforesaid Bank Guarantee is being sent to you through.....(name and designation).....along with this letter.

Enclosure : Bank Guarantee

Yours faithfully,  
Executive Engineer (E)  
DED-301, CPWD  
R K Puram, New Delhi.

Copy to:.....(Name & address of the contractor).....

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*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

Proforma for extension of BG to be issued 30 days before its expiry)

भारत सरकार  
केन्द्रीय लोक निर्माण विभाग  
दि.वै.मं-301 आर.के.पुरम, नई दिल्ली

To

The (Name and address of Contractor)...

.....

.....

Sub : Extension of Bank Guarantee number .....dated..... issued by .....(Name of Bank).....

(Name of work: **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.**

**Agreement No. ....**

**Dear Sir,**

The Bank Guarantee number.....dated..... submitted by you for the above mentioned work as security deposit/performance guarantee/mobilization advance/earnest money deposit (as applicable) is valid upto.....

The validity of the aforesaid bank guarantee needs to be extended because.....(give reasons).....

You are, therefore, requested to get the validity of the said Bank Guarantee extended upto.....and submit the same to this office within 15 days from the issue of this letter, failing which it shall be encashed without further notice.

Yours faithfully,

Yours faithfully,  
Executive Engineer (E)  
DED-301, CPWD  
R K Puram, New Delhi.

[Note for EE(E): If extended Bank Guarantee is not received by the prescribed date, action for encashment must be initiated].

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

**CPWD-7**  
**GOVERNMENT OF INDIA**  
**CENTRAL PUBLIC WORKS DEPARTMENT**  
**Percentage Rate Tender & Contract for Works**

**Tender for the : SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West  
work of Block-5, R.K.Puram, New Delhi.**

- (i) Tender to be uploaded online by **15:00 hrs. 20-08-2026**
- (ii) The time and date of opening of the bid online in presence of tenderers who may be present at **15:30 hrs. 20-08-2026** in the office of **The Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi.**

**T E N D E R**

I/We have read and examined the notice inviting tender, schedule, A, B, C, D ,E & F. Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the President of India within the time specified in Schedule 'F', viz., schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and in clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respects of accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for ...30... days from the due date of its opening in case of single bid system ~~or 75 (Seventy Five) days from the date of opening of Technical bid in case tenders are invited on two /three bid system for specialized work~~ and not to make any modification in its terms and conditions..

**A sum of Rs. 15,149/- is hereby forwarded in Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee (for balance amount as prescribed) issued by any of the Commerical Banks as earnest money.**

**A copy of earnest money in Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee (for balance amount as prescribed) issued by any of the Commerical Banks is scanned and uploaded (strike out as the case may be).** If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/We agree that the said President of India or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/ We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

Further, if I/We fail to commence work as specified, I/We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

Further, I/We agree that in case of forfeiture of performance guarantee as aforesaid I/We shall be debarred for participation in the retendering process of the work.

**I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for tendering in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to debar for tendering in CPWD.**

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information / derived therefrom to any person other than a person to whom I/We, am/are authorised to communicate the same or use the information in any manner prejudicial to the safety of the state.

Dated .....

Signature of the Contractor

Postal Address -----

Telephone No. -----

FAX -----

E-MAIL -----

Witness: -----

Address: -----

Occupation: -----

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

**स्वीकृति**  
**ACCEPTANCE**

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the President of India for a sum of Rs. \_\_\_\_\_/-  
(Rupees\_\_\_\_\_)

The letters referred to below shall form part of this contract Agreement:-

- (a). \_\_\_\_\_
- (b). \_\_\_\_\_
- (c). \_\_\_\_\_

For & on behalf of the President of India

Dated \_\_\_\_\_

Signature\_\_\_\_\_

Designation\_\_\_\_\_

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

## PROFORMA OF SCHEDULES

### SCHEDULE 'A'

Schedule of quantities (as per PWD-3) - (As per Schedule Attached)

### SCHEDULE 'D'

Extra schedule for specific requirements/documents for the work, if any. Nil

### SCHEDULE 'E'

|                                                                                                                           |   |                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference to General Conditions of contract (GCC-EPC Project-2022/ GCC-Maintenance work-2023/ GCC-Construction work-2023) | : | <b>General conditions of contract for Construction Work - 2023 as modified and corrected up to previous day of last day of submission of tender).</b>                                                                                                                                                                                                                                                  |
| Name of Work                                                                                                              | : | <b>SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.</b>                                                                                                                                                                                                                                                                                                     |
| Estimated cost of work                                                                                                    | : | <b>Rs. 7,57,440/-</b>                                                                                                                                                                                                                                                                                                                                                                                  |
| (i) Earnest Money                                                                                                         | : | <b>Rs. 15,149/- ( to be returned after receiving of performance guarantee)</b>                                                                                                                                                                                                                                                                                                                         |
| (ii) Performance Guarantee                                                                                                | : | A) 5% of tendered value or Estimated Cost Put to Tender (ECPT) (whichever is higher)<br>B) Where the tendered amount is less than eighty percent (80%) of the Estimate Cost put to tender (ECPT), the performance guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tendered amount. |
| (iii) Security Deposit                                                                                                    | : | 2.5% of tendered value of the work to be deducted from each R/A Bill.                                                                                                                                                                                                                                                                                                                                  |

### SCHEDULE 'F'

#### GENERAL RULES & DIRECTIONS :

**Officer inviting tender** : **Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi.**

#### Definitions

**2(v) Engineer -in- Charge** : **Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi.**

**2(viii) Accepting Authority** : **Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi.**

**2(x) Percentage on cost of materials and Labour to cover all overheads and profits** :

**15%**

**2(xi) Standard Schedule of Rates** : **Based on Current Minimum Wages of labour of Central Govt., Market Rates, Civil DSR -2023 & DSR-2025**

**2(xii) Department** : **Central Public Works Department.**

**9(ii) Standard CPWD Contract Form GCC 2023, CPWD Form 7/8 as modified & corrected up to previous day of last day of submission of tender).** : **GCC Construction Work -2023 & CPWD Form 7 corrected upto date of submission of Tender**

#### Clause 1

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(i) Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance. : **10 Days**

(ii) Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above ..... : **5 Days**

## Clause 2

Authority for fixing compensation under Clause- 2 : **Chief Engineer, NDZ – III, CPWD Sewa Bhawan, R.K.Puram, New Delhi.**

## Clause 2A

Applicable Clause 2A : **No**

## Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start Mile stone(s) as per table given below. : **15 days**

| S.No.      | Description of milestone (Physical) | Time allowed in days (from date of start) | Amount to be with held in case of non achievement of milestone (of agreement amount) |
|------------|-------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------|
| <b>NIL</b> |                                     |                                           |                                                                                      |

Time allowed for execution of work : **3 Months**

## Authority to decide

(i) Authority to convey the decision of shifting of milestone and extension of time. : **Executive Engineer (E), DED-301 (Formerly known as ED-IX), CPWD, R K Puram New Delhi.**

(ii) Authority to decide rescheduling of milestone and extension of time. : **Chief Engineer, N.D.Z. – III, Sewa Bhawan, CPWD, R K Puram, New Delhi.**

(iii) Shifting of date of start in case of delay in handing over of site : **Chief Engineer, N.D.Z. – III, Sewa Bhawan, CPWD, R K Puram, New Delhi.**

## PROFORMA OF SCHEDULES Clause 5 Schedule of handing over of site-

| Part   | Portion of site                     | Description | Time Period for handing over reckoned from date of issue of letter of intent |
|--------|-------------------------------------|-------------|------------------------------------------------------------------------------|
| Part A | Portion without any hindrance       |             |                                                                              |
| Part B | Portions with encumbrances          |             |                                                                              |
| Part C | Portions dependent on work of other |             |                                                                              |

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|  |          |  |  |
|--|----------|--|--|
|  | agencies |  |  |
|--|----------|--|--|

Clause 6 : CMB/EMB : EMB

**Clause 7 : Gross work to be done : As per Mutually Agree together with net payment/adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment.**

**Clause 7A: Whether clause 7A shall be applicable : Yes**

**Clause 10A**

List of testing equipment to be provided by the contractor at site lab.

1...Earth Tester..... 2 ..Meggar... 3.... Clamp.Meter.....

----- As per direction of Engineer-in-charge -----

**Clause 10B (ii)**

Whether **Clause 10 B (ii)** shall be applicable : No

**Clause 10C** :  
Component of labour expressed as percent : 15 %  
of value of work

**Clause 10 CC**

Schedule of component of other **Not Applicable**  
Materials, Labour etc. for price escalation

Component of Electrical Material  
expressed as percentage of total value of  
work.

