

CHIEF ELECTRICAL ENGINEER/PROJECT/LUCKNOW



TENDER FOR

Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern Railway.

in

UTRATIA-MAHARANI PASCHIM SECTION

OF

LUCKNOW DIVISION NORTHERN RAILWAY

Tender Paper No: CEEPROJECT-NER-UTR-MWP-26

Price:-Rs. NIL

JUNE-2026

E- Tender Document for Works Contract

Tender No. – CEEPROJECT-NER-UTR-MWP-26

Name of work: Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..

1	Approximate cost of the work:	Rs. 141,24,07,615.89
2	Validity	90 Days
3	Completion period	24 Months
4	Earnest money	Rs. 2,82,48,200
5	Tender Document cost	0.00

Issued By

**Chief Electrical Engineer/Project
North Eastern Railway, Lucknow**

NORTH EASTERN RAILWAY

Office of the
Chief Electrical Engineer/Project
NER/Station Road
Charbagh, Lucknow. -226001

No: CEEPROJECT-NER-UTR-MWP-26

Dated: 22-6-2026

Principal Chief Electrical Engineer, for and on behalf of the President of India,
invites the following E- Tender. The details of the tender are as under: -

Tender No.	Description of work			
CEEPROJEC T-NER-UTR- MWP-26	Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..			
	Advertised value	Rs. 141,24,07,615.89	Bid Security	Rs. 2,82,48,200
	Completion Period	24 Months	Bidding system	Two Packet
	Tender Closing date & Time	As per IREPS (NIT)	Tender opening date & Time	As per IREPS (NIT)
	Allocation	Capital	UWID No.	240035231017

Note:-

1. The complete information along with tender document of above E-Tender will be available from 22-6-26 and shall be available on Website www.ireps.gov.in up to date time of closing (as per IREPS NIT)
2. Bids other than in the form of E-Bids shall not be accepted against above tender. For this purpose, vendors are required to get themselves registered with IREPS website along with Digital Signature Certificate.
3. The Beneficiary name for manual submission of BG for EMD shall be in favour of PFA/NER/Gorakhpur. It should be supported with proper stamp duty with rate prescribed as per Section 13 & 24 of UP Stamp Act, 2008 with latest amendment, if any. **if stamp duty or beneficiary name is not as per mentioned above their bid will be summarily rejected.**
4. In case of any difficulty, helpdesk available on the website of IREPS may be approached.

**Chief Electrical Engineer/Project
North Eastern Railway, Lucknow**

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PREAMBLE

1. SCOPE OF WORKS:

This Tender document consists of works related to Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..

OHE modification/FEEDER line Works: Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..

TSS Works: Deleted- -Not Applicable-.

(a) **SCADA Works:** Deleted- -Not Applicable-.

Estimated cost of the Tendered work:

Details available at IREPS site (www.ireps.gov.in) may be referred.

Break up is as under:-

OHE modification / Feeder Line works	Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..	Details available at IREPS site (www.ireps.gov.in) may be referred.
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This Tender complies with Public Procurement Policy Order 2017 dated 15.06.2017.

- (a) Procurement of materials pertaining to this work should be done from RDSO/CORE/Railway approved/developmental 'Class 1 local supplier' and/or as per extant guidelines issued by RB from time to time on the matter. In case of any clarification/doubt, instructions of Railway shall be final and binding upon the contractor.

Implementation of Public Procurement (Preference to Make in India) Order, 2017

- (i) In terms of Para 3(a) of Public Procurement (Preference to make in India), Order 2017- Revision (Annexure-II of Part-I, Chapter-I), Railway Board has reviewed and considered that sufficient local capacity and local competition exist for all the material/items used in Railway Electrification as they are indigenously manufactured and supplied except short neutral section assembly which is an RDSO approved item. It has, therefore, been decided that in respect of these items only Class I local suppliers shall be eligible to bid and supply, irrespective of the purchase value. It has been further decided that the minimum local content for the local supplier, of the above item to be categorized as 'Class-I local supplier' shall be 50%.
- (ii) Requirement of a vendor to be a Class I local supplier (self-certification by bidder as per Public Procurement (Preference to make in India), Order 2017-Revision (Annexure-II of Part-I, Chapter-I), as amended), to be considered for ordering of item (s) detailed in para (i) above, shall be a mandatory condition in addition to other qualifying criteria, including status of approval with respective vendor approving agencies, etc., which may be applicable for purchase of the item. Therefore, public procurement of the item(s) detailed in para (i) is restricted to Class I local suppliers only and the vendors who do not qualify to be class I local suppliers should not quote in the tender as their offers shall not be considered for ordering. In case any vendor who does not qualify to be a Class local

supplier for the tendered item participates in the tender it does so at its own risk and cost and Railways shall not be liable for any loss or damage caused to the vendor.

- (iii) Tenderer is required to submit certification as per Para 9 of the Public Procurement (Preference to make in India), Order 2017-Revision (Annexure-II of Part-I, Chapter-I), as amended for verification of local content.
- (b) Local Content: The minimum local content shall be 50%.
- (c) Margin of Purchaser Preference: The Margin of Purchaser Preference shall be 20%.
- (d) The local supplier at the time of tender, bidding or solicitation shall be required to provide self- certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.
- (e) In cases of procurement for a value in excess of Rs. 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
- (f) Bidders may also note that Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department except for the list of items published by the Ministry/ Department permitting their participation.
- The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.
- (g) For schedule items/Non SOR items, Standard Schedule of Rates (SOR)/Non SOR items has been given. Tenderer are required to quote single percentage rate above/at par/below (SOR for schedule items/ Non SOR items).

Note:- Provisions of Public Procurement (Preference to Make in India) Order, 2017 along with its revisions/latest amendments shall be applicable.

2. FOREIGN EXCHANGE:

No foreign exchange and/or import license will be released/ provided to the Contractor in connection with this contract.

3. DOCUMENT COST & BID SECURITY:

- (1) (a)The tenderer shall be required to submit the Bid Security with the tender for the due performance with the stipulation to keep the offer open till such date as specified in the tender, under the conditions of tender. The Bid Security shall be as under:

Value of the Work	Bid Security
For works estimated	2% of the estimated cost of the work.

Note:

- (i) The Bid Security shall be rounded off to the nearest ₹100. This Bid Security shall be applicable for all modes of tendering.
- (ii) Any firm recognized by Department of Industrial Policy and Promotion (DIPP) as 'Startups' shall be exempted from payment of Bid Security detailed above.
- (iii) Labour Cooperative Societies shall submit only 50% of above Bid Security detailed above.

- a) It shall be understood that the tender documents have been issued to the tenderer and the tenderer is permitted to tender in consideration of stipulation on his part, that after submitting his tender he will not resile from his offer or modify the terms and conditions thereof in a manner not acceptable to the Engineer should the tenderer fail to observe or comply with the said stipulation, the aforesaid amount shall be liable to be forfeited to the Railway.
 - b) If his tender is accepted, this Bid Security mentioned in sub para (a) above will be retained as part security for the due and faithful fulfillment of the contract in terms of Clause 16 of the Standard General Conditions of Contract. The Bid Security of other Tenderers shall save as herein before provided be returned to them, but the Railway shall not be responsible for any loss or depreciation that may happen thereto while in their possession, nor be liable to pay interest thereon.
- (2) The Bid Security shall be deposited either in cash through e-payment gateway or submitted as Bank Guarantee bond from a scheduled commercial bank of India or as mentioned in tender documents. The Bank Guarantee bond shall be as per form-13 and shall be valid for a period of 90 days beyond the bid validity period.
 - (3) In case, submission of Bid Security in the form of Bank Guarantee, following shall be ensured:
 - I. A scanned copy of the Bank Guarantee shall be uploaded on e-Procurement Portal (IREPS) while applying to the tender.
 - II. The original Bank Guarantee should be delivered in person to the official nominated as indicated in the tender document before closing date for submission of bids (i.e. excluding the last date of submission of bids).
 - III. Non submission of scanned copy of Bank Guarantee with the bid on e-tendering portal (IREPS) and/or non submission of original Bank Guarantee within the specified period shall lead to summary rejection of bid.
 - IV. The Tender Security shall remain valid for a period of 90 days beyond the validity period for the Tender.
 - V. The details of the BG, physically submitted should match with the details available in the scanned copy and the data entered during bid submission time, failing which the bid will be rejected.
 - VI. The Beneficiary name for submission of BG for EMD shall be in favour of PFA/NER/ Gorakhpur. It should be supported with proper stamp duty with rate prescribed as per Section 13 & 24 of UP Stamp Act, 2008 with latest amendment, if any.
The Bank Guarantee shall be placed in an envelope, which shall be sealed. The envelope shall clearly bear the identification "Bid for the Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway. and shall clearly indicate the name and address of the Bidder. In addition, the Bid Due Date should be indicated on the right hand top corner of the envelope.
 - VII. The envelope shall be addressed to the officer and address as mentioned below:
Kind attention:

Chief Electrical Engineer/Project, NER/Lucknow
Office of the CEE/Project/NER,
Station Road, Charbagh,
Lucknow - 226001

Email ID:- ceeprojectner@gmail.com

- VIII. If the envelope is not sealed and marked as instructed above, the Authority assumes no responsibility for the misplacement or premature opening of the contents of the Bid submitted and consequent losses, if any, suffered by the Bidder.

4. SECURITY DEPOSIT (For details see Part-I, Chapter-II, at para 1.2.17)

5.1 CARE IN SUBMISSION OF TENDERS:

- (a) (i) Before submitting a tender, the tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the works, that all conditions liable to be encountered during the execution of the works are taken into account and that the rates he enters in the tender forms are adequate and all inclusive to accord with the provisions in Clause-37 of the Standard General Conditions of Contract for the completion of works to the entire satisfaction of the Engineer.
- (a)(ii) Tenderers will examine the various provisions of The Central Goods and Services Tax Act, 2017(CGST)/ Integrated Goods and Services Tax Act, 2017(IGST)/ Union Territory Goods and Services Tax Act, 2017(UTGST)/ respective state's State Goods and Services Tax Act (SGST) also, as notified by Central/State Govt. & as amended from time to time and applicable taxes before bidding. Tenderers will ensure that full benefit of Input Tax Credit (ITC) likely to be availed by them is duly considered while quoting rates.
- (a)(iii) The successful tenderer who is liable to be registered under CGST/IGST/UTGST/SGST Act shall submit GSTIN along with other details required under CGST/IGST/UTGST/SGST Act to railway immediately after the award of contract, without which no payment shall be released to the Contractor. The Contractor shall be responsible for deposition of applicable GST to the concerned authority.
- (a)(iv) In case the successful tenderer is not liable to be registered under CGST/IGST/UTGST/SGST Act, the railway shall deduct the applicable GST from his/their bills under reverse charge mechanism (RCM) and deposit the same to the concerned authority.

(a)(v) Contractor shall be liable to pay/refund the amount collected as GST to the Indian Railways along with interest and penalties, if any imposed by the authorities, in case GST input tax credit of Indian Railways is denied/rejected by the tax authorities due to reasons mentioned below but not limited to:

Wrong/incorrect invoices issued by Contractor ;

No-filing of GST returns;

Non-payment of GST collected from Indian Railways to the authorities;

Any other non-compliance done by Contractor;

General Indemnity: Contractor hereby agrees to indemnify and hold harmless the Indian Railways from and against any and all losses, including loss on account of Input Tax Credit and all losses incurred by the Indian Railways relating to or arising out of or in connection with any actual or threatened claim, legal action, proceedings, prosecution or inquiry by or against the Indian Railways arising out, directly or indirectly, of failure by the contractor to comply with the provisions of GST and related laws, or based upon or arising from any failure by the Contractor.

Retention Money: Any payment liable to be paid by Indian Railways to contractor against the goods or services or both supplied by such contractor to Indian Railways shall be kept on hold in case supplier makes any non-compliance of any of the GST law provisions including non-reporting of invoices in GST returns. Such payment shall be released after proper verification of records and availability of ITC to Indian Railways as per provisions of GST Law.

- (b) When work is tendered for by a firm or company, the tender shall be signed by the individual legally authorized to enter into commitments on their behalf.
- (c) The Railway will not be bound by any power of attorney granted by the tenderer or by changes in the composition of the firm made subsequent to the execution of the contract. It may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Contractor.

5.2 The Tenderer 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 FORM-28. In addition to FORM-28, in case of other than Company/Proprietary firm, FORM-28A & 32A shall also be submitted by the each member of a Partnership Firm / Joint Venture (JV) / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc, as the case may be. Non submission of above certificate(s) 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/digitally signed by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document.

5.3 DEVIATIONS:

All the tenderers may please note that the offers seeking modified terms and conditions by way of deviations mentioned under either Memorandum or Deviation schedule for instance, higher mobilisation advance, or any modification in respect of mobilisation advance, On account/ progress payment, recovery rate, insurance warranty, extension in completion period, facilities to be provided by the Purchaser or any reimbursement of taxes etc. are liable to be rejected without assigning any reason thereto and the decision of the Railway Administration in this regard will be binding on all the tenderers. It should be specifically noted that the prices shall be FIRM inclusive of all taxes and duties.

5. SUPPLY OF MATERIALS BY THE PURCHASER :

All materials required for completion of the work shall be supplied by contractor except the materials mentioned in Annexure-4 /Annexure-4A (As applicable) of the tender papers, will be supplied by Railways.

6. BOOSTER TRANSFORMERS-DELETED- 7. DESIGN SPEED

The existing 1x25 kV Electric Traction Overhead Equipment is to be upgraded for 2x25 Electric Traction System increasing the speed potential to 160 kmph as per RDSO Instruction TI/IN/0042 dated 23.10.2020 with any latest amendment. { refer para 2.1.10(b) of Part-II Chapter -I (Section-2)

8. TYPE OF OHE & FEEDER TO BE PROVIDED:

- (a) Regulated Conventional all Copper OHE with 65 sqmm Cadmium-Copper Catenary and 107 sqmm grooved HDBC Contact wire & FEEDER with All Aluminum Spider Conductor.

10.1 PERIOD OF COMPLETION

The entire work including commissioning of OHE modification/ FEEDER works shall be completed within 24 (Twenty Four) Months from the date of issue of the 'Letter of Acceptance' to the tenderer.

10.2 VALIDITY OF OFFER: -90 (Ninety) days from the date of opening of tender.

10.3 Schedule of Bidding Process: (As Per IREPS NIT, header)

SN	Event Description	Date
1	Invitation of NIT	22.06.2026
2	Last date for receiving queries	29.06.2026
3	Pre –Bid meeting (offline)*	06.07.2026 (11 :30 Hrs)
4	Response of queries	08.07.2026
5	Bid Due Date	23.07.2026. (15:00 Hrs IST)
6	Physical Submission of Original Bank Guarantee (If applicable) for Bid Security as per clause 3(3)(ii) of the Preamble.	23.07.2026 (15:00 hrs)
7	Opening of Technical Bid	23.07.2026 (15.30 Hrs IST)
8	Opening of Financial Bid	Will be system intimated during bidding process
9	E-Reverse auction	Not applicable

Address for pre bid meeting (offline)- Conference hall, at the office of CEE/Project/NER/Lucknow

Note- Queries recieved after cutoff date shall not be entertained.

11. TENDER BID

This is a 'Two packet e-tendering' syatem. The Tender bid shall be uploaded on IREPS site (www.ireps.gov.in) in two packets, which is as under:

- Packet-“A” - Pre-qualification Bid (Eligibility/Qualifying elements) of tender bid.
- Packet-“B” - Technical, Commercial (Price elements) of the tender bid. The details can be seen at para 1.1.7 & 1.1.28 (Part-I, Chapter-I).

12 ELIGIBILITY CRITERIA**12.1 Technical Eligibility Criteria:**

- (A) The tenderer must have successfully completed or substantially completed any one of the following categories of work(s) during last 07 (seven) years, ending last day of month previous to the one in which tender is invited:

Three similar works each costing not less than the amount equal to 30% of advertised value of the tender,

OR

Two similar works each costing not less than the amount equal to 40% of advertised value of the tender,

OR

One similar work each costing not less than the amount equal to 60% of advertised value of the tender.

NOTE: “ This tender is not a composite Electrical work thus Technachal Eligibility Criteria as per Para 12.1 (A) of the preamble will be applicable.

B. DELETED

- C. **Definition of SIMILAR Work:-** Any work which includes work of "Design, Supply, Erection, Testing & Commissioning of 25 kV/2x25 kV, 50 Hz, AC, single phase Overhead Railway Electrification Work including foundation, structure, erection and ancillary equipments of not less than 30% of total TKM of OHE component of tender work.

NOTE:-

Eligibility Criteria as per Clause 12.1 of the Preamble shall be required to be met as per above definition of similar works.

Note for Item 12.1:

Work experience certificate from private individual shall not be considered. However, in addition to work experience certificates issued by any Govt. Organisation, work experience certificate issued by Public listed company having average annual turnover of Rs 500 crore and above in last 3 financial years excluding the current financial year, listed on National Stock Exchange or Bombay Stock Exchange, incorporated/registered at least 5 years prior to the date of closing of tender, shall also be considered provided the work experience certificate has been issued by a person authorized by the Public listed company to issue such certificates.

In case tenderer submits work experience certificate issued by public listed company, the tenderer shall also submit along with work experience certificate, the relevant copy of work order, bill of quantities, bill wise details of payment received duly certified by Chartered Accountant, TDS certificates for all payments received and copy of final/last bill paid by company in support of above work experience certificate.

12.2 Financial Eligibility Criteria

The tenderer must have minimum average annual contractual turnover of V/N or ' V ' whichever is less; where

V = Advertised value of the tender in crores of Rupees.

N = Number of years prescribed for completion of work for which bids have been invited.

The average annual contractual turnover shall be calculated as an average of "Total contractual payments" in the previous three financial years, as per the audited balance sheet. However, in case balance sheet of the previous year is yet to be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover.

The tenderers shall submit requisite information as per **Form-12A, Sheet-5**, along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet.

- 12.3 Bid Capacity:** The Bid Capacity criteria shall be applicable for tenders costing more than Rs.20 Crore. The tender/technical bid will be evaluated based on bid capacity formula detailed as **Annexure-III of Part-I, Chapter-I**.

- 12.4** No Technical and Financial credentials are required for tenders having advertised value up to Rs 50 lakh.

- 12.5** Credentials if submitted in foreign currency, shall be converted into Indian currency i.e. Indian Rupee as under:

The conversion rate of US Dollars into Rupees shall be the daily representative exchange rates published by the Reserve Bank of India or entity authorized by RBI to do so for the relevant date or immediately previous date for which rates have been published. Where,

relevant date shall be as on the last day of month previous to the one in which tender is invited. In case of any other currency, the same shall first be converted to US Dollars as on the last day of month previous to the one in which tender is invited, and the amount so derived in US Dollars shall be converted into Rupees at the aforesaid rate. The conversion rate of such currencies shall be the daily representative exchange rates published by the International Monetary Fund for the relevant date or immediately previous date for which rates have been published.

Explanation for para 12 of the Tender Document (Second Sheet) including para 12.1 to 12.5.

Eligibility Criteria:

1. Substantially Completed Work means an ongoing work in which payment equal to or more than 90% of the present contract value (excluding the payment made for adjustment of Price variation (PVC), if any) has been made to the contractor in that ongoing contract and no proceedings of termination of contract on Contractor's default has been initiated. The credential certificate in this regard should have been issued not prior to 60 days of date of invitation of present tender.
2. In case a work is started prior to 07 (seven) years, ending last day of month previous to the one in which tender is invited, but completed in last 07 (seven) years, ending last day of month previous to the one in which tender is invited, the completed work shall be considered for fulfillment of credentials.
3. If a work is physically completed and completion certificate to this extent is issued by the concerned organization but final bill is pending, such work shall be considered for fulfillment of credentials
4. In case of completed work, the value of final bill (gross amount) including the PVC amount (if paid) shall be considered as the completion cost of work. In case final bill is pending, only the total gross amount already paid including the PVC amount (if paid) shall be considered as the completion cost of work.
In case of substantially completed work, the total gross amount already paid including the PVC amount (if paid), as mentioned in the certificate, shall be considered as the cost of substantially completed work.
5. If a bidder has successfully completed a work as subcontractor and the work experience certificate has been issued for such work to the subcontractor by a Govt. Organization or public listed company as defined in Note for 12.1 of the preamble, the same shall be considered for the purpose of fulfillment of credentials.
6. In case a work is considered similar in nature for fulfillment of technical credentials, the overall cost including the PVC amount (if paid) of that completed work or substantially completed work, shall be considered and no separate evaluation for each component of that work shall be made to decide eligibility.
7. In case of newly formed partnership firm, the credentials of individual partners from previous propriety firm(s) or dissolved previous partnership firm(s) or split previous partnership firm(s), shall be considered only to the extent of their share in previous entity on the date of dissolution/split and their share in newly formed partnership firm. For example, a partner A had 30% share in previous entity and his share in present partnership firm is 20%. In the present tender under consideration, the credentials of partner A will be considered to the extent of $0.3 \times 0.2 \times \text{value of the work done in the previous entity}$. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.
8. In case of existing partnership firm, if any one or more partners quit the partnership firm, the credentials of remaining partnership firm shall be re-worked out i.e., the quitting partner(s) shall take away his credentials to the extent of his share on the date of quitting the partnership firm (e.g. in a partnership firm of partners A, B & C having share 30%, 30% & 40% respectively and credentials of Rs 10 crore; in case partner C quits the firm, the credentials of this partnership firm shall remain as Rs 6 crore). For this purpose, the tenderer shall submit along with his bid all the relevant documents which

include copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.

9. In case of existing partnership firm if any new partner(s) joins the firm without any modification in the name and PAN/TAN no. of the firm, the credentials of partnership firm shall get enhanced to the extent of credentials of newly added partner(s) on the same principles as mentioned in item 6 above. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deeds, dissolution/splitting deeds and proof of surrender of PAN No.(s) in case of dissolution of partnership firm etc.
10. Any partner in a partnership firm cannot use or claim his credentials in any other firm without leaving the partnership firm i.e., In a partnership firm of A&B partners, A or B partner cannot use credentials of partnership firm of A&B partners in any other partnership firm or propriety firm without leaving partnership firm of A&B partners.
11. In case a partner in a partnership firm is replaced due to succession as per succession law, the proportion of credentials of the previous partner will be passed on to the successor.
12. If the percentage share among partners of a partnership firm is changed, but the partners remain the same, the credentials of the firm before such modification in the share will continue to be considered for the firm as it is without any change in their value. Further, in case a partner of partnership firm retires without taking away any credentials from the firm, the credentials of partnership firm shall remain the same as it is without any change in their value.
13. In a partnership firm "AB" of A & B partners, in case A also works as propriety firm "P" or partner in some other partnership firm "AX", credentials of A in propriety firm "P" or in other partnership firm "AX" earned after the date of becoming a partner of the firm AB shall not be added in partnership firm AB.
14. In case a tenderer is LLP, the credentials of tenderer shall be worked out on above lines similar to a partnership firm.
15. In case company A is merged with company B, then company B would get the credentials of company A also.]

12.6 For SCADA Works:- DELETED-

13. Tenderer's Credentials:-

- 13(a) Documents testifying Tenderer previous experience and financial status should be produced along with the tender. Tenderer(s) who is / are not borne on the approved list of the Contractors of Railway shall submit along with his / their tender:
 - (i) Certificates and testimonials regarding contracting experience for the type of job for which tender is invited with list of works carried out in the past.
 - (ii) Audited Balance Sheet duly certified by the Chartered Accountant regarding contractual payments received in the past.
 - (iii) The list of personnel / organization on hand and proposed to be engaged for the tendered work. Similarly list of Plant & Machinery available on hand and proposed to be inducted and hired for the tendered work.
 - (iv) A copy of certificate stating that they are not liable to be disqualified and 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 FORM-28. In addition to FORM-28, in case of other than Company/Proprietary firm, FORM-28A & 32A shall also be submitted by the each member of a Partnership Firm / Joint Venture (JV) / Hindu Undivided Family (HUF / Limited Liability Partnership (LLP) etc, as the case may be. Non submission of above certificate(s) 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/digitally signed by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document.

- (v) 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 hereunder nor will it affect any rights of the Railway there under.
- (vi) (a) In case of any information submitted by tenderer is found to be false forged or incorrect at any time during process for evaluation of tenders, it shall lead to forfeiture of the tender Bid security and may also lead to any other action provided in the contract including banning of business for a period of upto two years.
- (b) In case of any information submitted by tenderer is found to be false forged or incorrect after the award of contract, the contract shall be terminated. Bid security, Performance Guarantee and Security Deposit available with the railway shall be forfeited. In addition, other dues of the contractor, if any, under this contract shall be forfeited and may also lead to any other action provided in contract including banned for doing business for a period of up to two years.

13(b)- Non-compliance with any of the conditions set forth therein above is liable to result in the tender being rejected.

13(c) - List of works completed in the last seven qualifying financial years (as the case may be/as applicable) giving description of work, organization for whom executed, value of contract at the time of award, date of award, date of scheduled completion of work, date of actual start, actual completion, total payment received and final value of contract should also be given in respective FORMs.

13(d)-**Work load**:- The tenderers shall furnish the list of works on hand indicating description of work, contract value, value of balance work yet to be done, date of award and date of scheduled completion of work in respective FORMs. Besides, they shall also advise the details of unfinalised tenders (with cost and completion period) in which they have quoted.

