



भारत सरकार
उत्तर मध्य रेलवे
विद्युत (सामान्य) विभाग
आगरा मण्डल

Electrical (General) Department

Agra Division

निविदा-प्रपत्र

Tender Document

North Central Railway
"Form A"
(Electrical Department)

Name of work:- Electrification work in connection with Fabrication and installation of Pre-Fabricated PUF Panel Porta Cabins at AGC Coaching Depot and AF Station.

1.	Tender No.	-	T-09-N-2026-27
2.	Last date for submission of the tender.	-	10/07/2026/15:00 Hrs. (or latest update)
3.	Validity of Tender	-	60 days
4.	Completion period of work	-	08 Months
5.	App. Cost of work	-	Rs. 1198002.89
6.	Tender form containing number of pages	-	25 Nos.
7.	Earnest money deposit	-	Rs. 24000.00
8.	Tender Form Fee	-	NIL
9.	UWID	-	060142254005
10.	Plan head	-	42
11.	DE Sanctioning Authority	-	Sr. DME/C&W/AGC
12.	Allocation	-	Capital

वरिष्ठ मण्डल विद्युतइंजीनियर (सामान्य)आगरा
Sr. Divisional Electrical Engineer (General) Agra

North Central Railway

Office of the
Sr. Divisional Electrical Engineer (Gen.)
North Central Railway, Agra Division
Date:-17-06-2026

TENDER NOTICE No. T-09-N-2026-27

Sr. Divisional Electrical Engineer (General) N. C. Railway, Agra on behalf of President of India invites "Open Tender" through on line only (E-Tendering) for the following works.

SN	Tender No.	T-09-N-2026-27
1.	Name of work with its location & Completion Period	Electrification work in connection with Fabrication and installation of Pre-Fabricated PUF Panel Porta Cabins at AGC Coaching Depot and AF Station. Completion period 08 months
2.	Approx. Cost of the work	Rs.1198002.89

For full details and submission of bid please see the Indian Railways website www.ireps.gov.in
Tenders can only be submitted through web portal www.ireps.gov.in up to 15:00 hrs on 10-07-2026.

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Sr. Divisional Electrical Engineer (General) Agra

उत्तर मध्य रेलवे

कार्यालय
वारिष्ठ मंडल विद्युत इंजीनियर (सामान्य)
उत्तर मध्य रेलवे, आगरा
दिनांक: 17-06-2026

निविदा सूचना संख्या: T-09-N-2026-27

वारिष्ठ मंडल विद्युत इंजीनियर (सामान्य), आगरा द्वारा भारत के राष्ट्रपति की ओर से निम्नलिखित कार्य हेतु केवल ऑन लाईन (E-Tendering) द्वारा खुली निविदा आमन्त्रित की जाती है।

क्रम संख्या	टेन्डर संख्या	T-09-N-2026-27
1	कार्य का नाम लोकेशन सहित एवं कार्य पूर्ण करने की अवधि	AGC कोचिंग डिपो और AF स्टेशन पर प्री-फैब्रिकेटेड PUF पैनल पोर्टा केबिन बनाने और लगाने से जुड़ा इलेक्ट्रिकल काम। कार्य पूर्ण करने की अवधि 08 माह
2	कार्य की अनुमानित लागत	Rs.1198002.89

पूरी जानकारी एवं टेन्डर में भाग लेने हेतु Indian Railways Website www.ireps.gov.in देखें। टेंडर्स केवल बेव पोर्टल Indian Railways website www.ireps.gov.in पर **15:00 बजे तक दिनांक 10/07/2026** तक टेन्डर डाल सकते हैं।

REGULATIONS FOR TENDERS AND CONTRACT FOR THE

वारिष्ठ मण्डल विद्युत इंजीनियर (सामान्य) आगरा
Sr. Divisional Electrical Engineer (General) Agra

GUIDANCE OF CONTRACTORS FOR RAILWAY WORKS

1. (1) **Definitions:** In these Standard General Conditions of Contract, the following terms shall have the meaning assigned hereunder except where the context otherwise requires:

(a) "Railway" shall mean the President of the Republic of India or the Administrative Officers of the Railway or of the Successor Railway authorized to deal with any matters which these presents are concerned on his behalf.

(b) "General Manager" shall mean the Officer in-charge of the General Superintendence and Control of the Railway and shall also include Addl. General Manager, the General Manager (Construction) and shall mean and include their successors, of the successor Railway.

(c) "Chief Engineer" shall mean the Officer in-charge of the Engineering Department of Railway and shall also include Chief Engineer (Construction), Chief Signal & Telecommunication Engineer, Chief Signal & Telecommunication Engineer (Construction), Chief Electrical Engineer, Chief Electrical Engineer (Construction), Chief Mechanical Engineer and shall mean & include their successors, of the Successor Railway.

(d) "Divisional Railway Manager" shall mean the Officer in-charge of a Division of the Railway and shall mean and include the Divisional Railway Manager of the Successor Railway.

(e) "Engineer" shall mean the Divisional Engineer or the Executive Engineer, Divisional Signal & Telecom Engineer, Divisional Electrical Engineer, Divisional Mechanical Engineer in executive charge of the works and shall include the superior officers of Open Line and Construction organizations on the Railway of the Engineering, Signal & Telecom, Electrical and Mechanical Departments, i.e. the Senior Divisional Engineer/Deputy Chief Engineer, Senior Divisional Signal & Telecom Engineer / Dy.Chief Signal & Telecom Engineer, Senior Divisional Electrical Engineer / Deputy Chief Electrical Engineer, Senior Divisional Mechanical Engineer and shall mean & include the Engineers of the Successors Railway.

(f) "Engineer's Representative" shall mean the Assistant Engineer, Assistant Signal & Telecommunication Engineer and Assistant Electrical Engineer, Assistant Mechanical Engineer in direct charge of the works and shall include any Sr. Section/Junior Engineer of Civil Engineering/Signal and Telecommunication Engineering/Mechanical Engineering/Electrical Engineering Departments appointed by the Railway and shall mean and include the Engineer's Representative of the Successor Railway.

(g) "Contractor" shall mean the Person/Firm/LLP/Trust/Co-operative Society or Company whether incorporated or not who enters into the contract with the Railway and shall include their executors, administrators, successors and permitted assigns.

(h) "Contract" shall mean and include the Agreement, the Work Order, the accepted Bill(s) of Quantities or Chapter(s) of Standard Schedule of Rates (SSOR) of the Railway modified by the tender percentage for items of works quantified, or not quantified, the Standard General Conditions of Contract, the Special Conditions of Contracts, if any; the Drawing, the Specifications, the Special Specifications, if any and Tender Forms, if any.

(i) "Works" shall mean the works to be executed in accordance with the contract.

(j) "Specifications" shall mean the Standard Specifications for Materials & Works of Railway as specified by Railway under the authority of the Chief Engineer or as amplified, added to or superseded by Special Specifications, if any.

(k) Standard Schedule of Rates (SSOR) shall mean the schedule of Rates adopted by the Railway, which includes 1. "Unified Standard Schedule of Rates of the Railway (USSOR)" i.e. the Standard Schedule of Rates of the Railway issued under the authority of the Chief Engineer from time to time, updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents; 2. "Delhi Schedule Of Rates (DSR)" i.e. the Standard Schedule of Rates published by Director General/ Central Public Works Department, Government of India, New Delhi, as adopted and modified by the Railway under the authority of the Chief Engineer from time to time, updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents.

(l) "Drawing" shall mean the maps, drawings, plans and tracings or prints there of annexed to the contract and shall include any modifications of such drawings and further drawings as may be issued by the Engineer from time to time.

(m) "Constructional Plant" shall mean all appliances or things of whatsoever nature required for the execution, completion or maintenance of the works or temporary works (as hereinafter defined) but does not include materials or other things intended to form or forming part of the permanent work. (n) "Temporary Works" shall mean all temporary works of every kind required for the execution completion and/or maintenance of the works.

(o) "Site" shall mean the lands and other places on, under, in or through which the works are to be carried out and any other lands or places provided by the Railway for the purpose of the contract.

(p) "Period of Maintenance" shall mean the specified period of maintenance from the date of completion of the works, as certified by the Engineer.

(q) 'Contractor's authorized Engineer' shall mean a graduate Engineer or equivalent, having more than 3 years' experience in the relevant field of construction work involved in the contract, duly approved by Engineer.

(r) Date of inviting tender shall be the date of publishing tender notice on IREPS website if tender is published on website or the date of publication in newspaper in case tender is not published on website. (s) "Bill of Quantities" shall mean Schedule of Item(s) included in the tender document along with respective quantities and rates, accepted by the Railway.