**Component of of Labour** : **Not Applicable**  
Expressed as percentage of total value of  
work.

**Clause 11**

Specifications to be followed for execution of : **C.P.W.D. General Specifications for EI works, Sub-Station, DG Set, as amended upto date & as per Terms & conditions attached.**

|                                                                                                                                      |   |                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------|
| <b>Clause 12</b>                                                                                                                     |   |                                                                  |
| <b>Type of work</b>                                                                                                                  |   | <b>Construction Work</b>                                         |
| <b>12.2. &amp; 12.3</b><br>Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for this work                                | : | N.A. (All the deviated quantity shall be paid at agreement rate) |
| <b>12.5</b><br>(i) Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for foundation work (except items mentioned in earth | : | As per CPWD Work / GCC                                           |

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|                                                                                       |                |                                                        |
|---------------------------------------------------------------------------------------|----------------|--------------------------------------------------------|
| ii) Deviation Limit for items mentioned in earth Work subhead of DSR and related work | :              |                                                        |
| <b>Clause 16</b>                                                                      |                |                                                        |
| <b>Competent Authority for deciding reduced rates</b>                                 | :              | Chief Engineer (NDZ III), CPWD, Sewa Bhawan, New Delhi |
| <b>Clause 18</b>                                                                      |                |                                                        |
| List of mandatory machinery, tools & plants to be deployed by the contractor at site  |                |                                                        |
| 1- Ladder                                                                             | 2- Spanner Set | 3- Screw Driver Set                                    |
| 4- Test Lamp                                                                          | 5 Plier        |                                                        |
| ----- As per direction of Engineer-in-charge -----                                    |                |                                                        |

**Clause 19 C: Competent Authority to decide penalty for each default as per GCC 2023 provisions**

**Clause 19D: Competent Authority to decide penalty for each default as per GCC 2023 provisions**

**Clause 19G: Competent Authority to decide penalty for each default as per GCC 2023 provisions**

**Clause 19K: Competent Authority to decide penalty for each default as per GCC 2023 provisions**

#### **Clause 25**

|                                                         |                                 |                                          |
|---------------------------------------------------------|---------------------------------|------------------------------------------|
| Settlement of Disputes by Conciliation and Arbitration: | Conciliator                     | ADG (RD), CPWD, New Delhi                |
|                                                         | Arbitrator Appointing authority | Chief Engineer, NDZ-III, CPWD, New Delhi |
|                                                         | Place of Arbitration            | New Delhi                                |

#### **Clause 32:- Requirement of Technical Representative(s) and recovery Rate: -**

| S. No | Minimum Qualification of Technical Representative | Discipline | Designation (Principal Technical /Technical Representative) | Minimum experience (years) | Number | Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36 (i) |       |
|-------|---------------------------------------------------|------------|-------------------------------------------------------------|----------------------------|--------|--------------------------------------------------------------------------------------------------------------------|-------|
|       |                                                   |            |                                                             |                            |        | Figures                                                                                                            | Words |
| 1     | Nil                                               |            |                                                             |                            |        |                                                                                                                    |       |

**Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineers.**

Diploma holder Engineer with minimum 10 year relevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holder Engineers should not exceed 50% of requirement of degree engineers.

#### **Clause 38**

- (i) (a) Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates 2025 printed by C.P.W.D. N.A.
- (ii) Variations permissible on theoretical quantities: N.A.
- Cement For works with estimated cost put to bid not more than Rs. 25 N.A.

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lakh.

For works with estimated cost put to bid more than Rs.25 lakh

- |    |                                                                                            |      |
|----|--------------------------------------------------------------------------------------------|------|
| b) | Bitumen for all works.                                                                     | N.A. |
| c) | Steel Reinforcement and structural steel sections for each diameter, section and category. | N.A. |
| d) | All other materials.                                                                       | N.A. |

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**R K Puram New Delhi-66**

**ANNEXURE E-1**  
**GENERAL TERMS & CONDITIONS**

**1.0 GENERAL**

**1.1** This specification covers manufacture, testing as may be necessary before dispatch, delivery at site, all preparatory work, assembly and installation, commissioning putting into operation of DG Sets consisting of Earthing etc. and final testing of DG Sets at **NCG, Wing-1, West Block-5.**

**1.2** **Location:** The DG Set will be installed at **NCG, Wing-1, West Block-5**

**1.3** The work shall be executed as per CPWD General Specifications for Electrical Works Part VII (DG Set), Part – I, II & IV as amended up to date, relevant I.E. Rules, BIS/IEC and as per directions of Engineer-in-charge. These additional specifications/ conditions are to be read in conjunction with above and in case of variations; specifications given in the in the contract shall apply. However, nothing extra shall be paid on account of these additional specifications and conditions, as the same are to be read along with schedule of quantities for the work. In case of discrepancy between the BOQ, List of Makes, Tech. Specifications, Drawings etc the following order of preference shall be observed:-

1. BOQ
2. List of Makes
3. Technical Specifications
4. Drawings
5. CPWD General Specifications
6. IS/IEC/International Codes

**1.4** The tenderer should, in its own interest, visit the site and get familiarized with the site conditions before tendering.

**1.5** No T & P shall be issued by the Department and nothing extra shall be paid on account of this.

**1.6** The makes/models and Cat. No. etc mentioned in NIT are indicative only. The firms shall be responsible for providing the system fulfilling the specifications capacity and all other related requirement of system ensuring compatibility between different items of work.

**1.7** The firm shall be required to supply all the items of same make (among the list of approved makes) wherever available to ensure compatibility, proper matching and ease of maintenance.

**1.8** Department reserves the right to accept the upgraded version of various items, if there is technological advancement with reference to these makes/models. The decision of department in this reference shall be final and binding on the firms.

**1.9** The contractor shall discuss with EE(E) or his authorized representative / visit the site before placing the supply order / delivery of materials at site as per actual requirement as the actual Quantity of materials required may deviate (+/-) from the quantity taken in the schedule of Work/inventory of the agreement.

**2.0 Commercial conditions**

**2.1 Type of contract**

The work to be awarded by this tender shall be treated as indivisible works contract.

**2.2 Submission of Tenders: -**

**2.2.1** Percentage rate tender in two-bid system.

**2.2.2** Submission and opening of e-tender will be as per details given in the information and instructions for contractors for e tendering posted in the website and CPWD-form 6 for e-tendering forming part of the NIT.

**2.2.3** The tenderers are advised not to deviate from the technical specification/ items, commercial terms & Conditions of NIT like terms of payment, guarantee, arbitration clause, escalation etc.

**2.2.4** After obtaining clarifications from all the tenderers, the department may modify the technical & commercial condition/ specifications if required, and will intimate the tenderers.

**2.2.5** In the price bid, there shall be no conditions whatsoever. In case any tenderer mentions any condition i/c conditional rebates in their price part, tender shall be rejected forthwith.

**2.2.6** The department reserves the right to reject any or all the price bids and call for fresh prices/ tenders as the case may be without assigning any reason.

**2.2.7** **Scrutiny/ evaluation of the Tenders (Price Bid) shall be done by the department. In case it is found that the Tenders (Price Bid) of a tenderer is not in line with NIT specifications/requirements and/ or contains too many deviations, the department reserves the right to reject the price bid of such firm(s) without making any reference to the tenderer(s).**

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**2.2.8 The contractor shall upload/submit following documents along with technical bid:-**

- (i) Written commitment from OEM./OEA to supply the DG Sets and delivery schedule as per requirement of department.
- (ii) Required Guarantee of DG Set from OEM/OEA in favour of Engineer-in-charge to cover defect liabilities.
- (iii) An undertaking that mandatory free service shall be carried out during the guarantee period by the authorized service provider of engine manufacturer.

**3.0 TERMS OF PAYMENTS**

The following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein.

| Sl  | Stage of Work                                                                                                  | Engine-Alternator Set & AMF Panel | All other Items |
|-----|----------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------|
| I.  | After initial inspection (wherever specified) & delivery at site in good condition on pro-rata basis.          | 80%                               | 75%             |
| II  | On completion of pro-rata installation                                                                         | 15%                               | 20%             |
| III | On commissioning and completion of successful running in period & taking over of the DG set by the department. | 5%                                | 5%              |

**4.0 Security Deposit**

The security deposit shall be collected by deductions from the running bills of the contractor at the rate mentioned below.

- (i) A sum @ 2.5% of the gross amount of the each running & final bill shall be deducted till the sum deducted will amount to security deposit of 2.5% of the tendered value of the work. Such deductions shall be made and held by government by way of Security Deposit unless the contractor has deposited the amount of security at the rate mentioned in cash or in the form of Government securities or Fixed Deposit Receipts. This is in addition to the performance guarantee that the contractor is required to deposit.

**5.0 Performance Guarantee****5.1** The tender shall guarantee among other things, the following :-

- a) Quality, strength and performance of the materials used.
- b) Safe mechanical and electrical stress on all parts under all specified conditions of operation.
- c) Satisfactory operation during the maintenance period.

**6.0 Rates****6.1** The rates quoted by the tenderer, shall be firm and inclusive of all taxes including, GST, labour cess, duties levies, octroi etc and all charges for packing forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site including temporary construction of storage, risks, over head charges, general liabilities/obligations and clearance from Local Body. However, the fee for the Local Body inspections shall be borne by the department.**7.0 Completeness of Tender**

All sundry equipment, fittings, unit assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections and all other items which are useful and necessary for efficient assembly and installation of the system shall be deemed to have been included in the tender irrespective of such items are specifically mentioned in the tender documents or not.

**8.0 Storage and Custody of Materials**

The Sub Station room may be used for storage of sundry materials and erection equipments or else the agency has to make its own arrangements. No separate storage accommodation shall be provided by the department. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

**9.0 Care of the Building**

Care shall be taken by the contractor while handling and installing the various equipments and components of the work to avoid damage to the building. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of the installation from the site of work.