- Note: (i) Supportive documents/certificates from the organization with whom they worked/ are working should also be enclosed.
- (ii) Certificate from private individuals for whom such works are executed / being executed shall not be accepted.
- (iii) Tenderer shall submit all the documents in support of minimum eligibility criteria/ credential along with the Tender. No documents in support of minimum eligibility criteria/credentials will be accepted/ entertained after opening of the tender.

13(e) **Engineering Organization**:- The tenderers should have adequate engineering organizations required for the execution of the work. List of Personnel Organization available on hand and proposed to be engaged for the tendered work shall be furnished in forms as mentioned in respective FORMs.

13(f) **Construction machinery**:- The tenderers should have all the construction machinery, tools & plants, vehicles etc, required for the satisfactory execution of tendered work. List of plant & Machinery available on hand (own) and proposed to be inducted (own and hired to be given separately) for the tendered work in as mentioned in respective FORMs.

13(g)- **Documents to be Submitted Along with Tender:**

- (i) The tenderer shall clearly specify whether the tender is submitted on his own (Proprietary Firm) or on behalf of a Partnership Firm / Company / Joint Venture (JV) / Registered Society / Registered Trust / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc. The tenderer(s) shall enclose the attested copies of the constitution of their concern, and copy of PAN Card along with their tender. Tender Documents in such

cases are to be signed by such persons as may be legally competent to sign them on behalf of the firm, company, association, trust or society, as the case may be.

(ii) Following documents shall be submitted by the tenderer:

(a) Sole Proprietorship Firm:

(i) All documents in terms of Para 12 of the Preamble above.

(b) **HUF:**

(i) A copy of notarized affidavit on Stamp Paper declaring that he who is submitting the tender on behalf of HUF is in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act on behalf of HUF.

(ii) All other documents in terms of Para 12 of the Preamble above.

(c) Partnership Firm:

(i) All documents as mentioned in Para 15 of the Preamble.

(d) **Joint Venture (JV):** All documents as mentioned in Para 14 of the Preamble.

(e) Company registered under Companies Act 2013:

(i) The copies of **MOA (Memorandum of Association) / AOA (Articles of Association) of the company.**

(ii) A copy of Certificate of Incorporation.

(iii) A copy of Authorization/Power of Attorney issued by the Company (backed by the resolution of Board of Directors) in favour of the individual to sign the tender on behalf of the company and create liability against the company.

(iv) All other documents in terms Para 12 of the Preamble above.

(f) LLP (Limited Liability Partnership):

(i) A copy of LLP Agreement.

(ii) A copy of Certificate of Incorporation.

(iii) A copy of Power of Attorney/Authorization issued by the LLP in favour of the individual to sign the tender on behalf of the LLP and create liability against the LLP.

(iv) An undertaking by all partners of the LLP in FORM-28A&32A that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP or JV in which they were / are partners/members. Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the Standard General Conditions of Contract.

(v) All other documents in terms of Para 12 of the Preamble above.

(g) Registered Society & Registered Trust:

(i) A copy of Certificate of Registration

(ii) A copy of Memorandum of Association of Society/Trust Deed

(iii) A copy of Power of Attorney in favour of the individual to sign the tender documents and create liability against the Society/Trust.

(iv) A copy of Rules & Regulations of the Society

(v) All other documents in terms of Para 12 of the Preamble above.

(iii) If it is NOT mentioned in the submitted tender that tender is being submitted on behalf of a Sole Proprietorship firm / Partnership firm / Joint Venture / Registered Company etc., then the tender shall be treated as having been submitted by the individual who has signed the tender.

(iv) After opening of the tender, any document pertaining to the constitution of Sole

Proprietorship Firm / Partnership Firm / Registered Company/ Registered Trust / Registered Society / HUF/LLP etc. shall be neither asked nor considered, if submitted. Further, no suo moto cognizance of any document available in public domain (i.e., on internet etc.) or in Railway's record/office files etc. will be taken for consideration of the tender, if no such mention is available in tender offer submitted.

- (v) A tender from JV shall be considered only where permissible as per the tender conditions.
- (vi) The Railway will not be bound by any change of power of attorney or in the composition of the firm made subsequent to the submission of tender. Railway may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Contractor.

13(h):- The tenderer whether sole proprietor / a company or a partnership firm / registered society / registered trust / HUF / LLP etc if they want to act through agent or individual partner(s), should submit along with the tender, a copy of power of attorney duly stamped and authenticated by a Notary Public or by Magistrate in favour of the specific person whether he/they be partner(s) of the firm or any other person, specifically authorizing him/them to sign the tender, submit the tender and further to deal with the Tender/ Contract up to the stage of signing the agreement except in case where such specific person is authorized for above purposes through a provision made in the partnership deed / Memorandum of Understanding / Article of Association /Board resolution, failing which tender shall be summarily rejected.

A separate power of attorney duly stamped and authenticated by a Notary Public or by Magistrate in favour of the specific person whether he/they be partner(s) of the firm or any other person, shall be submitted after award of work, specifically authorizing him/them to deal with all other contractual activities subsequent to signing of agreement, if required.

Note: A Power of Attorney executed and issued overseas, the document will also have to be legalized by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by Bidders from countries that have signed the Hague Legislation Convention 1961 are not required to be legalized by the Indian Embassy if it carries a conforming Apostille certificate.

13(i) In terms of Restriction under Rule144(xi) of General Financial Rules (GFRs), 2017 Order (Annexure-IV, Part-I, Chapter-I), any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority which is the registration committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT). The bidder is required to submit a certificate in format available as FORM-28A&32A.

14. Participation of Joint Venture (JV) Firms in Works tender :

Joint Venture shall be considered only for tenders where advertised estimated cost of the work is more than Rs. 10 Crores (Rupees Ten Crores) only.

14.1 Separate identity/name shall be given to the Joint Venture.

14.2 Number of members in a JV shall not be more than three, if the work involves only one department (say Civil or S&T or Electrical or Mechanical) and shall not be more than five, if the work involves more than one Department. One of the members of the JV shall be its Lead Member who shall have a majority (at least 51%) share of interest in the JV. The other members shall have a share of not less than 20% each in case of JV with upto three members and not less than 10% each in case of JV with more than three members.

In case of JV with foreign member(s), the Lead Member has to be an Indian firm/company with a minimum share of 51%.

- 14.3** A member of JV shall not be permitted to participate either in individual capacity or as a member of another JV in the same tender.
- 14.4** The tender form shall be purchased and submitted only in the name of the JV and not in the name of any constituent member. The tender form can however be submitted by JV or any of its constituent member or any person authorized by JV through Power of Attorney to submit tender.
- 14.5** Bid Security shall be submitted by JV or authorized person of JV either as :
- (i) Cash through e-payment gateway or as mentioned in tender document, or
 - (ii) Bank Guarantee bond either in the name of JV, or in the name of all members of JV as per MOU irrespective of their share in the JV if the JV has not been constituted legally till the date of submission of tender.
- 14.6** A copy of Memorandum of Understanding (MoU) duly executed by the JV members on a stamp paper, shall be submitted by the JV alongwith the tender. The complete details of the members of the JV, their share and responsibility in the JV etc. particularly with reference to financial, technical and other obligations shall be furnished in the MoU. (The MoU format for this purpose shall be finalized by the Railway in consultation with their Law Branch and shall be enclosed alongwith the tender).
- 14.7** Once the tender is submitted, the MoU shall not normally be modified / altered / terminated during the validity of the tender. In case the tenderer fails to observe/comply with this stipulation, the full Bid Security shall be liable to be forfeited.
- 14.8** Approval for change of constitution of JV shall be at the sole discretion of the Railway. The constitution of the JV shall not normally be allowed to be modified after submission of the tender bid by the JV, except when modification becomes inevitable due to succession laws etc., provided further that there is no change in qualification of minimum eligibility criteria by JV after change of composition. However, the Lead Member shall continue to be the Lead Member of the JV. Failure to observe this requirement would render the offer invalid.
- 14.9** Similarly, after the contract is awarded, the constitution of JV shall not normally be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract conditions.
- 14.10** On award of contract to a JV, a single Performance Guarantee shall be submitted by the JV as per tender conditions. All the Guarantees like Performance Guarantee, Bank Guarantee for Mobilization Advance, Machinery Advance etc. shall be accepted only in the name of the JV and no splitting of guarantees amongst the members of the JV shall be permitted.
- 14.11** On issue of LOA (Letter of Acceptance), the JV entity to whom the work has been awarded, with the same shareholding pattern as was declared in the MOU/JV Agreement submitted alongwith the tender, shall be got registered before the Registrar of the Companies under 'The Companies Act - 2013' (in case JV entity is to be registered as Company) or before the Registrar/Sub-Registrar under the 'The Indian Partnership Act, 1932' (in case JV entity is to be registered as Partnership Firm) or under 'The LLP Act 2008' (in case JV entity is to be registered as LLP). A separate PAN shall be obtained for this entity. The documents pertaining to this entity including its PAN shall be furnished to the Railways before signing the contract agreement for the work. In case the tenderer fails to observe/comply with this stipulation within 60 days of issue of LOA, contract is liable to be terminated. In case contract is terminated railway shall be entitled to forfeit the full amount of the Bid Security and other dues payable to the Contractor under this

contract. The entity so registered, in the registered documents shall have, inter-alia, following Clauses:

- 14.11.1** Joint And Several Liability - Members of the entity to which the contract is awarded, shall be jointly and severally liable to the Railway for execution of the project in accordance with General and Special Conditions of Contract. The members of the entity shall also be liable jointly and severally for the loss, damages caused to the Railways during the course of execution of the contract or due to non-execution of the contract or part thereof.
- 14.11.2** Duration of the Registered Entity - It shall be valid during the entire currency of the contract including the period of extension, if any and the maintenance period after the work is completed.
- 14.11.3** Governing Laws - The registered entity shall in all respect be governed by and interpreted in accordance with Indian Laws.
- 14.12** Authorized Member - Joint Venture members in the JV MoU shall authorize Lead member on behalf of the Joint Venture to deal with the Contract, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said tender/contract. All notices/correspondences with respect to the contract would be sent only to this authorized member of the JV.
- 14.13** No member of the Joint Venture shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the Railway in respect of the said tender/contract.
- 14.14** Documents to be enclosed by the JV along with the tender:
- 14.14.1** In case one or more of the members of the JV is/are partnership firm(s), following documents shall be submitted:
- (a) A notarized copy of the Partnership Deed or a copy of the Partnership deed registered with the Registrar.
 - (b) A copy of consent of all the partners or individual authorized by partnership firm, to enter into the Joint Venture Agreement on a stamp paper,
 - (c) A notarized or registered copy of Power of Attorney in favour of the individual to sign the MOU/JV Agreement on behalf of the partnership firm and create liability against the firm.
 - (d) An undertaking by all partners of the partnership firm in FORM-28A&32A that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP in which they were / are partners/members. Any Concealment / wrong information in regard to above shall make the bid ineligible or the contract shall be determined under Clause 62 of the Standard General Conditions of Contract.
- 14.14.2** In case one or more members is/are Proprietary Firm or HUF, the following documents shall be enclosed:
- (i) A copy of notarized affidavit on Stamp Paper declaring that his Concern is a proprietary Concern and he is sole proprietor of the Concern OR he who is signing the affidavit on behalf of HUF is in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act on behalf of HUF.
- 14.14.3** In case one or more members of the JV is/are companies, the following documents

shall be submitted:

- a) A copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement,
- b) The copies of MOA (Memorandum of Association) / AOA (Articles of Association) of the company
- c) A copy of Certificate of Incorporation
- d) A copy of Authorization/copy of Power of Attorney issued by the Company (backed by the resolution of Board of Directors) in favour of the individual to sign the tender, sign MOU/JV Agreement on behalf of the company and create liability against the company.

14.14.4 In case one or more members of the JV is/are LLP firm/s, the following documents shall be submitted:

- (i) A copy of LLP Agreement
- (ii) A copy of Certificate of Incorporation of LLP
- (iii) A copy of resolution passed by partners of LLP firm, permitting the Firm to enter into a JV agreement
- (iv) A copy of Authorization /copy of Power of Attorney issued by the LLP firm (backed by resolution passed by the Partners) in favour of the individual, to sign the tender and/or sign the MOU/ JV agreement on behalf of the LLP and create liability against the LLP.
- (v) An undertaking by all partners of the LLP in FORM-28A&32A that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP or JV in which they were / are partners/members. Any Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the Standard General Conditions of Contract.

14.14.5 In case one or more members of the JV is/are Society/s or Trust/s, the following documents shall be submitted:

- (i) A copy of Certificate of Registration
- (ii) A copy of Memorandum of Association of Society/Trust Deed
- (iii) A copy of Rules & Regulations of the Society
- (iv) A copy of Power of Attorney, in favour of the individual to sign the tender documents and create liability against the Society/Trust.

14.14.6 All the Members of JV shall certify in FORM-28A&32A that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders/contract on the date of submission of bids either in their individual capacity or as a member of the JV in which they were/are members.

14.14.7 All other documents in terms of explanatory notes in clause 12 above.

14.15 Credentials & Qualifying Criteria: Technical, financial eligibility and Bid capacity of the JV shall be adjudged based on satisfactory fulfillment of the following criteria:

14.15.1 Technical Eligibility Criteria ('a' or 'b' mentioned hereunder):

(a) For Works without composite components:

The technical eligibility for the work as per para 12.1 above, shall be satisfied by either the 'JV in its own name & style' or 'Lead member of the JV'.

Each other (non-lead) member(s) of JV, who is/ are not satisfying the technical eligibility for

the work as per para 12.1 above, shall have technical capacity of minimum 10% of the cost of work i.e., each non-lead member of JV member must have satisfactorily completed or substantially completed during the last 07 (seven) years, ending last day of month previous to the one in which tender is invited, one similar single work for a minimum of 10% of advertised value of the tender.

(b) For works with composite components:

The technical eligibility for major component of work as per para 12.1 above, shall be satisfied by either the 'JV in its own name & style' or 'Lead member of the JV' and technical eligibility for other component(s) of work as per para 12.1 above, shall be satisfied by either the 'JV in its own name & style' or 'any member of the JV'.

Each other (non-lead) member(s) of JV, who is/ are not satisfying the technical eligibility for any component of the work as per para 12.1 above, shall have technical capacity of minimum 10% of the cost of any component of work mentioned in technical eligibility criteria. i.e., each other (non- lead) member of must have satisfactorily completed or substantially completed during the last 07 (seven) years, ending last day of month previous to the one in which tender is invited, one similar single work for a minimum of 10% of cost of any component of work mentioned in technical eligibility criteria.

Note for Para 14.15.1:

- a) The Major component of the work for this purpose shall be the component of work having highest value. In cases where value of two or more component of work is same, any one work can be classified as Major component of work.
- b) Value of a completed work done by a Member in an earlier JV shall be reckoned only to the extent of the concerned member's share in that JV for the purpose of satisfying his/her compliance to the above mentioned technical eligibility criteria in the tender under consideration.

14.15.2 Financial Eligibility Criteria

The JV shall satisfy the requirement of "Financial Eligibility" mentioned at Para 12.2 above. The "financial capacity" of the lead partner of JV shall not be less than 51% of the financial eligibility criteria mentioned at Para 12.2 above.

The arithmetic sum of individual "financial capacity" of all the members shall be taken as JV's "financial capacity" to satisfy this requirement.

Note: Contractual payment received by a Member in an earlier JV shall be reckoned only to the extent of the concerned member's share in that JV for the purpose of satisfying compliance of the above mentioned financial eligibility criteria in the tender under consideration.

14.15.3 Bid Capacity: The JV shall satisfy the requirement of "Bid Capacity" requirement mentioned at para 12.3 above. The arithmetic sum of individual "Bid capacity" of all the members shall be taken as JV's "Bid capacity" to satisfy this requirement.

- 14.6 The tenderer whether sole proprietor / a company or a partnership firm / joint venture (JV) / registered society / registered trust / HUF / LLP etc if they want to act through agent or individual partner(s), should submit along with the tender, a copy of power of attorney duly stamped and authenticated by a Notary Public or by Magistrate in favour of the specific person whether he/they be partner(s) of the firm or any other person, specifically authorizing him/them to sign the tender, submit the tender and further to deal with the Tender/ Contract up to the stage of signing the agreement except in case where such specific person is authorized for above purposes through a provision made in the partnership deed / Memorandum of Understanding / Article of Association /Board resolution, failing which tender shall be summarily rejected. A separate power of attorney duly stamped and authenticated by a Notary Public or by Magistrate in favour of the specific person whether he/they be partner(s) of the firm or any other person, shall be submitted after award of work, specifically authorizing him/them to deal with all

other contractual activities subsequent to signing of agreement, if required.

Note: A Power of Attorney executed and issued overseas, the document will also have to be legalized by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by Bidders from countries that have signed the Hague Legislation Convention 1961 are not required to be legalized by the Indian Embassy, if it carries a conforming Apostille certificate.

15. Participation of Partnership Firms in works tenders:

15.1 The Partnership Firms participating in the tender should be legally valid under the provisions of the Indian Partnership Act.

15.2 The partnership firm should have been in existence or should have been formed prior to submission of tender. Partnership firm should have either been registered with the Registrar or the partnership deed should have been notarized as per the Indian Partnership Act, prior to submission of tender.

15.3 Separate identity / name should be given to the partnership firm. The partnership firm should have PAN / TAN number in its own name and PAN / TAN number in the name of any of the constituent partners shall not be considered. The valid constituents of the firm shall be called partners.

15.4 Once the tender has been submitted, the constitution of the firm shall not normally be allowed to be modified / altered / terminated during the validity of the tender as well as the currency of the contract except when modification becomes inevitable due to succession laws etc., in which case prior permission should be taken from Railway and in any case the minimum eligibility criteria should not get vitiated. The re-constitution of firm in such cases should be followed by a notary certified Supplementary Deed. The approval for change of constitution of the firm, in any case, shall be at the sole discretion of the Railways and the Tenderer shall have no claims what-so-ever. Any change in the constitution of Partnership firm after submission of tender shall be with the consent of all partners and with the signatures of all partners as that in the Partnership Deed. Failure to observe this requirement shall render the offer invalid and full Bid Security shall be forfeited.

If any Partner/s withdraws from the firm after submission of the tender and before the award of the contract, the offer shall be rejected and Bid Security of the tenderer will be forfeited. If any new partner joins the firm after submission of tender but prior to award of contract, his / her credentials shall not qualify for consideration towards eligibility criteria either individually or in proportion to his share in the previous firm. In case the tenderer fails to inform Railway beforehand about any such changes / modification in the constitution which is inevitable due to succession laws etc. and the contract is awarded to such firm, then it will be considered a breach of the contract conditions liable for determination of the contract under Clause 62 of the Standard General Conditions of Contract.

15.5 A partner of the firm shall not be permitted to participate either in his individual capacity or as a partner of any other firm in the same tender.

15.6 The tender form shall be submitted only in the name of partnership firm. The Bid Security shall be submitted by partnership firm through e-payment gateway or as mentioned in tender document. The Bid Security submitted in the name of any individual partner or in the name of authorized partner (s) shall not be considered.

15.7 On issue of Letter of Acceptance (LOA) to the partnership firm, all the guarantees like Performance Guarantee, Guarantee for various Advances to the Contractor shall be submitted only in the name of the partnership firm and no splitting of guarantees among the partners shall be acceptable.

15.9 On issue of Letter of Acceptance (LOA), contract agreement with partnership firm shall

be executed in the name of the firm only and not in the name of any individual partner.

- 15.10** In case the Letter of Acceptance (LOA) is issued to a partnership firm, the following undertakings shall be furnished by all the partners through a notarized affidavit, before signing of contract agreement.

(a) Joint and several liabilities:

The partners of the firm to which the Letter of Acceptance (LOA) is issued, shall be jointly and severally liable to the Railway for execution of the contract in accordance with General and Special Conditions of the Contract. The partners shall also be liable jointly and severally for the loss, damages caused to the Railway during the course of execution of the contract or due to non-execution of the contract or part thereof.

(b) Duration of the partnership deed and partnership firm agreement:

The partnership deed/partnership firm agreement shall normally not be modified/altered/terminated during the currency of contract and the maintenance period after the work is completed as contemplated in the conditions of the contract. Any change carried out by partners in the constitution of the firm without permission of Railway, shall constitute a breach of the contract, liable for determination of the contract under Clause 62 of the Standard General Conditions of Contract.

(c) Governing laws: The partnership firm agreement shall in all respect be governed by and interpreted in accordance with the Indian laws.

(d) No partner of the firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other partner/s and that of the Railway.

- 15.11** The tenderer shall clearly specify that the tender is submitted on behalf of a partnership firm. The following documents shall be submitted by the partnership firm, with the tender:

- (i) A notarized copy of the Partnership Deed or a copy of the Partnership deed registered with the Registrar.
- (ii) A notarized or registered copy of Power of Attorney in favour of the individual to tender for the work, sign the agreement etc. and create liability against the firm.
- (iii) An undertaking by all partners of the partnership firm in FORM-28A&32A that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP in which they were / are partners/members. Any Concealment / wrong information in regard to above shall make the bid ineligible or the contract shall be determined under Clause 62 of the Standard General Conditions of Contract.
- (iv) All other documents in terms of Para 12 of the Preamble above.

- 15.12** Evaluation of eligibility of a partnership firm:

Technical and financial eligibility of the firm shall be adjudged based on satisfactory fulfillment of the eligibility criteria laid down in Clause 12 above.

- 16. PREBID MEETING:** Intenders having advertised value more than Rs 50 Crore or as mentioned in the tender document, Railway shall conduct Pre Bid Conference(s) with the prospective bidders

LAST DATE FOR SUBMISSION OF TENDERS AND DATE OF OPENING OF TENDERS:

- 16.1** Tender is invited on e-tendering portal of CRIS. Tender offers shall be submitted on www.ireps.gov.in. All the details are available on the website. Tender submitted in any other mode other than through www.ireps.gov.in shall be summarily rejected.

17. ADDRESSES:

The list of addresses, to which correspondence and documents relating to the contract should be sent, is as under:-

- (i) For all policy, Contractual and Commercial matters:-

- (a) Prior to the award of contract-

Chief Electrical Engineer/Project
North Eastern Railway, Charbagh, Lucknow-226001

Email ID:- ceeprojectner@gmail.com

Contact No.9794866300

or his successor/nominee (whose address will be intimated in due course).

- (b) For any query related with Tender Document:

Chief Electrical Engineer/Project
North Eastern Railway, Charbagh, Lucknow-226001

Email ID:- ceeprojectner@gmail.com

Contact No.9794866300

- (c) After award of contract:

Chief Electrical Engineer/Project
North Eastern Railway, Charbagh, Lucknow-226001

Email ID:- ceeprojectner@gmail.com

Contact No.9794866300

- (ii) For Security Deposit:

PFA/NER/GKP or his successor/nominee (whose address will be intimated in due course).

- (iii) For matters relating to particular design, working drawing:-

Chief Electrical Engineer/Project
North Eastern Railway, Charbagh, Lucknow-226001

Email ID:- ceeprojectner@gmail.com

Contact No.9794866300

or his successor/nominee (whose address will be intimated in due course).

- (iv) For matters relating to basic design and drawings for fittings, components equipments and prototype tests:-

The Director General (TI)
Research Designs & Standard Organisation,
Manak Nagar, Lucknow – 226011.

- (v) Matters relating to progressing of field work, scheduling of quantities and submission of bills.

Chief Electrical Engineer/Project
North Eastern Railway, Charbagh, Lucknow-226001

Email ID:- ceeprojectner@gmail.com

Contact No.9794866300

or his successor/nominee (whose address will be intimated in due course).

18 QUANTITIES APPROXIMATE

Quantities given in various Schedules are given in IREPS and are only the approximate quantities of various items of the work.

- 19 (a). (i) Standard Schedule of Rates (OHE modification/FEEDER Works): Schedule and unit cost has been given in IREPS.

Schedule-1-5, Items of the Tender papers lists out the standard schedule of rates for various items, categorized under Six Schedules namely General, Concrete, Ferrous, Non-ferrous, Insulators and Extra under Power Block Based on these standard rates, the total contract value has been worked out in Schedule-1 to 5 lists out the rates under Six sections namely General, Concrete, Ferrous, Non-ferrous, insulators and extra under power Block at which "On-account payments will be released to the successful Tenderer. The Tenderers are advised to quote only single percentage each below/at par/above against each schedule of the S.O.R.", Form-1B, Sheet 1 & 2 (Summary of prices). The percentage so quoted will be loaded to the rates given in corresponding sections of the Schedule 1 to 5 as well as Schedule 3A to arrive at the rates payable to the contractor against these schedules. The offers where more than one percentage has been given for different items for OHE & FEEDER Work of Schedule -1 to 5 shall liable to be rejected.

(ii) Rates of Non SOR: (Schedule-6)

The rates given in Schedule- 6 are the rates for Non SOR items. The Tenderer are advised to quote only single percentage, below/at par/above against each schedule, for the Non SOR items in Form-"1B", Sheet-1 & 2 (Summary of prices). The actual payment to be made against any item of Schedule-6 shall be derived after loading the Non SOR prices with the Tenderer's quoted percentage. The offers where more than one percentage has been given for different items for Non SOR items of Schedule-6 shall liable to be rejected.

(b) (i) Standard Schedule of Rates (for TSS Works): Deleted, Not Applicable.

(ii) RATES OF NON SOR ITEMS (FOR TSS Works): Deleted, Not Applicable.