1. (2) **Singular and Plural:** Words importing the singular number shall also include the plural and vice versa where the context requires.

1.(3) **Headings and Marginal Headings:** The headings and marginal headings in these Standard General Conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof the contract

2. **Applicability:** These instructions and conditions of contract shall be applicable for all the tenders and contracts of railways for execution of 'Works' as defined in GFR 2017.

3. "Limited tenders" shall mean tenders invited from all or more contractors on the approved list of contractor with the Railway.

4. "Open tenders" shall mean tenders invited in open and manner and with adequate notice.

5. "Work" shall mean the work contemplated in the drawing and schedulers set forth in the tender from the description of contract and required to be executed according to specifications.

Conditions of Tender

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1. Before starting the work contractor shall put up drawing of the work to be executed in consultation with site incharge and will put up in the office of Sr.DEE/G/Agra for approval.
2. General conditions of contract and specifications for material and work of the North Central Railway can be seen at the office of Sr. Divisional Electrical Engineer North Central Railways, Agra.
3. The tender containing erasures and alteration of the tender documents are liable to be rejected. Any correction made by the tender/Tenderers in his/their entries must be attested by him/them.
4. If the Tenderer deliberately gives/tenderers deliberately give information in his/their tender or creates/create circumstances for the acceptance of his/their tender, the Railway reserves the right to reject such tender at any stage.
5. The earnest money for the due performance of the stipulation to keep the offer open till the date specified in the tender will be refunded to the unsuccessful Tenderer/Tenderers within a reasonable time. The earnest money deposited by the successful Tenderer/tenderers will be retained towards the security deposit for the due and faithful fulfillment of the contract but shall be forfeited if the contractor fails/contractors fail to execute to agreement bond or start work within a reasonable time (to be determined by engineer-in-charge) after notification of the acceptance of his/their tender.
6. Documents testifying to the Tenderer/Tenderers' Previous experience and financial status should be produced when desired by the Railway.
7. Non-compliance with any of the conditions set forth therein above is liable to result in the tender being rejected.
8. Should a tenderer be retired engineer of the Gazetted rank or any other Gazetted officer working before his retirement, whether in the executive or administrative capacity or whether holding a pensionable post or not, in the electrical department of any of the Railway owned and administered by the president of India for the being, or should a tenderer being partnership firm have as one of its partner a retired Engineer or retired Gazetted officer as aforesaid, or should a tenderer being as incorporated company have any such a retired Engineer or retired Gazetted officer as aforesaid, at one of his directors or should a tenderer have in his employment any retired Engineer or retired officer as aforesaid the full information as to the date of retirement of such Engineer or Gazetted officer from the said service and in case where such Engineer or officer had not retired from government service at least two years prior to date of the submission of the tender as to whether permission for taking such contract, or, if the contract be a partnership firm or an incorporated, company to become a partner or director as the case may be, or to take employment under the contract has been obtained by the tender or the engineer or the officer as the case maybe from the president of India or any officer duly authorized by him in this behalf shall be clearly stated in writing at the time submitting the tender. Tenders without the information above referred to or a statement to the effect that no such retired engineer or retired gazetted officer is associated with the tender, as the case may be shall be rejected.
9. Should a tenderer/ contractor being the individual on the list of approved contractor have a relative employed in gazetted capacity in the electrical department of North Central Railway or, in case of partnership firm or company incorporated under the Indian company law should a partner or the relative or the partner or the shareholder or a relative of a shareholder be employed in gazetted capacity in the electrical department of North Central Railway authority inviting tenders shall be informed of the fact in the time of submission of tenders, failing which tender may be rejected, or if such fact subsequently comes to light, the contract may be rescinded in accordance with the provision in clause 62 of the general condition of contract.
10. Should the railway decide to negotiate with a view to bring down rate the original offer will still be binding in case nothing materialized out of the negotiation?
11. **All released material (if any) should be handed over to concerned Depot by the contractor.**

Additional conditions of contract`

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1. Railway's material such as cement, M.S. bars, flats or other sections including tie bars, A.C sheet with or without ridges and accessories, G.I. sheets glasses or and other items as are stipulated in the agreement to be issued of the contractor for the work, either free of charge or on payment as the case may be will be issued to him at the Railway's depot/goods shed at and will be used by the contractor for the work in such quantities as are indicated in the schedule or in relevant specification or drawing or as approved by the Engineer whose decision hereon shall be final. Wastage of damage to such material in any manner shall be totally avoided. If any quantity of the Railway's material is consumed in excess or wasted or damaged or lost or not satisfactorily accounted for, in that case, recovery, will be made from the contractor at the respective market rate or book rate whichever charges on the overall cost of material consumed in excess or wasted damages, lost or not satisfactorily accounted for in accordance with para 2327 to 2329 of the India railway's Code for stores department.

2. The code nos. Descriptions and Rates given in the schedule are based on the standard schedules of rates 1976. Any discrepancy notices during the executions of the work, in the working rates, quantity of the cement etc. Should be rectified by reference to the printed schedule, which be treated as authoritative & binding on the contractor. The relevant notes applicable to the respective sub-chapter will apply to the items of the tender schedule and should be considered as having been incorporation in the contract agreement and binding on the contractor.

3. For any other items not specially shown in the schedule of rates appended to the tender document, the Divisional/Executive Engineer will offer rates as shown for the X zone in the North Central Railway's standard schedule of rates, 1976 subject to the same percentage adjustment accepted in the contract being applicable to the additional items.

4. The Railway's shall not supply from its own quota to the contractors controlled commodities Assistance will, however, be given by recommending to appropriate authorities contractor's applications for issue of import licenses and release of controlled commodities of the Engineer is satisfied that this material is actually required by the contractors for carrying out the work and is not available in the country.

5. **Maintenance period** - The work shall be maintained after completion for a period of **12 Months** by the contractor and he shall make good any defects imperfections shrinkages or faults which may appear at his own cost except the item where specifically mention different maintenance period.

Note- Warranty Period of LED Lights/Lamps are 60 months.

6. Tender document should be submitted along with the form 'A' and special conditions duly signed at appropriated places of each pages.

7. Price quoted by the tenderer should be F.O.R destination. No freight charge or insurance is payable by the Railway

8. **CREDENTIALS OF THE TENDERERS:-** Copy of the valid certificates / license etc. may also be enclosed with Tender for consideration.

9. In case of, any discrepancy between the GCC (as amended till date) the special conditions for this work shall prevail. The special condition supplement to conditions of tenders and contracts, the General condition of contract and the notes appearing under the relevant chapters and sub-chapters of the standard schedule of rates, 1976 and should be considered a part of the contract papers.

10. **ELIGIBILITY CRITERIA:- Nil**

11. Tenderer should submit Valid Electrical License from the specified authority on the date of opening of tender on which the name of firm should have clearly mentioned, otherwise his offer will be SUMMARILY REJECTED. If tenderer submit the original Electrical License for renewal from where the original Electrical License is issued, tenderer should submit the proof / copy of receipt from the Electrical Safety department for consideration of offer.

12. **INSPECTION OF MATERIALS:-** The inspection of the material shall be conducted by the consignee/RITES/third party as per the Railway Board Guidelines. In cases, where due to any special reason, consignee inspection is proposed in cases of order value above Rs. 5 Lakh, the same should be done with the approval of the Divisional officer concerned.(as per Rly Board L.No. 2017/Trans/01/Policy/Pt-S dt 16-08-2018)or latest. The consignee inspection is

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proposed since the cost of the items less than 5 lakhs as per Vigilance ltr no.20230300392/PC/V5/N/ALD dated. 06.05.2024.

13. Payments:- Payment of running bills/ on account payment:

(i) For supply, installation/ fixing, testing and commissioning work-

(A) 90% payment will be made to contractor against supply, installation, testing and commissioning of material, inspection certificate, receipted challan, joint note with Sr.DEE (G) Authorized supervisor, test certificate of manufacturer, report of RITES etc.

(B) The number (i.e. maximum/minimum) of on account payment will be decided by the Sr. DEE/G/AGC depending upon the performance of contractor or importance of work.

(C) Balance 10% will be released/ paid with the final bill after successful completion, testing & commissioning of the complete awarded/ approved varied work.

