

CHAPTER -V ELECTRICAL AND MECHANICAL

Section 1.- E/M Formation and Structure

5.001. DELETED.

5.002. S.E., E/M will be under the administrative control of the E.-in-C. /C.E. of the department.

5.003. All plant and machinery electrical and mechanical works, workshop of the department other than the formation mentioned in paragraph 5.004 shall be under the control of S.E., E/M.

5.004. All plant and machinery, electrical and mechanical works, workshops of the Major Irrigation Project/ Ground Water Survey (W.R.D.) shall be under the control of respective C.E. (Civil)

The C.E., Major Irrigation Project and C.E., of Basins (W.R.D.) will be responsible for the control, maintenance and proper utilization of the machines of their formation and they will carry out these functions and responsibilities through the E/M formation posted under them and may consult S.E. E/M in this connection as and when necessary. The procedure and rules laid down for the E/M works and working of E/M formation under the S.E., E/M will apply to the working of E/M formations under the C.E. Major Irrigation Project and C.E., of Basins (W.R.D.).

Section 2. – The Responsibilities of the S.E., E/M

5.005. The responsibilities of the S.E., E/M shall be as follows:-

- (1) To standardise and prepare norms of E/M works of the department.
- (2) To lay down norms for utilisation, repairs, maintenance and operation of plants and machinery etc.
- (3) To deploy machines of works as per the programme received from C.E., in consultation with E.-in-C. of the department.
- (4) To keep state level inventory of all plant and machinery, to advise other C.E.s for planning, procurement, maintenance, repairs and operation of plant and machinery in their charge when requested.

Section 3. – Inspection of Plants

Machines and Electrical/Mechanical Works

5.006 Inspection of plants and machines shall be carried out as below :-

- (1) C.E., E/M or S.E., E/M (where the post of CE, E/M is not created) shall inspect the following atleast once in four years :-

- (i) Shovel of capacity 2 cubic meters and above ;
 - (ii) Motor scraper of capacity 15 cubic meters and above ;
 - (iii) Dozer and Tractor of 250 h.p. and above ;
 - (iv) Dumper of capacity 30 tonnes and above ;
 - (v) Crane of capacity 50 tonnes and above ;
 - (vi) Any other plant and machinery costing more than Rs. 25 Lakhs ;
 - (vii) Spillway gates and High head gates ; and
 - (viii) Electrical installation costing more than Rs. 25 lakhs.
- (ix) Heavy Earthmoving machines and other plant and machinery costing more than Rs. 25 lakhs-at least once every year ;
 - (x) Machinery each costing more than Rs. 10 lakhs and up to Rs. 25 lakhs-at least once in four years;
 - (xi) Drilling rigs, Hot mix plant, Paver finisher, water works and sewage treatment plant– at least once every year ;
 - (xii) Electrical installation costing more than Rs. 25 lakhs – at least once every year ;
 - (xiii) Electrical installation costing more than Rs. 10 lakhs and up to Rs. 25 lakhs – at least once in four years ;
 - (xiv) Spillway gates, High head gates of major projects at least once every year ;
 - (xv) Head regulator gates of medium projects – at least once in four years ;
 - (xvi) Regulator gates of the canals carrying more than 25 cumecs-- at least once every year; and
 - (xvii) Regulator gates of canal carrying more than 10 cumecs and up to 25 cumecs – at least once in four years.
 - (xviii) All the gates of head works of major projects.

(2) E.E., E/M shall inspect the following :-

- (i) Heavy earthmoving machines and other machines each costing more than Rs. 50,000 – at least once every year;
- (ii) Machines costing up to Rs. 50,000 – at least once in four years ;
- (iii) Electrical installations in buildings, workshops, water works and sewage treatment plant costing more than Rs. 1 lakh – at least once every year and those costing more than Rs. 25,000 and less than Rs. 1 lakh – at least once in four years ;
- (iv) Regulator gates canals carrying more than 10 cumecs – at least once every year; and
- (v) Regulator gates of canals carrying more than 3 cumecs and up to 10 cumecs – at least once in four years,

(3) S.D.O., E/M shall inspect the following :-

- (i) All machinery – at least once every year ;
- (ii) All electrical installation – at least twice a year;
- (iii) All water works , sewage treatment plant – at least once every year
- (iv) All sluice gates and canal regulator gates – at least once every year.

Record of Inspection

- 5.007 Results of inspection of plants and machinery carried out as per paragraph 5.006 shall be recorded by the inspecting officer in an inspection register. A separate individual register shall be maintained for each major electrical installation such as lift, substation, transformer etc. and a single common register for other minor inspections. These registers shall be maintain for each E/M section.

Programme of Inspection

- 5.008. A four yearly programme of inspection of plant and machinery shall be framed by the inspecting officers. This programme will indicate the plants and machinery to be inspected year wise.
- 5.009. The programme of inspection should be written in a register which shall be in the custody of the inspecting officer. The register should be handed over to the reliever on transfer.
- 5.010. In case the machine is transferred to other formation an extract of the programme of inspection concerning the machine shall be sent with machine.