(c) RATES OF NON SOR ITEMS (FOR SCADA Works): Deleted, Not Applicable.

(d) RATES OF NON SOR ITEMS (For Electrical General work portion): Deleted, Not Applicable.

20. INDIAN RAILWAYS STANDARD GENERAL CONDITIONS OF CONTRACT:

Indian Railways Standard General Conditions of Contract – April'2022 along with its latest amendment/advance correction slips issued by Railway Board shall be applicable to the contract. This may be obtained by the tenderer / contractor on payment from any Divisional Railway Manager's office of concerned Railway.

In case of any difference between provisions of **GCC – April'2022** and any condition contained in this tender document, the provisions of **GCC – April'2022** with latest amendments will prevail, unless stated otherwise.

"GCC or General Conditions of Contract" wherever appearing in the tender document is to be read as General Conditions of Contract– "April 2022" along with its latest amendment/advance correction slips issued by Railway Board shall be applicable to the contract.

21. COST OF TENDER DOCUMENT:

Details available at IREPS site (www.ireps.gov.in).

22. PERFORMANCE GUARANTEE:

The procedure for obtaining Performance Guarantee is outlined below:

- (a) The successful bidder shall have to submit a Performance Guarantee (PG) within 21 (Twenty one) days from the date of issue of Letter of Acceptance (LOA). Extension of time for submission of PG beyond 21 (Twenty one) days and upto 60 days from the date of issue of LOA may be given by the Authority who is competent to sign the contract agreement. However, a penal interest of 12% per annum shall be charged for the delay beyond 21 (Twenty one) days, i.e. from 22nd day after the date of issue of LOA. Further, if the 60th day happens to be a declared holiday in the concerned office of the Railway, submission of PG can be accepted on the next working day.

In all other cases, if the Contractor fails to submit the requisite PG even after 60 days from the date of issue of LOA, the contract is liable to be terminated. In case contract is terminated railway shall be entitled to forfeit Bid Security and other dues payable to the contractor against that particular contract, subject to maximum of PG amount. In case a tenderer has not submitted Bid Security on the strength of their registration as a Startup recognized by Department of Industrial Policy and Promotion (DIPP) under Ministry of Commerce and Industry, DIPP shall be informed to this effect. The failed Contractor shall be debarred from participating in re-Tender for that work.

- (b) The successful bidder shall submit the Performance Guarantee (PG) in any of the following forms, amounting to 5% of the original contract value:
- (i) A deposit of Cash;
 - (ii) Irrevocable Bank Guarantee;
 - (iii) Government Securities including State Loan Bonds at 5% below the market value;
 - (iv) Deposit Receipts, Pay Orders, Demand Drafts and Guarantee Bonds. These forms of Performance Guarantee could be either of the State Bank of India or of any of the Nationalized Banks;
 - (v) Guarantee Bonds executed or Deposits Receipts Tendered by all Scheduled Banks;
 - (vi) Deposit in the Post Office Saving Bank;
 - (vii) Deposit in the National Savings Certificates;
 - (viii) Twelve years National Defense Certificates;
 - (ix) Ten years Defense Deposits;
 - (x) National Defense Bonds and
 - (xi) Unit Trust Certificates at 5% below market value or at the face value whichever is less. Also, FDR in favour of PFA/NER/Gorakhpur (free from any encumbrance) may be accepted.
- (c) The Performance Guarantee shall be submitted by the successful bidder after the Letter of Acceptance (LOA) has been issued, but before signing of the contract agreement. This P.G. shall be initially valid upto the stipulated date of completion plus 60 days beyond that. In case, the time for completion of work gets extended, the Contractor shall get the validity of P.G. extended to cover such extended time for completion of work plus 60 days.
- (d) The value of PG to be submitted by the Contractor is based on original contract value and shall not change due to subsequent variation(s) in the original contract value.
- (e) The Performance Guarantee (PG) shall be released after physical completion of the work based on 'Completion Certificate' issued by the competent authority stating that the Contractor has completed the work in all respects satisfactorily.
- (f) Whenever the contract is rescinded, the Performance Guarantee already submitted for the contract shall be encashed in addition to forfeiture of Security Deposit available with Railway.
- (g) The Engineer shall not make a claim under the Performance Guarantee except for amounts to which the President of India is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

- (i) Failure by the Contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer may claim the full amount of the Performance Guarantee.
- (ii) Failure by the Contractor to pay President of India any amount due, either as agreed by the Contractor or determined under any of the Clauses/Conditions of the Agreement, within 30 days of the service of notice to this effect by Engineer.
- (iii) The Contract being determined or rescinded under clause 62 of the GCC.

23. e-Payment:

Tenderers are required to submit their bank details in the proforma given in FORM-24 to facilitate e-payment vide NEFT/RTGS, if any.

24. Whenever the contract is rescinded contractor shall return all the material to Railways which either Railway has supplied to him or for which he has taken any payment (including ONA) from Railways.

25. Bank Guarantees against Security Deposit, Performance Guarantee, Mobilization Advance and On Account payment, to be submitted by the contractor should preferably be sent to the concerned authorities directly by the issuing Bank under Registered Post (AD).

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PART - I

Chapter - I

PART-I

CHAPTER-I

INSTRUCTIONS TO TENDERERS & CONDITIONS OF TENDERING FOR FEEDER WORKS

Para No.	Subject
1.1.1	Tender papers
1.1.2	Interpretations
1.1.3	General
1.1.4	Clarifications
1.1.5	Earnest Money
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1.1.7	Forms of Tender
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1.1.12	Signing of Tenders
1.1.13	Tenderer's Address
1.1.14	Erasure or alteration
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1.1.18	Tenders Confidential
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1.1.22	Submission of Tender
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Annexure-I	Procedure for Conduct and Reporting of Reverse Auction
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PART I

CHAPTER I

INSTRUCTIONS TO TENDERERS & CONDITIONS OF TENDERING:

TENDER PAPERS: 1.1.1

The instructions to Tenderers and conditions of Tendering, special conditions of Contract, Prices, Payment and Explanatory Notes, specification, standard General Conditions of contract (GCC) of Indian Railways as amended/corrected upto latest correct slips, schedule of approximate quantities and forms for Tenders, included in part-I to V shall, hereafter, be collectively referred to as the Tender papers.

The intending Tenderer is advised to study the Tender Papers carefully. The Tenderer shall also acquaint himself with the local conditions, means of access to the site of work, nature of work and all other matters pertaining thereto.

The submission of Tender shall be deemed to have been done after careful study and examination of the Tender papers with a full understanding of the implications thereof.

(a) Order of Precedence of Documents: In a Tender/contract, in case of any difference, contradiction, discrepancy, with regard to conditions of Tender/contract, specifications, drawings, bill of quantities etc., forming part of the Tender/contract ,the following shall be the order of precedence:

- i. Letter of Award
- ii. Bills of Quantities
- iii. Special Conditions of Contract
- iv. Technical Specifications as given in Tender documents
- v. Drawings.
- vi. Indian Railways Standard General Conditions of Contract updated with correction slips issued up to date of inviting Tender or as otherwise specified in the Tender documents.
- vii. CPWD Specifications 2019 Vol I & II updated with correction slips issued up to date of inviting Tender or as otherwise specified in the Tender documents, if applicable in the contract.
- viii. Indian Railways Unified Standard Specification (IRUSS-2019)updated with correction slips issued up to date of inviting Tender or as otherwise specified in the Tender documents, if applicable in the contract.
- ix. Indian Railways Unified Standard Specifications (Works and Material) 2010 updated with correction slips issued up to date of inviting Tender or as otherwise specified in the Tender documents, if applicable in the contract.
- x. IR Specifications/Guide line updated with correction slips issued up to date of inviting Tender or as otherwise specified in the Tender documents.
- xi. Relevant B.I.S. Codes updated with correction slips issued up to date of inviting Tender or as otherwise specified in the Tender documents.

INTERPRETATIONS: 1.1.2

These Regulations for Tenders and Contracts shall be read in conjunction with the Standard General Conditions of Contract which are referred to herein and shall be subject to modifications additions or suppression by Special Conditions of Contract and/or Special Specifications, if any, annexed to the Tender Forms.

Definition: In these Regulations for Tenders and Contracts the following terms shall have the meanings 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 Successor Railway authorized to deal with any matter, 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 Zonal Railway/Production Unit and shall also include Addl. General Manager, 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 Electrical Engineer, Chief Electrical Engineer (Construction), Chief Signal & Telecom Engineer, Chief Signal & Telecom Engineer (Construction), Chief Mechanical Engineer and shall mean and include their successors of the Successor Railway.
- (d) **“Divisional Railway Manager” shall mean** the Officer-in-Charge of a Division of Zonal Railway and shall mean and include Divisional Railway Manager of the Successor Railway.
- (e) **“Engineer” shall mean** the Divisional Engineer or Executive Engineer, Divisional Signal & Telecom Engineer, Divisional Electrical Engineer, Divisional Mechanical Engineer in executive charge of the works and shall include the superior officers, both Open Line and Construction Organisations, of Engineering, Signal & Telecom, Mechanical and Electrical 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 Successor Railway.
- (f) **“Tenderer” shall mean** the person / firm / co-operative or company whether incorporated or not who Tenders for the works with a view to execute the works on contract with the Railway and shall include their representatives, successors and permitted as signs.
- (g) **“Limited Tenders” shall mean** Tenders invited from all or some contractors on the approved or select list of contractors with the Railway.
- (h) **“OpenTenders”shallmean**theTendersinvitedinopenandpublicmannerandwithadequate notice.
- (i) **“Works” shall mean** the works contemplated in the drawings and schedules set for thin the Tender forms and required to be executed according to the specifications.
- (j) **“Specifications” shall mean** the Specifications for Materials and Works of the Railway as specified under the authority of the Ministry of Railways or Principal Chief Electrical Engineer or as amplified, added “to or superseded by special specifications if any, appended to the Tender Forms.
- (k) **“Schedule of Rates of the Railway” shall mean** the Schedule of Rates issued under the authority of the Principal Chief Electrical Engineer from time to time.
- (l) **“Drawings” shall mean** the maps, drawings, plans and tracings or prints there of annexed to the Tender Forms.
- (m) **“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 the Engineer.

- (n) 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.
Words importing the singular number shall also include the plural and vice versa where the context requires.
- (o) Bill of quantity means schedule of items.

GENERAL: 1.1.3

- (a) All documents to be submitted in connection with this TENDER SHALL BE WRITTEN IN ENGLISH AND IN INK and then uploaded to www.ireps.gov.in.
- (b) --- DELETED---
- (c) **METRIC**
Dimensions, weights etc. Shall be quoted in metric system. The term "Tonne"=1,000 Kg. shall be used to indicate a metric tonne (M.T).
- (d) The definitions of the technical terms used will be the same as given in the international electro technical vocabulary.

CLARIFICATIONS:1.1.4

Any clarification required by the Tenderer may be obtained from the Chief Electrical Engineer/Project /NER, Lucknow(U.P.) or his successor/nominee (whose address will be intimated in due course).

BID SECURITY : 1.1.5

- (1) (a) The tenderer shall be required to submit the Bid Security with the tender for the due performance with the stipulation to keep the offer open till such date as specified in the tender, under the conditions of tender. The Bid Security shall be as under:

Value of the Work	Bid Security
For works estimated	2% of the estimated cost of the work.

Note:

- (i) The Bid Security shall be rounded off to the nearest ₹100. This Bid Security shall be applicable for all modes of tendering.
- (ii) Any firm recognized by Department of Industrial Policy and Promotion (DIPP) as 'Startups' shall be exempted from payment of Bid Security detailed above.
- (iii) Labour Cooperative Societies shall submit only 50% of above Bid Security detailed above.
- (b) It shall be understood that the tender documents have been issued to the tenderer and the tenderer is permitted to tender in consideration of stipulation on his part, that after submitting his tender he will not resile from his offer or modify the terms and conditions thereof in a manner not acceptable to the Engineer. Should the tenderer fail to observe or comply with the said stipulation, the aforesaid amount shall be liable to be forfeited to the Railway.
- (c) If his tender is accepted, this Bid Security mentioned in sub para (a) above will be retained as part security for the due and faithful fulfillment of the contract in terms of Clause 16 of

the Standard General Conditions of Contract (GCC). The Bid Security of other Tenderers shall, save as herein before provided, be returned to them, but the Railway shall not be responsible for any loss or depreciation that may happen thereto while in their possession, nor be liable to pay interest thereon.

- (2) The Bid Security shall be deposited either in cash through e-payment gateway or submitted as Bank Guarantee bond from a scheduled commercial bank of India or as mentioned in tender documents. The Bank Guarantee bond shall be as per FORM-13 and shall be valid for a period of 90days beyond the bid validity period.
- (3) In case, submission of Bid Security in the form of Bank Guarantee, following shall be ensured:
- i. A scanned copy of the Bank Guarantee shall be uploaded on e-Procurement Portal (IREPS) while applying to the tender.
 - ii. The original Bank Guarantee should be delivered in person to the official nominated as indicated in the tender document before closing date for submission of bids (i.e. excluding the last date of submission of bids).
 - iii. Non submission of scanned copy of Bank Guarantee with the bid on e-tendering portal (IREPS) and/or non submission of original Bank Guarantee within the specified period shall lead to summary rejection of bid.
 - iv. The Tender Security shall remain valid for a period of 90 days beyond the validity period for the Tender.
 - v. The details of the BG, physically submitted should match with the details available in the scanned copy and the data entered during bid submission time, failing which the bid will be rejected.
 - vi. The Beneficiary name for submission of BG for EMD shall be in favour of PFA/NER/Gorakhpur It should be supported with proper stamp duty with rate prescribed as per Section 13 & 24 of UP Stamp Act, 2008 with latest amendment, if any.
 - vii. The Bank Guarantee shall be placed in an envelope, which shall be sealed. The envelope shall clearly bear the identification "Bid for the Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway. and shall clearly indicate the name and address of the Bidder. In addition, the Bid Due Date should be indicated on the right hand top corner of the envelope.
 - viii. The envelope shall be addressed to the officer and address as mentioned below:
ATTN. OF: Chief Electrical Engineer/Project/NER, Charbagh, Lucknow.-226001,
Email ID:- ceeprojectner@gmail.com
 - ix. If the envelope is not sealed and marked as instructed above, the Authority assumes no responsibility for the misplacement or premature opening of the contents of the Bid submitted and consequent losses, if any, suffered by the Bidder.

Minimum Eligibility Criteria: 1.1.6

As per para- 12 of preamble.

FORM OF TENDER: 1.1.7

The Tender Bid shall be submitted online on www.ireps.gov.in along with the entire mandatory documents required. Tender Forms shall embody the contents of the contract documents either directly or by reference and shall be as per specimen form. e-Tender

Forms shall be issued free of cost to all Tenderers.

(a) Tenders not uploaded in proper FORMS as indicated below are liable to be rejected.

All FORMS shall be uploaded strictly as per sequence indicated on www.ireps.gov.in and shall be properly indexed.

(b) (i) Documents to be uploaded with Pre-qualification Bid (Eligibility/Qualifying Elements) (Packet – “A”) shall consist of the following:-

S.No.	Description	Remarks
1.	Offer letter only.	FORM - 1A
2.	Alternative Proposal of the Tenderer.	FORM – 4
3.	Tenderer’s Scheme of Work and Time Schedule for FEEDER Works.	FORM -10, Sh.1 to 4.
4.	Tenderer’s Credentials with details as per Sheet-1 to 5 for FEEDER.	FORM - 12A, Sh.1 to 5
5.	Tenderer’s Credentials with details as per Sheet for TSS. (Deleted).	FORM - 12B (Not Applicable)
6.	Tenderer’s Credentials with details as per Sheet for SCADA.(Deleted).	FORM - 12C (Not Applicable)
7.	Tenderer’s Credentials with details for Bid capacity.	FORM-12D
8.	Scanned Copy of Bank Guarantee Bond for Bid Security (if Applicable)	FORM-13
9.	Technical Data for Equipments, Components & Materials to be uploaded by the Tenderer for TSS. (Deleted)	Annexure-5B (Not Applicable)
10.	Memorandum of Understanding for Joint Venture Agreement (If applicable)	FORM-23
11.	Bank details in the proforma to facilitate e-payment vide NEFT/RTGS, if any.	FORM – 24
12.	Format for certificate to be uploaded by tenderer alongwith the tender offer	FORM – 28
13.	Format for certificate to be uploaded by tenderer alongwith the tender offer	FORM - 28A & FORM - 32A
14.	All related documents required to upload with notary Attestation as under:-	Required to upload
15.	Model Certificate to be submitted by Tenderers for Works involving possibility of sub-contracting (Restriction under Rule144 (xi) of General Financial Rules (GFRs),2017)	FORM 31
16.	(i) Regarding Power of Attorney, who has signed the Tender Documents.	Required to upload
	ii) Power of Attorney, documents regarding constitution of firm and other Associated legal documents.	Required to upload
	iii) A copy of Tender Papers along with A & C Slips, if any, duly Signed/Digitally Signed by the Tenderer on each and every page in token of his having studied the Tender Papers carefully, shall be attached with the Tender Offer.	

Notes:- -- Deleted --.

(b) (ii) Commercial (Price elements) of the Tender bid (Packet-B) shall be quoted on IREPS Website.

(c) - Deleted -

(d) Alternative proposals:

Should the Tenderers have alternative proposals for basic arrangements, typical designs and specifications drawings for components and materials (See Para 1.1.10) which the Tenderer considers would improve the operating performance of the equipment or would reduce the cost of the equipment, he shall incorporate them in the Tender for consideration by the Purchaser **Form-4**. He shall clearly indicate in detail the technical and /or financial advantages which would accrue to the Purchaser, specifically for each alternative proposal suggested by him.

PRICE: 1.1.8

This is a works Contract. The prices to be paid for supply and erection of various items of work or for materials and other amount payable, shall be in accordance with accepted schedules or prices or rates as governed by the terms and conditions of payment included in Part-I, Chapter-III A, for OHE & FEEDER - Prices and Payment.

1.1.9 Deleted-

SPECIFICATIONS AND DRAWINGS: 1.1.10

- (a) The Tenderer shall follow the standard general arrangement drawings and other drawings along with design and drawing for 2x25 kV OHE & FEEDER/Feeder line system as per RDSO Instructions No. TI/IN/0042 dated 23.10.2020 with latest amendment for upgradation of existing Electric Traction to 2x25 kV Electric Traction System, if any and specification relating to the equipment, components and fittings specified in the Tender paper. A list of standard drawings and specifications is enclosed as in Annexures in Part-IV. Copies of the above standard drawings are available for inspection in the drawing office of the CEE/Project/NER/LJN or his successor/ nominee (whose address will be intimated in due course). If the Tenderer so desires, he may purchase full sets of drawings and specifications from the office of the CEE/Project/NER/LJN or his successor/ nominee (whose address will be intimated in due course), on payment. However, if the Tenderer desires to purchase individual drawings and specifications, he may do so from the office of the CEE/Project/NER/LJN.

- (b) Meaning and intent of specifications and drawings:-

If any ambiguity arises as to the meaning and intent of any portion of the specifications and drawings or as to execution of quality of any work or material or as to the measurements of the works, the decision of the Railway Engineer Incharge shall be final, subject to appeal (within seven days of decision being intimated to the Contractor) to the CEE/Project/NER/LJN, who shall have the power to correct any errors, omission or discrepancies in the specifications, drawings, classification of work or materials, and whose decision in the matter in dispute or doubt shall be final and conclusive.

Milestone for stages of completion for work (Schedule of work): Milestones shall be decided by concerned office in consultation with the Contractor.

SIGNING OF TENDERS: 1.1.12

- (a) The tenderer shall clearly specify whether the tender is submitted on his own (Proprietary Firm) or on behalf of a Partnership Firm / Company / Joint Venture (JV)/ Registered Society / Registered Trust / Hindu Undivided Family (HUF) / Limited Liability Partnership

(LLP) etc. The tenderer(s) shall enclose the attested copies of the constitution of their concern, and copy of PAN Card along with their tender. Tender Documents in such cases are to be signed by such persons as may be legally competent to sign them on behalf of the firm, company, association, trust or society, as the case may be.

- (b) All the documents as mentioned in para 13(g) of the preamble shall be submitted by the tenderer.
- (c) If any partner(s) of a partnership firm expires after the submission of its tender or after the acceptance of its tender, the Railway shall deem such tender as cancelled/contract as terminated under clause 61 of the Standard General Conditions of Contract, unless the firm retains its character as per partnership agreement. If a sole proprietor expires after the submission of tender or after the acceptance of tender, the Railway shall deem such tender as cancelled / contract as terminated under clause 61 of the Standard General Conditions of Contract.
- (d) Power of Attorney should be executed by the competent Authority of Firm/Company and notarized on proper value of Non-Judicial stamp paper of concerned state and same should also be accepted by Attorney holder. Signature of executants should also be verified by Notary on same date and place.

TENDERER'S ADDRESS: 1.1.13

Every Tenderer shall state in the Tender his postal address fully and clearly. Any communication sent to the Tenderer by post at his address shall be deemed to have reached the Tenderer duly and in time notwithstanding the fact that the communication did not reach the Tenderer at all or in time for whatever reason. Important documents shall be sent by Registered Post and Fax.

ERASURE OR ALTERATION: 1.1.14

No erasure or alteration in the text of the Tender Papers is permitted and any such erasure and/or alteration will either be disregarded or render the whole Tender void at the option of the Purchaser. Any correction made in rate for work shall be initialed by the Tenderer in ink and dated.

RESULT OF TENDER: 1.1.15

No tender shall be deemed to have been accepted unless such acceptance has been notified in writing to the successful Tenderer by the Purchaser.

PURCHASER NOT BOUND TO ACCEPT ANY TENDER: 1.1.16

The Purchaser shall not be bound to accept the lowest or any Tender or to assign any reason for non-acceptance or rejection of a Tender. The work load on tenderers shall only be considered at this stage. The Purchaser reserves the right to accept any Tender in respect of the whole or any portion of the work specified in the Tender Papers or to subdivide the work among different Tenderers or to reduce the work or to accept any Tender for less than the tendered quantities without assigning any reason whatsoever. In case if tender is accepted in part by Railway administration, Letter of Acceptance shall be issued as counter offer to the Tenderer, which shall be subject to acceptance by the Tenderer.

TENDER AN AGREEMENT: 1.1.17

The fact of the submission to the Purchaser of a Tender shall be deemed to constitute

an Agreement between the Tenderer and the Purchaser whereby such Tender shall remain open for acceptance either in part or in full, or as may be modified by negotiation, by the Purchaser for a period mentioned in Item No.10.2 of 'PREAMBLE' from the date of closing of tender, during which period the Tenderer shall not withdraw his offer nor amend, impair or derogate therefrom. The Bid Security deposited in accordance with Para 1.1.5 above shall be forfeited if the Tenderer unilaterally withdraws, amends, impairs or derogates from the Tender in any respect within the said period mentioned in Item No.10.2 of 'PREAMBLE'. The Tenderer shall be deemed to have agreed as aforesaid in consideration of his Tender being considered by the Purchaser in terms hereof provided the same has been duly submitted and is otherwise in order.

When the successful Tenderer is notified in writing at his address given in the Tender within the said period mentioned in Item No.10.2 of 'PREAMBLE' that his Tender has been accepted by the Purchaser either in whole or in part, he shall be bound by the terms of agreement constituted by Purchaser until a formal Contract has been executed between him and the Purchaser in replacement of such Agreement as provided for in para 1.2.16.

TENDERS CONFIDENTIAL: 1.1.18

The Tenderer (whether his tender be accepted or not) shall treat the contents of his tender as private and confidential. He shall treat the prices quoted by him as strictly confidential till the tenders are opened (See Para 1.1.23).

CANVASSING AND BRIBERY: 1.1.19

- (a) No Tenderer shall canvass any Government official or the Purchaser's Engineers in respect of this or any other Tender. Contravention of this condition will involve rejection of the Tender. This clause shall not be deemed to prevent the Tenderer from supplying the Purchaser any information asked for by him.
- (b) Any bribe, commission, gift or advantage given, promised or offered by the Tenderer, or his partner, Agent or servant or any one on his or their behalf, to any officer, servant, representative or Agent of the Purchaser or any person on his or their behalf, in relation to the obtaining of this or any other contract with the Purchaser, shall, in addition to the criminal liability he may incur under the Prevention of Corruption Act (1908), subject the Tenderer to the cancellation of this and all other Tenders. Any question or dispute as to the commission of any offence under the present clause shall be decided by the Purchaser, in such manner and on such evidence or information as may be thought fit and sufficient, and his decision shall be final and conclusive in the matter.

(c) Employment/Partnership etc. of Retired Railway Employees:

(I) Should a tenderer

- i) be a 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 Engineering or any other department of any of the railways owned and administered by the President of India for the time being, OR
- ii) being partnership firm / joint venture (JV) / registered society / registered trust etc have as one of its partners/members a retired Engineer of the gazetted rank or any other gazetted officer working before his retirement, OR
- iii) being an incorporated company have any such retired Engineer of the gazetted rank or any other gazetted officer working before his retirement as one of its directors

AND

in case where such Engineer or officer had not retired from government service at least 1 year prior to the date of submission of the tender

THEN

the tenderer will give full information as to the date of retirement of such Engineer or gazetted officer from the said service and as to whether permission for taking such contract, or if the Contractor be a partnership firm or an incorporated company, to become a partner or director as the case may be, has been obtained by the tenderer or the Engineer or officer, as the case may be from the President of India or any officer, duly authorized by him in this behalf, shall be clearly stated in writing at the time of submitting the tender.

