



कार्यालय: रक्षा लेखा नियंत्रक (सेना), मेरठ छावनी

Office of the Controller of Defence Accounts (Army).

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No AN/VII/3239/Misc

Dated: 30.01.2023

To

The Officer-in-charge
All Sub-Offices
Under CDA(A), Meerut

Subject: Directives on maintenance of electrical and mechanical (E/M) services..

Reference: HQrs office letter No 18001/AT-X/Misc/E-3909 dated 18.01.2023

A copy of Dte. Of Works, E-in-C's Branch, New Delhi letter no. A/37696/Gen/Pol/E2W(PPC) dated 16/12/2022 on the above subject received ^{under} HQrs office letter is forwarded for information and Compliance.

Encls: As stated



sd -
ACDA (AN)

Copy To:

✓ IT&S Wing (Local)

: for uploading on website.

Qsher
Sr. Accounts Officer(AN)

	<p style="text-align: center;">“हर काम देश के नाम” रक्षा लेखा महानियंत्रक उलान बटार रोड, पालम, दिल्ली छावनी-110010 CONTROLLER GENERAL OF DEFENCE ACCOUNTS Ulan Batar Road, Palam, Delhi Cantt.- 110010 (Audit-X) Phone: 011 – 25665594, email: atxcgda.dad@gov.in</p>	
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No. 18001/AT-X/Misc/E-3909

Dated: 18.01.2023

To


All Regional PCsDA/CsDA &
CDA (IDS) New Delhi

Subject: - Directives on maintenance of electrical and mechanical (E/M) services.

A letter No. A/37696/Gen/Pol/E2W(PPC) dated 16.12.2022 received from Dte. of Works, E-in-C's Branch, New Delhi on the above subject is forwarded herewith for your information and necessary action at your end.

This issues with the approval of Sr. Jt. CGDA (Audit).

Enclosures: As stated above


[SujitKumar]
Accounts Officer (AT-X)

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Tele : 23019646Policy No 16/ 2022*works*
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Dte of Works, E-in-C's Branch
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A/37696/Gen/Pol/E2W (PPC)

16 Dec 2022

List 'A' and 'B'

(Through MES Website)

DIRECTIVES ON MAINTENANCE OF
ELECTRICAL AND MECHANICAL (E/M) SERVICES

1. Introduction. Maintenance of assets in a functional state constitute an important component of works services and is a major function of the MES. Suitable and timely maintenance and repairs enhance the functional efficiency, life and value of assets and provide better comfort to users. While considerable thrust is given towards planning and execution of capital works, it is the maintenance services which affect quality of life of users. A planned and targeted effort towards these services would automatically reflect in improved standards of maintenance of our assets in all cantonments and military stations within the confines of available resources.
 2. While buildings and roads maintenance has high visibility, the maintenance of E/M services is generally carried out backstage. The efficiency of E/M services or lack of the same, come to fore only when there is disruption in electric supply, water supply, non-working of STP etc. While the huge effort involved in ensuring optimal operation of E/M services is seldom highlighted, lack of the same causes immediate discomfort to the users. Therefore, greater skill and foresight are needed for planning and execution of E/M maintenance works. Guidelines highlighting some of the common issues are given in subsequent paragraphs which would assist MES executive formations/ units to have uniformity in E/M specifications of various utility maintenance services in the stations.
 3. Repairs. Repairs comprise of all maintenance and periodical services, renewals and replacements as well as alterations and improvements necessitated by technical or engineering reasons. Defence Works Procedure 2020 classifies repairs as Ordinary repairs (Para 9 (a) (iii)) and Special Repairs (Para 10 (a)).
 4. Renewal. A renewal is the replacement of the whole or a major part of a definite portion of a building or other structure. Para 227 of RMES, Para 9(c) of DWP 2020 and Para 1.9 of SoA 2022 define renewal/ replacement in general, while Para 259 of RMES states "An E/M renewal may be defined as the replacement of a complete installation, or whole of a definite portion of an installation or of a complete unit forming part of an installation" which includes extensive reconstruction of a supply system, increased capacity of plant or accommodation for the installation, replacement and supply of major spare parts. The replacement of a fitment or portion of a building by one of a better class
- Shahin*

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is an original work, if the existing fitment or portion of the building is still serviceable; but is a maintenance service if it is worn out and requires replacement in any case. In case of any dispute, the CWE's decision as to whether a particular work shall be classified as an original work, renewal or petty repair, shall be final.