**10.0 Completion Period**

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- 10.1 The completion period of the work shall be **3 months** as indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc i/c arrangement of materials & equipments, delivery at site including transportation, installation, testing, commissioning and handing over the entire system to the satisfaction of the Engineer-in-charge.
- 10.2 The Contractor shall be responsible for handing over the Inventory of entire system in operational to the Client to the satisfaction of the Engineer-in-Charge before recording of completion Certificate & making the final payment.
- 11.0 **Guarantee**
- 11.1 All the equipments shall be guaranteed for a period 12 months from the date of taking over of the installation by the department against unsatisfactory performance and /or break down due to defective design, workmanship or material. The contractor will stand performance guarantee of DG sets supplied and installed by them for a period of 12 months from the date of the handing over of the installation. Hence, the performance guarantee deposited at the time of award of work will be released after successful overall performance guarantee period of 12 months. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. If the performance of DG sets found unsatisfactory during the guarantee period or contractor repeatedly fails to replace/repair the defective parts of the DG sets within 7 days time after written complaint in this regard, the amount of performance guarantee shall be forfeited absolutely The decision of the Engineer-in-charge in this regard shall be final & binding on the contractor.
- 11.2 **The contractor shall submit the certificate from OEM / OEA or authorized service provider of engine manufacturer for satisfactory installation and commissioning of DG Set after completion of the work.**
- 12.0 **Water Supply & Power Supply**  
Water supply and Arrangement of electric power supply (Three Phase/Single Phase) at a single point as required to carry out the work for successful commissioning of the system will be provided by the department. However, distribution of electric supply to carry out the work at different locations shall lie in the scope of the contractor.
- 13.0 **Acceptable Makes of Various Equipments**
- 13.1 The acceptable makes of various equipments/components/accessories have been indicated in "Acceptable Makes". The tenderer shall work out the cost of the offer on this basis. Alternate makes are not acceptable.
- 13.2 The firm will be required to procure material directly from the manufacturer /authorized dealers to ensure genuineness & quality and as per the approved makes only. Proof in this regard shall be submitted by the contractor if required by the department.
- 14.0 The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturers for all items of equipments regarding installation, adjustments operation and maintenance including preventive maintenance trouble shooting together with all the relevant data sheets, spare parts catalogue etc all in triplicate.
- 15.0 **Extent of work**
- 15.1 The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning, as may be required by the department. The term complete installation shall not only mean major items of the plant and equipments covered by specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender documents in connection with this contract as this is a turnkey job.
- 15.2 In addition to supply, installation, testing and commissioning of complete installation, following works shall be deemed to be included within the scope of work to be executed by the tenderer as this is a turnkey job.
- a) Minor building works necessary for installation of equipments, foundation, making of opening in walls or in floors and restoring them to their original condition / finish and necessary grouting etc as required.
  - b) All supports for cables and MS channels for erection of panels etc as are necessary.
  - c) Getting Local Body inspection done & obtaining approval for energizing the installation if required. However, necessary fees for inspection shall be borne by the Department.
  - d) Small wiring, inter-connection etc inclusive of all materials and accessories, necessary to comply with the regulations as well as proper and trouble free operation of the equipment.

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- e) Closing of the cable entry points in sub-station/D.G Set room to arrest seepage of water, rodents etc.
- f) Tools and tackles required for handling and installation.
- g) Necessary testing equipments for commissioning.
- h) Watch and Ward of materials and/or installation and equipments till their handling over to the department.
- i) Provision of supports/clamps for equipments, cables etc wherever required.
- j) Arrangement of networking on requirement.

## **16.0 INSPECTION AND TESTING**

**16.1** The DG sets, AMF panel shall be offered for initial inspection at manufacturer's works/ Factory. The contractor will intimate the date of initial inspection of equipments at the manufacturer's works before dispatch. The successful tenderer shall give advance notice of minimum one week regarding the dates proposed for such inspection to the department's representative to facilitate his presence during inspection. **However the testing of DG set at full load at unity power factor shall be carried out at site and diesel shall be arranged by the agency and nothing extra for this shall be paid by the department. Testing shall be carried out exactly as per as per CPWD DG specification-2013. However, initial / general inspection except testing on load can be done at factory / manufacturer work before dispatch at site of work at the discretion of Engineer-Incharge as per detail given at 1.15.2.2 of CPWD DG specification-2013.** All routine tests confirming to relevant IS shall be carried out in the presence of E-in-Charge or his authorized representative. However, the department reserves the right to inspect or not to inspect the equipment at the works of the manufacturer. In the later case confirmation in writing will be issued by the department. The cost of the Engineer's visit to the factory will be borne by the Department. Equipments will be inspected at the manufacturer / Authorised Dealers premises before dispatch to the site by the contractor. Nothing extra shall be paid for initial inspection / testing at Manufacturer Works. Department reserves the right to inspect or waive off the inspection at the manufacturers work in lieu of suitable Test Certificate at its discretion

**16.2** **DG sets will be tested on load of unity power factor for the rated KW rating. During testing, each of the D.G. sets covered under scope of work, shall be operated for a period of 12 hours on the rated KW at DG set's KW rating including one hour on 10% overload after continuous run of the 12 Hours. During testing all controls/ operations safeties will be checked and proper record will be maintained. Any defect/ abnormality noticed during testing shall be rectified. The testing will be declared successful only when no abnormality/ failure is noticed during the testing. The DG set will be cleared for dispatch to site only when the testing is declared successful by authorised representative/ Engineer-in-Charge.**

**16.3** Similarly for fabricated equipments, the contractor will first submit dimensional detailed drawing for approval before fabrication is taken up in the factory. Inspection at the suitable stage in the factory may be made to ensure proper use of material, workmanship & quality control.

**16.4** Copies of all documents of routine and type test certificates of the equipment carried out at the manufacturers premises shall be furnished to the Engineer-in-Charge and/or consignee.

**16.5** After completion of work in all respect the contractor shall offer the installation for testing and commissioning.

## **17.0 Validity**

Tenders shall be valid for acceptance for a period of 30 days from the date of opening of bid.

## **18.0 Compliance with Regulations and Indian Standards**

**18.1** All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following:

- i) Factories Act
- ii) Indian Electricity Rules
- iii) BIS & other standards as applicable
- iv) Workmen's compensation Act
- v) Statutory norms prescribed by local bodies, Power supply co., etc

**18.2** Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.

**18.3** Successful tenderer shall arrange for compliance with statutory provisions of safety regulations and departmental requirements of safety codes in respect of labour employed on the work by the tenderer. Failure to provide such safety requirement would make the tenderer liable for penalty of



Rs. 500/- for each default. In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of tenderer and recover the cost thereof from him.

**19.0 Indemnity**

The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including their party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

**20.0 Erection Tools**

No tools and tackles either for unloading or for shifting the equipments for erection purposes would be made available by the department. The successful tenderer shall make his own arrangement for all these facilities.

**21.0 Cooperation with Client/Occupants**

**21.1** The successful tenderer shall coordinate with occupants and client to carry out the work with least disturbance and shut down shall be taken after consultation with client department.

**22.0 Interpreting specifications**

In interpreting the specifications, the following order of decreasing importance shall be followed in case of contradictions:

- a) Schedule of quantities
- b) Technical specifications
- c) General and Commercial Conditions
- d) Term & conditions and scope of work for AMC of DG sets.
- e) Drawing (if any)
- f) CPWD General specifications
- g) Relevant BIS codes or other international code in case BIS code is not available.

**23.0 Works to be carried out by CPWD**

Unless otherwise mentioned in the tender specifications, the following works shall be carried out by the department.

- (a) Major civil construction work in existing building. Cable trenches in Sub station room.
- (b) Preparation of trenches in the existing building.

**24.0 Works to be done by the contractor**

In addition to supply, installation, testing and commissioning of all the equipments, as per schedule of work, and specifications, the following works shall be deemed to be included within the scope of work to be executed by the contractor.

- i) Tools and tackles required for handling and installation of equipments.
- ii) Protection required for the equipments from rain, dust storm etc. during transportation i.e. polythene cover and tarpaulin.
- iii) Necessary equipments for commissioning/site testing.

**25.0 DATA MANUAL AND DRAWINGS TO BE FURNISHED BY THE TENDERER.**

**25.1 With Tender:** The tenderer shall furnish alongwith the tender, detailed technical literature, pamphlets and performance data for appraisal and evaluation of the offer.

**25.2 After award of work**

The successful tenderer would be required to submit the following drawings for approval of the department.

- (a) General arrangement drawing of the equipments
- (b) Single line diagram.
- (c) Schematic drawing including all safety interlocking.
- (d) Details of foundations for the equipments and the weights of assembled equipments.
- (e) Equipment details proposed to be procured for the execution of the work for the approval of the Engineer-in-charge.
- (f) Any other drawings necessary for the job.

The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturer's for all items of equipments regarding installation, adjustments, operation and maintenance including preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.