- II) In case, upon successful award of contract, should a tenderer depute for execution of the works under or to deal matters related with this contract, any retired Engineer of gazette rank or retired gazetted officer working before his retirement in the Engineering or any other department of any of the railways owned and administered by the President of India for the time being, and now in his employment, then the tenderer will ensure that retired Engineer or retired gazetted officer had retired from government service at least 1 year prior to the date of his employment with tenderer and in case he had retired from service within a year then he possesses the requisite permission from the President of India or any officer, duly authorized by him in this behalf, to get associated with the tenderer.
- III) Should a tenderer or Contractor being an individual, have member(s) of his family or in the case of partnership firm/ company / joint venture (JV) / registered society / registered trust etc. one or more of his partner(s)/shareholder(s) or member(s) of the family of partner(s)/shareholder(s) having share of more than 1% in the tendering entity employed in gazetted capacity in the Engineering or any other department of the railway, then the tenderer at the time of submission of tender, will inform the authority inviting tenders the details of such persons.

Note:- If information as required as per Para 1.1.19- (c) I), II) & III) above has not been furnished, contract is liable to be dealt in accordance with provision of clause 62 of Standard General Condition of contract.

- IV) **Restrictions on the Employment of Retired Engineers of Railway Services Within One Year of their Retirement:** The Contractor shall not, if he is a retired Government Engineer of Gazetted rank, himself engage in or employ or associate a retired Government Engineer of Gazetted rank, who has not completed one year from the date of retirement, in connection with

this contract in any manner whatsoever without obtaining prior permission of the President and if the Contractor is found to have contravened this provision it will constitute a breach of contract and administration will be entitled to terminate the contract and forfeit his Performance Guarantee as well as Security Deposit.

INDIAN LABOUR AND MATERIALS : 1.1.20

- (a) The Tenderer shall utilise Indian labour including supervisory staff, for the execution of this contract to the maximum possible extent.
- (b) The Tender shall be prepared on the basis that all the materials required to complete the works including those indicated in schedule 3 are procured from indigenous sources in full.

TENDERER'S CREDENTIALS : 1.1.21

The Tender shall upload his credentials all details as required as per eligibility/ qualifying criteria as given in para 12 of the preamble of this tender for OHE & FEEDER & TSS works separately (see FORM-12A, Sheet-1 to 5, FORM-12B, FORM-12C & FORM-12D at Part-V of Tender Paper).

SUBMISSION OF TENDER : 1.1.22

Details of Tender Notice, Tender document and corrigendum issued from time to time along with eligibility criteria are available on the web site <https://www.ireps.gov.in>. The necessary changes if required would be posted on this web site during advertisement period and may be seen on web site. Tenderers may participate in above E-tender electronically through website <https://www.ireps.gov.in> only & submission of manual offers against E-tender is not allowed. Manual offers, if submitted shall neither be opened nor considered.

OPENING OF TENDER : 1.1.23

Tender will be opened at the time and date prescribed in preamble to the tender paper, online on the website www.ireps.gov.in and in the office of the **Chief Electrical Engineer/Project, North Eastern Railway, Lucknow-226001** or his successor/nominee (whose address will be intimated in due course).

After the opening of the tender bids, it shall be scrutinized and analysed. If found necessary by the purchaser, the tenderer shall be asked to furnish the clarifications and the purchaser shall also hold discussions with the tenderer(s) after giving due notice.

To assist in the examination, evaluation & comparison and pre-qualification of the Tender, the Railway may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Railway shall not be entertained or considered. The Railway request for clarification and the response of the bidder in this regard shall be in writing.

However, if a Bidder does not provide clarification of its bid by the date and time communicated in the Railway request for clarification, the bid shall be evaluated as per the documents submitted along with the bid.

MISCELLANEOUS : 1.1.24

Tender documents are not transferable. The cost of the Tender Papers is not refundable.

OMISSIONS & DISCREPANCIES: 1.1.25

Should a tender find discrepancies in or omissions from the drawings or any of the Tender Forms or should he be in doubt as to their meaning, he should at once notify the authority inviting tenders who may send a written instruction to all tenders. It shall be understood that every endeavor has been made to avoid any error which can materially affect the basis of the tender and the successful tenderer shall take upon himself and provide for the risk of any error which may subsequently be discovered and shall make no subsequent claim on account thereof.

CARE IN SUBMISSION OF TENDERS: 1.1.26

- (a) (i) Before submitting a tender, the tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the works, that all conditions liable to be encountered during the execution of the works are taken into account and that the rates he enters in the tender forms are adequate and all inclusive to accord with the provisions in Clause-37 of the General Conditions of contract for the completion of works to the entire satisfaction of the Engineer.
- (ii) Tenderers will examine the various provisions of The Central Goods and Services Tax Act, 2017(CGST)/ Integrated Goods and Services Tax Act, 2017(IGST)/ Union Territory Goods and Services Tax Act, 2017(UTGST)/respective state's State Goods and Services Tax Act (SGST) also, as notified by Central/State Govt. & as amended from time to time and

applicable taxes before bidding. Tenderers will ensure that full benefit of Input Tax Credit (ITC) likely to be availed by them is duly considered while quoting rates.

- (iii) The successful tenderer who is liable to be registered under CGST/IGST/UTGST/SGST Act shall submit GSTIN along with other details required under CGST/IGST/UTGST/SGST Act to railway immediately after the award of contract, without which no payment shall be released to the Contractor. The Contractor shall be responsible for deposition of applicable GST to the concerned authority.
- (iv) In case the successful tenderer is not liable to be registered under CGST/IGST/UTGST/SGST Act, the railway shall deduct the applicable GST from his/their bills under reverse charge mechanism (RCM) and deposit the same to the concerned authority.
- (v) Contractor shall be liable to pay/refund the amount collected as GST to the Indian Railways along with interest and penalties, if any imposed by the authorities, in case GST input tax credit of Indian Railways is denied/rejected by the tax authorities due to reasons mentioned below but not limited to:
 - Wrong/incorrect invoices issued by Contractor ;
 - No-filing of GST returns;
 - Non-payment of GST collected from Indian Railways to the authorities;
 - Any other non-compliance done by Contractor;

General Indemnity: Contractor hereby agrees to indemnify and hold harmless the Indian Railways from and against any and all losses, including loss on account of Input Tax Credit and all losses incurred by the Indian Railways relating to or arising out of or in connection with any actual or threatened claim, legal action, proceedings, prosecution or inquiry by or against the Indian Railways arising out, directly or indirectly, offailure by the contractor to comply with the provisions of GST and related laws, or based upon or arising from any failure by the Contractor.

Retention Money: Any payment liable to be paid by Indian Railways to contractor against the goods or services or both supplied by such contractor to Indian Railways shall be kept on hold in case supplier makes any non-compliance of any of the GST law provisions including non-reporting of invoices in GST returns. Such payment shall be released after proper verification of records and availability of ITC to Indian Railways as per provisions of GST Law.

- (b) When work is tendered for by a firm or company of contractors, the tender shall be signed by the individual legally authorized to enter into commitments on their behalf.
- (c) The Railway will not be bound by any power of attorney granted by the tenderer or by changes in the composition of the firm made subsequent to the execution of the contract. It may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Contractor.
- (d) The Tenderer 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 FORM-28. In addition to FORM-28, in case of other than Company/Proprietary firm, FORM-28A&32A shall also be submitted by the each member of a Partnership Firm / Joint Venture (JV) / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc, as the case may be. Non submission of above certificate(s) by the bidder shall result in summary rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested/digitally signed by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document.

(e) **DEVIATIONS:**

All the tenderers may please note that the offers seeking modified terms and conditions by way of deviations mentioned under either Memorandum or Deviation schedule for instance, higher mobilisation advance, or any modification in respect of mobilisation advance, On account/ progress payment, recovery rate, insurance warranty, extension in completion period, facilities to be provided by the Purchaser or any reimbursement of taxes etc. are liable to be rejected without assigning any reason thereto and the decision of the Railway Administration in this regard will be binding on all the tenderers. It should be specifically noted that the prices shall be FIRM inclusive of all taxes and duties.

Documents to be submitted along-with Tender: 1.1.26 A

- (i) The tenderer shall clearly specify whether the tender is submitted on his own (Proprietary Firm) or on behalf of a Partnership Firm / Company / Joint Venture (JV) / Registered Society / Registered Trust / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc. The tenderer(s) shall enclose the attested copies of the constitution of their concern, and copy of PAN Card along with their tender. Tender Documents in such cases are to be signed by such persons as may be legally competent to sign them on behalf of the firm, company, association, trust or society, as the case may be.
- (ii) Following documents shall be submitted by the tenderer:
 - (a) Sole Proprietorship Firm:**
 - (i) All documents in terms of Para 12 of the Preamble above.
 - (b) HUF:**
 - (i) A copy of notarized affidavit on Stamp Paper declaring that he who is submitting the tender on behalf of HUF is in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act on behalf of HUF.
 - (ii) All other documents in terms of Para 12 of the Preamble above.
 - (c) Partnership Firm:**
 - (i) All documents as mentioned in Para 15 of the Preamble.
 - (d) Joint Venture (JV):** All documents as mentioned in Para 14 of the Preamble.
 - (e) Company registered under Companies Act 2013:**
 - (i) The copies of MOA (Memorandum of Association) / AOA (Articles of Association) of the company.
 - (ii) A copy of Certificate of Incorporation.
 - (iii) A copy of Authorization/Power of Attorney issued by the Company (backed by the resolution of Board of Directors) in favour of the individual to sign the tender on behalf of the company and create liability against the company.
 - (iv) All other documents in terms of Para 12 of the Preamble above.
 - (f) LLP (Limited Liability Partnership):**
 - (i) A copy of LLP Agreement
 - (ii) A copy of Certificate of Incorporation
 - (iii) A copy of Power of Attorney/Authorization issued by the LLP in favour of the individual to sign the tender on behalf of the LLP and create liability against the LLP.
 - (iv) An undertaking by all partners of the LLP in Form-28A&32A that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP or JV in which they were / are partners/members. Concealment / wrong information in regard to above shall make

the contract liable for determination under Clause 62 of the Standard General Conditions of Contract.

- (v) All other documents in terms of Para 12 of the Preamble above.
- (g) Registered Society & Registered Trust:
 - (i) A copy of Certificate of Registration
 - (ii) A copy of Memorandum of Association of Society/Trust Deed
 - (iii) A copy of Power of Attorney in favour of the individual to sign the tender document and create liability against the Society/Trust.
 - (iv) A copy of Rules & Regulations of the Society.
 - (v) All other documents in terms of Para 12 of the Preamble above.
- (iii) If it is NOT mentioned in the submitted tender that tender is being submitted on behalf of a Sole Proprietorship firm / Partnership firm / Joint Venture / Registered Company etc., then the tender shall be treated as having been submitted by the individual who has signed the tender.
- (iv) After opening of the tender, any document pertaining to the constitution of Sole Proprietorship Firm / Partnership Firm / Registered Company/ Registered Trust / Registered Society / HUF/LLP etc. shall be neither asked nor considered, if submitted. Further, no suo moto cognizance of any document available in public domain (i.e., on internet etc.) or in Railway's record/office files etc. will be taken for consideration of the tender, if no such mention is available in tender offer submitted.
- (v) A tender from JV shall be considered only where permissible as per the tender conditions.
- (vi) The Railway will not be bound by any change of power of attorney or in the composition of the firm made subsequent to the submission of tender. Railway may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Contractor.

1.1.27

- (a) **Right of Railway to deal with Tenders:** The Railway reserves the right of not to invite tenders for any of Railway work or works or to invite open or limited tenders and when tenders are called to accept a tender in whole or in part or reject any tender or all tenders without assigning reasons for any such action.
In case if tender is accepted in part by Railway administration, Letter of Acceptance shall be issued as counter offer to the Tenderer, which shall be subject to acceptance by the Tenderer.
- (b) **Rights of the Railway to deal with tender:**
If the tenderer(s) deliberately gives/give wrong 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.
- (c) **Two Packets System of Tendering:** With a view to assess the tenders technically without being influenced by the financial bids, 'Two Packets System of tendering' shall be adopted wherein tender documents provide for the same.
- (d) **Pre Bid Conference:** Intenders having advertised value more than Rs 50 Crore or as mentioned in the tender document, Railway shall conduct Pre Bid Conference(s) with the prospective bidders.
- (e) Provisions of Make in India Policy 2017 issued by Govt. of India, as amended from time to time, shall be followed for consideration of tenders.

- (f) **Permission to Bid for a bidder from a country which shares Land boundary with India:** Any bidder from the countries sharing a land border with India will be eligible to bid in any procurement of works (including turnkey projects) only if the bidder is registered with the Competent Authority. The Competent Authority for registration will be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT), Government of India. For interpretation of this para, Department of Expenditure, Ministry of Finance, Government of India letter F.No.6/18/2019- PPD dated 23/07/2020 shall be referred.
- (g) **Clarification of Bids:** To assist in the examination, evaluation & comparison and pre-qualification of the Tender, the Railway may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Railway shall not be entertained or considered. The Railway request for clarification and the response of the bidder in this regard shall be in writing.

However, if a Bidder does not provide clarification of its bid by the date and time communicated in the Railway request for clarification, the bid shall be evaluated as per the documents submitted along with the bid.

Reverse Auction : 1.1.28 (Not Applicable in this Tender)

1.1.28.1 Selection criteria for Tender cases of Works, Stores and Services proposed through Reverse Auction (e-RA) route:

- (a) In the first phase, following method of purchase through Reverse Auction shall be the preferred method for Tenders valued more than Rs. 50 Cr. in each case.
- (b) The process of procurement through Reverse Auction shall be followed only in case of Tenders where there are at least three proven/likely competitive sources, prima facie competent for execution of work.
- (c) Financial Bids in single currency/parameter only shall be allowed.
- (d) For cases on Zonal Railways/PUs, personal approval of the PHOD/CHOD duly vetted by associate finance shall be required for any exception in Tendering method for cases otherwise eligible to be processed through the method of procurement detailed herein.

1.1.28.2 Procedure for award of contracts through Reverse Auction:

- (a) The procedure discussed herein shall be fully implemented through IREPS. Any reference to Reverse Auction in these instructions shall imply e-RA.
- (b) Conduct and reporting of Reverse Auction shall be as per Annexure-I to Part-I, Chapter-I.
- (c) Each Tender should clearly specify essential technical and commercial parameters in a transparent manner. No deviation to such essential Technical & Commercial conditions shall be permitted to the vendors in the electronic bid form.

1.1.28.2.1 Technical Bid and Initial Price Offer:

- (a) e-RA shall be adopted only for those cases where evaluation is on the basis of single parameter/currency.
- (b) Bidder shall be simultaneously required to electronically submit a Technical & Commercial Bid and Initial Price Offer.

- (i) Offers found eligible for award of contract / meeting eligibility criteria shall be categorized as Qualified for Award of Contract for the purpose of e-RA.
- (c) Offers not complying with essential technical & commercial requirement of the Tender shall be declared as ineligible for award contract.
- (d) Technical & Commercial evaluation bids shall be done by a Tender Committee, as per extant guidelines, delegation and the estimated value of Tender. Recommendations of Tender Committee shall be considered by Tender Accepting Authority, as per existing guidelines.
- (e) Initial Price Offer of only those bidders categorized as Qualified for Award of contract, shall be opened and tabulated by system separately. Extant instructions for electronic tabulation shall apply for tabulation of Initial Price Offers.

1.1.28.2.2 Financial Bid:

Financial Bid shall comprise of final Price Offer obtained through Reverse Auction. Following conditions and procedure shall be followed in selection of bidders for conduct of Reverse Auction:

- (a) Selection of vendors for Reverse Auction for award of Contract in Works and Services Tenders and bulk ordering in Stores Tenders:

Number of Tenders Qualified for Award of contract / Bulk Order	Number of Tenders to be selected for Reverse Auction	Remarks
< 3	NIL*	The bids disallowed from participating in the Reverse Auction shall be the highest bidder(s) in the tabulation of Initial Price Offer. In case the highest bidders quote the same rate, the Initial Price Offer received last, as per time log of IREPS, shall be removed first, on the principle of last in first out, by IREPS system itself.
3 to 6	3	
More than 6	50% of Vendors Qualified for award of contract (rounded off to next higher integer)	

- Note:** (i) *If the number of Tenders qualified for Bulk Order / Award of Contract is less than 3, RA shall not be done and Tender may be decided on the basis of Initial Price Offer(s).
- (ii) Make in India criteria: All bidders eligible for benefits under Public Procurement (Preference to Make of India) Order - 2017, found Qualified for Bulk/Developmental Order/Award of Contract and are within the specified range of price preference, under the make in India policy, of lowest Initial Price offer of the vendor qualified for bulk order shall be permitted to participate in the Reverse auction, irrespective of their inter se ranking on the basis of Initial Price Offer. Such bidders shall be over and above the number of vendors selected for Reverse Auction, as per Para: 1.1.28.2.2 (a). However, if all the bids qualified for bulk order as well as for developmental order (before applying elimination criteria) also qualify under "Make in India Order, 2017" criteria, this clause shall not apply. Refer Annexure-II to Part-I, Chapter-I.
 - (b) During Reverse Auction process, bidders shall not be allowed to bid a rate higher than the lowest Initial Price Offer.

- 1.1.28.2.3** Reverse Auction among bids categorized as Qualified for award of contract shall be conducted on IREPS / Suitable Platform. Bidders shall be able to see the auction screens.
- 1.1.28.2.4** After obtaining the final price offers through Reverse Auction, the lowest bid of only those bidders who had participated in the reverse auction shall be tabulated and considered for ordering. The offers of bidders which were eliminated from reverse auction in terms of Para1.28.2.2 (a) shall be tabulated separately and shall not be considered for any ordering. All the relevant policies of Government of India at the relevant time shall be applicable.
- 1.1.28.2.5** The level of Tender Committee to consider the Final Prices Offer shall be determined on the basis of lowest Initial Price Offer of bid Qualified for award of contract, as opened prior to Reverse Auction. In case the level Tender Committee which evaluated technical & commercial bids as per para1.1.28.2.1(d) was higher than the level of TC competent to consider lowest Initial Price Offer of bid Qualified for award of contract/Bulk order, the higher level TC shall continue to finalize such Tender cases.
- 1.1.28.2.6** Considering the fact that execution of works, delivery of services and availability of items is of paramount importance, Zonal Railways should resort to Tendering through other appropriate methods to meet any exigency.

Annexure-I

Procedure for Conduct and Reporting of Reverse Auction (Not applicable)

1. The Tendering authority shall solicit bids through an invitation to the electronic Reverse Auction to be published or communicated in accordance with the provisions similar to procurement.
2. Convenor of the Tender committee shall fix the following, on case to case basis, depending upon the nature of work and complexity of case on hand. These shall be indicated in the Tender for e-RA itself.
 - a. **Initial e-RA period:** This shall be the initial time interval for e-RA. e-RA shall be open for this duration.
 - b. **Auto extension period:** In case any offer is received in the time period equal to auto extension period before close of initial e-RA period, the e-RA shall be extended for time equal to auto extension period from the time of last bid. There shall be no upper limit on number of auto extensions. When no offer is received in the last auto extension period, e-RA shall close.
 - c. Minimum decrement in percentage of value of the last successful bid.
3. Date and time for start of e-RA shall be communicated to qualified Tenderers by the convener after evaluation of Technical Bids.
4. After submission of Initial Price Bid, Tenderers will not be allowed to revise the taxes and other levies.
5. During auction period, identities of the participating Tenderers will be kept hidden.
6. Minimum admissible bid value will be last bid value minus minimum decrement as specified by the Tendering authority before starting of reverse auction. Starting point for

reverse auction shall be lowest initial Price Bid of the Tenderer eligible for award of contract.

7. After close of the RA, tabulation of last (minimum) bids received from all the Tenderers will be generated and made visible to Railways and participating Tenderers.
8. Railway users can also view the bidding history in chronological order.
9. Bidders not be allowed to withdraw their last offer.
10. L-1 will be defined as the lowest bid obtained after the closure of R.A. session.

PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER-2017-As amended

(Important clauses are reproduced hereunder)

Whereas it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

Whereas procurement by the Government is substantial in amount and can contribute towards this policy objective, and

Whereas local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them.

Now therefore the following Order is issued:

1. This Order is issued pursuant to Rule 153(iii) of the General Financial Rules 2017.
2. Definitions: For the purposes of this Order:

'Local Content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured(excluding net domestic indirect taxes) minus the value of imported content in the item(including all customs duties) as a proportion of the total value, in percent.

'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class- I local supplier' under this Order.

'Class-II local supplier' means a supplier or service provider whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-II local supplier' but less than that prescribed for Class-I local supplier' under this Order

'Non – Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for 'Class-II local supplier' under this Order.

'L 1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'Margin of purchase preference' means the maximum extent to which the price quoted by a local supplier may be above the L 1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

'Procuring entity' means a Ministry or department or attached or subordinate office of or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

'Works' means all works as per Rule 130 of GFR 2017, and will also include 'turnkey works'

3. Eligibility of 'Class-I local supplier'/ 'Class-II local supplier'/ 'Non-local suppliers' for different types of procurement

- (a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only Class-I local supplier, as defined under the Order, shall be eligible to bid irrespective of purchase value.
 - (b) Only 'Class-I local supplier and Class-II local supplier', as defined under the Order, shall be eligible to bid in procurements undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub- para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure
 - (c) For the purpose of this Order works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.
4. Exemption of small purchases: Notwithstanding anything contained in paragraph (iii), procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.
 5. Minimum local content: The local content' requirement to categorize a supplier as Class-I local supplier is minimum 50%. For Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier' / 'Class II local supplier'. For the items for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for Class I local supplier/ 'Class-II local supplier' respectively.
 6. Margin of Purchase Preference: The margin of purchase preference shall be 20%.
 7. Requirement for specification in advance: The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.
 8. Government E-market place: In respect of procurement through the Government E- market place (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.
 9. Verification of local content:
 - a. The local supplier at the time of tender, bidding or solicitation shall be required to provide self-certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.
 - b. In cases of procurement for a value in excess of Rs. 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
 - c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.

- d.** Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/accountant's certificates on random basis and in the case of complaints.
- e.** Nodal Ministries and procuring entities may prescribe fees for such complaints.
- f.** False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules, along with such other actions as may be permissible under law.
- g.** A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph (ix)(h) below.
- h.** The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:
 - i.** The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry/Department or in some other manner.
 - ii.** On a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);
 - iii.** in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

Note: For detail and updated policy guidelines Bidders may go through the complete document available on public domain on website.

TENDERER'S CREDENTIALS (BID CAPACITY)

For tenders having advertised value more than Rs 20 crore wherein eligibility criteria includes bid capacity also, the tenderer will be qualified only if its available bid capacity is equal to or more than the total bid value of the present tender. The available bid capacity shall be calculated as under:

Available Bid Capacity = $[A \times N \times 2] - 0.33 \times N \times B$ Where,

A = Maximum value of construction works executed and payment received in any one of the previous three financial years or the current financial year (up to date of inviting tender), taking into account the completed as well as works in progress.

N= Number of years prescribed for completion of work for which bids has been invited.

B = Existing commitment and balance amount of ongoing works with tenderer as per the prescribed proforma of railway for statement of all works in progress and also the work which are awarded to tenderer but yet not started upto the date of inviting of tender.

Note:

- (a) The Tenderer(s) shall furnish the details of -
 - (i) Maximum value of construction works executed and payment received in any one of the previous three financial years or the current financial year (up to date of inviting tender) for calculating A, and
 - (ii) Existing commitments and balance amount of ongoing works with tenderer as per the prescribed proforma Form-12D for statement of all works in progress and also the works which are awarded to tenderer but yet not started upto the date of inviting of tender for calculating B. In case of no works in hand, a 'NIL' statement should be furnished.

The submitted details for (i) and (ii) above should be duly verified by Chartered Accountant.

- (b) In case if a bidder is JV, the tenderer(s) must furnish the details of
 - (i) Maximum value of construction works executed and payment received in any one of the previous three financial years or the current financial year (up to date of inviting tender) by each member of JV for calculating A, and
 - (ii) Existing commitments and balance amount of ongoing works with each member of JV either in individual capacity or as a member of other JV as per the prescribed proforma Form-12D for statement of all works in progress and also the works which are awarded to each member of JV either in individual capacity or as a member of other JV but yet not started upto the date of inviting of tender for calculating B. In case of no works in hand, a 'NIL' statement should be furnished.

The submitted details for (i) and (ii) above should be duly verified by Chartered Accountant.

- (c) Value of a completed work/work in progress/work awarded but yet not started for a Member in an earlier JV shall be reckoned only to the extent of the concerned member's share in that JV for the purpose of satisfying his/her compliance to the above mentioned bid capacity in the tender under consideration.
- (d) The arithmetic sum of individual "bid capacity" of all the members shall be taken as JV's "bid capacity".
- (e) In case, the tenderer/s failed to submit the above statement duly verified by Chartered Accountant in the prescribed proforma (Form-12D) along with offer, their/his offer shall be considered as incomplete and will be rejected summarily.
- (f) The available bid capacity of tenderer shall be assessed based on the details submitted by the tenderer. In case, the available bid capacity is lesser than estimated cost of work put to tender, his offer shall not be considered even if he has been found eligible in other eligibility criteria/tender requirement.