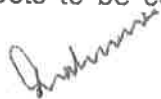
5. **Inspection of E/M Plant and Equipment.** Routine maintenance inspection tests of E/M internal installations, tools & plant, equipment etc shall be carried out as per paras 241 to 257 of E-in-C's Standing Orders. The necessary records, log books, registers, reports etc shall be maintained as laid down at Paras 258 to 275. These routine/ periodic inspections and tests indicate necessity and extent of maintenance required for each of the items and help deciding when it will be more economical to carry out definite renewals instead of continuing with piecemeal repairs.

6. **Renewal/ Replacement.** Some of the E/M items may need replacement after out-living their design/ performance life and having worn out due to wear and tear. Sometimes, mandatory/regulatory instructions of government based on environmental concerns, use of renewable energy, energy efficiency etc tend to necessitate replacement of older assets/ plant/ equipment. The replacement of unserviceable items, ceiling fans/ summer appliances, fans, CFC-free refrigerant appliances shall be as per latest Standards of BIS, in consonance with Indian Society for Heat and Refrigeration and Air Conditioning Engineers (ISHRAE). Under India Cooling Action Plan (ICAP) as per Hydro Chloro Fluoro Carbon (HCFC) Phase out Management Plan (HPMP) Stage-II, the target is to phase out HCFC-22 from the country by 2022 and to train Refrigeration and Air-conditioning (RAC) technicians on alternative technologies and good servicing practices. The HPMP Stage-II, also prioritizes phasing out of HCFCs and increasing energy efficiency in building sector. Also as per Ministry of Environment and Forests on Climate Change (MOEF&CC) notification dated 13 Mar 2014, the phase out date for Ozone depleting group six substances is as under:

- (a) Manufacture of domestic Refrigerator- Phase out date - 01-01-2015
- (b) Manufacture of Air Conditioners - Phase out date - 01-01-2025
- (c) Manufacture of other Refrigeration and Air Conditioning products (excluding compressor) - Phase out date - 01-01-2025

7. The appropriate decision on repair/ replacement shall be taken after assessing the state of respective items based on annual depreciation rate as per E-in-C's Branch Policy No. A/37696/Pol/E2W (PPC) dated 18 Apr 2017. In consonance with para 904 of RMES, such items need not be declared unserviceable if they are functional and adhering to latest norms of operational efficiency. Efforts shall be made to maintain such E/M equipment/ plant/item in functional state after addressing requisite safety aspects, till its final replacement.

8. Some important aspects to be considered while planning and execution of E/M services are listed below:-



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Wiring. The circuit for lighting of common area shall be separate. For large spaces such as conference halls, auditorium etc. circuits feeding fans, lights and sockets may be kept separate. The wiring at such locations may utilise 2.5 Sqmm wire considering more number of points and longer wiring. The size of earth wire in each circuit should be same as that of live wire /phase wire. PVC casing and capping should be avoided. The wiring for fire alarm & detection should be carried out in steel conduit with proper colouring of conduit. The flame proof wiring should invariably be carried out in ERW steel conduit. Modular type switches, sockets and regulators should be catered. The rewiring / wiring must be in conformity to Part 8 Section 2 of NBC-2016. The nominal cross-sectional area of copper conductors in AC circuits shall not be not less than the values specified below:-