**25.3** The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturer's for all items of equipments regarding installation, adjustments, operation

- and maintenance including preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.
- 26.0 MOBILIZATION ADVANCE**  
No mobilization advance shall be paid to the contractor.
- 27.0 INSURANCE AND STORAGE**  
All consignments are to be duly insured up to the destination from warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned.
- 28.0 VERIFICATION OF CORRECTNESS OF EQUIPMENT AT DESTINATION**  
The contractor shall have to produce all the relevant records to certify that the genuine equipments from the manufacturers has been supplied and erected.
- 29.0 TRIAL RUN/ RUNNING-IN-PERIOD**  
**29.1** After successful testing of the DG Set, a trial run at available load will be carried out for 120 Hours or 15 Days whichever is earlier. The DG Set will be operated and a log of all relevant parameters will be maintained during this period. The arrangement of staff for trial run/running in period will be made by the successful tenderer. However, diesel shall be provided by Department. The contractor will be free to carry out necessary adjustments. The DG Set will be said to have successfully completed the trial run, if no break down or abnormal/unsatisfactory operation of any component of the entire installation included in the scope of work of the contract, occurs during this period. After this the DG Set will be made available for beneficial use. After the DG set has operated without any major break down/ trouble, it shall be taken over by the department subject to guarantee clause of this contract. This date of taking over to the DG set, after trouble free operation during the trial run/running-in period, shall be the date of acceptance/taking over.
- 30.0 PAINTING**  
This shall include cost of painting of the entire installation. The major equipments shall be factory final finish painted. The agency shall be required to do only touching to the damages caused to the painting during transportation, handling & installation at site, if there is no major damage to the painting. However hangers, supports etc. of bus trunking shall be painted with required shade including painting with two coats of anticorrosive primer paint at site.
- 31.0 TRAINING**  
The scope of works includes the on job technical training of two persons of department at site. Nothing extra shall be payable on this account.

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## TECHNICAL SPECIFICATION

### 1.0 Climatic Conditions

The DG set required to deliver specified output under following climatic conditions to be in conformity with as per CPCB IV + or better norms approved type tests:

- (i) Outside maximum ambient temperatures : 40 Deg. C
- (ii) Height above mean sea level : 1000 meter
- (iii) RH : 50%

1.1 DG set should be type tested for noise and emission norms / standards as per latest as per CPCB IV + or better norms as per Appendix 'II' and Appendix 'III' of General specifications for Electrical works Part – VII (DG SETS)2013.

### 2.0 Diesel Engine

#### 2.1 Engine Rating

The engine shall be of standard design of the original manufacturers. It should be 4 stroke cycles, radiator coolant cold, turbo charged diesel engine developing suitable BHP for giving a prime power rating of **62.5 KVA** at the load terminals of alternator at 1500 rpm at ambient temperature of 40°C, for height at 1000 meter above MSL and at 50% RH.

The engine shall be capable for delivering specified prime power rating at variable loads for PF of 0.85 lag with 10% overload available in excess of specified output for one hour in every 12 hours. The average load factor of the engine over period of 24 hours shall be 0.85 (85%) or prime power output.

The engine shall conform to IS: 10000/ISO 3046/BS; 649/BS 5514 amended upto date.

2.2 Necessary certificate indicating the compliance of the above capacity requirement for the engine model so selected along with compliance of noise and emission norms as per CPCB IV + or better norms should be furnished from the manufacturers alongwith the technical bid.

2.3 The engine shall be fitted with following accessories subject to the design of the manufacturer:

- (i) Dynamically balanced fly-wheel.
- (ii) Necessary flexible coupling and guard for alternator and engine (applicable only for double bearing alternator).
- (iii) Air cleaner (dry/oil bath type) as per manufacturer standard.
- (iv) An electronic governor to maintain constant voltage at all conditions of load.
- (v) Daily fuel service tank of minimum **120 Litres** capacity with each DG set fabricated as per OEM.
- (vi) Dry exhaust manifold with suitable exhaust residential grade silencer to reduce the noise level.
- (vii) Suitable self starter for 12/24 DC as per OEM standard.
- (viii) Battery charging alternator unit and voltage regulator, suitable for starting batteries, battery racks with interconnecting leads and terminals.
- (ix) Necessary gear driven oil pump for lubricating oil, priming of engine bearing as well as fuel systems as per manufacturer recommendations.
- (x) Necessary/turbo charger
- (xi) Lubrication oil cooler
- (xii) Lubrication oil filters with replaceable elements.
- (xiii) Crank case heater as per manufacturer recommendations.
- (xiv) Fuel injection: Engine should have suitable fuel injection system in order to achieve low fuel consumption.
- (xv) Fuel control solenoid
- (xvi) Fuel pump with engine speed adjustment.
- (xvii) Engine Control Panel: fitted and having digital display for following:---
  - (a) Start/stop key switch.
  - (b) Lube oil pressure indication
  - (c) Water temperature indication
  - (d) RPM indication
  - (e) Engine Hours indication
  - (f) Battery charging indication
  - (g) Low lube oil trip indication
  - (h) High water temperature indication
  - (i) Over speed indication.

- (xviii) All moving parts of the engine shall be mechanically guarded in such a manner that a human finger cannot touch any moving part.
- (xix) Radiator
- (xx) Any other item not included/specified, but is a standard design of the manufacturer

### **3.0 Governor**

Electronic governor of class A1 as per ISO 3046/BS 5514 with actuator shall be provided as per standard design of manufacturer. Governor shall be a self-contained unit capable of monitoring speed.

### **4.0 Frequency variation**

The engine speed shall be so maintained that frequency variation at constant load including No load shall remain within a band of 1% of rated frequency.

### **5.0 Fuel System**

It shall be fed through engine driven fuel pump. A replaceable element of fuel filter Shall be suitably located to permit easy servicing. The daily service tank shall be complete with necessary supports, gauges, connection pipe work etc. In case of top mounted tank, non return valves are must in fuel supply and return line of specified value. Pipe sealant should be used for sealing all connections. No Teflon taps is to be used. If piping length is more than 10 meters, detail engineering is required in consultation with OEM/Manufactures.

### **6.0 Lubricating oil system**

It shall be so designed that when the engine starts after a long shut down lubrication failure does not occur. Necessary priming pumps for the lub. oil circuit as per recommendation of manufacturer shall be installed, to keep bearings primed. This pump shall be normally automatically operative on AC/DC supply available with the set.

### **7.0 Starting System**

This shall comprise of necessary set of heavy duty batteries/'s 12/24 V DC as per OEM standard and suitable starter motors and axial type gear to match with the toothed ring on the fly wheel. A timer in the control panel to protect the starter motor from excessively long cranking runs shall be suitably integrated with the engine protection system and shall be included within the scope of the work. Battery capacity shall be suitable for meeting the needs of starting system (as three attempt starting), as well as the requirements of control panel, indications and auxiliaries such as priming pump as applicable etc. The system shall be capable of starting the DG set within 20-30 seconds, even in winter condition with and ambient temperature down to 0° C.

### **8.0 Battery Charger**

The battery charger shall be suitable to charge required numbers of batteries/'s at 12/24 Volts complete with, transformer, rectifier, charge rate selector switch, indicating ammeter & voltmeter etc. Connections between the battery charger & batteries shall be provided with suitable copper leads with lugs etc.

### **9.0 Piping Work**

All pipe lines, fittings and accessories requirement inside the room/enclosure and outside for exhaust piping shall be provided by the contractor. This shall include necessary flexible pieces in the exhaust, fuel, lub. oil and water lines as are necessary in view of the vibration isolation requirement in the installation. Piping of adequate size shall be used for lub. oil of the material as per manufacturer standard. However, only M.S. pipes for the exhaust and fuel oil lines shall be used. The pipe work shall be inclusive of all fittings and accessories required such as bends, reducers, elbows, flanges, flexible connections, necessary hardware etc. The installation shall cover clamps, supports, hangers etc. as are necessary for completing the work. However, the work shall be sectionalized with flanged connections as are necessary for easy isolation for purposes for maintenance of unit as approved by Engineer-in-charge.

### **10.0 Common bed plate**

Engine and alternator shall be coupled by means of flexoplate / flexible coupling as per manufacturer standard design and both units shall be mounted on a common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with minimum vibrations.

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The bed plate shall be suitable for installation on suitable ant-vibration mounting system. The foundation of the canopy shall be made as per CPWD specification for DG set work.

## 11.0 Exhaust System

**11.1** Exhaust Piping. All M.S. Pipes for exhaust lines shall be conforming to relevant IS. The exhaust pipe work using 50mm thick resin mattress /mineral wool/ rock wool, density not less than 120 kg/m<sup>3</sup> and aluminum cladding (0.60mm thick) for the complete portion. The exhaust pipe work includes necessary supports, foundation etc. to avoid any load & stress on turbo charger/exhaust piping. The exhaust pipe support structure shall be got approved by engineer-in-charge before execution after approval of registered/enlisted structural engineer. The structural engineer shall also visit the site to confirm that the structural work for supporting of exhaust pipe has been carried out as per approved drawing.

- Exhaust system should create minimum back pressure.
- Number of bends should be kept minimum and smooth bends should be used to minimize back pressure.
- Pipe sleeve of larger dia should be used while passing the pipe through concrete wall & gap should be filled with 'felt linig..
- Exhaust piping inside the Acoustic Enclosure/Genset room should be lagged with asbestos rope along with aluminum sheet cladding to avoid heat input to the room.
- Exhaust flexible shall have it's free length when it is installed. For bigger engines, two flexible bellows can be used.
- 'Class B' MS pipes and long bend/elbows should be used.
- The exhaust outlet should be in the direction of prevailing winds and should not allow exhaust gases to enter air inlet/window etc.
- When tail end is horizontal, 45 Degree downward cut should be given at the end of the pipe to avoid rain water entry into exhaust piping.
- When tail end is vertical, there should be rain trap to avoid rain water entry. If rain cap is used, the distance between exhaust pipe and rain cap should be higher than diameter of pipe. Horizontal run of exhaust piping should slope downwards away from engine to the condensate trap. Silencer should be installed with drain plug at bottom.