Regarding ‘Restriction under Rule 144 (xi) of General Financial Rules (GFRs), 2017’

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this Tender only if the bidder is registered with the Competent Authority which is the registration committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).
- II. “Bidder” (including the term ‘Tenderer’, ‘consultant’ or ‘service provider’ in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. “Bidder from a country which shares a land border with India” for the purpose of this Order means:-
 - a. An entity incorporated, established or registered in such a country; or
 - b. A subsidiary of an entity incorporated, established or registered in such a country; or
 - c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - d. An entity whose *beneficial owner* is situated in such a country; or
 - e. An Indian (or other) agent of such an entity; or
 - f. A natural person who is a citizen of such a country; or
 - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.
- IV. The *beneficial owner* for the purpose of (iii) above will be as under:
 1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation—

- a. **“Controlling ownership interest” means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company;**
- b. “Control” shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.
- VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority
- VII. The bidder has to submit the following certificates as applicable:

Model Certificate to be submitted by Tenderers

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

Model Certificate to be submitted by Tenderers for Works involving possibility of sub-contracting:

“I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries, I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

Note:

1. If the certificate given by bidder whose Bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law (*Ref: Ministry of Finance's Office Memoranda No. 6/18/2019-PPD dated 23.07.2020 regarding 'Restriction under Rule 144 (xi) of General Financial Rules (GFRs), 2017' Para12*).

2. In projects which receive international funding with the approval of the DEA, Ministry of Finance, the procurement guidelines applicable to the project shall normally be followed, notwithstanding anything contained in this Order. Exceptions to this shall be decided in consultation with DEA. (Ref: Ministry of Finance's Office Memoranda as above, Annex II, Para D).
3. The orders will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects. (Ref: Ministry of Finance's Office Memoranda No. 6/18/2019-PPD dated 23.07.2020 titled 'Exclusion from restriction under Rule 144 (xi) of General Financial Rules (GFRs), 2017-regarding' Para2).

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PART-I
CHAPTER -II

PART-I
CHAPTER-II
CONDITIONS OF CONTRACT
FOR FEEDER LINE WORKS

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1.2.2	Conditions of Contract.
1.2.3	Purchaser's Representative.
1.2.4	Contractor's Representative.
1.2.5	Contractor's Office & Address.
1.2.6	Purchaser's Address.
1.2.7	Deleted.
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1.2.12	Force Majeure.
1.2.13	Notice under local laws.
1.2.14	Determination of Contract.
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Annexure-I	Proforma for Agreement towards Waiver under Section 12(5) and Conciliation (Amendment) Act and Section 31A (5) of Arbitration.
Annexure-II	Proforma for Certification by Arbitrators appointed under clause 63 & 64 of GCC.

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PART - I
CHAPTER II

SCOPE: 1.2.1

This chapter deals with the conditions of Contract under which the various works coming under the purview of this contract are to be executed by the Contractor.

CONDITIONS OF CONTRACT: 1.2.2

If the Tender submitted by a Tenderer is accepted and the contract awarded to The Tenderer, the various works coming under the purview of the contract shall be governed by the terms and conditions included in the Tender papers covering the following:

- (i) Preamble to the Tender Papers.
- (ii) Instructions to Tenderers and conditions of Tendering, as included in Part-I, Chapter-I.
- (iii) Conditions of contract, as included in this chapter.
- (iv) Prices and Payments, as included in Part-I Chapter-III A, IIIB & IIIC.
- (v) Explanatory notes of Schedule, Schedule of prices, Part-I, Chapter-IV A.
- (vi) General specifications, as included or referred to in Part-II and
- (vii) Particular specifications, as included or referred to in Part-III and
- (viii) Annexures under Part-I V and Forms under Part-V and as modified or amended by the letter of acceptance of the Tender.

PURCHASER'S REPRESENTATIVE: 1.2.3

(i) **PURCHASER'S REPRESENTATIVE:** Subject as otherwise provided in this contract, all notices to be given on behalf of the Purchaser and all other action to be taken on his behalf may be given or taken, as the case may be, on his behalf by the General Manager or his successor.

(ii) **DELEGATION BY ENGINEER:** Engineer may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident engineer, and/or independent inspectors appointed to inspect and/or test items of Plant and/or materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both parties.

However, unless otherwise agreed by both parties, the engineer shall not delegate the authority to determine any matter in accordance with clause 1.2.14 (Determinations).

Assistants shall be suitably qualified persons, who are competent to carry out these duties and exercise this authority.

Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorized to issue instructions to the contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However:

- (a) Any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the engineer to reject the work, Plant or materials.

- (b) If the contractor questions any determination or instruction of an assistant, the contractor may refer the matter to the engineer, who shall promptly confirm reverse or vary the determination or instruction.

CONTRACTOR'S REPRESENTATIVE: 1.2.4

The Contractor's representative shall be a person as defined in Para 1.1.2.

CONTRACTOR'S OFFICE & ADDRESS: 1.2.5

The Contractor shall within a month of issue of letter of acceptance of Tender, establish an office at a convenient place indicated in Part-III, for progressing designs and drawings and field works, expeditiously, in consultation and with approval of the Purchaser. He shall intimate the Purchaser the address thereof in which all correspondence shall be sent. Any communication sent to the Contractor by post at his said address shall be deemed to have reached the Contractor duly and in time. Important documents shall be sent by Registered post/Speed Post. Contractor has to setup at least 02 major office at Sultanpur & Lucknow or at convenient location or as decided by Railway along with 3 Field Offices at Utratia, Nihalgarh & Haidergarh as indicated in part-III for fast execution of work to cover all depots under TRD department of Lucknow Division of Northern Railway.

PURCHASER'S ADDRESS: 1.2.6

The list of addresses to which correspondence and documents relating to the contract should be sent, is included in Part-III.

1.2.7 - Deleted-

TAXES: 1.2.8

- (a) The Contractor and all personnel employed by him shall pay such taxes like income tax as are payable under statutory laws of India and the Purchaser will not accept any liability for the same.
- (b) Deduction of income tax at source as per provision of finance act and income tax act in force may be made from the Contractor/sub-Contractor and the amount so deducted may be credited to the Central Government.
- (c) Implementation of "The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996" and "The Building and Other Construction Workers' Welfare Cess Act, 1996":

The Tenderers for carrying out any construction work must get themselves registered from the Registering Officer under Section-7 of the Building and Other Construction Workers Act, 1996 and rules made thereto by the concerned State Govt. and submit certificate of Registration issued from the Registering Officer of the concerned State Govt. (Labour Dept.). The cess shall be deducted from contractor's bill as per provision of the act.

ILLEGAL GRATIFICATION: 1.2.9

Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the Contractor or his partner or agent or servant or anyone on his behalf, to any officer or employee of the Railway or to any person on his behalf in relation to obtaining or execution of this or any other contract with the Railway shall, in addition to any criminal liability which he may incur, subject Contractor to the rescission of the contract

and all other contracts with the Railway and to the payment of any loss or damage resulting from such decision and the Railway shall be entitled to deduct the amounts so payable from the Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India.

The Contractor shall not lend or borrow from or have or enter into any monetary dealings or transactions either directly or indirectly with any employee of the Railway and if he shall do so, the Railway shall be entitled forthwith to rescind the contract and all other contracts with the Railway. Any question or dispute as to the commission of any such offence or compensation payable to the Railway under this Clause shall be settled by the General Manager of the Railway, in such a manner as he shall consider fit & sufficient and his decision shall be final & conclusive. In the event of rescission of the contract under this Clause, the Contractor will not be paid any compensation whatsoever except payments for the work done upto the date of rescission.

RAILWAY PASS: 1.2.10

No Railway pass for the conveyance of the Contractor or his agents or his labour and/or stores will be granted. The Contractor may, however, carry free of charge but at his own risk such labour, supervisory staff and stores as far as necessary for the execution of work by work trains between the Contractor's depot/s (See para 1.2.22 and 1.2.27) and site of work.

LAWS OF INDIA: 1.2.11

- (a) This contract shall be governed by the laws for the time being in force in the Republic of India.
- (b) **Deleted.**

FORCE MAJEURE: 1.2.12

If at any time, during the continuance of this contract, the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, serious loss or damage by fire, explosions, epidemics/pandemics, strikes, lockouts or acts of God (hereinafter, referred to events) provided, notice of the happening of any such event is given by either party to the other within 30 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance, and works under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the Engineer as to whether the works have been so resumed or not shall be final and conclusive, PROVIDED FURTHER that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 120 days, either party may at its option terminate the contract by giving notice to the other party.

NOTICE UNDER LOCAL LAWS: 1.2.13

The Purchaser shall, throughout the continuance of the Contract, and in respect of all matters arising out of the Contract, serve all notices and obtain all consents and way leaves, approvals and permissions required to be taken by the Purchaser under any regulations and by-laws of the local or other authority, which shall be applicable to the works.

DETERMINATION OF CONTRACT: 1.2.14

Notwithstanding the provisions under para 1.2.12 the Purchaser may, at any time, by a notice in writing, summarily determine the contract without liability to pay any compensation to the contractor in respect thereof in any of the following events

(1) Determination of contract owing to default of contractor **–if the contractor should:(Clause 62.(1) of GCC**

- (i) Becomes bankrupt or insolvent, or
- (ii) Make an arrangement for assignment in favour of his creditors, or agree to carry out the contract under a Committee of Inspection of his Creditors, or
- (iii) Being a Company or Corporation, go into Liquidation (other than a voluntary Liquidation for the purpose of amalgamation or reconstruction), or
- (iv) Have an execution levied on his goods or property on the work, or
- (v) Assign the contract or any part thereof otherwise than as provided in clause 1.2.24 of these conditions, or
- (vi) Abandon the contract, or
- (vii) Persistently disregard the instructions of the Engineer, or contravene any provision of Contract, or
- (viii) Fail to adhere to the agreed programme of work by a margin of 10% of the stipulated period, or
- (ix) Fail to execute the contract documents in terms of Clause 8 of the Instructions to Tenderers (GCC), or
- (x) Fails to submit the documents pertaining to identity of JV and PAN in terms of Clause 17.11 of Tender Form second sheet of annexure-I available in the Instructions to Tenderers (GCC),

or

- (xi) Fail to remove materials from the site or to pull down and replace work after receiving from the Engineer notice to the effect that the said materials or works have been condemned or rejected under para 25 and 27 of these conditions (GCC),

or

- (xii) Fail to take steps to employ competent or additional staff and labour as required under clause 26 of the conditions G C C (Para 1.2.35 of tender document), or
- (xiii) Fail to afford the Engineer or Engineer's representative proper facilities for inspecting the works or any part thereof as required under clause 28 of the conditions (GCC), or
- (xiv) Promise, offer or give any bribe, commission, gift or advantage either himself or through his partner, agent or servant to any officer or employee of the Railway or to any person on his or on their behalf in relation to the execution of this or any other contract with this Railway.
- (xv) Fail to adhere to the provisions of Clause 16 of Tender Form (Second Sheet) of Annexure I of Instructions to Tenderers (GCC), or provision of above Clause 59(9) of Indian Railways Standard General Conditions of Contract, April'2022.
- (xvi) **(A)** At any time after the tender relating to the contract, has been signed and submitted by the contractor, being a partnership firm admit as one of its partners or employee under it or being an incorporated company elect or nominate or allow to act as one of its directors or employee under it in any capacity whatsoever any retired engineer of the gazetted rank or any other retired gazetted officer working before his retirement, whether in the executive or administrative capacity, or whether

holding any pensionable post or not, in the Railways for the time being owned and administered by the President of India before the expiry of one year from the date of retirement from the said service of such Engineer or Officer unless such Engineer or Officer has obtained permission from President of India or any officer duly authorized by him in this behalf to become a partner or a director or to take employment under the contract as the case may be,

or

(xvi)(B) Fail to give at the time of submitting the said tender:

- (a) The correct information as to the date of retirement of such retired engineer or retired officer from the said service or as to whether any such retired engineer or retired officer was under the employment of the Contractor at the time of submitting the said tender,

or

- (b) The correct information as to such engineers or officers obtaining permission to take employment under the Contractor,

or

- (c) Being a partnership firm, the correct information as to, whether any of its partners was such a retired engineer or a retired officer,

or

- (d) Being an incorporated company, correct information as to whether, any of the Directors was such a retired engineer or retired officer,

or

- (e) Being such a retired engineer or retired officer suppress and not disclose at the time of submitting the said Tender the fact of his being such a retired engineer or a retired officer or make at the time of submitting the said Tender a wrong statement in relation to his obtaining permission to take the contract or if the Contractor be a partnership firm or an incorporated company to be a partner or Director of such firm or Company as the case may be or to seek employment under the Contractor.
- (f) Submits copy of fake documents/certificates in support of credentials submitted by tenderer.

Then and in any of the said clause, the Engineer on behalf of the Railway may serve the Contractor with a notice (FORM-25) in writing to that effect and if the contractor does not within seven days after the delivery to him of such notice proceed to make good his default in so far as the same is capable of being made good and carry on the work or comply with such directions as aforesaid of the entire satisfaction of Engineer, the Railway shall be entitled after giving 48 hours notice (FORM-26 or 26 A, as the case may be) in writing under the hand of the Engineer to rescind the contract as a whole or in part or parts (as may be specified in such notice)' and after expiry of 48 hours notice, a final termination notice (FORM- 27 or 27A, as the case may be) should be issued.

Note: Engineer at his discretion may resort to the part termination of contract with notices (Form-25, 26A and 27A), only in cases where progress of work is more than or equal to 80% of the original scope of work.

- (2) Right of Rly. after rescission of contract owing to default of contractor – In the event of any or several of the courses, referred to in sub clause (1) of this clause, being adopted -
 - (a) The contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any commitments or made any advances on account of or with a view to the execution of the

works or the performance of the contract and contractor shall not be entitled to recover or be paid any sum for any work there to for actually performed under the contract unless and until the Engineer shall have certified the performance of such work and the value payable in respect thereof and the Contractor shall only be entitled to be paid the value so certified.

- (b) In the contract which has been rescinded as a whole, the Security Deposit already with railways under the contract shall be encashed/ forfeited and the Performance Guarantee already submitted for the contract shall be encashed. The balance work shall be got done independently without risk & cost of the failed Contractor. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV/partnership firm.
Further the authorized representative of failed Contractor cannot be accepted as authorized representative in new contract.
- (c) In the contract rescinded in part or parts,
 - (i) The full Performance Guarantee for the contract shall be recovered. No additional Performance Guarantee shall be required for balance of work being executed through the part terminated contract. The contract value of part terminated contract stands reduced to the balance value of work under the contract.
 - (ii) The Security Deposit of part terminated contract shall be dealt as per clause 16(2) of GCC.
 - (iii) The defaulting Contractor shall not be issued any completion certificate for the contract.
 - (iv) The balance work shall be got done independently without risk & cost of the failed Contractor. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV /partnership firm.
 - (v) Further the authorized representative of failed Contractor will not be accepted as authorized representative in new contract.
- (d) The Engineer or the Engineer's representative shall be entitled to take possession of any materials, tools, implements, machinery & buildings on the works or on the property on which these are being or ought to have been executed, and to retain and employ the same in the further execution of the works of any part thereof until the completion of the works without the contractor being entitled to any compensation for the use and employment thereof or for wear and tear per destruction thereof.
- (e) The Engineer shall as soon may be practicable after removal of the contractor fix and determined ex-parte or by or after reference to the parties or after such investigation or enquiries as he may consider fit to make or institute and shall certify what amount (if any) had at the time of rescission of the contract been reasonably earned by or would reasonably accrue to the contractor in respect of the work then actually done by him under the contract and what was the value of any unused, or partially used materials, any constructional plant and any temporary works upon the site. The legitimate amount due to the contractor after making necessary deductions and certified by the Engineer should be released expeditiously.

If loss or damage occurs to the stores or any part thereof during transit by rail, the Contractor shall have only such remedy as is available to the public against the carrier under the Indian Railways (Amendment) Act 1961, No. 39 of 1961.

AGREEMENT: 1.2.16

- (a) **Execution of Contract Document:** The Tenderer whose tender is accepted shall be required to appear in person at the office of Chief Electrical Engineer/Project, North Eastern Railway Lucknow or if tenderer is a firm or corporation, a duly authorized representative shall appear (there would be no need for appear in person if agreement is signed digitally) and execute the contract agreement within seven days of notice from Railways that the Contract Agreement is ready. Failure to do so shall constitute a breach of the agreement affected by the acceptance of the tender. The Contract Agreement shall be entered into by Railway only after submission of valid Performance Guarantee by the Contractor. In such cases the Railway may determine that such tenderer has abandoned the contract and there upon his tender and acceptance thereof shall be treated as cancelled and the Railway shall be entitled to forfeit the full amount of the Bid Security and other dues payable to the Contractor under this contract. The failed Contractor shall be debarred from participating in the re-tender for that work.
- (b) **Form of Contract Document:** Every contract shall be complete in respect of the document it shall so constitute. Not less than 2 copies of the contract document shall be signed by the competent authority and the Contractor and one copy given to the Contractor. (There would be no need of signing two copies if agreement is signed digitally).
- (c) For contracts for specific works, the contract document required to be executed by the tenderer whose tender is accepted shall be an agreement as per specimen form -14.
- (d) If a work is transferred from the jurisdiction of one Railway to another Railway or to a project authority or vice versa while the contract is in subsistence the contract shall be binding on the Contractor and successor Railway/Project in the same manner and take effect in all respects as if the Contractor and the successor Railway/Project were parties thereto from the inception and the corresponding officers or the competent authority in the successor Railway/Project will exercise the same powers and enjoy the same authority as conferred to the Predecessor Railway/Project under the original contract/agreement entered into.
- (e) If for administrative or other reasons the Contract is transferred to the successor Railway/Project the contract shall notwithstanding anything contained herein contrary thereto, be binding on the Contractor and the successor Railway/Project in the same manner and take effect in all respects as if the Contractor and the successor Railway/Project had been parties thereto from the date of this contract.
- (f) **Final Supplementary Agreement:** After the work is completed or otherwise concluded by the parties with mutual consent, and taken over by the Railway as per terms and conditions of the contract agreement, and there is unequivocal no claim on either side under the contract other than as mentioned in item 4 of Annexure-XIV, the parties shall execute the Final Supplementary Agreement as per Form-29.

SECURITY DEPOSIT: 1.2.17

The Security Deposit shall be 5% of the contract value. The Bid Security submitted by the Contractor with his tender will be retained/encashed by the Railways as part of security for the due and faithful fulfillment of the contract by the Contractor. Provided further that, if Contractor submits the Cash or Term Deposit Receipt issued from a Scheduled commercial

bank of India or irrevocable Bank Guarantee Bond from a Scheduled commercial bank of India, either towards the Full Security Depositor the Part Security Deposit equal to or more than Bid Security, the Railway shall return the Bid Security, to the Contractor.

Balance of Security Deposit may be deposited by the Contractor in cash or Term Deposit Receipt issued from Scheduled commercial bank of India or irrevocable Bank Guarantee bond issued from Scheduled commercial bank of India, or may be recovered at the rate of 6% of the bill amount till the full Security Deposit is recovered. Provided also that in case of defaulting Contractor, the Railway may retain any amount due for payment to the Contractor on the pending "On account bills" so that the amounts so retained (including amount guaranteed through Performance Guarantee) may not exceed 10% of the total value of the contract.

The Irrevocable Bank Guarantee submitted towards Security deposit shall be initially valid up to the stipulated date of Maintenance period plus 60 days and shall be extended from time to time, depending upon extension of contract granted in terms of Clause 17A and 17B of the Standard General Conditions of Contract.

Note: Security Deposit deposited in cash by the Contractor or recovered from the running bills of a Contractor or submitted by contractor as Term Deposit Receipt(s) can be refunded/returned to the contractor, in lieu of irrevocable Bank Guarantee bond issued from scheduled commercial bank of India, to be submitted by him, for an amount equal to or more than the already available Security Deposit, provided however that, in a contract of value less than Rs. 50 Crore, such refund/ return of the already available Security Deposit is permitted up to two times and in a contract of value equal to or more than Rs. 50 Crore, such refund / return of the already available Security Deposit is permitted up to three times.

(B) (i) Refund of Security Deposit: Security Deposit mentioned in Clause 1.2.17(A) above shall be returned to the Contractor after the following:

- (a) Final Payment of the Contract as per clause 51.(1) of GCC and
- (b) Execution of Final Supplementary Agreement or Certification by Engineer that Railway has No Claim on Contractor and
- (c) Maintenance Certificate issued, on expiry of the maintenance period as per clause 50.(1)GCC, in case applicable.

(B) (ii) Forfeiture of Security Deposit: Whenever the contract is rescinded as a whole under clause 62

(1) of GCC, the Security Deposit already with railways under the contract shall be forfeited. However, in case the contract is rescinded in part or parts under clause 62 (1) of GCC, the Security Deposit shall not be forfeited.

(C) No interest shall be payable upon the Bid Security and Security Deposit or amounts payable to the Contractor under the Contract, but Government Securities deposited in terms of Sub-Clause 16.(4)(b) of GCC will be payable with interest accrued thereon.

SCHEME OF WORK: 1.2.18

- (a) The Contractor shall submit to the authority in para 3.20(i)(b) and (iv), the following documents:

(i) Accepted Programme of Work: The Contractor who has been awarded the work shall as soon as possible but not later than 30 days after the date of receipt of the acceptance letter in respect of contracts with initial completion period of two years or less or not later than 90 days for other contracts have to submit the detailed programme of work indicating the time schedule of various items of works in the form of Bar Chart/PERT/CPM.

He shall also submit the details of organisation (in terms of labour and supervisors), plant and machinery that he intends to utilize (from time to time) for execution of the work within stipulated date of completion. The programme of work amended as necessary by discussions with the Engineer, shall be treated as the agreed programme of the work for the purpose of this contract and the Contractor shall endeavor to fulfill this programme of work. The progress of work will be watched accordingly and the liquidated damages will be with reference to the overall completion date. Nothing stated herein shall preclude the Contractor in achieving earlier completion of item or whole of the works than indicated in the programme.

In Contracts for works of New Line/Gauge Conversion/Doubling/Railway Electrification, finalized through Tenders having advertised value more than Rs.100 crores, the Contractor shall submit a detailed time programme to the Engineer within 30 days after issue of LOA. The program shall include the physical and Financial Progress vis-à-vis program and forecast cash flow adopting Project Management Software such as Primavera/Sure Track/MS Project etc. **The program must identify the milestones, interface requirements and program reporting elements. The Contractor shall supply, free of cost one set of authorized software to the Engineer and the soft copy of structured program for the project. This shall be updated every month. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress. Each programme shall include:**

The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage, Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing, each of these stages for work by each Subcontractor, if any, the sequence and timing of inspections and tests specified in the Contract, and a supporting report which includes: a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and details showing the Contractor's reasonable estimate for the number of each class of Contractor's Personnel & Equipment, required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Engineer shall be entitled to rely upon the programme when planning their activities.

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer within 15 days in accordance with this Sub-Clause.

(ii) Detailed programme of work should also include submission of various documents enumerated in Part-II Chapter-V. Designs and Drawings to be supplied by the purchaser shall also be included in the programme of work to make it comprehensive. The comprehensive schedule shall be planned in a manner such that the entire basic designs and drawings for the group/s is/are accepted by the Purchaser within a period not exceeding one third of the total period allowed for completing the work and working drawings, within a period not exceeding two third of the total period allowed for completing the work. This period shall be reckoned from the date of issue of the letter of Acceptance of Tender. The schedule shall take into account the time required for study by the Purchaser who reserves for this purpose 30 days for verifying the designs and drawings.

NOTE : *The above provision is applicable provided the Purchaser has been able to supply all pegging plans and other drawings and designs in a uniformly spread out manner to the maximum extent possible over a period ending at least four months before the target dates allotted to the Contractor.*

(iii) The Contractor shall submit a detailed time schedule for the execution of the various items of the work specifying the duration of each part of these works together with comprehensive scheme of execution of the OHE modification/feeder work. The planning for each stage of work shall be done in order of priority as given by the Purchaser and should be such as to complete the entire work within the stipulated period. This planning should also include the programme of delivery of materials and equipment which should synchronize with the progress of field work.

(iv) The planning for each stage of work shall be done in the order of priority as given by the Purchaser and should be such as to complete the entire work within the stipulated period.

(b) WORKS TO BE DONE AS APPROVED

The site and the detailed drawings shall be made available to the contractor commensurate with the accepted programme of work submitted under clause 1.2.18. The whole of the works shall be executed in perfect conformity with the specifications and drawings of the contract. If Contractor performs any works in a manner contrary to the specifications or drawings or any of them and without such reference to the Engineer, he shall bear all the costs arising or ensuing therefrom and shall be responsible for all loss to the Railway. The planning shall be finalised in consultation with the Purchaser and approved by the latter in writing before commencement of the work and the Contractor shall be held responsible for the execution of the work in full compliance with approved design and drawings. Designs and drawings modified at site by the Purchaser's Engineers shall be treated as approved. However, such modifications shall be incorporated in the designs and drawings and resubmitted for formal approval.

(c) MONTHLY PROGRESS REPORT

The Contractor shall furnish to the authority as mentioned in para 3.20(i)(b) and (v), or his successor / nominee (whose address will be advised in due course) during the first week of every calendar month, a progress report showing progress of finalisation of designs and drawings, materials and equipment received at site and the works carried out during the preceding month and up-to-date progress of these items alongwith the total quantum of designs and drawings, materials and equipments and the works required for the contract.