SI No	Type of Wiring Circuit	Minimum Copper Wire Size	Remarks
(i)	Light point only	1.5mm ²	One circuit with maximum 8 points.
(ii)	Light points and Socket 6A In common circuit	2.5mm ²	One circuit with maximum 8 points. (Not more than 2x6A sockets in one circuit)
(iii)	Socket-outlets, 6A point only	2.5mm ²	One circuit with maximum 4 points.
(iv)	Socket-outlets, 16 A point only	2.5mm ²	One circuit of one point only.
(v)	Water Heater < 3 kW	2.5mm ²	One circuit of one point only.
(vi)	Heater or Electric equipment more than or equal to 3 kW	4.0mm ²	One circuit of one point only.
(vii)	Air Conditioner 1.5 /2 Ton point	4.0mm ²	One circuit of one point only.

(b) **Fans.** Energy efficient Brush-Less Direct Current (BLDC) fans can be incorporated as replacement to unserviceable conventional fans. The rewinding of old/ unserviceable fans should not be carried out and the fan should be replaced with new BLDC fans as per BIS 374-2019. The selection of rating of fan shall be decided as per market availability and cost factor. The performance requirement shall be in accordance with clause 15 of IS 374:2019 including all amendments, as applicable. The rated quantities of air delivery and service value shall not be inferior to the minimum values specified in Table 1 (Performance Value for fans) Clauses 15.1 and 15.2 of IS 374:2019, reproduced as under:-

(i) **Clause 15.1**

Service Value for Fans (Size based)			
Ser No	Fan Size mm	Minimum Air Delivery M ² /min	Minimum Service Value M ² /min/W
(aa)	900	130	3.1
(ab)	1050	150	3.1
(ac)	1200	210	4.0
(ad)	1400	245	4.1
(ae)	1500	270	4.3

Signature

(ii) Clause 15.2

Service Value for Fans (Star-Rating based)			
Ser No	Star Rating	For Sweep size < 1200 mm (i.e. 900 mm and 1050 mm)	For Sweep size \geq 1200 mm (i.e. 1200 mm and 1400 mm and 1500 mm)
(aa)	1 Star	≥ 3.1 to < 3.6	≥ 4.0 to < 4.5
(ab)	2 Star	≥ 3.6 to < 4.1	≥ 4.5 to < 5.0
(ac)	3 Star	≥ 4.1 to < 4.6	≥ 5.0 to < 5.5
(ad)	4 Star	≥ 4.6 to < 5.1	≥ 5.5 to < 6.0
(ae)	5 Star	≥ 5.1	≥ 6.0
For 1400 mm, minimum service value for fans shall be 4.1 (for 1 star)			
For 1500 mm, minimum service value for fans shall be 4.3 (for 1 star)			

(c) **Sensor Based Lighting.** Use of Sensor based lighting for corridor, washroom, conference halls, auditoriums of HQs etc be encouraged to save power and enhance life of fittings.

(d) **Air Conditioners.** Bureau of Energy Efficiency (BEE) has advised consumers to use ACs at 24°C. Ministry of Power Notification No SO2528 (E) dated 08 Aug 2017 and SO3897(E) dated 29 Oct 2019 shall be referred for compliance. The labeling program on room air conditioners aims at common rating plan based on Indian Seasonal Energy Efficiency Ratio (ISEER) for fixed speed and inverter air conditioners.

(e) **Refrigerators.** Ministry of Power notification No SO1899(E) dated 26 May 2016 and SO6244(E) dated 21 Dec 2018 shall be referred for compliance. The star rating for frost free refrigerators is one star to five star. Only 5 star refrigerators with low Ozone depletion potential refrigerants should be used.

(f) **DG Sets.** All new DG Sets should be CPCB-II norms compliant. All existing DG Sets should be made CPCB-II compliant by installing Retro-fitted Emission Control Devices (RECD) as per guidelines issued by E-in-C's Branch policy letter No. A/37696/Gen/Pol/E2W(PPC) dated 29 Jun 2022. All new DG Set above 1000 KVA required in works should be preferably on 11 KV Voltage alternators.