**11.2** *Optimum Silencer Location:* Location of the silencer in exhaust system has very definite influence on both reduction of noise and back pressure imposed on the system. The preferred silencer locations are given in the Table below, where L is length of the total exhaust system measured from exhaust manifold in meters. Please note that locating the silencer as per optimum silencer location is not mandatory. For high rise buildings, suitable arrangements may have to be provided in consultation with acoustic engineer.

**Optimum Location of Silencer (In meters)**

|                            | In-line Engine                               | 'V' Engine                                        |
|----------------------------|----------------------------------------------|---------------------------------------------------|
| Best                       | 2L/5                                         | (4L - 1.5)/5                                      |
| Second Best                | 4L/5                                         | (2L - 4.5)/5                                      |
| Worst Location of Silencer | L/5 or 3L/5 or at tail end of Exhaust piping | (3L - 10)/ 5 or at the tail end of exhaust piping |

**11.3** *Exhaust stack height.* In order to dispose exhaust above building height, minimum exhaust stack height should be as follows:-

(a) For DG set upto 1000 KVA :

$$H = h + 0.2 \times \sqrt{\text{KVA}}$$

Where H = height of exhaust stack

h = height of building

**11.4** Care should be taken to ensure that no carbon particle emitted due to exhaust leakage enters and deposits on alternator windings and on open connections.

## 12.0 Support to Exhaust Piping

Exhaust piping should be supported in such manner that load of exhaust piping is not exerted to turbocharger.

## 13.0 Air System

It is preferable to provide vacuum indicator with all engines to indicate choked filter. Maximum air intake restrictions with lean and choked filters should be within prescribed limit as per

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OEM/manufacture recommendation for the particular model of the engine. Gensets should be supplied with heavy duty air cleaners.

#### **14.0 Cooling system**

**14.1** System should be designed for ambient temperature of 40 Deg. C.

**14.2** Coolant should be used mixed with additive (in suitable proportion) as per recommendation of OEM/Manufacturer for various engine models.

**14.3** Radiator fan flow should be free from any obstruction.

#### **15.0 ALTERNATOR**

Scope: This section covers technical requirement of the alternator.

**15.1** Synchronous Alternator: Self excited, screen protected, self regulated, brush less alternator, Horizontal foot mounted in Double bearing construction suitable for the following:

|                                             |   |                                                       |
|---------------------------------------------|---|-------------------------------------------------------|
| Rated PF.                                   | : | 0.85 (lag)                                            |
| Rated Voltage                               | : | 415 volts                                             |
| Rated frequency                             | : | 50 Hz                                                 |
| No. of phases                               | : | 3                                                     |
| Enclosure                                   | : | SPDP                                                  |
| Degree of protection                        | : | IP-23                                                 |
| Ventilation                                 | : | Self ventilated air cooled                            |
| Ambient Temperature                         | : | 40° C Maximum                                         |
| Insulation Class                            | : | H                                                     |
| Temperature                                 | : | Within class H limits at rated load                   |
| Voltage Regulation                          | : | +/- 1%                                                |
| Voltage variation                           | : | +/- 5%                                                |
| Overload duration/capacity                  | : | 10% for one hour in every 12 hours of continuous use. |
| Frequency                                   | : | As defined by the Engine Governor (+/-1%)             |
| Excitation                                  | : | Self excited                                          |
| Type of AVR                                 | : | Electronic                                            |
| Type of Bearing and Lubrication arrangement | : | Anti-friction bearings with Grease lubrication        |
| Standard                                    | : | IS-4722 & IEC:34 as amended upto date.                |

**15.2** Alternator should be able to deliver output rating at 40° C. ambient at 1000 Meter altitude at MSL & at 50% RH

**15.3** Excitation: The alternator shall be brushless type and shall be self excited, self regulated having static excitation facility. The exciter unit should be mounted on the control panel or on the alternator assembly. The rectifier shall be suitable for operation at high ambient temperature at site.

**15.4** Automatic Voltage Regulators (AVR): In order to maintain output terminal voltage constant within the regulation limits i.e. +/- 1%, Automatic voltage regulator unit shall be provided as per standard practice of manufacturer.

**15.5** Fault tripping: In the event of any fault e.g. over voltage/high bearing temperature/ high winding temperature or an external fault, the AVR shall remove the excitation voltage to the alternator. An emergency trip shall also be provided.

**15.6** Standards: The alternator shall be in accordance with the following standards as are applicable.

(a) IS:4722/BS : 2613/1970. The performance of rotating electrical machine.

(b) IS:4889/BS: 269 rules for method of declaring efficiency of electrical machine.

**15.7** Performance : Voltage dip shall not exceed 20% of the rated voltage for any step load or transient load as per ISO:8528 (Part-I). The winding shall not develop hot spots exceeding safe limits due to imbalance of 20% between any two phases from no load to full load.

The generator shall preferably be capable of withstanding a current equal to 1.5 times the rated current for a period of not more than 15 seconds as required vide clause 14.1.1 of IS 4722:1992.

The performance characteristics of the alternator shall be as below:

(a) Efficiency at full load 0.8 P.F. – not less than 93.5%

(b) Total distortion factor Less than 3%

(c) (i) 10% overload - One hour in every 12 hrs of continuous use.

(ii) 50% overload - 15 seconds.

**15.8** Terminal Boxes: Terminal boxes shall be suitable for Bus Trunking. The terminal box shall be suitable to withstand the mechanical and thermal stresses developed due to any short circuit at the terminals.



- 15.9** Earth Terminals: 2Nos. earth terminals on opposite site with vibration proof connections, non-ferrous hardware etc. with galvanized plate and passivated washer of minimum size 12mm dia. hole shall be provided.
- 16.0** **AMF Panel, Batteries & Electrical System**  
**Scope:** This section covers technical and functional requirements of AMF Panel, Battery/Electrical system.
- 16.1** **Location**  
 AMF Panel shall be located in the existing room and DG Set shall be located outside.
- 17.0** **AMF Control Panel**
- 17.1** General Features: The control panel shall be indoor type fabricated out of 2 mm sheet steel, totally enclosed. Dust, damp and vermin proof free standing floor mounted type & front operated. It shall be made into sections such that as feasible, there is no mixing of control, power, DC & AC functions in the same section and they are sufficiently segregated except where their bunching is necessary. Hinged doors shall be provided preferably double leaf for access for routine inspection from the rear. There is no objection to have single leaf hinged door in the front, all indication lamps, instruments meter etc. shall be flushed in the front. The degree of protection required will be IP-65 conforming to IS:2147
- 17.2** *Terminal blocks and wiring:* Terminal blocks of robust type and generally not less than 15 Amps capacity, 250/500 volts grade for DC upto 100 volts and 660/1100 that they are freely accessible for maintenance. All control and small wiring from unit to unit inside the panel shall also be done with not less than 2.5 Sq. mm copper conductor PVC insulated and 660/1100 volts grade. Suitable colour coding can be adopted. Wiring system shall be neatly formed and run preferably, function wise and as far as feasible segregated voltage-wise. All ends shall be identified with ferrules at the ends.
- 17.3** *Labeling:* All internal components shall be provided with suitable identification labels suitably engraved. Labels shall be fixed on buttons, indication lamps etc.
- 17.4** *Painting:* The entire panel shall be given primer coat after proper treatment and powder coating with 7 tanks process before assembly of various items.
- 17.5** *Equipment requirements:* The control cubical panel shall incorporate into assembly general equipment and systems as under:
- (a) Control system equipments and components such as relays, contactors, times, etc. both for automatic operation on main failure and as well as for manual operation.
  - (b) Equipment and components necessary for testing generating set's healthiness with test mode and with load mains.
  - (c) Necessary instruments and accessories such as voltmeter, power factor meter, KW meter, KWH meter, Ammeter, Frequency meter etc. in one energy analyzer unit with selector switch to obtain the reading of desired parameters.
  - (d) Necessary indication lamps, fuses, terminal blocks, push buttons, control switches etc., as required.
  - (e) Necessary engine/generating set shut down devices due to faults/ abnormalities.
  - (f) Necessary visual audio alarm indication and annunciation facility, as specified.
  - (g) Necessary battery charger.
  - (h) Necessary excitation control and voltage regulating equipment.
  - (i) Necessary over head bus trunking terminations all internal wiring, connections etc., as required.
  - (j) Breakers as specified in the schedule of work.
- 17.6** *System Operation:* The above-mentioned facilities provided shall afford the following operational requirements.
- 18.0** **Auto Mode:**
- (a) A line voltage monitor shall monitor supply voltage on each phase. When the mains supply voltage fails completely or falls below set value (variable between 80 to 95% of the normal value) on any phase, the monitor module shall initiate start-up of diesel engine. To avoid initiation due to momentary disturbance, a time delay adjustment between 0 to 5 second shall be incorporated in start-up initiation.
  - (b) A three attempt starting facility shall be provided 6 seconds ON, 5 seconds OFF, 6 seconds ON, 5 seconds off, 6 Seconds ON. If at the end of the third attempt, the engine does not start, it shall be locked out of start and a master timer shall be provided for this function. Suitable adjustment times are to be incorporating which will make it feasible to vary independently ON-OFF setting periods

- from 1 – 10 seconds. If alternator does not build up voltage after the first or second start as may be, further starting attempt will not be made until the starting facility is reset.
- (c) Once the alternator has built up voltage, the alternator circuit breaker/controller/PLC panel shall close connection the load to the alternator. The load is now supplied by the alternator.
  - (d) When the main supply is restored and is healthy as sensed by the line voltage monitor setting, both for under voltage and unbalance, the system shall be monitored by a suitable timer which can be set between 1 minute to 10 minutes for the load to be transferred automatically to main supply.
  - (e) The diesel alternator set reverts to standby for next operation as per (a), (b) and (c) above.