(d) For finalising the scheme for work out-line in above sub-paras, the Contractor shall make use of the latest network analysis techniques like CPM technique, PERT chart etc.

(e) Contractor shall widely use IT (Information Technology) for the purpose of progress reporting and Material Management. The contractor shall make the following information available to the purchaser in the form of reports which shall be uploaded on a Web based system. Following Reports shall be deliverable by the IT management system.

SN	Name of the report	Data update frequency
1	Daily progress report of all OHE modification/FEEDER works specifying the total quantum, balance quantum, location of work and the work done on the previous day.	Once a day before 09:00 hrs on the following day
2	Weekly progress report of OHE modification/FEEDER works specifying the total quantum, balance quantum, location of work and the work done on the previous week.	Once a week on the following Monday before 09:00 hrs
3	Monthly progress report of all OHE modification/FEEDER works specifying the total quantum, balance quantum, location of work and the work done on the previous Month.	Once a month on the third day of the next month before 09:00 hrs
4	Material requirement sub section wise	After completion of design once of that sub section Thereafter on every change in designs.
5	Material consumed, Ground balance and the balance material required	Once a week on the following Monday at 09:00 hrs
6	Daily, Weekly, Monthly Traffic and Power Block demanded and granted	Once a day/week/month as the case may be for each report at 09:00 hrs.
7	Traffic Block and Power Block plan for next day/week	19:00 hrs each day for the next day requirement

- The Reports provided shall be in a format approved by Railway.
- APP/WEB based system shall be used for updating progress of work/uploading picture and videos of site work, foundations, erection, etc. Separate server for data backup shall be installed at CEE/Project/NER office.
- The firm shall depute staff at CEE/Project/NER office for updation & submission of daily progress report/status of work to concerned Railway officer.
- Install computer/system with all accessories and equipment for above work at CEE/Project/NER office.
- Videography shall be done on monthly basis for entire section where work is being executed. Drone survey shall be carried out once in a month for the same work as mentioned above.
- In violation of the above mentioned clauses suitable penalty will be imposed on the contractor as decided by the Railway Authority.

PROCUREMENT OF MATERIALS/QUALITY OF MATERIALS: 1.2.19

All materials used in the work shall be procured from RDSO/ CORE approved/developmental sources as per the extant guidelines issued by RB from time to time on the matter and of the best quality and of the class most suited for the purpose specified. It is essential that the manufacturer/s from whom supply is arranged should have long experience of design and manufacture of equipments components, materials and fittings. The requisite facilities for testing prototypes supplied against this contract should be available with the manufacturer. In the case of these equipments components or fittings for which the requisite facilities for testing prototypes are not available with the Manufacturer the manufacturer shall arrange to carry out the prototype tests at his own cost in a testing laboratory approved by the Purchaser. Only tested quality steel shall be used. All erection work carried out shall also be of the best quality, acceptable to the Purchaser.

NOTE:-

1. The supply of all materials shall be from RDSO/ CORE approved/developmental sources as per the extant guidelines issued by RB from time to time on the matter (as mentioned in the RDSO's/CORE's approved list of vendors). However, items / materials for which RDSO/CORE approved/developmental sources do not exist, the same may be procured as per relevant BIS/Specifications or from other sources after one time approval of the source (for particular work only) from the project in-charge (SAG).
- Note : Railway Board guideline regarding ordering of material on approved sources/RDSO approved vendor/developmental vendor along with its latest revisions/amendments shall be applicable.
2. Apart from deviations, if any, proposed by the contractor and accepted by the purchaser, in case of ambiguity in tender paper in respect of procurement of materials required for the subject work, the decision of the purchaser shall be final.
3. Material will be issue from contractor store with the approval of competent authority.

SPECIFIED RAILWAY STORES: 1.2.20

FEEDER WORKS : 1.2.20.1

(a) The Purchaser shall supply to the contractor free on rail or free on lorry upto the siding/contractor's depot all the steel work that are indicated in Annexure-4. The materials will be unloaded & stacked by the contractor at the appropriate place in the presence of Purchaser's representative. The steel work which are to be supplied by the Purchaser to the contractor will be made available as described above sufficiently in advance of the planned dates of erection. The contractor may return to the Purchaser any steel work found defective or damaged on account of manufacturing defects. After completion of the works, any undamaged surplus steel work left over with the contractor shall be returned to the Purchaser. For the purpose of final reconciliation, the procedure laid down in para 1.4.6, Part-I, Chapter-IVA, will be followed.

(b) EQUIPMENTS, COMPONENTS, FITTINGS AND OTHER MATERIALS

The various materials which will be supplied to the contractor by the Purchaser free on rail or free on lorry upto the siding/contractor's depot, are listed in Annexure-4. The prices in Schedule-1, Section-1 to 5, shall be exclusive of the cost of supply of these items. For the purpose of final reconciliation, the procedure laid down in para 1.4.6, Part-I, Chapter-IVA, will be followed. The shortage, if any, shall be recovered from the contractor by the Purchaser at the prices specified in note at the end of para 1.4.6 (f) Part-I, Chapter-IVA. In addition the material/items specified in Annexure-4, some of the items which are normally in the contractor's scope of supply may also be supplied by the Railways either in part or in full, to meet the requirement of tendered work. The recovery of such items will be made in terms of Clause 1.3.2 and 1.3.10 (Part-I, Chapter-III A).

Further, the Purchaser reserves the right to supply any equipments, components or materials, indigenous or imported, from his own resources in quantities which may fulfill the contract either in whole or in part upto a maximum of 10% of the total value of the contract free on rail or free on lorry upto the RE siding/contractor's depot. The same shall be accepted by the Contractor provided that the Purchaser shall at the time of issue of letter of Acceptance of the tender to the Contractor, indicate to the contractor the list of materials and quantities thereof which will be supplied by the Purchaser free on rail or free on lorry upto the siding/contractor's depot sufficiently in advance of the planned dates of erection. Such materials shall be tested by the contractor at his own cost before use to the extent that the

specifications require tests at site prior to installation but the contractor shall not be responsible for any defects in the material or component and the contractor may return to the Purchaser any materials which are found defective or damaged on account of manufacturing defects. Any damaged surplus materials left out with the contractor on completion of works should also be returned to the Purchaser for which necessary adjustments would be made. The cost of materials supplied by the Purchaser to the contractor in terms of the above sub-para would be recovered from the contractor as indicated in para 1.3.10(Part-I, Chapter-III A). Purchaser may also supply material to the extent of 10% of contract value as Rly supply material for which no recovery shall be affected. Instead, contract value shall get reduced to that extent which will be accepted by the contractor provided the Purchaser shall at the time of issue of letter of Acceptance of the tender to the Contractor, indicate to the contractor the list of materials and quantities thereof which will be supplied by the Purchaser as free Rly supply materials.

(c) Should it be impossible for the Contractor to obtain any of the items included in schedule – 3, Part-V, Form-7(Sh.1 to 26) indigenously for any reason accepted as adequate by the Purchaser, the Purchaser, will arrange to import such items at his own cost and supply them to the Contractor in accordance with para 1.2.20.1(b). The cost of such supplies shall be recovered in accordance with para 1.3.10 of (Part-I, Chapter-III A).

(d) The various equipments, components and materials supplied by the Purchaser to the Contractor will be handed over to the Contractor, as far as possible in a stage ready for installation. The Purchaser shall supply to the Contractor within reasonable time (as far as possible within 3 months of issue of the letter of Acceptance of Tender) six copies each of the drawings of all items to be supplied by the Purchaser. Wherever possible, 3 copies each of the instructions booklets for various equipments will also be supplied by the Purchaser. The Contractor shall carefully follow the instructions mentioned in the various instruction booklets and those indicated by the Purchaser during the erection of equipments supplied by the Purchaser and shall endeavor to bring such equipment into successful operation. In the event of the failure of any item supplied by the Purchaser due to inherent defects/deficiencies in the item, the Contractor shall not be responsible. Should the defects be repairable at site without requiring the dismantlement of the equipment, the repair shall be done by the Contractor, free of cost, for which the necessary replacement parts will be supplied by the Purchaser, free of cost, to the Contractor. If the defect cannot be rectified at site and the replacement of the equipment is required, then the Purchaser shall replace the defective equipment, alternatively the Contractor may be required to dismantle the defective equipment and re- erect the required equipment for which he shall be paid separately at original schedule-1 rates as applicable, if available or at rates to be mutually agreed to between the Purchaser and the Contractor prior to undertaking the work.

(e) In case damage to the stores handed over to the Contractor, is caused by faulty test or careless handling by the Contractor as distinct from damage due to inherent manufacturing defect, the cost of repairs to replacement of the damaged equipment shall be borne by the Contractor.

NOTE: (1) *Booster Transformers complete with all accessories will be supplied along with necessary oil for the first filling to the Contractor. The Contractor shall make his own arrangements for oil filtration, testing and commissioning as well as arrangements for oil filtration plant and power supply for the same.*

(2) *Empty drums, wooden crates, and other packing materials including gunny bags used for supply of Purchaser's materials to the contractor shall be the property of the Contractor. The Tenderer should take note of this while quoting rates.*

(f) SUPPLY OF CEMENT: D E L E T E D.

(g) Railway may supply any item to the contractor for erection which are not provided for

in the contract. Erection rate shall be mutually finalised as Non Schedule item, if Schedule of Rate for the same are not available in the contract. Railway may also supply for erection, with the consent of the contractor, any item as per the latest specifications as a substitute of the same item of old specifications provided for in the contract.

FOR TSS & SCADA WORKS: 1.2.20.2 : Deleted.

(a) The various materials which will be supplied to the Contractor by the Purchaser, free at Contractor's depot are listed in Annexure-4/4A (As applicable). The price in Schedule-1, Section-8 to 11, shall be exclusive of the cost of supply of these items. For the purpose of final reconciliation the procedure laid down in Para 1.4.5 Part-1, Chapter-IV B will be followed. Shortages shall be recovered from the Contractor by the purchaser at the prices specified in the Note at the end of Para 1.4.5, Part- 1, Chapter-IV B. Cost of repairs to damage of materials handed over to the Contractor, shall be borne by the Contractor.

(b) Further the Purchaser reserves the right to supply any equipments, components or materials which are in contractor's scope of supply, indigenous or imported, from his own resources in quantities which may fulfill the contract either in whole or in part up to a maximum of 10% of the total value of the contract. No handling charges will be paid to the Contractor for such supplies, and the same shall be accepted by the Contractor provided that the Purchaser shall, at the time of issue of Letter of Acceptance of Tender to the Contractor, indicate to the Contractor the list of materials and quantities thereof which will be supplied. Such materials will be supplied by the Purchaser free at the Contractor's depot/sufficiently in advance of the planned date/s of erection. Such materials shall be tested by the Contractor at his cost before use to the extent that the specifications require tests at site prior to installation but Contractor will not be responsible for any defects in the material or component and he may return to the Purchaser any materials which are found defective or damaged on account of manufacturing defects. Any undamaged surplus materials left with the Contractor on completion of the work should also be returned to the Purchaser for which necessary adjustments would be made. The cost of the materials supplied by the Purchaser to the Contractor in terms of the above sub-para would be recovered from the Contractor as indicated in Para 1.3.9 of (Part-I, Chapter-IIIB & IIIC).

(c) The various equipments, components and materials supplied by the Purchaser to the Contractor will be handed over to the Contractor, as far as possible in a stage ready for installation. The Purchaser shall supply to the Contractor within reasonable time (as far as possible within 3 months of issue of the letter of Acceptance of Tender) six copies each of the drawings of all items to be supplied by the Purchaser. Wherever possible 3 copies each of the instructions booklets for various equipments will also be supplied by the Purchaser. The Contractor shall carefully follow the instructions mentioned in the various instruction booklets and those indicated by the Purchaser during the erection of equipments supplied by the Purchaser and shall endeavor to bring such equipment into successful operation. In the event of the failure of any item supplied by the Purchaser due to inherent defects/deficiencies in the item, the Contractor shall not be responsible. Should the defects be repairable at site without requiring the dismantlement of the equipment, the repair shall be done by the Contractor, free of cost, for which the necessary replacement parts will be supplied by the Purchaser, free of cost, to the Contractor. If the defect cannot be rectified at site and the replacement of the equipment is required, then the Purchaser shall replace the defective equipment, alternatively the Contractor may be required to dismantle the defective equipment and re- erect the required equipment for which he shall be paid separately at original schedule-1, (Part-I, Chapter-IVB & IVC), rates as applicable, if available or at rates to be mutually agreed to between the Purchaser and the Contractor prior to undertaking the work.

(d) In case damage to the stores handed over to the Contractor, is caused by faulty test or careless handling by the Contractor as distinct from damage due to inherent manufacturing defect, the cost of repairs to replacement of the damaged equipment shall be

borne by the Contractor.

NOTE : (1) *Empty drums, wooden crates, and other packing materials including gunny bags used for supply of Purchaser's materials to the contractor shall be the property of the Contractor. The Tenderer should take note of this while quoting rates.*

OTHER RAILWAY STORES :1.2.21

If any material other than those specified in para 1.2.20 is supplied by the Purchaser either at the Contractor's request or suo moto in order to prevent any possible delay in the execution of the works likely to occur due to the Contractor's inability to make adequate arrangements for supply thereof or otherwise, recovery will be made from Contractor's bill at the issue rate or market rate prevailing at the time of supply, whichever is higher, plus 5% on account of initial freight and 2% on account of incidental charges together with supervision charges at 12.5% of the total cost inclusive of material, freight and incidental charges or Schedule-3 rate for OHE & FEEDER works. In case of TSS & SCADA works it shall be the supply rate of schedule-1, Section-9 to 12, whichever is higher, freight between the Purchaser's source of supply and the Contractor's depot or RE siding shall be to the Contractor's account. If, however, the material required by the Contractor is not available in Purchaser's stock or the Purchaser decides not to supply the same, be that for whatever reason, the Purchaser shall not be bound to arrange for the supply at cost quoted above or at any other cost nor will this fact be accepted as an excuse for delay in execution of works.

CONTRACTOR'S ORGANISATION:

1.2.22 OHE Modification/FEEDER LINE WORKS

- (a) In addition to the establishment of an office as per Para 1.2.5, the Contractor shall set up at least one main depot for receiving and storing steel work and other materials and establish a workshop for small fabrication and assembly work, if considered necessary by the Contractor. If he and the Purchaser deem it necessary, sub-depots may be set up to ease operation of work trains and distribution of materials. The location of Contractor's depot and sub-depots will be mutually agreed upon by the Purchaser and the Contractor. For the main and sub-depots, the Purchaser shall offer open space reasonably leveled and workable and suitable for storage of materials free of charge inside Railway premises which will be convenient from the point of view of operation. The depot/s shall, as far as possible, be located such as to be accessible by road. The depot will be provided with a siding of suitable length to accommodate the work trains and allow shunting of trains within the depot area, free of charge, to serve the area for the use of the Contractor. Contractor has to setup at least Two major office at Sultanpur & Lucknow or at convenient location or as decided by Railway along with 3 Field Offices at Utratia, Nihalgarh & Haidergarh as indicated in part-III for fast execution of work to cover all depots under TRD department of Lucknow Division of Northern Railway.

NOTE: *For unloading of Purchaser's steel work and other Railway materials, for attention to wagons, for stabling of Purchaser's wagons of work trains the Purchaser at his own cost, will arrange for provision of additional sidings, as required by him. All other expenses for providing covered and enclosed storage and workshop accommodation, other facilities and running the establishment shall be borne by the Contractor. Labour charges for laying of additional sidings or alterations to the sidings, if considered essential by the Contractor, shall be borne by the Contractor. The recoverable costs shall be finalised and mutually agreed upon, before the tracks are laid. Track materials such as Rails, fastenings and ballast, and/or ashes cinder only for additions or alterations to sidings shall be provided free of charge to the Contractor by the Purchaser. Maintenance of all sidings will be done by the Purchaser at his own cost, On completion of the work the cost of dismantling such additional sidings shall be borne by the Contractor. In case of difference of opinion in these matters the decision of the General Manager or his successor shall be final.*

- (b) If possible, the Purchaser will also provide free of charge stabling lines for work trains at suitable stations, should it be considered necessary to suit convenience of operation or to avoid haulage of work trains back to main or sub-depot/s except for the

purpose of recoupment of stock on work trains. Space for storage of ballast and sand may also be provided free of charge along such stabling lines as convenient to the Purchaser. The receipt of storage of materials at the main and sub-depots shall be so planned as to avoid transport of materials between the main and sub-depot/s and vice versa to the maximum extent possible.

NOTE: For Para 1.2.22.1 (a) & (b): The delay in providing open space/stabling lines shall only entitle the contractor suitable DOC extension and no other compensation shall be admissible.

- (c) The main depots will be located at stations as indicated in part-III. The proposed location/s of sub-depots and stabling lines is/are to be given by the Tenderer for scrutiny and approval by the Purchaser.
- (d) For the main depot the services of a commercial Clerk shall be provided, when required, for complying with commercial formalities of receiving and dispatching goods. The cost of such clerk/s will be borne by the Purchaser.
- (e) The contractor shall hand over the depot, sub-depot area complete with sidings, within a period of one year from completion of the work, cleaned of all Contractor's stores or refuse unless otherwise agreed to by the Purchaser.
- (f) The Contractor will be responsible for transfer of materials from source of supply to the main or sub depots, between depot/s and workshops except where otherwise stated. If wagons are required, the Purchaser will use his good offices for expeditious allotment. The Contractor will be responsible for all loss and/ or damage in the transfer of materials and for demurrage or wharfage he may incur, and no loss damage or expenses incurred on this account will be reimbursed by the Purchaser. Work trains for transport between depots or between depot/s and work site will be provided to the extent indicated in para 1.2.27.
- (g) Electricity may be supplied at places where spare capacity is available for running of machinery and for lighting. The Contractor shall provide his own distribution system in consultation and with the approval of the Purchaser. The cost of providing connections and of energy consumed shall be paid by the Contractor to the Purchaser in accordance with relevant rules and prevailing rates of the Railway.
- (h) At places where piped water supply is available the Purchaser may supply water to the Contractor at convenient points for his office, workshops and stores if necessary in connection with the work. The Contractor shall arrange to lay his own pipe lines for distribution in consultation and with the approval of the Purchaser. The Contractor shall be charged for consumption by the Railways at the rate of Rs. 2/- only per 1000 liters. The Contractor shall arrange water at the work site at his own cost. However, in exceptional cases where the Purchaser is satisfied that it is not feasible for the Contractor to arrange water due to its non- availability nearby, water may be made available free of cost in water tanks at watering station/s which may be carried to work site through work trains. The decision of the Purchaser in regard to supply of water through work trains shall be final and binding on the Contractor.
- (i) The Contractor shall arrange at his own cost all tools, plants and facilities as necessary for erection and testing of the equipments, in compliance with the Specification.
- (j) No conservancy cess charges will be recovered from the Contractor. The Tenderer should take note of this while quoting rates.
- (k) Contractor shall arrange and make available at their depot the following measuring equipments(digital type) duly calibrated for inspection at site by the representative of the purchaser as and when required:

- (i) Digital Weighing Machine of capacity 3 MT
- (ii) Digital Alcometer
- (iii) Digital Vernier Caliper
- (iv) Digital Micrometer
- (v) Digital Radius Gauge
- (vi) Thread Gauge
- (vii) Cotton Measuring Tapes 3m & 30 m length each
- (viii) Angle Protractor etc.
- (ix) Insulator Testing jib
- (x) Digital Laser distance finder
- (xi) Digital Multimeter

Or any other equipment required as per condition and decided by the railway. All above instrument must be in digital Type.

FOR TSS & SCADA WORKS: 1.2.22.2 Deleted, Not Applicable.

- a) In addition to the establishment of an office as per Para 1.2.5 the Contractor shall set up at least one main depot for receiving and storing steel work and other materials and establish a workshop for small fabrication and assembly work. The location of Contractor's depot will be mutually agreed upon by the Purchaser and the Contractor. The Purchaser shall offer free of charge open space reasonably level and workable for the depots. The depot will be provided with a siding of suitable length free of charge. All other expenses for providing covered and enclosed storage and workshop accommodation and facilities and running the establishment shall be incurred by the Contractor.
- b) The Contractor shall hand over the depot area complete with siding on completion of the work, cleared of all structures, stores or refuse unless otherwise agreed to by the Purchaser.
- c) The Contractor will be responsible for transport of materials from source of supply to the depot or between depot and worksite. If wagons are required, the Purchaser will use his good offices for expeditious allotment. The Contractor will be responsible for all loss and/or damage in the transfer of materials and for demurrage or wharf age he may incur, and no loss, damage or expenses incurred on this account, will be reimbursed by the Purchaser.
- d) Electricity may be supplied at places where spare capacity is available for running of machinery and for lighting. The Contractor shall provide his own distribution system in consultation and with the approval of the Purchaser. The cost of providing connections and of energy consumed shall be paid by the Contractor to the Purchaser in accordance with relevant rules and prevailing rates of the Railway.
- e) At places where piped water supply is available, the Purchaser may supply water to the Contractor at convenient point/s for execution of work and for his depot, if necessary. The Contractor shall arrange to lay his own pipelines for distribution, in consultation and with the approval of the Purchaser. The Contractor will be charged for consumption at the fixed rate of Rs. two per thousand liters subject to periodical revision by the General Manager or his successor.
- f) The Contractor shall arrange at his own cost all tools, plants and facilities for erection and testing of the equipment, in compliance with the specification.

The list of machinery, tools and plants and the other infrastructure available with the Tenderer will be furnished along with the bid (Form-12B & 12C).

- g) No conservancy cess charges will be recovered from the Contractor. The Tenderer should take note of this while quoting rates.

CONTRACTOR'S DRAWINGS ETC.: 1.2.23

Any calculations, designs, drawings, schedules, information, data, progress charts etc. required by the Purchaser's Engineer in connection with the contract shall be furnished by the Contractor at his own expenses. The Contractor will not be required to furnish drawings, designs and calculations etc. for basic designs and employment schedules provided by the Purchaser in case no modification/deviation is required for a particular basic design/ employment schedule. In case of new developments in designs, comments on Research Designs and Standards Organisation (hereinafter called RDSO's) and decision of Purchaser to implement the same basic drawings/designs/employment schedules will be submitted by the contractor to the Purchaser. If the RDSO's drawings/designs/employment schedule is not revised, Contractor need not submit drawings/designs/ employment schedules to the NR/NE Railway. In the event of Contractor suggesting any alteration/deviation in standard drawings, he shall submit the retraced drawings with full calculations and justification of the change to the Purchaser. The Purchaser if convinced of the need of the alteration shall approach RDSO for necessary approval. In case of any ambiguity in the interpretation of design and drawing, the decision of the purchaser shall be final and conclusive.

ASSIGNMENT OR SUBLETTING OF CONTRACT: 1.2.24

The Contractor shall not assign or sublet the contract or any part thereof or allow any person to become interested therein in any manner whatsoever without the special permission in writing of the Chief Electrical Engineer/Project/NER/LKO, save as provided below. Any breach of this condition shall entitle the Railway to rescind the contract under Clause 62 of these Conditions and also render the Contractor liable for payment to the Railway in respect of any loss or damage arising or ensuing from such cancellation; provided always that execution of the details of the work by petty Contractor under the direct and personal supervision of the Contractor or his agent shall not be deemed to be sub-letting under this clause.

In case Contractor intends to subcontract part of work, he shall submit a proposal in writing seeking permission of Chief Electrical Engineer/Project/NER/LKO for the same. While submitting the proposal to railway, Contractor shall ensure the following:

- (a) (i) Total value of work to be assigned to sub-contractor(s) shall not be more than 50% to be assigned to sub-contractor(s) shall not be more than 50%.
- (ii) The subcontractor shall have successfully completed at least one work similar to work proposed for subcontract in last 5 years ending date Of submission of proposal by contractor to railway, costing not less than 35% value of work to be subletted, in last 5 years through a works contract directly given to him by a Govt. Department; or by a Public listed company having average annual turnover of Rs 500 crore and above in last 3 financial years excluding the current financial year, listed on National Stock Exchange or Bombay Stock Exchange, registered at least 5 years back from the date of submission of proposal by Contractor to Railway and work experience certificate issued by a person authorized by the Public Listed Company to issue such certificates.

Note: For subletting of work costing up to Rs 50 lakh no previous work experience shall be asked for by the Railway

In case contractor submits subcontractor's work experience certificate issued by public listed company, the contractor shall also submit along with work experience certificate, the relevant copy of work order, bill of quantities, bill wise details of payment received duly certified by Chartered Accountant, TDS certificates for all payments received and copy of final/last bill paid by company in support of above work experience certificate.