14. A) Contractor is to abide by the provisions of Payment of Wages act & Minimum Wages act in terms of clause 54 and 55 of Indian Railways General Condition of Contract. In order to ensure the same, an application has been developed and hosted on website www.shramikkalyan.indianrailways.gov.in Contractor shall register his firm/company etc, and upload requisite details of labour and their payment in this portal. These details shall be available in public domain. The Registration/ updating of Portal shall be done as under: (a) Contractor shall apply for onetime registration of his company/firm etc. in the Shramikkalyan portal with requisite details subsequent to issue of Letter of Acceptance. Engineer shall approve the contractor's registration in the portal within 7 days of receipt of such request. (b) Contractor once approved by any Engineer, can create password with login ID (PAN No.) for subsequent use of portal for all LOAs issued in his favour. (c) The contractor once registered on the portal, shall provide details of his Letter of Acceptances (LOA) / Contract Agreements on shramikkalyan portal within 15 days of issue of any LOA for approval of concerned engineer. Engineer shall update (if required) and approve the details of LOA filled by contractor within 7 days of receipt of such request. (d) After approval of LOA by Engineer, contractor shall fill the salient details of contract labours engaged in the contract and ensure updating of each wage payment to them on shramikkalyan portal on monthly basis. (e) It shall be mandatory upon the contractor to ensure correct and prompt uploading of all salient details of engaged contractual labour & payments made thereof after each wage period.

15. The tenderers shall submit a copy of certificate stating that all their statements/documents submitted along with bid are true and factual. Standard format of certificate to be submitted by the bidder is enclosed as Annexure-B. Non submission of above certificate by the bidder shall result in summarily rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify state and submit the supporting documents duly self-attested by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document.

The Railway reserves the right to verify all statements, information and documents submitted by the bidder in his tender offer, and the bidder shall, when so required by the Railway, make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification, by the railway shall not relieve the bidder of its obligations or liabilities here under nor will it affect any rights of the railway thereunder.

ANNEXURE – IV

**NORTH CENTRAL RAILWAY
CONTRACT AGREEMENT OF WORKS**

CONTRACT AGREEMENT NO. _____ DATED _____

ARTICLES OF AGREEMENT made this _____ day of _____ 20____

Between President of India acting through the Railway Administration hereafter called the "Railway" of the one part and _____ herein after called the "Contractor" of other part. WHEREAS the Contractor has agreed with the Railway for performance of the works **Electrification work in connection with Fabrication and installation of Pre-Fabricated PUF Panel Porta Cabins at AGC Coaching Depot and AF Station.** Set forth in the Schedule hereto annexed upon the Standard General Conditions of Contract, corrected upto latest correction slips and the Specifications of North Central Railway corrected upto the latest correction slips and the Schedule of Rates of North Central Railway, corrected upto latest correction slips and the Special Conditions and Special Specifications, if any and in conformity with the drawings here-into annexed ANDWHEREAS the performance of the said works is an act in which the public are interested. NOW THIS INDENTURE WITNESSETH that in consideration to the payments to be made by the Railways, the Contractors will duly perform the said works in the said schedule set forth and shall execute the same with great promptness, care and accuracy in a workmanlike manner to the satisfaction of the Railway and will complete the same in accordance with the said specifications and said drawings and said conditions of contract on or before the _____ day of _____ 20__ and will maintain the said works for a period of _____ Calendar months from the certified date of their completion and will observe, fulfill and keep all the conditions therein mentioned (which shall be deemed and taken to be part of this contract, as if the same have been fully set forth herein), AND the Railway, both hereby agree that if the Contractor shall duly perform the said works in the manner aforesaid and observe and keep the said terms and conditions, the Railway will pay or cause to be paid to the Contractor for the said works on the final completion thereof the amount due in respect thereof at the rates specified in the Schedule hereto annexed.

Contractor _____ (Signature) Railway: Designation _____

Address _____ (For President of India)

Date _____ Date _____

Witnesses (to signature of Contractor):

1. Signature of witnesses _____

Name with address _____

Date _____

2. Signature of witnesses _____

Name with address _____

Date _____

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Special Conditions

SCOPE OF THE WORK.

All released accountable material will be returned back to the Railway by the contractor at concerned depot. Cable will be supplied by Railways. Contractor transport cable from SSE/P/Depot store to working site at his own cost.

1. Civil Engg. Works by the Contractor:-

Following Civil Engg works are whether specified or not are to be carried out by the Contractors.

- a) Plinth foundation for / control panel board / LT panel board etc.
 - b) Excavation of cable trench in ground/under the Rly track/road etc to facilitate laying of the LT cables.
- In addition to above, other civil engineering works i.e. cleaning of sites, removing of obstruction, replaster of wall with same colour etc. should also be carried out by the contractor at his own cost.
- c) Before spreading of Ballast, firm will do leveling of surface of entire yard area & will spray chemical herbicide to avoid growth of grass, etc. The depth of ballast spread will be 100 mm.

2. Supply of materials by the Contractor:-

All the materials to be supplied by the contractor shall be procured from the sources approved by Railways(List Enclosed). All the equipment materials fittings and components will be subject to quality control Programmed of the manufacturer being part of the quality assurance programme of the contractor.

3. Execution of the work:-

3.1 All the works are to be carried out as per the detailed specification and approved drawings. All the material shall confirm to relevant IS specification amended up to date. The works shall also comply with IE rule.

3.2 Time is essence of the contract as such various item of the works shall be completed in accordance with the work time programme decided by Sr.DEE/G/ NC. Rly Agra.

3.3 Local disturbance if any, on account of local people shall be dealt by the contractor.

3.4 All the tools and tackles instrument etc as required for the work shall be arranged and provided by the contractor.

3.5 Protection of equipments, materials and personnel of the contractor shall be his own responsibility.

3.6 Contractor shall make his own arrangement for water supply, electric supply and space /store for keeping his materials.

4. Cement/ Sand/ Metal

The contractor shall use ISI mark cement. The sand used shall be river sand. The contractor shall use the Machine broken metal.

5. Testing and inspection

The installation shall be jointly inspected and tested for insulation resistance test, earth continuity test etc. as per IE rules before commissioning and energization.

6. ADDITIONAL SCHEDULE ITEMS:-If during the execution of the work the contractor is called upon to carry out additional item of work not included in Schedules, the contractor shall execute such works at such price as may be mutually agreed with the Purchaser before commencement after obtaining the competent authority's approval and sanction.

7. INSPECTION CLAUSE:-

The inspection of the material shall be conducted by the consignee/RITES/third party as per the Railway Board Guidelines. In cases, where due to any special reason, consignee inspection is proposed in cases of order value above Rs. 5 Lakh, the same should be done with the approval of the Divisional officer concerned.(as per Rly Board L.No. 2017/Trans/01/Policy/Pt-S dt 16-08-2018)or latest. The consignee inspection is proposed since the cost of the items less than 5 lakhs as per Vigilance ltr no.20230300392/PC/V5/N/ALD dated.06.05.2024.

8. WARRANTY:-

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a) The work shall be maintained after completion for a period of **12 Months** by the contractor and he shall make good any defects imperfections shrinkages or faults which may appear at his own cost except the item where specifically mention different maintenance period.

Note- Warranty Period of LED Lights/Lamps are 60 months.

b) If any defect/failure noticed during the warranty period, contractor will rectify the defect/failure free of cost. For rectification of defects, transportation charges of defective material, during the warranty period will be borne by the contractor and Railway will not pay any additional amount in this regard.

c) During the period of warranty the contractor shall make available with reasonable time an experienced engineer and necessary equipments to attend any defects as and when reported by Railway otherwise Railway will get rectified departmentally/ from outside agency and necessary payment will be deducted from balance amount available with Railway as decided by Sr.DEE/G/AGC.

d) During the period of warranty, the contractor shall be liable for the replacement of any parts which may be found defective at the site, weather arising from faulty design, materials, workmanship or negligence in any manner on the part of the contractor provided always those defective parts as are not repairable at the site promptly returned to the contractor if so required by him at his(Contractor's) own expenses. The repaired or renewed parts shall be delivered and erected on the site free of charge.

9. The work will be included everything from supply to installation and further warrantee etc. of all materials shall have to be given by contractor unless until specifically mentioned that Railways will provide the material.

10. While doing work certain additional minor work material requirement may come up which cannot be foreseen at the movement. This has to be provided by the contractor.

11. All the released material to be handed over in consignee depot.

12. All the schedule items to be supplied as per attached make list or marked against the item or Approved by Sr.DEE/G/Agra.

13.SETC of Point wiring or Rewiring for light, fan, call bell etc. in PVC ISI Make casing capping with 2 x 2.5 sq. mm. FR multi stranded PVC copper wire along with all accessories, running earth and finishing of the surface after rewiring etc.

SYSTEM OF POINT WIRING

Point wiring shall be carried out with 2 X 2.5 SQMM FR Copper conductors in ISI Mark

PVC Casing-capping/ on the walls/ ceilings along with running earth conductor of 1.5 sq.mm.

FR Copper wire.