(g) **Energy Efficient Transformer.** Ministry of Power had issued Notification No SO4062 (E) dated 16 Dec 2016 and SO1665(E) dated 27 May 2020 for achieving energy efficiency in reducing losses from transformers. Unserviceable transformers should not be repaired and be replaced with energy efficient transformers. All transformer above 1000 KVA which are to be installed within buildings in new works should be Dry Type, wherein space constraints are existing, 33/11 KV compact type substation shall be installed for ease of maintenance. In consonance with para 902 of RMES, transformers which are serviceable needs to be maintained in operation till they fall in a state of beyond economical repair.

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(i) **SCADA.** The SCADA works for W/S and E/S should be carried out as per the policy issued by E-in-C's Branch E2W (PPC) Policy No. 04/2022 dated 06 Apr 2022 for W/S and Policy No. 05/2022 dated 06 Apr 2022 for E/S. The work for SCADA is integration of components and there is no OEM for the complete system. The above mentioned policy is 'MAKE' neutral and recommends use of openware software, communication system viz Cellular network, RF and VSAT etc to prevent monopoly. The SCADA system should have station security clearance and audit as well as CERT certified security audit to ensure cyber security.

(j) **Smart Meter with Prepaid Feature.** All the unserviceable electric meters to be replaced with Smart Meters as specified in IS 16444-2015 (Reaffirmed 2020) and as per guidelines issued by E-in-C's Branch E2W (PPC) policy dated 10 Mar 2022. Govt. of India vide Gazette Notification F No. 23/35/2019-20 R&R dated 17 Aug 2021 has mandated placement of Smart Meters with prepayment feature by Dec 2023 / Mar 2025 based on the urbanisation and communication network availability. The policy mandates obtaining of cyber security clearance from respective service HQ Cyber agencies and mandatory CERT-IN audit firms before installation of Smart Meters.

9. The following important points shall be borne while planning maintenance of E/M internal installations:-

(a) Scope of work in tender may include general repairs like repairs to compressor of Air Conditioner, water cooler, gas charging, rewinding of motors in ceiling fans and desert coolers etc only for such equipments/ fixtures which are found unserviceable at the time of planning of maintenance work. These items shall not be included as routine on presumption of likely requirement. However, periodic servicing can be included in the maintenance tender.

(b) Supply and fix through contracts of standalone fixtures/ fittings like ceiling fans, exhaust fans, desert coolers, air conditioner, water coolers, geysers, light fittings shall be discouraged. These shall be procured as stores through GeM and got fixed by MES Industrial staff or outsourcing of services contracts in consonance to this HQ letter No A/37696/12-158/Pol/E2W (PPC) dated 24 Jan 2022.

(c) Summer appliances such as refrigerator, water cooler & Air Conditioner (R-22 based) are not to be repaired and need to be phased out from use. These shall be replaced by non-CFC refrigerant appliances in compliance to guidelines issued by Bureau of Energy Efficiency.

10. **Disposal of Unserviceable items.** The unserviceable items or salvage stores should be disposed off as per provisions of paras 759 (c), 781, 816, 817 under Section 50 (Disposal of Store) of RMES. The unserviceable items obtained from demolition of building or E/M work should be disposed off after taking it in demolition ledger and conversion to scrap etc as explained in relevant paras of RMES. To ensure proper accounting, the procedure enumerated in RMES shall be strictly adhered to.

11. The guidelines contained herein are neither exhaustive nor complete and are to be read in conjunction with other instructions on the subject as well as requirements



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regulated by relevant codal provisions, latest policies/ guidelines, other statutory/ mandatory regulations etc.

12. These directives shall be disseminated up to AGE/ JE level for compliance.



(SH Rahuman)
Brig
DDGW (PPC & Est)
For E-in-C

Copy to: -

QMG's Branch / DG LW&E

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IHQ of MoD (Air Force) / Dte of AF Works

HQ IDS / Works Dte

HQ SFC

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CME / Faculty of Construction Management

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Automation Cell - For uploading on the MES website **with restricted access**.