- (iii) There is no banning of business with the sub-contractor in force over IR.
- (b) The Contractor shall provide to the Engineer a copy of the agreement to be entered into by Contractor with subcontractor. No subcontractor shall be permitted without a formal agreement between Contractor and subcontractor. This agreement shall clearly define the scope of work to be carried out by subcontractor and the terms of payment in clear & unambiguous manner.
- (c) On receipt of approval from Chief Electrical Engineer/Project/NER/LKO, Contractor shall enter into a formal agreement legally enforceable in Court of Law with subcontractor and submit a copy of the same to the Engineer.
- (d) The Contractor shall intimate to the Engineer not less than 7 days in advance, the intended date of commencement of subcontractor's work.
- (e) Once having entered into above arrangement, Contractor shall discontinue such arrangement, if he intends to do so at his own or on the instructions of Railway, with prior intimation to Chief Electrical Engineer/Project/NER/LKO.
- (f) The Contractor shall indemnify railway against any claim of subcontractor.
- (g) The Contractor shall release payment to the Sub-contractor(s) promptly and shall endeavour to resolve all matters and payments amicably and speedily with the subcontractor. so that the execution of work is not affected in any manner whatsoever
- (h) In addition to issuance of work experience certificate to Contractor, the Engineer, when, based on documents, is satisfied that subcontracted work has been carried out by subcontractor, shall issue work experience certificate to the sub contract orals of or the portion of work subcontracted and successfully completed by the sub-contractor.

Note: Work Experience Certificate to the subcontractor shall be issued only when the contractor's work is complete and contractor is entitled for the issuance of Work Experience Certificate. However, in the same contract, when the Chief Engineer, based on documents, is satisfied that the subcontractor has successfully carried out subletted work; without issuance of work experience certificate to subcontractor at this stage, the Chief Engineer can, only once, consider the successfully completed subletted work for the fulfilment of eligibility for further subletting of work to the subcontractor in the same contract. When the contractor's work is complete and contractor is entitled for the issuance of work experience certificate, the subcontractor shall be issued one Work Experience Certificate for the total scope of work executed by the subcontractor in the contract.

- (i) The responsibility of successful completion of work by subcontractor shall lie with Contractor. Subcontracting will in no way relieve the Contractor to execute the work as per terms of the Contract.
- (j) Further, in case Engineer is of the view that subcontractor's performance is not satisfactory, he may instruct the Contractor to remove the subcontractor from the work and Contractor has to comply with the above instructions with due promptness. Contractor shall intimate the actual date of discontinuation of subcontract to Engineer. No claim of Contractor whatsoever on this account shall be entertained by the Railway and this shall be deemed as 'excepted matter' (matter not arbitrable).
- (k) The permitted subcontracting of work by the Contractor shall not establish any contractual relationship between the sub-contractor and the Railway and shall not relieve the Contractor of any responsibility under the Contract.

QUALITY ASSURANCE MATERIALS: 1.2.25

- (a) All the equipments, materials, fittings and components will be subject to quality control program of the manufacturer, being part of the quality Assurance program of the Contractor. The materials may also be inspected by the Purchaser or his representative either at the manufacturer works or at the Contractor's depot. The Purchaser or his representative shall have the right to be present during all the stages of manufacture and shall be accorded free of charge all reasonable facilities for inspection and testing as well as to examine the stage inspection report of the manufacturer in addition to the quality audit which the Contractor may institute as a part of his program so as to satisfy himself that the materials are in accordance with specifications, approved drawings and designs and Purchaser's prescribed quality Assurance Standards.

(b) **ERECTION**

All erection work will also be subjected to the Quality Assurance Program including inspection by the Purchaser or his representative to ensure that the work is done in accordance with the specifications and approved drawings and designs and Purchaser's prescribed Quality Assurance Standards.

(c) **EXPENSES OF PURCHASER'S REPRESENTATIVE**

All the expenses of Purchaser's representative shall be borne by the Purchaser whether the inspected material is finally utilized in work or not.

- (d) The decision of the General Manager or his successor shall be final in respect of acceptability or otherwise of any material, fittings, components or equipments required for the work.

(e) **QUALITY ASSURANCE PROGRAMME**

For proper control of quality and to ensure that the materials, equipments and fittings are manufactured according to specification and the erection is according to approved instructions, drawings, specifications, the Contractor shall adopt a suitable quality assurance programme to ensure quality at all necessary points, whether at manufacturer's works, or in his depot or at work site as well as during erection. Such quality assurance programme shall also meet the requirement of the Purchaser's Prescribed Quality Assurance Standards. This programme of the Contractor shall generally cover the following:-

1. The Organisation to manage and implement the Quality Assurance programme.
2. The documentation control system:-
 - i) Basic control system.
 - ii) Adopted at manufacturer's works.
 - iii) Adopted at the Contractor's Depot and worksite.
3. Procedure adopted for:-
 - i) Source Inspection.
 - ii) Incoming raw material inspection.
 - iii) Verification of materials purchased.
 - iv) Fabrication controls.
 - v) Site erection controls.
4. Inspection and Test Procedure for:-
 - i) Manufacture and quality control procedure.
 - ii) Field activities.

5. System of handling and storage.
6. System of quality audit.
7. System of maintenance of records.
8. For the purpose of obtaining 'On Account Payment' (See para 1.3.9 of Part-I, Chapter- IIIA for FEEDER wire, Para 1.3.8 of Part-I, the Contractor shall submit along with the invoice, the documents indicated in the Prescribed Quality Assurance Standard which should inter-alia cover the following as may be applicable in each case.
 - i) Material test reports on raw materials used.
 - ii) Material type and routine test report on components specification.
 - iii) Inspection plan with reports of the Inspection plan checkpoints.
 - iv) Routine test report.
 - v) Factory test results as required under the specification.
 - vi) Quality audit report including test check report of Purchaser's representative if any.

CRANES: 1.2.26

(a) FOR OHE modification/FEEDER LINE WORKS

No Crane will be provided by the purchaser for use in a work-train for mast erection by the Contractor. Road crane for handling heavy materials at the contractor's depot will be arranged by the contractor who will also arrange his own crew for its operation and maintenance. All charges including pay and allowances of the crew and all running expenditure will be borne by the contractor. However, in exceptional cases where the Purchaser is satisfied that it is not feasible for the contractor to arrange a road crane himself, the same may be made available to the contractor on hire basis as per rate mentioned in special condition and depending on its availability with the Purchaser terms and conditions.

It may, however, be noted that if the road crane required by the contractor is not available with the Purchaser or if the purchaser decides not to supply the same be that for whatever reason, the purchaser shall not be bound to arrange for the supply of the road crane nor will this fact be accepted as an excuse for delay in execution of works.

(b) FOR TSS & SCADA WORKS: Deleted, Not Applicable.

The contractor can make his own arrangement for loading and unloading of all material at his depot or at work sites. The contractor may, however, obtain such facilities from the Railways as a normal user on payment of normal schedule charges.

WORK TRAINS: 1.2.27

(a) The Purchaser will not provide any work trains to the Contractor for erection of mast and portal structures and stringing of conductors only. For distribution of foundation materials en route, no work train will be provided and, therefore, the Contractor shall have to make his own arrangement for carrying such materials by road transport or any suitable means. However, in case of locations inaccessible by road, if work trains are required by the Contractor, the same will be made, if available, on payment basis as per rate mentioned in special condition per work train per day. The work train on chargeable basis can also be made available for erection of mast subject to availability on request of Contractor. This rate will be applicable as mentioned in the Tender document in Special condition of contracts for an effective traffic block period of one and a half hours or more on each day. The running time to and fro from the depot to the work site or time required for loading at the depot shall not be reckoned for the purpose of this charge. The minimum number of wagons to be provided for work train for distribution of foundation materials will be 8 wheelers except in unavoidable circumstances.

However, no reduction in charges will be allowed if the number of wagons falls below 8 in such cases. Work trains may be used for transport of materials other than foundation materials from the depot to another only to the extent necessary on chargeable basis. The work trains shall not be used for erection of small parts steel works, installation of droppers, adjustment of FEEDER or solely for transport of labour to the site of work (See para 1.2.10). The number of work trains will ordinarily be provided for the work as indicated in part -III.

(b) COMPOSITION OF WORK TRAINS AND EQUIPMENTS TO BE INSTALLED:

The work trains will not be provided by the purchaser. However, in emergent conditions, the work train will consist of wagon open or covered, wagon under frames, coaching stock withdrawn from service, brake van/s and locomotives. The section is wired with 25 kV OHE, no equipment and super structure will provide on work train he intends to provide on each work train he is planning to use. This equipment and super structure shall be supplied and erected by the Contractor at his own cost. The Contractor shall submit detailed drawings of the work trains within two months from the date of issue of the Letter of Acceptance of Tender to enable the Purchaser to obtain approval from the competent authorities for the use of such work train, if required. The Contractor may utilise his own super structure and other tools and equipment already used by him in the previous groups.

(c) CHARGES FOR THE WORK TRAINS

The work trains provided by the Purchaser shall be on chargeable basis of all operating costs/charges to the contractor inclusive of pay and allowances of loco and trains crew, running expenses for fuel, water, oil etc. and maintenance of loco and wagon under frames and running gear, upto the limit indicated in sub-para (d) below. The Purchaser will not entertain complaints regarding non-availability of work trains, but such non-availability will be reasonable ground for extension of time.

(d) EXTENT TO WHICH PERMITTED AND LIABILITY FOR EXTRA EQUIPEMENTS

Work trains will be made available to the Contractor on the basis of hiring, if possible, the block hours indicated in Part- III, (Para 3.18) per kilometer of track to be equipped in accordance with the final quantity of Item's of Schedule 1 to 8 for completing the work. The block hours for work trains shall be reckoned from the time the track is placed at the Contractor's disposal, at the site of work for use of the train, for any purpose permitted in sub-para (a) above, to the time it is cleared by the Contractor. The running time to and from the work spot would be excluded from such reckoning. Hiring charges per work train per day or part thereof shall be paid by the Contractor **(Hiring rates for work trains will be provided by the Purchaser)** to the Purchaser for any extra period for which work trains are requisitioned by him and provided by the Purchaser, over and above that required to complete works on the above basis, unless the Contractor proves to the satisfaction of the Purchaser that the additional work trains days required by him are not due to any fault or negligence on his part. The extra work train days for the purpose of this para shall be computed by dividing the overall block hours for work trains used by the Contractor in excess of what is permitted, by six ladder trolleys may be used simultaneously with work trains employed for stringing of overhead equipment or by themselves for dropper or adjustment of equipment. The use of these ladder trolleys shall not be taken into account for computation of overall block hours.

(e) INTENSIVE USE OF WORK TRAINS

The work trains provided by the Purchaser shall be intensively used if possible, shall not be misused, under loaded or run unnecessarily. The Contractor shall fully co-operate with the Purchaser to see that the volume of work done by the work trains is commensurate with the expenses incurred on the work trains. Work trains shall be used to progress

the work without gaps to the maximum extent possible. Work trains shall be moved out of block sections immediately after the materials to be distributed are unloaded or the work completed even though the block period granted for the purpose is not over. Violation of these principles will entail withdrawal of the facility of work trains and Contractor shall not be entitled to any claim on this account.

(f) **CONTINUOUS USE OF WORK TRAINS**

Work trains once supplied shall be used continuously. Whenever a work train is not required for a period of 3 days or more the Contractor shall be responsible to cancel the same by giving the Purchaser at least 3 days' notice in advance. If any train is subject to an idle period of a week at a time it is liable to be withdrawn. Trains or wagons if and when required for removal of spoil earth from the excavations in certain areas (specially stations) will be placed by the Purchaser free of charge, at the Contractor's disposal. Blocks granted for this purpose shall not be reckoned for the purpose of sub-para (d) above.

(g) **PROGRAMME OF THE WORK TRAINS:**

The Contractor shall submit a chart showing the tentative programme of work for the working of various work trains/Tower wagons in the section for entire work from the date of order to enable movement of diversion of traffic over the section to be planned well in advance.

- (h) The Contractor shall submit his requirement of various types of rolling stock at least 3 months in advance of the date from which the work trains would be required for his use.

(i) **DAILY/WEEKLY/MONTHLY PROGRAMME OF WORK**

- (ii) The Contractor shall also submit detailed daily/weekly/monthly programme of work indicating the different sections in which the work trains would be required to work at least 10 days in advance of the month for which the programme has been submitted. In order to avoid unnecessary blocking of tracks, the Contractor shall make out the monthly programme of work considering the actual work expected to be done and his block requirements on any particular day/s which may be less than the average foreseen in para 3.18(a).

(j) **LADDER TROLLEYS (Deleted)**

In addition to work trains/Tower wagon, the Contractor may use light ladder trolleys on tracks for carrying out various works, like adjustments of Traction Over Head Equipment dropper and other works. The ladder trolleys shall not weigh more than 200 kg. and should be capable of being removed from the track easily and quickly. The detailed drawings of these should be submitted within one month from the date of issue of Letter of Intent/Acceptance of Tender to enable the Purchaser to obtain approval from the competent authorities for the use of such trolleys on tracks, if required.

- (k) In order to minimise blocking the track for work material trains the Tenderer shall consider the working conditions on the sections and assess use of alternative methods of construction on a part or whole of the work. He should submit clear proposals along with financial implications if any to the Purchaser for such special methods of saving of blocks that could be obtained along with reduction /redundancy of the facilities being provided by the Railway in terms of Clauses 1.2.26, 1.2.27 and 1.2.28.

- (l) Deleted (Not applicable).

TRAFFIC BLOCKS/POWER BLOCKS: 1.2.28

- (a) The Purchaser will make arrangements to obtain Power/traffic blocks (hereinafter

referred to as blocks) necessary for the running and operation of work trains/Tower wagons and light ladder trolleys and track lorries for works to be carried out along or adjacent to the track (See 1.2.27 a). The Contractor shall, however, carry out maximum amount of work possible without block. Works such as grouting of traction masts, muffing, and erection of dwarf mast shall invariably be done without blocks. Installation of droppers and adjustment of traction over-head equipment will be permitted only with power block to be carried out with light ladder trolleys protected by banner flags in accordance with General and Subsidiary Rules of Indian Railway.

- (b) Blocks will normally be granted any time during day or night to suit convenience of traffic operations. The Contractor shall equip himself to carry out all construction during night block also efficiently by suitable lighting equipment. The blocks granted will ordinarily be on one track at a time over a distance covered by one or two consecutive block sections. In case of blocks to be granted after sunset, the Contractor will be informed at least 24 hours in advance. The duration of blocks, normal and maximum, which would ordinarily be granted on different tracks and in different sections, during day and/or night time, is indicated in Part - III. Blocks shall not be availed of by the Contractor when it is not possible for him to complete the specific field work within the block period granted by the Purchaser.
- (c) Block periods shall be counted from the time the track is placed at the Contractor's disposal at the work spot till it is cleared by the Contractor. All blocks asked for and granted shall be reckoned in accordance with Part 1.2.27. If by the contract completion date the total reckoned period of block works out to less than the specified number of block hours per kilometer of single track to be equipped as indicated in Part-III, the Contractor shall be eligible for corresponding extension of time for completion of the work.
- (d) Blocks will normally be granted for work trains or for carrying out other work in one block section except, when the work overlaps two adjacent block sections, when blocks will be granted over both the blocks sections. The contractor shall Organise the various works so as to use fully the blocks granted to him. He shall ensure that none of the equipment obstructs at any time at any track for which he has not been granted a block.
- (e) The contractor shall in consultation with the Purchaser submit a weekly block programme for works or for work trains 7 days in advance of the week for which the programme has been submitted. At the end of each week a comparison shall be made between the block periods asked for by the Contractor and that availed of by the Contractor, fractions of an hour in the total being ignored.
- (f) Blocks will be subject to normal operating conditions and rules of the Railway. All formalities of exchanging private numbers etc. with the traffic control will be carried out by the Purchaser's staff and for this purpose the Purchaser will depute a representative for each erection gang, who will be responsible for imposing traffic blocks and also removing the same after men, material and equipment have been cleared by the Contractor from running tracks and the same declared safe for traffic by the Purchaser's representative in case of works involving safety of running tracks.

The protection required for block working i.e. flagmen, flags etc. shall be provided by the contractor. Competency for the above shall, however, be given by the Railway authority. Protection of track by banner flags shall be done in accordance with General Rules of Indian Railways and Subsidiary Rules of the concerned zonal Railway where work is being carried out. Flagmen so deployed by the contractor shall be medically fit for A/3 category (as per Indian Rly Medical Manual); examination and certification of which shall be given by Railway Doctor. Such medical examination from Rly Doctors shall be arranged by Rly authority; prescribed fee for which shall be borne by the contractor.

- (g) Blocks required for carrying out works necessitated by the thefts, pilferage, accidents or such other incidents, shall be granted by the Purchaser over and above the normal requirements of block and shall not be counted for the purpose of para 1.2.27 (d) or 1.2.28(c).
- (h) Traffic blocks given after energisation (see 1.2.46.1)(a) shall not be reckoned for the purposes of Para 1.2.27 (d) or 1.2.28(c).
- (i) Traffic Blocks not to be granted for Traction sub-station and SCADA works. (Deleted).
- (j) **Power block:** Where a section of line is blocked against movement of electric locomotive hauled vehicles or EMUs only i.e., a section where 25 kV electric supply to the OHE & FEEDER is switched off and the section made dead. Power block will be required whenever light repairs to or maintenance of the OHE & FEEDER has to be carried out and the nature of the work is such that traffic block is not necessary. Power blocks are granted by TPC in consultation with the Section Controller. Whenever a power block is granted by TPC, movement of vehicles hauled by other than electric power, i.e., steam or diesel may be permitted, provided a caution order is issued as per General and Subsidiary Rules drawing the attention of the Driver to the fact that the OHE & FEEDER staff are working at the kilometerage specified and he should exercise caution when passing over the section and obey signals displayed at the place of work. Power Block will be granted either for Sub-sector (between TSS-SP-SSP) or Elementary section as on availability.

The power blocks are arranged with the great difficulties by regulating of traffic. The block causes delays and detention / cancellation to the trains. It is therefore, most imperative that the power blocks sanctioned for the work are utilized most effectively by engaging maximum number of labours, arrangement of tools and plants so that work can be completed simultaneously at as many locations as possible. Normally, each block will be of maximum one hour to three hours duration. The purchaser will arrange to operate the power and traffic block as per the requirement of the contractor which will have to be submitted by him in writing, minimum seven days in advance. All possible efforts will however, be made to operate power and traffic blocks already arranged, and advised to the contractor. However, the purchaser reserves the right to cancel any power and traffic block at the last moment which was arranged and advise the contractor, in the interest of running of traffic. The contractor will not be entitled for any compensation towards wastage of labour or for any inconvenience caused or monetary loss sustained by the contractor because of non-operation of the power and traffic block earlier arranged and advised to the contractor. Contractor has to submit the Rolling Block programme for two weeks in advance.

(k) Traffic Block: Where a line is blocked against movement of vehicles whether steam, electric or diesel locomotive hauled. This will be required whenever heavy repair have to be carried out. A traffic block will be granted by the Section Controller in consultation with the TPC.

DEFAULT AND DELAY: 1.2.29

The contractor shall execute the work with due diligence and expedition keeping to the approved time schedule. Should he refuse or neglect to comply with any responsible orders given to him in writing by the Purchaser's Engineer in connection with the work or contravene the provision of the contract or the progress of works lags persistently behind the time schedule due to his neglect, the Purchaser shall be at liberty to give seven day's notice in writing to contractor requiring him to make good the neglect or contravention complained of and should the contractor fail to comply with the requisitions made in the notice within seven days from the receipt thereof, the purchaser shall be entitled after giving 48 hours notice in writing under the hand of the Contractor's Engineer (to rescind the contract as a whole or in part or parts as may be specified in such notice) and action would be taken

as per 1.2.14 of Tender document.

LOSS SUSTAINED DUE TO DEFAULT AND DELAY: 1.2.30

(a) In the event of any loss to the Purchaser on account of execution and/or completion of the work or any part thereof by agencies other than the contractor, in terms of para 1.2.29, the contractor shall be liable to reimburse the loss to the Purchaser without prejudice to the other rights and remedies of the Purchaser, and the reimbursement in full or in part as the case may be, shall be met, at the option of the Purchaser from out of all or any of the following sources, viz:

- (i) Any amount due and payable to the contractor by the Purchaser on any account whatsoever,
- (ii) The Contractor's Security Deposit in the hands of the Purchaser as far as available; and
- (iii) Any other assets whatsoever of the Contractor.

(b) (i) and/or (ii) above-mentioned the Purchaser shall have the right of appropriation suo-moto.

NOTE: The above para should be read in conjunction with para 1.2.42.

CORRECTNESS OF WORK AND MATERIALS: 1.2.31

- (a) The contractor shall be solely responsible for the correctness of the position, levels and dimensions of the works according to approved drawings, notwithstanding that he may have been assisted by the Purchaser or his men in setting out the same.
- (b) If any dimension figured upon a drawing differs from that obtained by scaling the drawing, the figured dimension should be normally taken as correct, unless it is prima facie mistake. But all such cases shall be brought to the notice of the Purchaser's Engineers and the discrepancy set right before execution.

CONTRACTOR'S RESPONSIBILITY FOR DISCREPANCY: 1.2.32

- (a) All designs and drawings submitted by the contractor shall be based on a thorough study and shall be such that the contractor is satisfied about their suitability. The Purchaser's approval will be based on these considerations, notwithstanding the approval communicated by the Purchaser, during the progress of the contract for designs and drawings, prototype samples of components, materials and equipment after inspection of materials, after erection and adjustments to installations, the ultimate responsibility for correct design and execution of work shall rest with the contractor unless the Purchaser insists on adoption of his own designs in spite of the contractor not being agreeable to it.
- (b) The contractor shall be responsible for and shall bear and pay the costs for any alteration of works arising from any discrepancies, errors or omissions in the designs and drawings supplied by him, whether such designs and drawings have been approved by the Purchaser or not.

ADDITIONS AND ALTERATIONS TO ERECTED EQUIPMENT: 1.2.33

The Purchaser may require additional installations or modifications or replacements as per new designs as evolved or decided during the currency of the contract to be carried out on the works he deems necessary, either during the execution or after a part or whole of the installations coming within the purview of the contract has been put into commercial service. Further it may be necessary and expedient to energise Over Head Equipment which has been completed and finally adjusted in portions in yards. This will necessitate erection of new equipment in the vicinity or joining energised equipment. In case the prices for such additional works or modifications or replacements are not covered by the

schedule of prices and are such that either party considers additional prices for such works justified, such additional works or modifications shall be carried out by the Contractor. Any additional prices for such work items would be mutually settled between the purchaser and the contractor, based on proper rate analysis and with reference to the current prevalent market rates or the rates available with the Railway Construction Administration in that or nearby area/s. In case additional installations or modifications or replacements are required to be carried out under this para, the Purchaser shall grant a reasonable extension of time, should it be necessary.

QUANTUM OF WORK AND MATERIALS: 1.2.34

The procedure detailed below shall be adopted for dealing with variations in quantities during execution of works contracts:

- (i) Unless otherwise specified in the special conditions of the contract, the accepted variation in quantity of each individual item of the contract would be upto 25% of the quantity originally contracted, except in case of foundation work (in which no variation limit shall apply). However, the rates for the increased quantities shall be as per sub- para (iii) below.
- (ii) The Contractor shall be bound to carry out the work at the agreed rates and shall not be entitled to any claim or any compensation whatsoever upto the limit of 25% variation in quantity of individual item of works.
- (iii) In case an increase in quantity of an individual item by more than 25% of the agreement quantity is considered unavoidable, then same shall be executed at following rates

- (a) Quantities operated in excess of 125% but upto 140% of the agreement quantity of the concerned item, shall be paid at 98% of the rate awarded for that item in that particular tender;

- (b) Quantities operated in excess of 140% but upto 150% of the agreement quantity of the concerned item shall be paid at 96% of the rate awarded for that item in that particular tender;

- (c) Variation in quantities of individual items beyond 150% will be avoided and would be permitted only in exceptional unavoidable circumstances and shall be paid at 96% of the rate awarded for that item in that particular tender.

- (d) Variation to quantities of Minor Value Item:

The limit for varying quantities for minor value items shall be 100% (as against 25% prescribed for other items). A minor value item for this purpose is defined as an item whose original agreement value is less than 1 % of the total original agreement value.

- d.(i) Quantities operated upto and including 100% of the agreement quantity of the concerned minor value item, shall be paid at the rate awarded for that item in that particular tender;

- d.(ii) Quantities operated in excess of 100% but upto 200% of the agreement quantity of the concerned minor value item, shall be paid at 98% of the rate awarded for that item in that particular tender;

- d.(iii) Variation in quantities of individual minor value item beyond 200% will be avoided and would be permitted only in exceptional unavoidable circumstances and shall be paid at 96% of the rate awarded for that item in that particular tender.

- (iv) In case of earthwork items, the variation limit of 25% shall apply to the gross quantity of earthwork items and variation in the quantities of individual classifications of soil shall not be subject to this limit.
- (v) In case of foundation work, no variation limit shall apply and the work shall be carried out by the Contractor on agreed rates irrespective of any variation.
- (vi) As far as SOR items are concerned, the variation limit of 25% would apply to the value of SOR schedule as a whole and not on individual SOR items. However, in case of NS items, the limit of 25% would apply on the individual items irrespective of the manner

of quoting the rate (single percentage rate or individual item rate).

NOTE-

- (a) It is also pointed out that the above provisions for variation in quantities (para 1.2.34) would apply not only to works items of contracted section but also to its extensions in any direction as well as existing sidings and sidings/yard modifications etc coming up in the section during the execution of the contract.
- (b) The Contractor shall, if called upon by the Purchaser, supply equipment, components, fittings and materials listed in Schedule-3, Part-V, Form-7 (Sheet -1 to 26) for OHE & FEEDER portion and material's column as listed in schedule-1, Section-8 to 12 for TSS and SCADA works for other requirements upto a maximum of 5% of the total value of supplies of the contract at prices included in Schedule-3 during the currency of the contract. Bulk requirements of the Purchaser under this sub-para would be intimated within 6 months from the date of issue of Letter of Acceptance of the Tender. Delivery of such materials shall be effected by the Contractor from ready stock, if available, or otherwise after procurement from the manufacturers.