**19.0 Manual mode:**

- a) In a manual mode, it shall be feasible to start-up the generator set by the operator on pressing the start push button.
- b) Three attempts starting facility shall be operative for the start-up function.
- c) Alternator circuit breakers closing and trip operations shall also be through operator only by pressing the appropriate button on the panel and closure shall be feasible only after alternator has built up full voltage. If the load is already on 'mains', pressure on 'close' button shall be ineffective.
- d) Engine shut down, otherwise due to faults, shall be manual by pressing a 'stop' button.

**20.0 Test mode:**

- a) When under 'test' mode, pressing of 'test' button shall complete the start up sequence simulation and start the engine. The simulation will be that of mains failure. Sequence 1 (a) and (b) shall be completed.
- b) Engine shall build up voltage but the set shall not take load by closing of alternator circuit breaker/controller. When the load is on the mains, monitoring of performance for voltage/frequency etc. shall be feasible without supply to load.
- c) If during test mode, the power supply has failed, the load shall automatically get transferred to alternator.
- d) Bringing the mode selector to auto position shall shut down the set as per sequence I (d) provided main supply in ON. If the mains supply is not available at that time, the alternator shall take load as in (c) above.

**20.1 Engine shut down and alternator protection equipments:** Following shut down and protection system shall be integrated in the control panel mounted in canopy.

**(a) Engine:**

- (i) Low lubrication oil pressure shut down. This shall be inoperative during start up and acceleration period.
- (ii) High coolant (water) temperature shut down.
- (iii) Engine over speed shut down.

**(b) Alternator Protection: Following protection arrangement shall be made:**

- (i) Over load
- (ii) Short circuit
- (iii) Earth fault
- (iv) Over voltage

**20.2 Monitoring and metering facilities:**

- (a) Necessary energy analyzer unit for visual monitoring of mains, alternator and load voltage, current, frequency, KWH, power factor, etc.

**(b) A set of visual monitoring lamp indication for:**

- (i) Load on set
- (ii) Load on mains
- (iii) Set on test (alternator on operation duty. Alternator on standby duty).
- (iv) Set of lamp for engine shut down for over speed, low lub. Oil pressure and high coolant water temperature, overload trip of alternator, earth fault trip of alternator, engine lock out and failures to start etc. All accepts the alarm, the hooter will be silenced and the fault indication will become steady until reset by operating a reset button.

**20.3 Operating devices:** A set of operation devices shall be incorporated in the front of panel as under:

- a) Master Engine Control Switch: This shall cut off in 'OFF' position DC control to the entire panel, thus preventing start-up of engine due to any cause. However, battery charge and lamp test button for testing the healthiness of indication lamps, DC volt meter/ammeter etc. shall be operative. It shall be feasible to lock the switch in OFF position for maintenance and shut down purposes.
- b) Operation selector switch Off/Auto/Manual/Test position.
- c) Energy analyzer unit for display of various electrical parameters like voltage, current, frequency, KW, power factor, etc.

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- d) A set of push button, as specified.
  - e) Relays, contactor, times, circuit breakers, as required.
  - f) Necessary battery charger with boost/trickle selector, DC voltmeter and DC ammeter.
- 21.0 Battery/Electrical System**
- 21.1** Batteries supplied with Genset are generally dry and uncharged. First charging of uncharged batteries is very important and should be done from authorized battery charging center. Initial charging should be done for 72-80 hours.
  - 21.2** Batteries should be placed on stands and relatively at cool place.
  - 21.3** Batteries capacity and copper cable sizes for various engine capacity should be as per OEM.
  - 21.4** For AMF applications, a static battery charger working on mains supply is recommended to keep the batteries charged at all times.
  - 21.5** 2.5 sq.mm copper wire should be used for wiring between junction box and Control Panel.
- 22.0 Cabling**
- 22.1** Power cabling between alternator and control panel and control panel and AMF panel should be done with recommended cable sizes.
  - 22.2** Overheating due to loose thumbing /undersize cables causes most of electrical failures and hence correct size of cable and thimbles should always be used, if cable is specified.
  - 22.3** While terminating cables, avoid any tension on the bolts/ bus bars. (if cable is specified)  
While terminating R,Y & B phase notations should be maintained in the alternator and control panel for easy maintenance.
  - 22.4** Crimped cables should be connected to alternator and control panel through cable glands, if cable is specified.
  - 22.5** Multi-core copper cables should be used for inter connecting the engine controls with the switchgear and other equipments.
  - 22.6** For control/AMF application, multicore core 2.5 sq. mm flexible stranded copper cable for control cabling should be used.
  - 22.7** It is recommended to support output cable on separate structure on ground so that weights of cables should not fall on alternator/ base rail.
  - 22.8** External wirings, when provided for remote voltage/excitation monitoring/droop CT etc. shall be screened sheathed type. Maximum length of such wiring shall not exceed 5 meters.
  - 22.9** Alternator termination links
  - 22.9.1** For proper terminations between links and switchgear terminals, the contact area must be adequate. The following situations should also be avoided as they lead to creation of heat sources at the point of termination:
    - (i) Point contact arising out of improper position of links with switchgear terminals
    - (ii) Gaps between bus bars/links and terminals being remedied by connection bolt/stud in such cases the bolt will carry the load current. Normally these bolts/studs are made of MS and hence are not designed to carry currents.
  - 22.9.2** Adequate clearance between bus bars/links at terminals should be maintained (IS:4232 may be referred to for guidelines)
  - 22.9.3** Improper termination will lead to local heat generation which may lead to failure.
- 23.0 FOUNDATION**
- 23.1** Genset with acoustic enclosure: A PCC foundation (1:2:4,M-20 grade) of weight 2.5 times the operating weight of the Genset with enclosure or as recommended by the Genset manufacturer or OEM/OEA, whichever is higher is required to be provided and is included in the scope of work for SITC of DG set. The approximate depth of 250mm is required so as to provide leveled surface for placement of the acoustic enclosure. **About 300 mm foundation height** should be above ground level. The length and breadth of foundation should be at least 250 mm more than the size of the enclosure. Genset should be mounted on AVM's inside the enclosure.
  - 23.2** Foundation should be designed considering safe bearing capacity of soil. Vibration isolators (AVMs) should be provided to reduce vibration transmission to the surrounding structure.
  - 23.3** Foundation level should be checked diagonally as well as across the length for even flatness. The foundation should be within  $\pm 0.5$  Degree (angle) of any horizontal plane.
- 24.0 ACOUSTIC ENCLOSURE**
- Scope:** This section covers technical requirements of the acoustic enclosures.

- 24.1 **As per (CPCB IV+) or better norms**, restriction has been imposed for new DG sets for noise level. Therefore, in terms of these norms, acoustic enclosure should be type tested at the climatic conditions through one to the authorized laboratory.
- 24.2 **INSTALLATION**
- 24.2.1 Acoustic enclosures are supplied with built in Anti Vibration Mountings (AVMs). As such Genset can be installed directly on the leveled surface.
- 24.2.2 Exhaust piping outlet should not be turned towards window/ventilator of home or occupied building. Provision of rain cap should be ensured.
- 24.2.3 The acoustic enclosure placement should be such that there is no restriction in front of air inlet and outlet from canopy.
- 24.3 **Service Accessibility**
- 24.3.1 Genset/Engine control panel should be visible from outside the enclosure.
- 24.3.2 Routine/periodical check on engine/alternator (filter replacement and tappet setting etc.) should be possible without dismantling acoustic enclosure.
- 24.3.3 For major repairs/overhaul, it may be required to dismantle the acoustic enclosure.
- 24.3.4 Sufficient space should be available around the Genset for Inspection and service.
- 24.4 **General Design Guidelines**
- 24.4.1 To avoid re-circulation of hot air, durable sealing between radiator and canopy is must.
- 24.4.2 Ventilation fans are must for the Gensets cooled by heat-exchanger.
- 24.4.3 Exhaust piping inside the enclosure must be lagged (except bellow)
- 24.4.4 Temperature rise inside the enclosure should not be more than 5°C for maximum ambient above 40°C and it should be below 10°C for ambient above 50°C.
- 24.4.5 There should be provision for oil, coolant drain and fill. Fuel tank should have provision for cleaning.
- 24.5 **Specifications for Acoustic Enclosure**
- 24.5.1 The acoustic enclosure shall be designed and manufactured confirming to relevant standards suitable for outdoor installation exposed to weather conditions, and to limit overall noise level to 75 db (A) at a distance of 1 mtr. from the enclosure **as per CPCB IV + or better norms** under free field conditions.
- 24.5.2 The construction should be such that it prevents entry of rain water splashing into the enclosure and allows free & quick flow of rain water to the ground in the event of heavy rain. The detailed construction shall confirm to the details as under:
- 24.5.3 The enclosure shall be fabricated out of the CRCA sheet of thickness not less than 1.6mm on the outside cover with inside cover having not less than 0.6 mm thick perforated powder coated CRCA sheet.
- 24.5.4 The hinged doors shall be made from not less than 16 SWG (1.6mm) thick CRCA sheet and will be made air tight with neoprene rubber gasket and heavy duty locks.
- 24.5.5 All sheet metal parts should be processed through 7-tank process.
- 24.5.6 The enclosure should be powder coated.
- 24.5.7 The enclosure should accommodate the daily service fuel tank of the D.G. Set to make the system compact in case manufacturer does not recommended outside tank. There should be provision of fuel gauge, which should show the level of the fuel even when the DG set is not running. The gauge should be calibrated. The fuel tank should be filled from the out side as in automobiles and should be with a lockable cap.
- 24.5.8 The batteries should be accommodated in the enclosure in battery rack.
- 24.5.9 The canopy should be provided with high enclosure temperature safety device.
- 24.5.10 The acoustic lining should be made up of high quality insulation material i.e. glass/mineral wool/rock wool/PU foam of appropriate thickness and density for sound absorption as per standard design of manufacturers to reduce the sound level **as per CPCB IV + or better norms**. The insulation material shall be covered with fine glass fiber cloth and would be supported by perforated M.S. Sheet duly powder coated.
- 124.5.11 The enclosure shall be provided with suitable size and No. of hinged type doors along the length of the enclosure on each side for easy access inside the acoustic enclosure for inspection, operation and maintenance purpose. Sufficient space will be provided inside the enclosure on all sides of the D.G. set for inspection, easy maintenance and repairs.
- 24.5.12 The canopy should be as compact as possible with good aesthetic look.
- 24.5.13 The complete enclosure shall be of modular construction.
- 24.5.14 The forced ventilation shall be as per manufacturer design using either engine radiator fan or additional blower fan(s). if the acoustic enclosure is to be provided with forced ventilation then

