

## **PROCEDURE FOR INSPECTION OF ELECTRICAL INSTALLATIONS ABOVE 250KVA**

Generally inspection of electrical installations is carried out under Regulation-30 (Periodical inspection & testing) & Regulation-43 (Approval by Electrical Inspector for the installation before commencement of supply or recommencement after shutdown for six months) of Central Electricity Authority (Measures relating to safety and electric supply) Regulation-2010. So, electrical inspection is divided in to two parts, one periodical & other initial.

The inspection / drawing approval fees are to be deposited through treasury challan (e-challan only) under proper Head of Account in the name of the owner of installation & the purpose should be mentioned in the remarks column of treasury challan. The fees for inspection / drawing approval etc. are as per Notification No.21610 dt.28.12.2001 which is available on our official website ([as1.ori.nic.in/eicelectricity](http://as1.ori.nic.in/eicelectricity)).

### **1. Periodical Inspection & testing of installations**

- (a) Every owner of electrical installation shall deposit the inspection fees on or before the date stipulated in the inspection fee demand notice and the copy of the treasury challan be submitted to the concerned Inspector with request for inspection.
- (b) Extend due co-operation for inspection such as safe access to equipment, installation & records.
- (c) After inspection, the report will be issued by the concerned Inspector within a week.
- (d) Compliance to the defects i.e. rectification report to be submitted within the stipulated time mentioned in the inspection report.

### **2. Initial Inspection**

The installations are divided into three basic categories.

#### **A. Substation / Switchyard / Transmission line & installations other than generating stations.**

- (i) Submission of drawings for approval.
  - (a) All the requisition for approval of drawings shall be made in the prescribed format (Annexure-A).
  - (b) All the LT, MV, HV & EHV drawings as indicated in the requisition form shall be submitted in duplicate.

- (c) Required fees in shape of treasury challan for approval of drawings shall be accompanied along with requisition.
  - (d) Necessary permission letter from DISCOM, OPTCL etc. shall be submitted.
  - (e) The copy of work order issued by the owner of the installation to the licensed electrical contractor, who will execute the work, shall be submitted.
  - (f) All the drawings shall be signed by the Owner of installation, Electrical Contractor and the Supervisor
- (ii) The drawings will be approved & one set sent to owner for reference.
- (iii) After completion of work submit the requisition for inspection to the concerned Inspector with following documents.
- a) Deposit the initial inspection fees in shape of treasury challan in the respective head of account **“0043-00-102-0034-01001-000”** available in the website **as1.ori.nic.in/eicelectricity**.
  - b) Completion report in the prescribed format (Annexure-B) duly signed by the Owner, Contractor & Supervisor.
  - c) Detail equipment list to be inspected in the format given in item 5A of completion certificate.
  - d) Manufacturer’s test certificates of all important equipments signed by owner.
  - e) Pre-commissioning test results of all the installations duly signed by the Owner, Contractor and Supervisor on the following points.
    - (i) Insulation resistance values of all the installations.
    - (ii) Basic insulation level of all the installations.
    - (iii) Name-plate details of all the equipments / installations.
    - (iv) One write-up on inter-locking arrangements.
    - (v) Test-results of all the relays and meters.
    - (vi) Earth-resistance of individual earth electrodes of each installation.
    - (vii) Combined earth resistance of earth mat.
    - (viii) Test reports of transformer oil, if any, from Standard Testing Laboratory, Bhubaneswar / NABL Accredited Laboratory.
  - f) Details of safety provisions as per CEA (Measures relating to safety & supply of electricity) Regulation-2010.

- g) List of authorised persons proposed to be engaged for operation and maintenance of the installations.
- h) In case of transmission lines the following additional requisites are to be furnished.
  - (i) Copy of approval letter of State Govt. for installation of overhead line under section-68 of the Electricity Act-2003.
  - (ii) News paper advertisement details about charging of transmission line.
  - (iii) Certificate from Executive Engineer regarding Jungle Clearance, drum biting in different locations.
  - (iv) Statement of ground clearance.
  - (v) Statement on all power line crossing, telephone line crossing, railway line crossing, roads and N.H. crossing, river, pond and canal crossings.
- i) P.T.C.C. approval.
- j) Railway line clearance from Railway Department.
- k) Take-off arrangements in the Grid Sub-stations situated at both the ends of the transmission line.
- iv) Extend due co-operation for inspection such as safe access to equipment, installation & records.
- v) Inspection report shall be issued within a week of inspection.
- vi) Compliance to the defects i.e. rectification report to be submitted within the stipulated time mentioned on the inspection report.
- vii) Final charging order shall be issued by the Inspector within three days from the date of receipt of compliance & satisfaction thereof.