13.1 The point wiring of light, fan, plug socket of 5 amps. Capacity shall be carried out with single core Flame Retardant PVC multi standard copper wire of size 2.5 sq mm confirming to IS 694/1990. In addition to this the wire shall also confirm FR (Flame retardant) properties as per ASTM-D 2863 and IEC60754-1 and of 1100 volts grade inside ISI PVC casing capping/ PVC conduit as specified in schedule.

Point wiring shall include all accessories like bend, elbow, tee, junction box etc. with necessary fixing materials/hardware etc. complete with all respect. No joints are allowed in the wiring. The neutral connection in the board should be done with proper connectors.

TECHNICAL SPECIFICATION FOR WIRING

1. System of Interior wiring.

(1.1) The wiring (unless otherwise specified) shall be carried out in single core, multistranded PVC insulated copper wire conforming to ISS-694/1990 with latest amendments and of the 1100 volts grade in rigid heavy-duty non-metallic flame retarding ISI (PVC) casing/capping.

The PVC insulated wire shall be FR (Fire Retardant) with latest amendment. The wiring shall be done on the distribution system with main and branch distribution boards at convenient centres and without isolated fuses. All conductors shall be run, as far as possible along the walls and ceiling, so as to be easily accessible to and capable of being thoroughly inspected. Runs as marked out will be inspected and cables shall not be fixed until the lay-out is approved by Sr.DEE/G/Agra or his authorized representative whose decision is final and binding on the contractor. The internal wiring shall be conforming to code of practice for electrical wiring as per IS-732 – 1989 with latest amendment.

(1.2) The cables shall be run on rigid heavy duty non-metallic fire retarding (ISI PVC) casing/capping with corresponding accessories. The conduit shall conform to ISS-2509 and accessories to ISS-3419 with latest amendments. The PVC casing/capping and accessories shall be ivory white with fire retardant as per clause of BS-4678 Part-IV-82.

(1.3) In case where surface wiring with ISI PVC conduit is specified the conduits shall be fixed to walls using spacer's etc. not more than 600 mm apart. Bends or diversions shall be done by employing normal bends, inspection bends, inspection boxes, elbows or similar fittings. Conduit joints shall be by means of plain or screwed couplers. For long run of straight conduit inspection type coupler shall be provided at intervals.

2. ISI PVC Junction box.

(2.1) All ceiling roses, lamp holder etc. shall be fixed on rigid PVC square junction box conforming to relevant IS. Specification of standard color Precision makes with Brass inserts.

(2.2) Switch board – All electrical switchboard shall be of seasoned Teakwood Board or ISI PVC fire retardant board of standard size.

3. Plugging walls or ceilings.

(3.1) Plugs for ordinary walls or ceiling shall be of ISI PVC of appropriate size. They shall be cemented into the walls or ceilings to within line of the surface and remainder being finished according to the nature of surface used with plaster or lime putty. Where owing to irregular coursings or other reasons, the plugging of the wall or ceiling present difficulties, the casing shall be attached to the walls or ceiling in a manner approved by the Senior Divisional Electrical Engineer(G) Agra.

(3.2) Plugs for fixing square box for ceiling rose or single switch shall be sufficiently large to take two screws so as to prevent box from turning while in use.

4. Passing through floors and walls.

(4.1) This shall be done strictly in accordance with code of practice for wiring installation as per IS-732 / 1989 with latest amendments.

5. White washing.

(5.1) Walls cut or defaced during wiring will have to be made good and adequately whitewashed, distempered/painted as the case may be.

6. Wires and cables.

(6.1) All conductors shall be standard copper and in accordance relevant IS specifications. The wiring shall conform to the IEE, wiring rules (Latest) and no conductors shall have a cross section of less than 2.5sq.mm. Unless otherwise specified.

(6.2) Each coil of wire and cables proposed to be used must be accompanied by the makers test certificates stating that the 'Class' and giving the results of insulation tests.

7. Main and sub-distribution boards.

(7.1) The fuses/switch board/ meter board must be the swing back type provided with suitable hinged unglazed cover permitting of inspection at back and having ample room behind the boards for the convenience and neat arrangement

of the conductors and to take a small amount of slack necessary to enable cut out to be readily connected up. The board must be made of ISI PVC/seasoned teak wood, impregnated with varnish and with a good finish and constructed with all joints dove tailed and provided with a back of the same materials.

(7.2) Placement of fuses – Fuses shall not be placed in ceiling roses or in any position other than the distribution boards or the sub-distribution boards which shall be located as approved by Sr.DEE/G/Agra. No fuses shall be placed in the neutral conductor of a main, sub-main or sub-circuits.

(7.3) Adequate spaces clear of other fittings and to the satisfaction of the Sr.DEE/G/Agra or his representative shall be provided on each main distribution board for the installation of KWH Meters. Adequate size conduit casing/capping leading to the main board will be provided for the incoming mains.

(7.4) Similarly adequate space shall be provided on the switchboards controlling fan light, plug for the installation of fan regulators.

(7.5) Bus bar contacts and other live metal parts shall be suitably protected as to render it impossible for anyone to make accidental contact with them while replacing fuses. A strip of teak wood easily removable shall be provided in front of the neutral bus bar so as to avoid contact with it while fuses are being attended too.

(7.6) Main and sub-distribution boards – Earthing.

Continuous running earth shall be provided by the contractor as given below:-

The continuity of earth wire shall be maintained throughout without any joints. This shall be in conformity with IEE Rules No. 32 & ISS-3043 (latest) section 2 clauses 12 to 13.7.

1. Main earth pit/pole to main meter board or distribution board 8 SWG GI wire

2. Meter board/distribution board to main switch inside quarters. 12 SWG GI wire.

3. Main switch inside quarters to wall plug fan, fan regulators & any other metallic/accessories. 1.5 sq.mm. PVC copper stranded Green colour wire for earthing purposes.

(7.7) The distribution boards shall be fixed at such a height as to be within easy reach of a person standing on the floor. The installation of main and distribution boards shall be as per IS-732 Clause 4.3.

(7.8) No sub-main circuit shall contain more than 10 (Ten) light/fan/5A, plug points. Wherever No. of points exceeds more than 10. The contractor shall draw separate sub-main circuit for each 10 points or part thereof.

(7.9) The contractor shall observe all colour code in wiring viz. Red, Yellow, Blue for phases, Black for neutral and Green for earthing.

(7.10) On completion of wiring of each quarters, contractor shall do routine tests as per IS. Free of cost and result of same shall be submitted along with bill duly certified by Railway's representative.

8. Joints.

(8.1) All joints in conductors shall be made by mechanical connections in suitable joint boxes, jointing of aluminium conductors shall be in accordance with IS-732 appended 'C' Clause C-6. Joint boxes shall be as per approved make by Sr.DEE(G)AGC or his representative at site.

9. Switches.

All switches, controlling points must be placed on 'Phase' wires. All switches shall be of Modular / Piano type (as per site requirement) 5/10 Amps capacity unless otherwise specified and conforming to relevant IS specifications of approved make and shall be provided with quick make and break movement and shall have substantial plain Bakelite cover. The switches shall be mounted at height of 4'-6" from ground level unless otherwise approved. The switches shall generally comply with the relevant I.S. specification. The switches shall be marked 'F', 'L' and 'P' and of Original Approved make only.

10. Plugs and sockets.

(10.1) Plugs shall be of a front entry pattern with hand shield. The shrouds of sockets and the grips of plugs shall be molded Bakelite and the bases of sockets shall be of vitreous porcelain or Bakelite. All sockets shall be complete with plugs of standard dimensions and shall be interchangeable. Each plug point shall be controlled by a switch on the supply side. The socket shall be 5-Pin Universal design 5Amp unless otherwise specified with separate controlling switch and original.

11. Lamp holders, shades etc.

(11.1) Bakelite lamp holders with necessary accessories shall be robust and of approved make.

Lamp holders for use of brackets and the like shall be in accordance with IS-1258(latest) and as per Clause 5.5 of I.S-732 / 1989 (latest).

12. Mountings.

(12.1) All fittings such as switches, plugs etc mounted on board shall be adequate spaced with a uniform margin to the satisfaction and only brass fixing screws/Nut bolts of approved sizes shall be used. The mounting heights from the floor shall be a generally as follows :- Switches, distribution board setc. 1.5 mtrs., Lights –2.5 Mtrs.

13. Flexible wires and pendants.

14. Suitable service tapings in all quarters at positions decided by Sr.DEE(G)AGC or his authorized representative will be provided by the Railway.

15. Special clauses for the internal wiring.

(15.1) The work shall comprise supply of all necessary materials, installations, testing and putting into operational lights, plugs etc. as per schedule, 'A' which is subject to slight variations at the time of execution of the work.