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suitable size of axial flow fan (with motor and auto-start arrangement) and suitable size axial flow exhaust fan to take the hot air from the enclosure complete with necessary motors and auto start arrangement should be provided. The forced ventilation arrangement should be provided with auto stop arrangement to stop after 5 minutes of the stopping of D.G. sets.

**24.5.15** The acoustic enclosure should be suitable for connection through bus-trunking. Such arrangements on acoustic enclosure should be water proof and dust-proof conforming to IP-65 protection.

**24.5.16** The inside of enclosure should be provided with at least two nos. 18/20 W-LED tube light luminaire controlled by a 5A switch for adequate lighting during servicing etc. of the DG Set. The power supply to this luminaire should be from the load side of the AMF Panel so that it can remain energized under all conditions.

**25 Trial Run/ Running-in-Period**

After successful testing of the DG Set, a trial run at available load will be carried out for 120 Hours or 15 Days whichever is earlier. The DG Set will be operated and a log of all relevant parameters will be maintained during this period. The arrangement of staff for trial run/ running in period will be made by the successful tenderer. However, diesel shall be provided by Department. The contractor will be free to carry out necessary adjustments. The DG Set will be said to have successfully completed the trial run, if no break-down or abnormal/ unsatisfactory operation of any component of the entire installation included in the scope of work of the contract, occurs during this period. After this the DG Set will be made available for beneficial use. After the DG Set has operated without any major break-down/ trouble, it shall be taken over by the department subject to guarantee clause of the contract. This date of taking over of the DG Set, after trouble free operation during the trial run/ running-in period, shall be the date of acceptance/ taking over.

**Assistant Engineer (E) (P)**  
**DED-301, CPWD,**  
**(Formerly known as ED-IX),**  
**R K Puram New Delhi-66**

**Executive Engineer (E)**  
**DED-301, CPWD,**  
**(Formerly known as ED-IX),**  
**R K Puram New Delhi-66**

### **List of Acceptable Makes**

| <b>SL. No.</b> | <b>Item</b>                                                       | <b>Approved Makes</b>                                                                                          |
|----------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 1              | D.G. Set (Engine)                                                 | Volvo Penta / Cummins/Kirlsokar Oil Engine Ltd./ Caterpillar (FG Wilson) / Mitsubishi/ Perkins/Greaves Cotton  |
| 2              | Alternator                                                        | Stamford/KOEL / Leroysoner/ Mitsubishi /Kirloskar Electric Co/Caterpillar/Perkins/Volvo Penta/Crompton Greaves |
| 3              | Anti Vibration Mountings                                          | Dunlop / GERB/Resistoflex / Easy Flex.                                                                         |
| 4              | DG Set Canopy                                                     | OEM of DG sets.                                                                                                |
| 5              | AMF Panel                                                         | OEM of DG set / <b>MILESTONE / NEPTUNE / ASPL / SPC ELECTROTECH / ADLEC/R P Control</b>                        |
| 6              | Terminal Blocks/Lugs                                              | Elmec / Phoenix Contacts / Wago & Control / Weidmuller / Dowell's/Commet/Reycham                               |
| 7              | Contactors                                                        | L&T (Lauritz Knudsen Electrical and Automation) / Schneider / Siemens /Hager                                   |
| 8              | MCB/MCCB                                                          | LEGRAND/SCHNEIDER/HAGER/ ABB/ L&T (Lauritz Knudsen Electrical and Automation)/ MITSUBISHI ELECTRIC             |
| 9              | Push Buttons & Indicating Lamp                                    | Siemens / Telemechanique / L&T (Lauritz Knudsen Electrical and Automation)/ Schneider/BCH                      |
| 10             | Relays                                                            | L&T (Lauritz Knudsen Electrical and Automation)/ Siemens / Schneider/BCH                                       |
| 11             | Timers                                                            | L&T (Lauritz Knudsen Electrical and Automation)/ Siemens / Telemechanique/ GE/ Conzerve/BCH                    |
| 12             | Indicating Instruments /Multi Function Meter /Annunciation window | AE / Conzerve / L&T (Lauritz Knudsen Electrical and Automation)/ Yokins Instrument/ HPL India/ Siemens/Neptune |
| 13             | Current Transformers                                              | AE / Kappa / L&T (Lauritz Knudsen Electrical and Automation)/ Areva / Indcoil / Gilbert & Maxwell / Matrix     |
| 14             | Selector Switch                                                   | Kaycee / L&T (Lauritz Knudsen Electrical and Automation)/ Siemens / BCH/Salzer                                 |
| 15             | Battery                                                           | Exide / Amaron/OEM                                                                                             |
| 16             | Exhaust Pipe                                                      | Jindal (Hissar)/ Tata/ Prakash Surya                                                                           |
| 17             | Steel Structure                                                   | SAIL / TISCO/Rathi/Jindal/Kamdhenu                                                                             |
| 18             | Wires/Cables                                                      | POLYCAB / FINOLEX/ HAVELLS                                                                                     |
| 19             | Feeder Pillar / LT Panel                                          | <b>MILESTONE / NEPTUNE / ASPL / SPC ELECTROTECH / ADLEC/ R P Control</b>                                       |
| 20             | Change over switch                                                | <b>HPL/ ABB / L&amp;T / C&amp;S</b>                                                                            |
| 21             | DWC PIPE                                                          | D – REX / Duraline / Triputi / Gemini                                                                          |
| 22             | All other items not covered above                                 | As per samples approved by Engineer In-charge.                                                                 |

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**R K Puram New Delhi-66**

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

## Schedule of Work

**Name of Work:** **SITC of 62.5 KVA DG set for ISOC server at NCG, Wing-1, West Block-5, R.K.Puram, New Delhi.**

| Sl. No. | Description of Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Qty. | Unit | Rate | Amount |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|--------|
| 1       | Supply, installation, Testing & Commissioning of 'Silent Type Diesel Generating set as per CPCB IV + or better norms along with having Prime Power Rating of KVA as below, 415 volts at 1500 RPM, 0.8 lagging power factor at 415 V suitable for 50 Hz, 3 phase system & for 0.85 Load Factor, including testing at factory and site with fuel, load for test and other necessary arrangements Complete as per CPWD specifications, should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location, rating plate as per relevant IS Code etc. and consisting of the followings:<br>(A) Diesel Engine: Turbocharged Diesel engine 4 stroke water cooled, multi cylinder, dynamically balanced fly wheel, electric start of suitable BHP at 1500 RPM suitable for above output of alternator at 40 Degree C, 50% RH & at 1000 Meter MSL , capable of taking 10% over loading for one hour after 12 hours of continuous operation. The engine will be with Electronic governor, Dry type Air filter with service indicator, first filling of engine fuel (after commissioning) lubricating Oil, Coolant and other consumables complete with all the required accessories, the Electronic governor shall be as per ISO 8528. The engine shall comply to the latest CPCB norms (CPCB IV + or better) and Conforming to BS 5514, BS 649, IS 10000, IS 10002, IS 13018 and as per CPWD specifications. (B) Engine mounted Instrument Panel fitted with and having digital display for following:(i) Start-stop switch with key(ii) Water temperature indication(iii) Lubrication oil pressure indication(iv) Lubrication oil temperature indication(v) Battery charging indication and Voltage indication(vi) RPM indication(vii) Over speed indication(viii) Low lubrication Oil trip indication(ix) Engine Running Hours indication(x) Fuel Level (C) |      |      |      |        |