**B. Generating stations with associated installations.**

- (i) Submission of drawings for approval
  - (a) All the requisition for approval of drawings shall be made in the prescribed format (Annexure-C).
  - (b) All the LT, MV, HV & EHV drawings as indicated in the requisition form shall be submitted in duplicate.
  - (c) Required fees in shape of treasury challan for approval of drawings shall be accompanied along with requisition.
  - (d) Copy of the permission from State Pollution Control Board, the copy of water allotment letter from Water Resources Department,

- copy of the permission from Forest & Environment Department, Govt. of India etc. as the case may be shall be submitted.
- (e) The copy of work order issued by the owner of the installation to the licensed electrical contractor, who will execute the work, shall be submitted.
  - (f) All the drawings shall be signed by the Owner of installation, Electrical Contractor and the Supervisor
- (ii) The drawings will be approved & one set sent to owner for reference.
- (iii) After completion of work, submit the requisition for inspection to the concerned Inspector with following documents:-
- (a) Deposit of initial inspection fees in shape of treasury challan (e-challan only) in the respective head of account **“0043-00-102-0034-01001-000”** available in the website **as1.ori.nic.in/eicelectricity**. Submit the copy of the challan.
  - (b) Completion report in the prescribed format (Annexure-B) duly signed by the Owner, Contractor & Supervisor.
  - (c) Detail equipment list to be inspected.
  - (d) Manufacturer’s test certificate of all importance equipments signed by owner.
  - (e) Pre-commissioning test results of all the installations duly signed by the Owner, Contractor and Supervisor on the following points.
    - (i) Insulation resistance values of all the installations.
    - (ii) Basic insulation level of all the installations.
    - (iii) Name-plate details of all the equipments / installations.
    - (iv) One write-up on inter-locking arrangements.
    - (v) Test-results of all the relays.
    - (vi) Earth-resistance of individual earth electrode installation.
    - (vii) Combined-earth resistance of earth-mat.
    - (viii) Test reports of energy meter, CT & PT from Standard Testing Laboratory, Bhubaneswar.
    - (ix) Test reports of transformer oil, if any, from Standard Testing Laboratory, Bhubaneswar / NABL Accredited Laboratory.
- (iv) Extend due co-operation for inspection such as safe access to equipment, installation & records.

- (v) Inspection will be conducted during which all the energy metering unit of generating set will be sealed by the Inspector concerned.
- (vi) Inspection report will be issued within a week.
- (vii) Compliance to the defects i.e. rectification report to be submitted within the stipulated time mentioned on the inspection report.
- (viii) After receipt of the compliance report & satisfaction of Inspector concerned, the permission for commissioning of generating set will be issued. In case of thermal power plant “consent to operate” from Pollution Control Board” to be submitted for consideration.
- (ix) If, date of commissioning of the generating unit is required, then due prior intimation may be submitted to the concerned Inspector to witness commissioning either by him or his authorised representative.
- (x) Apply for declaration of date of commissioning to the concerned Inspector with the witness certificate of commissioning of the unit.
- (xi) Concerned Inspector will declare the date of commissioning of the unit.

**C. Temporary Electrical Installation.**

The organiser / event manager shall submit the required documents such as completion certificate, inspection fee, drawings etc. at least 48 hour before the event so as to enable the Inspector to inspect the temporary electrical installation in time and issue safety certificate.

**ANNEXURE-A**

**APPLICATION FORMAT FOR SUBMISSION OF DRAWINGS FOR APPROVAL**

To

.....  
.....  
.....

Sub: Submission of Drawings for approval.

Sir,

With reference to the above captioned subject, find enclosed herewith the following drawings of our proposed EHV/HV/MV installation for the purpose of Industrial / GP / Bulk Domestic / etc. along with the treasury challan No.....dated.....for Rs..... (Rupees.....) only. The drawings may be checked and approved early, so that, the work can be started soon.

The drawings for the proposed electrical installations have been distinguishably marked from the existing one. The list of drawings and other required information as applicable are given below.

(A) LIST OF DRAWINGS

Sl. No.	Description of Drawings	Voltage level	Quantity (in No.)	Rate (in Rs.)	Amount (in Rs.)
(1)	(2)	(3)	(4)	(5)	(6)
1.	General arrangement and schematic drawings				
2.	Single line diagram of the Sub-station (For Licensee, metering arrangement for auxiliary consumption must be accompanied)				
3.	Plan & Elevation of Switchyard				
4.	Drawing of Power Transformer / distribution transformer showing the clearances				
5.	GA of control room and other floors showing clearances				
6.	GA of control panel				
7.	Protection drawings of Switchyard / transformers / Lines				
8.	Earth mat drawing				
9.	Earth mat calculation				
10.	Earthing arrangement drawing of the total installation including Earth Pit section				
11.	Lighting arrangement drawings				
12.	DC supply / Battery room drawings				
13.	Cable routing / drawing				
14.	Write up on inter-locking				
15.	Drawing for lines (Profile & Root alignment)				
16.	Any other drawings				
	TOTAL Rs.				