(15.2)The system of wiring for lighting and fan point shall be PVC insulated cable on rigid ISI PVC conduit/casing/capping.

(15.3)The contractor shall on completion of the work but before the installation is taken over by the Railway, supply drawings as under.

a) Wiring – diagram sub-mains mains with particulars of size of cables and wires used.

b) Main and branch distribution boards.

16. Special Clauses for the internal wiring.

(16.1) Conformity with Electricity Act, 2003. The installation shall be in conformity with the requirements of the Electricity Act, 2003 as amended up to the date and Indian Electricity Rules, framed, there under and also the relevant regulations of the electric supply authority concerned, and IS-732 of 1989 with latest amends.

17. Materials.

(17.1) All materials fittings, appliances, used in electrical installations shall conform to Indian Standard Specification and of approved make list enclosed.

18. Workmanship.

(18.1) Good workmanship is an essential requirement for compliance with the Rules in the code. The work shall be carried out under the direct supervision of a person holding a certificate of competency issued by the State Government for the type of work involved.

a. Position of lamp, fans and fittings, branch wires and not be shown, but the fittings etc. connected to each circuit must be clearly indicated by numbers on the fuse carrier of distribution board.

b. Any alternations in the position of fittings or modifications of the existing lay out of the schedule of suit local conditions as indicated by the representative of the Sr.DEE/G/Agra shall also be carried out while the work is in progress.

(18.2) Before taking the work in hand a specimen of each of the materials and fittings proposed to be used as per schedule shall be submitted to Sr.DEE(G)Agra for his approval. The letter of approval of materials by Sr.DEE(G) Agra shall be submitted along with final bill.

(18.3) Metal casings. All metal casings of metallic coverings containing or protecting any electric supply line or apparatus shall be connected with earth by the contractor shall be jointed and connected across all junction boxes and other openings as to make a good mechanical and electrical connection throughout the whole length.

NOTE:

(i) All wall plugs mentioned under clause page 6 shall be of Universal pin type, the earth pin being connected to the continuous running earth.

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Sr. Divisional Electrical Engineer (General) Agra

- (ii) All fan regulators even if supplied by the Railways shall be connected to the continuous running earth conductor.
- (iii) Continuous running earth through 1.5 sq.mm. copper PVC conductor PVC wire green colour from the main board to the various wall plugs, fan points, regulator etc. All existing FT fittings, fans, incandescent light fittings and other equipment shall be connected to ceiling rose/power point with 2 core twisted PVC insulated copper conductor of size not less than 1.0 sq.mm.
- (iv) After Rewiring, the surface shall be made as original / earlier with proper finishing.

SETC of 5 A 5 Pin universal plug socket complete with switch, wiring or rewiring and earth connection, to be provided in Existing light/fan board and finishing of the surface after rewiring.

Supplying and erecting shockproof 5 amps 5 pin ISI marked socket outlet with flush type erected on Provided board for light and fan duly connected with earth terminals and supply system. The socket outlet shall be 5- pin universal design 5A capacity. The socket outlet shall confirm to IS 1293 of 1988 with latest amendments & ISI mark. Socket shall be of front entry pattern with hand shield shall be of 5 pin type & unbreakable., to be connected with 2 x 2.5 sq.mm. FR copper wire. Each socket outlet shall be controlled by a piano type switch preferably located immediately adjacent thereto. Switch controlling the socket outlet shall be connected to the phase wire i.e. on live side of the line and finishing of the surface after rewiring Continuous running earth through 1.5 sq.mm. copper PVC conductor PVC wire green colour from the main board to the various wall plugs, fan points.

2.SETC of 5 Amp 5 Pin universal plug socket complete with switch and point wiring or rewiring in ISI Make PVC casing capping with 2x2.5 sqmm FR multistranded PVC copper wire along with all accessories, running earth etc. on separate switch board and finishing of the surface after rewiring.

Supply, erection, testing and commissioning of 5 amp 5 pin universal socket with switch along with point wiring on separate board. Point wiring for 5 amp 5 pin socket shall be done with 2 x 2.5 sq mm FR copper conductor and running earth 1.5 sq.mm. copper conductor in PVC casing capping with all fixing accessories/ materials. The wiring shall be done in an approved manner as per the specification given for point wiring. Each socket outlet shall be controlled by a piano type switch preferably located immediately adjacent thereto. Switch controlling the socket outlet shall be connected to the phase wire i.e. on live side of the line. The work shall be done in an approved manner as per the site condition and the instructions of field Engineer and finishing of the surface after rewiring.

3.SETC of 4 nos. 5 A plug socket with switches on separate board along with point wiring or rewiring with 2 x 2.5 sq.mm. FR copper wire and finishing of the surface after rewiring etc.

Supply, Erection, testing and commissioning of 5 amp 5 pin plug socket 4 nos. complete with 4 nos. switches on separate board. Point wiring for 5Amp 5pin universal plug socket (4 plug & 4 switches on separate board) shall be provided separately with 2 x 2.5 sq mm PVC insulated FR copper, 1.1 KV, multistranded wire on rigid PVC casing capping with all accessories and running earthing of 1.5 sq.mm. of copper conductor with green colour PVC insulated 1.1 KV connected to each plug on switch board with all fixing accessories /materials. Point wiring shall be carried out as per the specification for point wiring and finishing of the surface after rewiring etc.

4.Wiring of 15 A power point on separate switch board with wiring 2x4 sqmm FR copper wire for earthing with all accessories running earth and finishing of the surface after rewiring etc. The socket outlet shall be 6-pin universal design 15 amp capacity with piano type switch, fuse, indicator. The socket outlet shall confirm to IS 1293 of 1988 with latest amends & ISI mark. Each socket outlets shall be controlled by a separate Point Wiring With 2X4 sqmm FR PVC Copper wire from nearest Sub distribution board. Piano type Switch controlling the socket outlet shall be on phase side of the line. Each 15 Amp. 6 pin socket and switch will be fixed on separate switch board and running 1.5sq.mm. copper conductor with green colour PVC insulated to metallic part.

The wiring shall be done in an approved manner as per the specification given for point wiring.

The work shall be done in an approved manner as per the site condition and the instructions of field engineer and finishing of the surface after rewiring.

5. Wiring for Power Point wiring with 20 Amps DP MCB. The wiring shall

be of copper PVC insulated 1.1 KV multistranded wire with all accessories and running earthing with sub mains on separated PVC switch board and finishing of the surface after rewiring etc.

Supply, erection, testing and commissioning for wiring for Power Point wiring with 20 Amp with DP MCB of rated current 20 Amp., 10 kA breaking capacity, 'C' series shall be provided inside the suitable size of MS sheet enclosure along with plug socket. Plug socket shall be mounted on teak wood board. The wiring for the ISI make PVC insulated multistranded FR copper wire of 1.1 KV2x4 sqmm ISI mark and confirming to ISS-694/1990 or latest grade on rigid ISI make PVC casing capping/ PVC conduit along with running earthing with one wire of 1.5 sq.mm. wire insulated with green colour from nearest sub distribution board. The interconnection between switch boards as per schedule item of point wiring shall be as stated in specification for point wiring. The work shall be carried out under the supervision of field engineer.

6. S.E T.C. of Sub Main with 2 x 6 sqmm FR copper wire with running earth etc complete. (1 m length of submain consists one ckt mtr including all accessories & 2 wire of 6 sqmm with one wire of 1.5 sqmm for earth conn)

The wiring for sub-mains shall consist of two wires of single core 6 sq.mm. PVC insulated multistranded FR copper wire of 1.1 KV ISI mark and confirming to ISS-694/1990 or latest grade on rigid PVC casing capping/ PVC conduit along with running earthing with one wire of 1.5 sq.mm. wire insulated with green colour PVC. For measurement purpose each meter of submain shall comprise of 2wires of 6 sq.mm. of 1 mtr. length each and one earthing wire of 1.5 sq.mm of 1 mtr. Length along with associated accessories like PVC casing– capping/ PVC conduit etc. The sub-mains shall be run inside the PVC casing capping /PVC conduit of suitable size as per site condition as per standard practice specified above as per the instructions of field Engineer. The item submain shall be measured only for length up to switch board in room . If more than one switch board is provided in a room or adjacent room and total no. of points is upto 10, then interconnection between switch boards as per schedule item of point wiring shall be as stated in specification for point wiring.

7. SETC of sub-main from switch board to single phase DP switch / DP one circuit meter comprising of 2x 4 sq.mm. PVC insulated FR 1.1KV multistranded wire & one running earth of 1.5 sq.mm. copper conducting PVC insulation green colour of 1.1 KV grade on rigid PVC casing capping with all accessories.