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*

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|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|  | <p>Alternator:Synchronous alternator rated of appropriate KVA, 415 volts at 1500 RPM, 3 phase 50 Hz, AC supply with 0.8 lagging power factor at 40 Degree C, 50% RH &amp; at 1000 Meter MSL. The alternator shall be having Screen Protected Drip Proof (SPDP) enclosure IP23, brushless, continuous duty, dynamically balanced rotor, capable of taking 10% over loading for one hour after 12 hours of continuous operation, self cooled,self-excited and self-regulated through AVR conforming to IS13364(Part 2)/IS: 4722/BS 2613 suitable for tropical conditions and with class- H insulation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |
|  | <p>(D) Base Frame &amp; Foundation: Both the engine and alternator shall be mounted on suitable base frame made of MS channel with necessary reinforcement which shall be installed on suitable cement concrete foundation and vibration isolation arrangement as per recommendations of manufacturer. (E) FUEL TANK:Daily service fuel tank of suitable liters capacity as per CPWD Specifications, fabricated out of 3 mm thick M.S. sheet complete with all standard accessories and fuel piping between fuel tank and diesel engine with MS class 'C' pipes of suitable dia. Complete with valves, level indications &amp; accessories as required as per specifications.(F) Exhaust System:Dry exhaust manifold with hospital type exhaust silencer and catalytic convertor.(G) Starting System:12V/24V DC starting system comprising of starter motors: voltage regulator and arrangement for initial excitation complete with suitable numbers of batteries (180 AH capacity lead acid SMF type) as required as per specifications. The battery shall be housed inside the acoustic enclosure of DG Set.(H) Acoustic and weather proof enclosure with arrangement for fresh air intake for cooling of the engine &amp; alternator, extraction, discharging hot air in to the atmosphere and the temperature rise inside the enclosure, noise level outside enclosure. The acoustic enclosure should be suitable for cableconnection/connection through bus-trunking. Such arrangements on acoustic enclosure should be water proof &amp; dust-proof conforming to IP-65 protection. The</p> |  |  |  |  |

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|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|  | enclosure shall be as per CPCB IV + or better norms etc. and as per CPWD specifications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |
|  | <p>(I) AMF Panel:Free standing floor mounted IP 42 automatic mains failure control panel including auto by- pass, suitable for KVA as below for silent type DG set complete with relays, timers, set of CTs for metering &amp; protection and energy analyser to indicate currents, phase and line voltages, frequency, powerfactor, KWH, Kilo Volt Ampere Reactive Hour (KVARH), KVA (Phase &amp; Total), KW &amp; provision for overload, short circuit, restricted earth fault, under frequency, power (aluminum) and control (copper ) cabling of suitable size upto 15 meter between AMF panel, LT Panel and DG Set including connection interconnection etc. as required, all complete and inter locking and communication/ Ethernet /RS485/SNMP port open protocol for BMS integration including suitable software, the panel shall be of DG Set OEM make etc. as per approved by Engineering in charge and including thefollowing:</p> <ol style="list-style-type: none"> <li>1. Suitable numbers and appropriate capacity 4 pole motorised electrically operated draw out with cradle type 3 position ACB/ MCCB with electronic release for O/C &amp; E/F and shunt trip.</li> <li>2. Auto/Manual/Test/Off selector switch</li> <li>3. Protection for under and over voltage phase reversal (2 nos Over voltage relay, 2 Nos. reverse power relay and 2 Nos. under voltage relay).</li> <li>4. 3 Sets of current transformers 15 P 10 accuracy for protection and 15 VA class-I for metering</li> <li>5. Energy analyser unit to indicate current, Voltage( L-N &amp; L-L), kW, kVA (Phase &amp; Total), Frequency, KWH, PF.</li> <li>6. LED Indicating lamps for load on mains and load on set.</li> <li>7. Fuse/ MCB for instruments.</li> <li>8. Battery charger, complete with transformer/ rectifier, D.C. voltmeter and ammeter, selector switch for trickle, off and boost and current adjustment.</li> <li>9. Main supply failure monitor.</li> <li>10. Supply failure timer.</li> <li>11. Restoration timer</li> <li>12. Control unit with three impulse automatic engine start/stop and failure to start lockout.</li> <li>13. Impulse counter with locking and reset facility.</li> <li>14. ON/OFF/Control circuit switch with indicator</li> <li>15. Audio/Video annunciation for(i) High water</li> </ol> |  |  |  |  |
|  | <p>LED Indicating lamps for load on mains and load on set.7. Fuse/ MCB for instruments.8. Battery charger, complete with transformer/ rectifier, D.C. voltmeter and ammeter, selector switch for trickle, off and boost and current adjustment.9. Main supply failure monitor.10. Supply failure timer.11. Restoration timer12. Control unit with three impulse automatic engine start/stop and failure to start lockout.13. Impulse counter with locking and reset facility.14. ON/OFF/Control circuit switch with indicator15. Audio/Video annunciation for(i) High water</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |

*Assistant Engineer (E)(P)*

*Executive Engineer (E)*



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|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|-----------|-----------|
|       | temperature(ii) Low lubricating oil pressure(iii) Engine over speed(iv) Engine fails to start(v) Full load/maximum load warning16. Protection for over/under Frequency, Loss of AC sensing, Over Current, Unbalancing load with suitable number of relays and accessories17. Maintenance notification based on Engine Run Hour & due date.                                                                                                            |        |       |           |           |
| 1.1   | 18. Load Management through PLC to achieve auto opening and closing of incomer breakers, bus coupler switching of essential panel , interlocking providing signal to AMF Panel for load status and AMF shall give command to DG Set to auto start / auto stop depending upon load status and requirement etc. and necessary hardware and software required to perform the operation shall be provided by the contractor including all control wiring. |        |       |           |           |
| 1.1.1 | 62.5KVA                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.00   | Each  | 597453.00 | 597453.00 |
| 2     | Supplying of following size XLPE insulated and PVC sheathed aluminium conductor steel armoured power cable of 1.1 KV grade conforming to IS 7098(Part-I) on wall surface etc. as required.                                                                                                                                                                                                                                                            |        |       |           |           |
| 2.1   | 3.5X35 Sqmm                                                                                                                                                                                                                                                                                                                                                                                                                                           | 100.00 | Meter | 644.00    | 64400.00  |
| 3     | Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/HUME/ METAL pipe as required.                                                                                                                                                                                                                                                                                            |        |       |           |           |
| 3.1   | Above 35 sq. mm and upto 95 sq. mm                                                                                                                                                                                                                                                                                                                                                                                                                    | 20.00  | mtr   | 72.00     | 1440.00   |
| 4     | Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on wall surface as required.                                                                                                                                                                                                                                                                                                      |        |       |           |           |
| 4.1   | Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)                                                                                                                                                                                                                                                                                                                                                                                | 80.00  | mtr   | 151.00    | 12080.00  |
| 5     | Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.                                                                                                                                                                                                     | 2.00   | Set   | 8531.00   | 17062.00  |
| 6     | Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.                                                                                                                                                                                                                                                         | 20.00  | Mtr   | 755.00    | 15100.00  |
| 7     | Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for                                                                                                                                                                                                                                                                                                                                                                              | 20.00  | Mtr   | 287.00    | 5740.00   |

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|      |                                                                                                                                                                                                                                                                                                                                                                                         |        |      |         |          |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|---------|----------|
|      | connections etc. as required.                                                                                                                                                                                                                                                                                                                                                           |        |      |         |          |
| 8    | Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.                                                                                                                                                                                                                    | 200.00 | Mtr  | 50.00   | 10000.00 |
| 9    | Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc.direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required. |        |      |         |          |
| 9.1  | 63 mm dia (OD-63 mm & ID-51 mm nominal)                                                                                                                                                                                                                                                                                                                                                 | 20.00  | Mtr  | 289.00  | 5780.00  |
| 10   | Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.                                                                                                                                                                                 |        |      |         |          |
| 10.1 | 3½ X 35 sq. mm (32mm)                                                                                                                                                                                                                                                                                                                                                                   | 2.00   | Each | 437.00  | 874.00   |
| 11   | Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator).                                                            |        |      |         |          |
| 11.1 | 4 way (4 + 12), Double door                                                                                                                                                                                                                                                                                                                                                             | 1.00   | Each | 4377.00 | 4377.00  |
| 12   | Supplying and fixing Cable End Box (Loose Wire Box) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc.as required.                                                                                                                                                        |        |      |         |          |
| 12.1 | For 4 way, Double door TPN MCBDB                                                                                                                                                                                                                                                                                                                                                        | 1.00   | Each | 1177.00 | 1177.00  |
| 13   | Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.                                                                                                                                            |        |      |         |          |
| 13.1 | Single pole                                                                                                                                                                                                                                                                                                                                                                             | 3.00   | Each | 285.00  | 855.00   |
| 14   | Supplying and fixing 63 A rating, TP 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load in the existing MCB DB complete with connections, testing and commissioning etc. as required.                                                                                                                                                                       | 3.00   | Each | 1931.00 | 5793.00  |

|      |                                                                                                                                                                                                                                                                                         |      |      |         |                  |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|---------|------------------|
| 15   | Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, Ics=100% Icu and Operational Voltage 690V etc. as required. |      |      |         |                  |
| 15.1 | 125 A, 16 KA,TPMCCB                                                                                                                                                                                                                                                                     | 3.00 | Each | 5103.00 | 15309.00         |
|      | <b>Total</b>                                                                                                                                                                                                                                                                            |      |      |         | <b>757440.00</b> |

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