Section 4.- Plant Planning, Selection, Procurement and Purchase of Enquipment

- 5.011. Planning, selection and procurement of machines will be done by the S.E., E/M. For specific project work, this will be done by him in consultation with the C.E. in charge.
- 5.012. The purchases of new machinery will be against a sanctioned estimate, budget provision and allotment of necessary funds therefor by the competent authority.
- 5.013. S.E. in charge shall send a copy of the sanctioned estimate and budget provision and allotment of funds indicating the programme of requirement to S.E., E/M who shall, thereafter, take action for the procurement and supply of plants and equipments to the concerned C.E.
- 5.014. (a) Purchase on open tenders of (i) machinery costing more than Rs. 10 Lakhs at a time, (ii) transport/ inspection vehicles shall be decided by the following purchase committee :-

- (1) Secretary of the Department (Chairman);
- (2) Finance Secretary / Director Budget;
- (3) Engineer-in-Chief ;
- (4) Chief Engineer concerned;
- (5) Financial Adviser (for W.R.D. only);
- (6) Secretary Control Board for Major Projects (for W.R.D. only) ; and
- (7) Superintending Engineer, E/M (member Secretary).

(b) Purchases on open tenders of machinery costing less than Rs. 10 lakhs at a time shall be decided by the following purchase committee.

- (1) S.E., E/M (Chairman),
- (2) S.E. (Civil) Concerned,
- (3) Accounts Officer and

Other instructions mentioned in paragraph Nos. 4.078 and 4.079 should be followed.

Section 5.- Checking of Measurements

5.015 Every machinery costing more than Rs. 2 lakhs shall be inspected and trial taken by the E.E., E/M. He shall record his check in the measurement book.

10 per cent in number and value of the machinery costing less than Rs. 2 lakhs each, received during the financial year shall be inspected and trial taken by the E.E., E/M. He shall record his check in the measurement book.

Section 6. – Utilization and Development of Plant and Machinery

5.016. Utilisation of machines shall be planned in advance. The S.E. of the civil circle shall frame programme of utilisation of rated machines and other machines such as road rollers, drilling rings, stone crushers etc for the work to be done during the coming working season and intimate the S.E. (E/M) They shall then together discuss and finalise the programme. In case where S.E. (E/M) does not concur with the programme framed by S.E. (civil) the former shall report to the zonal C.E. whose directions shall be binding on both.

The S.E. (Civil) shall make the programme available to C.E. (Civil), and S.E., E/M by 15th July every year.

5.017. On receipt of work programme from C.E. concerned the S.E., E/M shall formulate necessary proposals for the deployment of available machines. The E.-in-C. shall finalise programme in consultation with S.E., E/M by the end of August every year. The S.E., E/M will issue the order for deployment of machines by 15th September every year.

5.018. If it is found that a particular machine has no work or utility on work, the officer incharge should initiate action for its transfer or deployment else where in consultation with the S.E., E/M.

5.019. Wherever the work is to be carried out by E/M formation the E.-in-C./S.E. shall allocate funds for the E/M works.

5.020. In order to control the expenditure on running and maintenance of the machines at site on hourly use rate basis, the E.E., E/M under whose control the machines work, shall frame a working estimate for approval by the competent authority.

While framing the working estimate it should be ensured that the amount of expenditure proposed would not exceed the anticipated amount of recovery for work done on hourly rate basis .

- 5.021. The powers of sanction to working estimate shall be as per item No.6. Appendix 2.30.
- 5.022. The working estimate shall be framed in the format which shall be prescribed by S.E., E/M.

Section 7. Hourly Use Rates

- 5.023. For work done by machines, hourly/k.m. use rate shall be charged to the works.
- 5.024. The hourly/k.m. use rate of machinery and other construction equipments will be fixed and notified by the S.E., E/M from time to time.
- 5.025. Separate rates shall be fixed for (i) departmental work and (ii) contractor's works.
- 5.026. The form to be used for working out hourly use rates is given in Appendix 5.01.

Section 8.- History Sheets of the Machines

- 5.027. History Sheets shall be maintained for every machine and workshop equipment in the form given in Appendix 9.24.
- 5.028. In case of transfer of the machine/equipment, the history sheet duly up dated shall be handed over along with other transfer documents. A sample form of handing over note is given in Appendix 5.02 for guidance.
- 5.029 On transfer of a machine a photo copy of the history sheet pertaining to the period for which the machine remained in the Division shall be retained in that Division.