Supply, erection, testing and commissioning of Sub main with 2 x 4 sq mm 1100V grade PVC FR copper wire. The wiring for sub-mains shall consist of two wires of single core 4 sq.mm. PVC insulated multi-stranded FR copper wire of 1.1 KV grade on rigid PVC casing capping/ PVC conduit along with running earthing with one wire of 1.5 sq.mm. wire insulated with green colour PVC. For measurement purpose each meter of submain shall comprise of 2 wires of 4 sq.mm. of 1 mtr. length each and one earthing wire of 1.5 sq.mm of 1 mtr. length along with associated accessories like PVC casing –capping/ PVC conduit etc. The sub-mains shall be run inside the PVC casing capping/PVC conduit of suitable size as per site condition as per standard practice specified above as per the instructions of field Engineer. The item sub main shall be measured only for length upto switch board in room. If more than one switch board is provided in a room or adjacent room and total no. of points is upto 10, then interconnection between switch boards as per schedule item of point wiring shall be as stated in specification for point wiring.

The price shall cover cost of supply, loading, transportation and unloading of material at site, erection testing and commissioning of single phase/ 3 phase distribution board as above. The DB shall be double metallic door type with earthing terminal, bus bars, neutral link, etc. housed in 16 SWG CRCA sheet enclosure powder coated type with all accessories with IP 65 protection. The minimum breaking capacity of MCB shall be 10 KA.

MCB DB- MCB Distribution board consisting with various capacity of MCB's as in schedule .

MCB shall be 'C' Class, of 10 kA breaking capacity and conforming to IS 8828 –78 with latest amendments. MCB shall be with ON/OFF indication, IP 65 degree protection, showing mid trip position in case of overload or short circuit conditions. MCB shall be having bi-connect terminals, load-line reversibility and with energy limitation class –III features.

Distribution board shall be made of high quality CRCA steel sheet with surface finish power coated mat finish broken white distribution board double door & neutral link with box type terminal tin plated Electrolyte grade copper bus

bar & phase link tin plated brass earthing link and wire set for internal wiring . DB shall be with IP 65 protection. It shall be provided with cements skill protection and side locking DIN bar interchangeable door.

Note: -

(1) All items endorsed by BEE under star rated labelling scheme from time to time to be procured as per BEE list, in terms Railway Board letter No. 2008/Elect.(G)/150/9/Pt. dt. 17/21/07.2009

(2) For item for which RDSO specification are available at the time of issue of NIT RDSO specifications should be followed clause by clause and compliance of railway Board's letter No. 2006/(G)/150/9 Pt. dt.23-12-2009 must be ensured.(3) The items not covered in the list above may be procured based on relevant IS specifications applicable for that item at the time of issue of NIT. (3) For panel, lift & other items design/drawing, GAD shall be put up by successful tenderer for approval of Sr.DEE/G/Agra before supply of material.

Annexure-I**Technical Specification for 18/20 watt complete LED type indoor tube light fitting**

Description: supply of energy efficient luminaries complete with all accessories, 18/20 watt LED lamps with suitable current control driver circuit, suitable for surface/recessed mounting.

SN	Description	Specification
	LED luminaries	1. A complete LED lighting unit consisting of a light source and driver together with parts of distribute light, to position and protect the light source, and to connect the light source to a branch circuit. The light source itself may be an LED array and LED module, or an LED Lamp. 2. Supplied LED luminaries shall conform to IS: 16101 (2012), IS: 16106 (2012).
	Light Source (LED) in the luminaries should be of make	1. PHILIPS/ OSRAM/ WIPRO/ BAJAJ/ HALONIX/ TOSHIBA/ SYSKA/ SURYA/ CROMPTON/ ORIENT/ ONIDA/ GE/ OREVA/ HAVELLS 2. LEDs to IS: 16105 (2012), IS: 16108 (2012), IEC: 62471.
1	Input operating Voltage	105-295 V AC
2	Normal Voltage	220 V AC
3	Driver Type	Constant current driver with short circuit protection (For Tube Light)
4	Control of distribution:	Fully cut off
5	Driver component:	Industrial grade only
6	Efficiency of driver electronic	>85% (For tube light)
7	Colour Temperature	5000-6500 K (For tube light)
8	Colour Rendering Index (CRI)	>75 (For tube light)
9	Ingress Protection	IP-20
10	Lumen Output	>100 lumens/w @ Max.350 mA drive current (For tube light)
11	Power Factor	>0.90 (For tube light)
12	Total Harmonic Distortion (THD)	<20% (For tube light)
13	Lamp Cover	Acrylic cover which does not result in loss of lumens
14	Finishing:	Powder coated/Anodized
15	Secondary optics:	Poly carbonate reflector/Poly Carbonate lens
16	Construction of housing	Extruded aluminum/ CRCA/Pressure die cast aluminum
17	Mounting:	Suitable for surface mounting/ recessed mounting.
18	Certificate	Firm to submit LM80 & LM79 test certificate from National/International accredited Laboratory and OEM certificate for compliance of BIS/IEC.
19	Warranty	Firm to submit warranty certificate for Five year along with the supply.

Annexure-II

Technical specification of wattage 30 watt and above complete LED outdoor type street light fitting are as under

Description: supply of energy efficient luminaries complete with all accessories, wattage 30 watt and above LED lamps with suitable current control driver circuit including mounting arrangement for street light.

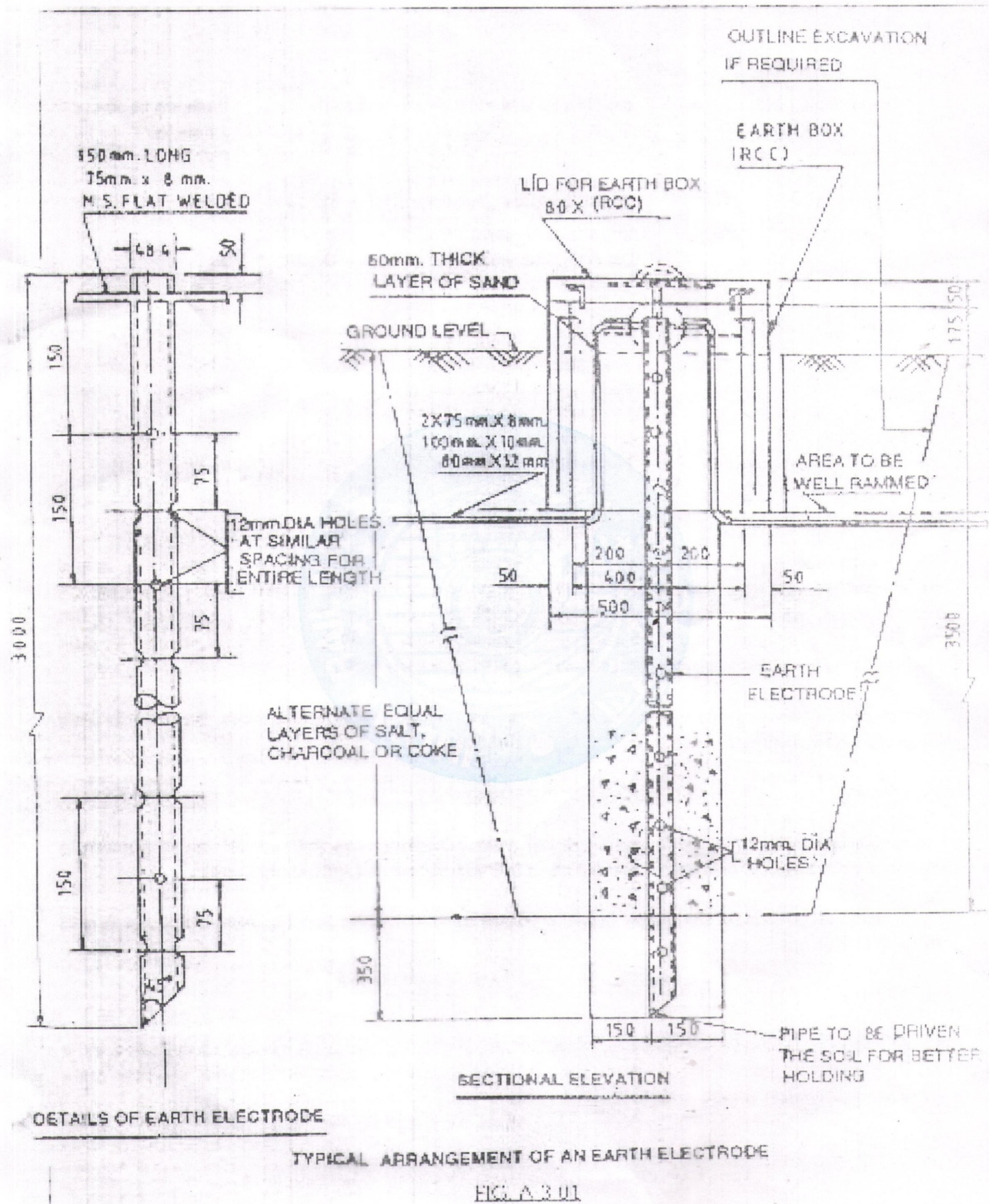
SN	Description	Specification
	LED luminaries	1. A complete LED lighting unit consisting of a light source and driver together with parts of distribute light, to position and protect the light source, and to connect the light source to a branch circuit. The light source itself may be an LED array and LED module, or an LED Lamp. 2. Supplied LED luminaire shall conform to IS: 16101 (2012) IS: 16106 (2012)
	Light Source (LED) in the luminaries should be of make	1. PHILIPS/ OSRAM/ WIPRO/ BAJAJ/ HALONIX/ TOSHIBA/ SYSKA/ SURYA/ CROMPTON/ ORIENT/ ONIDA/ GE/ OREVA/ HAVELLS 1. LEDs to IS: 16105 (2012), IS:16108 (2012), IEC: 62471
	Type LED	High Power LED, SMD (Surface Mounting device)/ COB (clip on Board).
1	Input operating Voltage	105-295 V AC.
2	Normal Voltage	220 V AC.
3	Driver Type	Constant current driver with short circuit protection.
4	LED life	>50,000 burning hours.
5	Depreciation	30% max. after 50,000 burning hours.
6	Control of distribution:	Fully cut off.
7	Surge protection	4 KV
8	Driver component:	Industrial grade only.
9	Efficiency of driver electronic	>85%.
10	Beam Angle	≥ 140° along with road. ≥ 80° across the road.
11	Colour Temperature	5000-6500 K.
12	Colour Rendering Index (CRI)	≥75
13	Ingress Protection	IP-66
14	Lumen Output	>120 lumens/watt
15	Power Factor	>0.95
16	Total Harmonic Distortion (THD)	<15%
17	Lamp Cover	Toughened glass or UV stabilised poly carbonate.
18	Finishing:	Powder coated/Anodized
19	Secondary optics:	Poly carbonate reflector/Poly Carbonate lens
20	Construction of housing	Extruded aluminum/ CRCA/Pressure die cast aluminum
21	Mounting:	Suitable for existing pole/ Truss/ Lantern mounted
22	Certificate	Firm to submit LM80 (In respect of LED used) & LM79 (In respect of luminaire used) test certificate from National/International accredited Laboratory and OEM certificate for compliance of BIS/IEC.
23	Warranty	Firm to submit warranty certificate for Five year along with the supply.