- (B) Capacity and location of other existing generating sets (owned by the same owner
- (C) Status of inspection of construction power supply
- (D) Status of payment of inspection fees against the existing electrical installation (B&C) above, up to the date of application along with date of last inspection
- (E) Status of construction work against the proposed equipment / installation
- (F) Name of the Electrical Contractor to whom work has been awarded. (Copy of the detailed work order enclosed)
- (G) License / Project license No. of the Contractor with period of validity

Yours faithfully,

Encl: As above

Signature

Name

Designation

Name & address of the Firm

**COMPLETION CERTIFICATE**

We certify that the installation below has been installed by me/us and tested and that to the best of my knowledge and belief it complete with CEA (Measures relating to safety and electric supply) Regulation, 2010 as well as 732-1963 code of practice for Electrical wiring installation System voltage upto 650V / 11KV / 33KV / 66KV / 132KV / 220KV / 400KV and is ready for inspection.

- 1 Name and address of the Owner of the Electrical installation. :
- 2 Location of the Electrical Installation. :
- 3 Purpose of the Electrical Installation. :
- 4 Voltage and System of Supply :
- 5 A. Details of Equipments. :

<u>Sl. No.</u>	<u>Name of App.</u>	<u>Make / Sl. No.</u>	<u>Capacity</u>	<u>Current</u>	<u>Voltage</u>	<u>Control equipment</u>	<u>Make &amp; Capacity</u>
----------------	---------------------	-----------------------	-----------------	----------------	----------------	--------------------------	----------------------------

- B. Type of the System of Wiring :
- C. Conductor size :
- D. If the work involves installations of overhead lines/or underground cables. :
- E. Conductor / Cable size :
- F. Type & specification of support of overhead line :
- i. Length of line :
- ii. Average span length :
- iii. State if clearance are maintained as per relevant regulation of CEA (Measures relating to safety and electric supply) Regulation, 2010
- 6 Earthing
  - A. Type one Electrodes :
  - B. Size of Earth Wire/ Flat :
  - C. Size of earth electrodes provided :



- 7 Test result :
- i. Insulation resistance for the whole installation :
  - ii. Between each conductor and earth :
  - iii. Between each conductor Insulation resistance for each apparatus :
  - i. Between each conductor and earth :
  - ii. Between each conductor Earth resistance for the system earthing :
- 8 Name & address of the contractor with License No. & grade. :
- License of the Supervisor under whose Supervision work has been executed. :
- 9 Name & permit No. & Grade of the Lineman/Wiremen/Electrician engaged in the work. :
- 10 Date of the completion and final checking of the work by the Supervisor. :
- 11 If the work has been taken up with specific authority of the Electrical inspector in the absence one required competency/contractor/Supervisor of the authority quoted. :
- 12 Detail of Pre-commissioning tests & setting has been furnished in the enclosed statement.

**Work executed by  
Owner  
(Contractor)**

**Supervisor**

**APPLICATION FORMAT FOR SUBMISSION OF DRAWINGS FOR APPROVAL**

To

.....  
.....  
.....

Sub: Submission of Drawings for approval.

Sir,

With reference to the above captioned subject, find enclosed herewith the following drawings of our proposed generating unit / station along with the treasury challan No.....dated.....for Rs..... (Rupees.....) only. The drawings may be checked and approved early, so that, the work can be started soon.

The drawings for the proposed electrical installations have been distinguishly marked from the existing one. The list of drawings and other required information as applicable are given below.

(A) LIST OF DRAWINGS

Sl. No.	Description of Drawings	Voltage level	Quantity (in No.)	Rate (in Rs.)	Amount (in Rs.)
(1)	(2)	(3)	(4)	(5)	(6)
1.	General arrangement and schematic drawings including arrangement for Energy Meter Scheme				
2.	Single line diagram of connectivity				
3.	GA of control panel				
4.	Control circuits drawings				
5.	GA of control circuit room and other floors showing clearances				
6.	Earthing arrangement drawing including Earth Pit section and lighting installation				
7.	Earth mat drawing				
8.	Earth mat calculation				
9.	Generator transformer / auxiliary transformer showing the clearances drawings				
10.	Lighting arrangement drawings				
11.	DC supply / Battery room drawings				
12.	Cable routing / drawing				
13.	Write up on inter-lockings				
	TOTAL Rs.				

- (B) Capacity and location of other existing generating sets (owned by the same owner
- (C) Status of payment of inspection fees against the generating sets at (B) above, up to the date of application along with date of last inspection
- (D) Status of payment of Electricity Duty against the generating sets shown at (B) above, up to the date of application
- (E) Status of construction work against the proposed equipment / installation
- (F) Name of the Electrical Contractor to whom work has been awarded. (Copy of the detailed work order enclosed)

Yours faithfully,

Encl: As above

Signature

Name

Designation

Name & address of the Firm