Section – 9. - Log Books of Machines/Vehicles

- 5.030. Importance to log book shall be as that for a measurement book. Its issue, movement and record shall be regulated as prescribed for measurement books.
- 5.031. The following instructions shall be complied for log books of machines/vehicles:-
- (i) Separate forms of log books shall be adopted for machines/heavy machines, drilling rigs, vehicles, road rollers etc. The forms of log books for some of the common machines are given in Appendices 5.03, 5.04 and 5.05. For other machines, the S.E., E/M shall prescribe the forms.
 - (ii) The log book and the pages thereof shall be machine numbered and shall be in triplicate. The original will remain in the log book. The duplicate carbon copy shall be forwarded, by Sub –Engineer, E/M or S.D.O., E/M to E.E.,

E/M. The triplicate carbon copy shall be forwarded, to any other officer as directed by E.E., E/M.

- (iii) The log books shall clearly indicate the details of work done by the machine/journey performed by the vehicle, fuel and lubricants consumed and details of repairs carried out.
 - (iv) Each entry in the log book should be made and signed by officer not below the rank of Sub Engineer (E/M) in charge. The signature of operator/driver concerned shall also be obtained side by side. Signature of the Sub Engineer (Civil) in charge shall also be obtained in token of the work done by the machine. Where Sub Engineer (E/M) is not available. Sub Engineer (Civil) shall make entries in the log book and take further action as per 5.031 (ii) Where it is not physically possible for latter to do this the time keeper shall make such entries daily. The same shall be duly authenticated by the Sub Engineer (Civil) at least twice a week.
- 5.032. At the end of every month, abstract shall be prepared stating the total use of machine/vehicle, consumables used and average rate of fuel consumed. The debitable head of expenditure shall also be clearly indicated.
- 5.033. The abstract of log book shall be sent to the E/M Division by concerned S.D.O. every month after due scrutiny.
- 5.034. In cases in which the machines are operated on hourly use rate/k.m. use rate basis, a copy of the abstract of log book for work done shall also be sent to the concerned. E.E. (Civil) of the project or other officer concerned.
- 5.035. On receipt of the abstract from the S.D.O., the E.E., E/M concerned will take action to recover the cost of work done by the machine from the E.E. (Civil) or other officer concerned through C.S.A., If the latter has any objection in the log book entries he will immediately write to the E.E., E/M concerned for clarification but on no account the settlement be delayed. Adjustments if any shall be made in subsequent month after reconciliation (See Appendix 7 of C.P.W.A. Code).
- 5.036. The S.D.O., E/M shall be responsible for the proper up keep of the log book. During inspection the E.E., E/M and S.E., E/M shall see that the log books are carefully kept and necessary entries properly recorded. S.E./E.E., E/M shall record his observation under dated signature in the log book.

Section 10 – Repairs to Machines

- 5.037. The S.E., E/M will obtain separate funds from the Government under appropriate heads of account for establishment and running and maintenance of workshops.
- 5.038. Generally, all repairs to the machines and vehicles in the Department shall be carried out in the Departmental shops. In exceptional circumstances and urgency, repairs may be got done through outside agency under intimation to next higher authority.

Chap. IV, Sect. 10 to 14]

5.039. Repair works shall be carried out as per estimates sanctioned by a competent authority subject to availability of funds.

5.040. The types of repairs estimates to machines shall be categorized as below:-

- (i) Estimate for major and special repairs and
- (ii) Estimate for minor and field repairs.

Estimate for Major and Special Repairs

5.041. This estimate is meant for heavy repairs including overhauling of the machines requiring extensive replacements of parts or components.

Estimate for Minor and Field Repairs

5.042. This estimate is meant for ordinary repairs which are outside the provisions for repairs made in the working estimate.

5.043. The estimate forms for major, special and minor repairs are given in Appendices 5.06 and 9.20.

Section 11.- Cannibalisation

5.044. As a rule no part or accessory or component of one machine shall be removed and fitted to any other machine. In exceptional circumstances and emergent situations, this can be allowed under the written orders of the S.E., E/M.

Section 12.- Spillway, Outlet and Regulator Gates

5.045. Design, procurement, installation and maintenance of the spillway, outlet and regulator gates shall be the responsibility of E/M formation and shall be referred to E/M formation by the engineer in charge of the works.

Section 13.- Financial Powers in Respect of Electrical / Mechanical Works

5.046. The financial powers exercised by officers of the Works Department in respect of E/M works are detailed in Appendix 5.07

Section 14. – Hiring of Machines Giving Plants/Machinery of Hire

5.047. Instructions about hiring of plant and machinery to contractors are detailed in paragraphs 9.015 and 9.016. Instructions about hiring of plant and machinery to other Government departments/Under- takings and Enterprises of Government of India/Government of Chhattisgarh/ local bodies are detailed in paragraphs 9.017 and 9.018. The form of agreement is given as Appendix 5.08.

Taking Plants/Machinery on Hire

5.048. The E-in-C / CE, E/M has full powers to take on hire any machinery from any agency for machines other than heavy machines . In case of hiring of heavy machines approval from E-in-C will be necessary.