Annexure-III**Technical Specification for LED Bulb for indoor application for wattage upto 20 watt are as under**

SN	Description	Specification
1	Normal Voltage	220-240 V AC
2	LED Makes	1. PHILIPS/ OSRAM/ WIPRO/ BAJAJ/ HALONIX/ TOSHIBA/ SYSKA/ SURYA/ CROMPTON/ ORIENT/ ONIDA/ GE/ OREVA/ HAVELLS 2. LEDs to IS: 16105 (2012), IS: 16108 (2012), IEC: 62471.
3	Type of LED	High Power, SMD (Surface Mounting device) LED/Chip
4	Cap material	Aluminum
5	Bulb life	> 15,000 burning hours
6	Bulb Shape	A 19
7	Colour Temperature	5000-6500 K
8	Colour Rendering Index (CRI)	≥75
9	Cap Base	B 22
10	Lumen Output/Efficiency	>85 lumens/w @ Max.350 mA drive current
11	Power Factor	>0.85
13	Bulb Cover	Poly carbonate
14	Ingress Protection	IP 20

Note:

1. Supplied LED bulb shall confirm to IS: 16102 pt 1&2/2012
2. Firm to submit warranty certificate for Five year along with the supply.



ELECTRIC (GENERAL) AGRA
LIST OF LIKELY SOURCES FOR Electrical & GENERAL SERVICE ITEMS/ EQUIPMENT

Sr. No.	Item	Specification/IS No.	Likely Sources
1	Transformer upto 500KVA	IS: 2026/1977 part 1 to 4 or latest	Crompton Greaves, Kirloskar, EMCO, TESLA Kanohar, BHEL, ABB, Voltamp, Siemens, GEC, TELK, East India
2	11Kv/HT vacuum circuit breaker. SF-6/11Kv gas filled circuit breaker.	IS: 3427 or latest	Crompton Greaves, BHEL, Alstom (Areva), ABB, Siemens, GEC, L&T, Schneider,
3	ACB (11Kv)	IS: 13118/1991 IS: 13947/1993 or latest	Crompton Greaves, MEI, ABB, Siemens, GEC, Alind, L&T, Schneider, English electric, Legrand, C & S, HPL, Havells
4	MCCBs, MCBs, ELCBs, RCCBs, DB, ICTPN, TP, HRC fuse changing over switch, switch fuse unit	IS: 8828/96 for MCB or latest, IS: 13947 (Part-1&5/Sec1)/93 or latest for MCCB, IS: 12640 (Part-1)/2000 or latest for RCCB, IS: 13703 (Part-2/sec 1)/93 or latest for HRC fuse, IS: 13947 (Part-3)/93 or latest for SFU	Crompton Greaves, Havells, ABB, Siemens, GEC, BCH, L&T, C & S, Schneider, Legrand, Standard, HPL, BENLO
5	HT-XLPE cable 11/33Kv grade	IS: 7098 (Part-2)/1985 or latest	NICCO, Universal, Torrent, INCAB, Industrial cable, Polycab, Indian cable, Havells
6	LT-XLPE power cables up to 1.1Kv grade	IS: 694/1990 or latest for PVC cable, IS: 1554(Part 1)/1988 or latest for heavy duty PVC cable, IS: 7098(Part-1)/1988 or latest for XLPE cable	Universal cable, Polycab, NICCO, INCAB, Finolex, Garndlay, Havells, Torrent
7	Instrument voltmeter, Ammeter, PF meter	IS: 1248 or latest for analog IS: 13875/2008 or latest for digital	Automatic Electric, Meco, Industrial meter, Motowani, Toshniwal, L&T, Siemens, Rishab,
8	11Kv cable End termination & jointing kits	IS: 13573/92 or latest	Raychem, 3M, Safe system, Mahindra & Mahindra, Hari consolidated (Cable seal brand), Densons.
9	Relays	IS: 3231/65 or latest	Siemens, Alstom, Jyoti, ABB, BHEL, Alind, GE, BCH, L&T, Minilec, Enercon, CG, Ashida.
10	Pvc insulated multistrands copper wires sheathed/ unsheathed, PVC flexible LT cable multi core, single core, flat cable for submersible pumps	IS: 694/1990 or latest for PVC cable	Finolex, CCI, Universal cable, Polycab, NICCO, Incab, Grandlay, Uniflex, ICL, Havells, HPL, RR KABEL, BENLO All to confirm fire Retardant property.
11	Current transformer	IS: 2705 (Part-2)/92 or latest	Automatic Electric, CGL, C&S, MECO, KAPPA, Siemens, L&T, Schneider,
12	On line UPS, servo stabilizer, inverter CVT	IS: 13314/92 or latest for Inverter IS: 11260/85 or latest for voltage stabilizer	BHEL, Hind Rectifier, L&T, Siemens, HI-REL, Autometer, Luminous, Microtech, TATA Libert
13	Rotary switches, selector switches	IS: Relevant or latest	Kaycee, L&T, Salzer, GE, ABB, C&S, Siemens, HPL
14	Exhaust fan/Air circulator/Bracket & pedestal fans/ceiling fan	IS: 374/79 or latest for ceiling fan IS: 2312/67 or latest for Exhaust fan	Crompton Greaves, Khaitan, Usha, Philips, Havells RR, Bajaj, Polar, Orient.
15	Galvanized High Mast Tower/ Tubular pole/ Octagonal pole/Polygonal pole for general purpose lighting	IS: 875 (Part-3) or latest for High mast IS: 10025/1993 or latest for BSTN, CPE III TRT/1996 of ILE UK, Octagonal pole S355JO, IS: 2629 or latest Galvanization IS: O-1461 or latest BSEN	Bajaj, Philips, GE, CGL, Mactech, Utkarsh
16	Electronic Energy Meter	IS: 13779/1999 or latest, IEC: 62053-21 or latest	L&T, IMP, HPL, Secure, ABB, Enercon, Havells, BENLO
17	Central Air conditioning plants & Package type plant AC unit-package	IS: 8148/1991 or latest for package type	Blue star, Sidwal, Lloyd, Hitachi, O General, Mitsubishi,
18	AC unit Split/window	IS: 1391 (Part 2)/1992 or latest for Room Air conditioners Split type IS: 1391 (Part 1)/1992 or latest for Room Air conditioners window type	Daikin, O General, Hitachi, LG, Blue Star, Sidwal, Lloyd, Mitsubishi

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19	Capacitors PF correction for Electrical General Services	IS: 13340/93, or latest IS: 13341/92 or latest	ABB, BHEL, Indian Capacitors, L&T, Hind Rectifier, Voltas, Siemens, Shakti, Schneider, EPCOS
20	DG Sets Portable	IS: 1001-1981/1991 or latest	Birla Yamaha, CGL, Shriram Honda
21	DG Engine	IS: 13364 or latest	Cummins, Kirloskar, Caterpillar, Ashok Leyland, Penta-volvo
22	Alternator for DG set	IS: 4722/2001 or latest IS: 4728/1975 or latest	KEC, Stamford, Leroy-somer, BHEL, Kirloskar-Green, Cummins, Mahindra, Caterpillar
23	Induction Motor	IS: 235/96, or latest IS: 12615/2004 or latest	Bharat, Bijlee, BHEL, CGL, GE, Kirloskar, Siemens, ABB,
24	LT switchgear & control gear, Contactors & motor starters, Energy Efficient soft starter panel/earthing switch, single phase preventer	IS: 13947 (Part 1)/1993 or latest IS: 13947 (Part 4)/1993 or latest	ABB, CGL, L&T, MEI, Siemens, Legrand (MDS), standard, HPL, GEC, BHEL, Minilec, Enercon, N.N. planner, Power Boss, Schneider
25	Pumps- Submersible	IS: 8034/2002 or latest for submersible pump sets IS: 9283/1995 or latest for motors of submersible pump sets IS: 14220/1994 or latest for open well submersible pump sets	CGL, Kirloskar, KSB, TEXMO, Waterman, unnatti pumps, universal engineer, Lubi, Varuna, Shakti
26	Timers electronic solid state	IS: 5834/1991 or latest Relevant	ABB, BHEL, GE, L&T, Siemens, Minilec, Legrand
27	Water coolers	IS: 1475/2001 or latest	Blue star, Fedders, LLYOD, Shriram, Sidwal, Usha, Sunrise Aquacoolers
28	Electrical Accessories (Piano switch, plugs & Sockets, ceiling rose, Angle holder, holders)	IS:3854/97 or latest for switches IS:1293/05 or latest for plugs & sockets IS:371/99 or latest for ceiling rose IS:1258/2005 for lamp holder Bakelite	SSK (Top line), Anchor (penta-or-net), CONA (nice-india), ABB, HPL, Rider, Havells, BENLO
29	Bell Buzzer	IS:2268/1988 or latest	CONA, MAX, Anchor, SSK
30	Electronic fan regulator	IS:11037/1984 or latest	Anchor, Usha, ERIK, Rider, havells, Legrand.
31	Solar Cell/Module system	IS: Relevant	TATA BP, BEL, BHEL, CEL, Sharp Business system (India)Ltd, UTS
32	Solar lighting system	IS: Relevant	As per GeM to be decided by competent authority
33	GI/MS Pipe	IS:1239 (Part-1)/2004 or latest/relevant latest	TATA, Jindal, Surya
34	Geysers	IS:2082/93 or latest	Bajaj, Usha, Crompton, Recold, Venus, RR
35	Lifts & Escalator	IS:14665/2000 or latest	OTIS, Schindler, KONE, Mitsubishi, Johnson
36	Solar water heater	IS: Relevant	As per MNES approved sources
37	Solar Distilled water plants	IS: Relevant	
38	Energy savers used for lighting loads	IS: Relevant/RDSO approved	As per RDSO draft specification no. RDSO/PE/SPEC/PE/0083 (Rev-0)/2007
39	Air cooling plant	IS:8148/1976 or latest	Voltas, Blue star, carrier
40	Battery charger for other than battery room for train lighting	IS:2026 or latest IS:3895 or alets	Hind Rectifier, Usha rectifier, Pyramid, Automatic electric, Delta Elect., Trinity Elect., Universal Ind. Product, venus engg, RS Power
41	Battery Charger for battery room	As per RDSO specification having regeneration facility	Amar Raja, EXIDE, RS Power
42	PVC conduit pipe & Casing capping for electrical wiring	IS:9537/1980 or latest	Precision, A.K.G., Polycab, Finolex, BEC, Prestoplast, Stargold, Diplast, Garware, V Plast, Modi
43	Air curtain	IS: Relevant	Aircon, ALMONARD, Technocrate
44	Air Break isolators and earthing switch (GODO)	9921-1972 (Part-3)-1982 (Part-4) or latest	ABB, ALIND, CGL, Kiron, Mysore Electric, NGEF, SIEMENS, Trans Electricals, Altas Mumbai
45	Capacitor-Fans and motors	1709:1984 or latest	BHEL, CGL, INDIAN CAPACITORS, VOLTAS, WS INSULATOR
46	Instrument Transformers CT/PT		Automatic Electric, CGL, Areva T&D India Ltd (Formerly Alstom Ltd) JSPL
47	Lightning arrestor	3070/ Part-1, 1985 or latest	ELPRO/LAMCO
48	Insulators	731 or latest	BHEL/JAYSHREE/Seshasayee/WS/Bengal Potteries, ATLAS

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49	Pumps-Vertical turbine	1710:1989 or latest	JYOTI, KIRLOSKER BROS, MATHER & PLATT
50	Timers Electronic	5834/1991 or latest	ABB, BHEL, GE, JYOTI, L&T, SIEMENS, SELEC
51	Transformers distribution above 500 KVA	2026: 1991 or latest	ABB, ALSTOM, BHEL, CGL, EAST INDIA, EMCO, KIRLOSKER ELECT. SIEMENS, TESLA, VOLTAS,
52	BLDC 1200 mm		Bajaj, usha, RR, Havells, Orient, Crompton
53	Package suction enclosed type		ABB, CGL, SCHNEIDER, GEC, AREVA T&D India Ltd (Formerly ALOSTEM Ltd, SIEMENS
54	Engine of DG Set		Kirloskar/Cummins/Ashok Leyland
55	Alternator of DG set		KEC/Stamford/KEL/CGL/BHEL
56	White hylum Sheet/phenalic laminated sheet	IS:2036/1995 or latest	Hylem, Super Hylem, Anchor
57	Selector Switch	IS: Relevant	KeyCee, L&T
58	HDPE Pipe/DWC pipe	As per explanatory note, Relevant IS	Carlton, Fmtelle, Awadh, Gwalior, Dura line, Rex Polyextrusion Ltd, Himalayan
59	Timer switch (Timer)	As per Explanatory note	GIC, HDS, Legrand, Havells, GE India, Industrial, Indo Asian Fuse gear, Siemens, L&T, AEG, ABB, Indo, Asian.
60	ACSR Conductor	IS:398/96 or latest version	L&T, ABB, Siemens, Havells, BCH, Schneider.
61	Automatic power factor correction system		SUKAM, LUMINOUS, EXIDE, MICROTECK
62	Inverter		Khaitan, Bajaj, Orient, Usha, standard, hevells
63	Cabin fan		Schneider electric india Ltd, AREVA T&D, ABB, GE India, Crompton, Greaves, Blcco Lawire limited, L&T, ALIND
64	HT VCB Panel (11KV)	IS:13118 & 3427/1993 or latest	PHILIPS/ OSRAM/ WIPRO/ BAJAJ/ HALONIX/ TOSHIBA/ SYSKA/ SURYA/ CROMPTON/ ORIENT/ HPL/ ONIDA/ GE/ OREVA/ HAVELLS, BENLO
65	LED fitting/Luminaries	IS:Relevant/Railway specification attached	Kirnotics, Ruptronics, Microtech, Blue Bird, Serrvo, V-Guard
66	Stabilizer	As per latest IS	Escon Elevators, Jonson, Arohi, Expendite, Automation LLP, Kone
67	Lift	As per latest IS	

Note: -

- (1) All items endorsed by BEE under star rated labelling scheme from time to time to be procured as per BEE list, in terms Railway Board letter No. 2008/Elect.(G)/150/9/Pt. dt. 17/21/07.2009
- (2) For item for which RDSO specification are available at the time of issue of NIT RDSO specifications should be followed clause by clause and compliance of railway Board's letter No. 2006/(G)/150/9 Pt. dt. 23-12-2009 must be ensured.
- (3) The items not covered in the list above may be procured based on relevant IS specifications applicable for that item at the time of issue of NIT.



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