(i) FOR TSS WORKS: Deleted. Not Applicable.

(ii) FOR SCADA WORKS: Deleted. Not applicable.

COMPETENT SUPERVISORS: 1.2.35 (Clause 26 to GCC)

Provision of Efficient and Competent Staff/ Supervisors at Work Sites by the Contractor:

- (i) The contractor shall place and keep on the works at all times efficient and competent staff to give the necessary directions to his workmen and to see that they execute their work in sound & proper manner and shall employ only such supervisors, workmen & labors in or about the execution of any of these works as are as careful and skilled in the various trades.
- (ii) The contractor shall at once remove from the works any agents, permitted sub-contractor, supervisor, workman or labourer who shall be objected to by the Engineer and if and whenever required by the Engineer, he shall submit a correct return showing the names of all staff and workmen employed by him.
- (iii) In the event of the Engineer being of the opinion that the contractor is not employing on the works a sufficient number of staff and work men as is necessary for proper completion of the works within the time prescribed, the contractor shall forthwith on receiving intimation to this effect deploy the additional number of staff and labour as specified by the Engineer within seven days of being so required and failure on the part of the contractor to comply with such instructions will entitle the Railway to rescind the contract under Para-1.2.14 of these conditions.

1.2.35A (Clause 26A to GCC):

Deployment of Qualified Engineers at work sites by the contractor:

- (i) The Contractor shall also employ qualified Graduate Engineer(s) or equivalent, or qualified Diploma Engineer(s), as prescribed in the Tender document.
- (ii) In case the Contractor fails to employ the Engineer, as aforesaid in Para 1.2.35 A(i), he shall be liable to pay liquidated damages at the rates, as prescribed in the Tender documents.
- (iii) No. of qualified engineers required to be deployed by the contractor for various activities contained in the works contract shall be specified in the Tender documents as 'special condition of contract' by the Tender inviting authority.'

- (iv) 2 nos. Safety Officers qualified in any discipline having at least 5 years experience in Industrial safety for monitoring the safety of personal & assets during the execution of FEEDER work.

Note:

- (i) In terms of provisions of new clause 26A.1 to the General Conditions of Contract (GCC), Contractor shall also employ following qualified Engineers during execution of the allotted work:
- (a) One qualified Graduate Engineer when cost of work to be executed is Rs. 200 lakh and above, and
- (b) One qualified Diploma Holder Engineer when cost of work to be executed is more than Rs. 25 lakh, but less than Rs. 200 lakh.
- (ii) Further, in case the contractor fails to employ the qualified engineer, as aforesaid in para (i) above, he, in terms of provisions of Clause 26A.2 to the General Conditions of contract, shall be liable to pay an amount of Rs.40,000/- and Rs.25,000/-for each month or part there off or the default period for the provisions, as contained in Para (i)(a) and (i)(b) above respectively.
- (iii) Provision for deployment of Qualified Engineers (Graduate Engineer or Diploma Holder Engineer) shall be for the values as prescribed above. However, for the works contract Tenders, if it is considered appropriate by the Tender inviting authority, not to have the services of qualified engineer, the same shall be so mentioned in the Tender documents by the concerned Executive with the approval of Officer not below the level of SAG Officer, for reasons to be recorded in writing.

1.2.35 B (Clause 27.(2) of the GCC) Removal of Improper Work and Materials:

The Engineer or the Engineer's Representative shall be entitled to order from time to time:

- (a) The removal from the site, within the time specified in the order, of any materials which in his opinion are not in accordance with the specifications or drawings.
- (b) The substitution of proper and suitable materials, and
- (c) The removal and proper re-execution, notwithstanding any previous tests thereof or on account payments there for, of any work which in respect of materials or workmanship is not in his opinion in accordance with the specifications and in case of default on the part of the Contractor in carrying out such order, the Railway shall be entitled to rescind the contract under Clause 62 of these conditions.
- (d) The provision of Construction and Demolition Waste Management Rule 2016 issued by Ministry of Environment Forest and Climate Change dated 29.03.2016 and published in the Gazette of India, Part – II, Section -3, Sub-section (ii) are binding upon the Contractor. Contractor shall implement these provisions at worksites, for which no extra payment will be payable.

TRAINING OF PURCHASER'S STAFF: 1.2.36

The Contractor shall train, free of charge, in a manner mutually agreed between the Purchaser and Contractor, such staff of the Purchaser as may be deputed by him and the wages and allowances and all other associated expenses of such staff shall be paid by the Purchaser.

WORK BY OTHER AGENCIES: 1.2.37

- (a) Any other works undertaken at the same time by the Purchaser or the Railway direct or through some other agencies at the same time or section where the Contractor is carrying out his work will not entitle the Contractor to prefer any claim regarding any delays or hindrances he may have to face on this account but the Purchaser shall grant a reasonable extension of time to the Contractor. The Contractor shall comply with any instruction which may be given to him by the Purchaser in order to

permit simultaneous execution of his own works and those undertaken by other Contractors or the Railway without being entitled on this account to any extra charge.

- (b) The Contractor shall not be entitled to any extra payment due to hindrance resulting from normal Railway operations, such as delay on account of adequate number of and duration of blocks not being granted, operational delay in movement of work trains etc. but the Purchaser shall grant a reasonable extension of time to the Contractor.
- (c) The Contractor shall take note that owing to works being carried out by the Purchaser and others, there may be breaks in the Continuity of the locations for work owing to works such as track remodeling being undertaken. But the Contractor shall not be entitled to claim any extra payment on account of such breaks. However, such breaks in the continuity of work would be reasonable ground for extension of completion date/s for the work.
- (d) If the Purchaser is unable to supply materials to the Contractor as specified in the contract, in time, the Contractor shall not be entitled to any extra payment on account of such delay in supply. However, such delays in supply will be reasonable ground for extension of completion date/s for the work.
- (e) In cases where the lines to be electrified are not in their final position, the Purchaser will furnish the remodeling plans for such lines to the Contractor and/or peg out the altered or remodeled position of the tracks to be electrified to enable preparation of designs and assessment of quantities of components required for the work. However, the Contractor may not undertake field work on such track till they are in final position. The Contractor shall not be entitled to any compensation in case of delay in such remodeling work, but the Purchaser will grant a reasonable extension of the time for completion.
- (f) In course of checking the overhead equipment layout plans, the Contractor shall prepare a list of infringements, if any exist, and advise the Purchaser in time. The Purchaser will arrange for removal of these infringements. The works which will be carried out by the Purchaser are detailed below.
 - i) Alterations of slewing of tracks to accommodate traction structures of overhead equipment or to suit the Railways requirement.
 - ii) Alterations to over-bridge, tunnels, foot-over bridges and irrigation troughs, raising of bridges or troughs, or lowering of track to give sufficient clearance for overhead equipment.
 - iii) Protection at over bridges to prevent accidental or malicious interference with overhead equipment.
 - iv) In cuttings, any work necessary to provide clearance for traction structures.
 - v) At viaducts and bridges, any alterations required to enable traction structure to be accommodated.
 - vi) Alterations to station buildings, signal gantries, signal cabins and other similar constructions, which may be required for erection of overhead equipment, with requisite electrical clearances.
 - vii) **Deleted.**
 - viii) Removal of signal, telegraph, power lines and guys to enable overhead equipment to be erected, with requisite electrical clearances.
 - ix) Any blasting work required for excavation in rock other than for foundations.
 - x) Any rail strapping or other similar work/s necessary for the installation of track

structures and overhead equipment on bridges and over-bridges.

- xii) Any special steel work and fittings for attachment for masts/portals on steel girder or other bridges, or for attachment to other non-traction structures of the Railway for carrying or anchoring overhead equipment conductors.
 - xiii) Dismantling and drilling of piers of bridges and walls, supply and grouting of dowel pins or holding down bolts, in the piers of bridges or walls.
 - xiv) Clearing the way and removing all infringements for erection of 25kV feeder lines from grid sub-stations.
 - xv) Chopping/trimming of tree branches required for erection of Overhead equipment shall be done by the contractor. At least four metres clearance shall be made available before 25kV charging between the nearest OHE & FEEDER Structures and the tree branches. Also to ensure that there are no loose tree branches nearby or overhead which are likely to fall on the live OHE & FEEDER. However cutting of the trees is NOT covered under this sub clause.
- (g) In the course of checking layout plans and general arrangement drawings for switching and/or booster stations, the Contractor shall prepare a list of infringements, if any exist, and advise the Purchaser in time. The Purchaser will arrange for removal of these infringements at his own cost.

ACCESS TO WORK SITE: 1.2.38

- (a) Access to the site for the purpose of this contract shall be accorded to the Contractor by the Purchaser at all times. In the execution of the work no person other than the Contractor or his duly appointed representative or approved sub-contractor and bonafide workmen shall have access to the site. Access to the site of work at all times shall be allowed by the Contractor to officials or approved representatives of the Purchaser or to Railway staff for purpose of maintenance.
- (b) The Purchaser or his Authorised representative shall have the right to refuse admission to the work site of any person employed by the Contractor whom the Purchaser or his Engineer may consider undesirable.
- (c) The Purchaser or his Engineer shall be at liberty to object to the employment of any person as Contractor's Agent/ Representative, approved Sub-contractor's supervisors, workmen or labourer for execution of this contract on the ground of misconduct, incompetence or negligence. The Contractor on receipt of notice of such objection in writing from the Purchaser or his Engineer shall forthwith remove the person so objected to and provide in his place any other competent person and shall not allow the persons so objected to, to enter the site of work subsequently or remain in the execution of the contract. The Purchaser will not be liable to pay any cost or damage on this account.
- (d) While finalizing the general arrangement and layout of subsections, the Contractor shall prepare a list of infringements, if any, which have to be removed, and incorporate the list in the said drawings. The Contractor will arrange for the removal of such infringements at his own cost.

INFRINGEMENT OF PATENTS: 1.2.39

- (a) The Contractor is forbidden to use any patents or registered drawings, processes or patterns in fulfilling his contract without the previous consent in writing of the owner of such patents, drawings, patterns or trade mark, except where these are specified by the

Purchaser himself. Royalties where payable for the use of such patented processes, registered drawings or patterns shall be borne exclusively by the Contractor. The Contractor shall advise the Purchaser of any proprietary rights that may exist on such processes, drawings or patterns which he may use of his own accord.

- (b) In the case of patents taken out by the Contractor of the drawings or patterns registered by him, or of those patents, drawings or patterns for which he holds a licence, the signing of the contract automatically gives the Purchaser the right to repair by himself the purchased articles covered by the patent or by any person or body chosen by him and to obtain from any sources he desires the component parts required by him in carrying out the repair work. In the event of infringement of any patent rights due to above action of the Purchaser, he shall be entitled to claim damages from the Contractor on the grounds of any loss of any nature which he may suffer e.g., in the case of attachment because of counterfeiting.

(c) INDEMNIFICATION BY CONTRACTOR

In the event of any claim or demand being made or action being brought against the Purchaser for infringement of letters patent in respect of any equipment, machine, plant, work or thing used or supplied by the Contractor under this contract or in respect of any method of using or working by the Purchaser of such equipment, machine, plant, work or thing, the Contractor shall indemnify the Purchaser and keep him indemnified and harmless against all claims, costs, charges and expenses arising from or incurred by reason of such claim provided that the Purchaser shall notify the Contractor immediately after any claim is made and that the Contractor shall be at liberty, if he so desires with the assistance of the Purchaser if required but at the Contractor's expense, to conduct all negotiations for the settlement of the same or any litigations that may arise there from and PROVIDED THAT no such equipment, machine, plant, work or thing, shall be used by the Purchaser for any purpose or in any manner other than that for which they have been supplied by the Contractor and specified under this contract.

INSURANCE: 1.2.40

- (a) The Contractor shall take out and keep in force a policy or policies of insurance against all liabilities of the Contractor or the Purchaser at common law or under any statute in respect of accidents to persons who shall be employed by the Contractor in or about the site of the Contractor's Offices for the purpose of carrying out the works on the site. The Contractor shall also take out and keep in force a policy or policies of Insurance against all recognized risks to their offices and depots. Such insurance shall in all respects be to the approval of the Purchaser and if he so requires in his name.

(b) INSURANCE OF MATERIALS AND INSTALLATIONS:

The Contractor shall take out and keep in force a policy or policies of insurance for all materials in storage and traction installations excluding foundations under erection and/or erected until such materials and installations are provisionally handed over to the Purchaser. For this purpose, the traction installations in a section (See para 1.2.46) shall be deemed to have been provisionally handed over, when a Provisional Acceptance Certificate is issued for the section or the traction installations in the section are commissioned or on the expiry of three months after installations are given ready in all respect for handing over as per Para 1.2.46.1(a) & 1.2.46.2(a), whichever is earlier, for commercial use. The Contractor shall not be liable for losses, damages to equipments erected in the course of erection or in store at the Contractor's depot, in consequence of mutiny or other similar cause over which the Contractor has no control and which cannot be insured. Such losses or damages shall be the liability of the Purchaser and if required by the Purchaser, be made good by the Contractor, at the cost of Purchaser.

Note: *It may be noted that the beneficiary of the insurance policy should be Rlys or the policies should be pledged in favour of Railways. The contractor shall keep the policy/policies current till the installations are provisionally handed over to the purchaser. It may also be noted that in the event of contractor's failure to keep the policy current and alive, renewal of the policy will be done by the purchaser, for which the cost of the premium will be recovered from the contractor as per the procedure laid down in clause 1.3.10 Pt. I Chapter-III A for OHE & FEEDER,*

- (c) The Contractor should, however, insure the stores brought to site, against risks in consequence of war and invasion, as required under the Emergency Risk (goods) Insurance Act in force from time to time.
- (d) The Contractor shall take out all insurance covers in connection with this contract with Government recognized Insurance Companies.
- (e) For purpose of enabling the Contractor to take the insurance cover in connection with this contract, the Purchaser will advise the approximate price of all the Railway supply materials two months before the same are handed over to the Contractor at his depot. However, the recovery in case of shortages of such materials will be made in accordance with provisions specified in Note at the end of Para 1.4.6.(f), Pt. I, Chapter IVA, 1.4.5.(c), Pt. I, Chapter IVB & 1.4.5.(a), Pt. I, Chapter IVC.

ACCIDENTS: 1.2.41

- (a) The Contractor shall, in respect of all staff engaged by him or by his sub-contractor, indemnify and keep the Purchaser at all times indemnified and protected against all claims made and liabilities incurred under Workmen's Compensations Act, the Factories Act and the Payment of Wages Act and rules made there under from time to time or under any other labour and Industrial legislation made from time to time.
- (b) The Contractor shall indemnify and keep the Purchaser indemnified and harmless against all actions, suits, claims demands, costs, charges or expenses arising in connection with any death or injury sustained by any person or persons within the Railway premises and any loss or damage to Railway property sustained due to the acts or omission of the Contractor, his Sub- contractors, his agents or his staff during the execution of this contract irrespective of whether such liability arises under the Workmen's Compensation Act, or Fatal Accident Act or any other statute in force for the time being.
- (c) The Contractor's liability to meet third party claims of the type outlined above will be applicable only in cases where accidents have been caused by bad design, workmanship, material or negligence on the part of the Contractor and further the liability of the Contractor will be limited to Rs. 25 lacks for any one accident.
- (d) The Contractor shall be responsible for all repairs and rectification of damages to traction installations erected or under erection due to railway accidents, thefts, pilferage or any other cause, without delay to minimize or to avoid traffic detentions, in a section until the installations are provisionally handed over to the Purchaser (See para 1.2.46).

(e) CLEARING DAMAGED INSTALLATIONS:

The Contractor shall at his cost arrange for expeditious clearing of the Railway track/s of traction installations obstructing or fouling the track/s when they are damaged as a result of Railway accident or any other cause, upon the oral/telephonic/written instructions from the Purchaser's representative, until installations are provisionally

handed over to the Purchaser. If the Contractor fails to clear the tracks expeditiously and within reasonable time, the Purchaser will arrange to clear the track/s or the damaged installations and recover the expenses incurred from the Contractor, If during such clearance operations further damage is caused to the installations, the Purchaser is not liable to reimburse the Contractor the cost of such further damage in the installations.

- (f) The Contractor shall arrange for temporary slewing of overhead equipment for crane operation for derailment of rolling stock due to accidents for which the Contractor is not responsible, if required by the Railway or the Purchaser, at the cost of the Purchaser (Item 31 of Schedule 1) until the installations are provisionally handed over to the Purchaser. If the Contractor fails to slew the overhead equipment within reasonable time the Purchaser will arrange to slew the equipment and recover the extra expenses, if any incurred from the Contractor. After the crane operations are completed, the Contractor shall restore the overhead equipment to its normal positions.

NOTE for sub-para (d) & (e):

For the works mentioned in (d) and (e) above the Contractor will be granted blocks and work train/s will be made available to him over and above the normal requirements of block and work train(s) which shall not be counted for the purpose of Para 1.2.27(d) or 1.2.28(c) [See para 1.2.28 (g)].

CONTRACTOR'S LIABILITY FOR COSTS AND DAMAGES: 1.2.42

(a) WITHHOLDING AND LIEN IN RESPECT OF SUMS CLAIMED.

Whenever any claim or claims for payment of a sum of money arises out of or under the Contract against the Contractor, the Purchaser shall be entitled to with hold and also have lien to retain such sum or sums in whole or in part from the Security, if any, deposited by the Contractor and for the purpose aforesaid, the Purchaser shall be entitled to withhold the said cash security deposit or the security if any, furnished as the case may be and also have lien over the same pending finalisation or adjudication of any such claim. In the event of the Security being insufficient to cover the claimed amount or amounts or if no security has been taken from the Contractor, the Purchaser shall be entitled to withhold and have lien to retain to the extent of such claim amount or amounts referred to supra, from any sum or sums found payable or which at any time thereafter may become payable to the Contractor under the same contract or any other Department of the Central Government pending finalisation or adjudication of any such claim. It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to by the Purchaser till the claim arising out of or under the contract is determined by the Arbitrator (if the contract is governed by the Arbitration clause) or by the competent court as the case may be and that the Contractor will have no claim for interest or damages whatsoever or any account in respect of such withholding or retention under the lien referred to supra and duly notified as such to the Contractor. If the Contractor is a partnership firm or a limited company, the Purchaser shall be entitled to withhold and also have lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company, as the case may be, whether in his individual capacity or otherwise.

(b) LIEN IN RESPECT OF OTHER CONTRACTS:

Any sum or sums of money due and payable to the Contractor (including the security deposit returnable to him) under the Contract may be withheld or retained by way of lien by the Purchaser against any claim of this or any other Railway or any other Department of the Central Government in respect of payment of a sum of money arising out of or under any other contract made by the contractor with this or any other Railway or any other department of the Central Government.

(c) It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Purchaser will be kept withheld or retained as such by the Purchaser till the claim arising out of or under any other contract is either mutually settled or determined by the Arbitrator, if the other contract is governed by the Arbitration clause or by the competent court as the case may be, and that the Contractor shall have no claim for interest or damages whatsoever on this account or any other grounds in respect of any sum of money withheld or retained under this clause and duly notified to the Contractor.

SAFETY MEASURES: 1.2.43

- (a) The Contractor shall take all precautionary measures in order to ensure the protection of his own personnel moving or working on the Railway premises and under power block, but shall then conform to the rules and regulations of the Railway. If and when, in the course of the work there is likely to be any danger to persons in the employment of the Contractor due to running traffic while working in the Railway siding and premises, the Contractor shall provide necessary protection i.e. Flagmen, Flag, Safety Jacket (Luminous), Safety Helmet, Safety Belt, Dress Code (as decided by Railway) etc. required in block working. Competency for the above shall, however, be given by the Railway authorities. The Purchaser shall remain indemnified by the Contractor in the event of any accident occurring in the normal course of work, arising out of the failure of Contractor or his men to exercise reasonable precaution at all places of work. The Contractor shall be responsible to take all precautions to ensure the safety of the public whether on public or railway property and shall post such look out men as may, in the opinion of the Engineer, be required to comply with regulations appertaining to the work. Contractor shall ensure placement of barricading / partitions at the place of work to ensure safety of habitants of adjacent area, failing which Engineer may advise stoppage of work as per his discretion.
- (b) (i) Blasting of rock for foundation work shall be done only after due notice is given to the Purchaser and time/s and date/s for blasting operations agreed to by the Purchaser. Blasting, if required to be done in the vicinity of the track, shall not be undertaken until the Purchaser's flagmen on duty take necessary steps to protect trains and the track is adequately protected by the Contractor against damage by blasted rock. The Contractor shall follow detailed instructions which will be issued to him regarding blasting operations in the vicinity of tracks. He flagmen for protection of trains and the Track in such cases will be appointed by the purchaser and no expenses on this account will be charged from the contractor.
- (ii) Explosives shall not be used on the works or on the site by the Contractor without the permission of the Engineer and then also only in the manner and to the extent to which such permission is given. Where explosives are required for the works, they shall be stored in a special magazine to be provided by and at the cost of the Contractor in accordance with the Explosive Rules. The Contractor shall obtain the necessary license for the storage and the use of explosives. All operations in which or for which explosives are employed shall be at the sole risk and responsibility of the Contractor and the Contractor shall indemnify the Railway in respect thereof
- (c) During stringing operations every care shall be taken to prevent conductors hanging low over tracks on which traffic block has not been given. All conductors shall be pulled out before traffic block is cleared so that such conductors do not infringe with moving traffic.
- (d) **Ladder trolleys shall be used with caution.** They shall not be put on tracks until the flagmen are on duty to protect the trolleys and the Purchaser's representative authorises in writing for the trolleys to be put on the tracks. Ladder trolleys shall be promptly

removed on instructions from the Purchaser's representative and well in advance of trains. No claims shall rest on the Purchaser in the event of a ladder trolley being run over by train. The flagmen for the above job will be provided by the contractor.

Competency for the above shall, however, be given by the Railway authority. Protection of track by banner flags shall be done in accordance with General Rules of Indian Railways and Subsidiary Rules of the concerned zonal Railway where work is being carried out. Flagmen so deployed by the contractor shall be medically fit for A/3 category (as per Indian Rly. Medical Manual); examination and certification of which shall be given by Railway Doctor. Such medical examination from Rly Doctors shall be arranged by Rly authority; prescribed fee for which shall be borne by the contractor.

- (e) The Contractor shall abide by all Railway regulations in force for the time being and ensure that the same are followed by his representatives, Agents or Sub-contractors or workmen. He shall give due notice to his employees and workers about provision of the para.
- (f) While working within station limits, especially on passenger platforms, the Contractor shall ensure that at all times sufficient space is left for free movement of passenger traffic. He must cover and/or barricade the excavations carried out in such areas and continue to maintain these till the work is completed, with a view to avoid any accident to public or to Railway staff.
- (g) The works must be carried out most carefully without any infringement of the Indian Railway Act or the General and Subsidiary Rules in force on the Railway in such a way that they do not hinder Railway Operation or affect the proper functioning or damage any Railway equipment, structure or rolling stock except as agreed to by the Purchaser, provided that all damage and disfiguration caused by the Contractor to any Railway property must be made good by the Contractor or at his own cost failing which cost of such repairs shall be recovered from the Contractor.
- (h) If safety of track or track drainage etc. is affected as a consequence of works undertaken by the Contractor, the Contractor shall take immediate steps to restore normal conditions. In case of delay, the Purchaser shall, after giving due notice to the Contractor in writing, take necessary steps and recover the costs from the Contractor.
- (i) Moreover, if any time the works to be carried out directly concern the safety of trains, the Contractor's staff must comply fully with the Railway regulations given to him by the authorised Railway staff. The Contractor's employees and workers may for no reason operate an installation concerning train safety or train movement. They shall notify the authorised representative of the Purchaser who will take all necessary steps in this regard.
- (j) The Contractor shall be responsible for safe custody of all equipments till provisional acceptance.
- (k) The Contractor's liability to meet third party claims of the type outlined above will be applicable only in cases where accidents have been caused by bad design, workmanship, material or negligence on the part of the Contractor and further the liability of the Contractor will be limited to Rs. 25 lacks for any one accident.
- (l) The Contractor shall ensure that unauthorised, careless or inadvertent operation of switchgear, which may result in accident to staff and/or damage to equipment, does not occur.
- (m) The Contractor shall abide by all instructions issued by the Purchaser from time to time in connection with protection/safety of track/Railway installations/personnel as well as quality control. The Contractor should not leave the excavated pits unfilled overnight.

Due to any reason if it becomes necessary to leave the pit unfilled overnight, it should be filled back effectively with sand bags to the satisfaction of the Purchaser's representative.

- (n) The Contractor shall obtain a valid electrical contractor license for LT/HT/EHT of voltage equal to OR more than 110/132/200kV as applicable from the concerned statutory authority before taking up the physical execution of work and submit a copy of the same to concerned Rly. Electrification project in-charge.
- (o) In case of failure to adhere to above provisions or if unsafe practices/safety violation by contractor/his staff are noticed at the site of work, the contractor shall be levied with a penalty of Rs. 20,000/-for the 1st incident, Rs.50,000/-for the 2nd incident and Rs.1,00,000/- for subsequent such incident. Repeated safety violations shall become a valid ground for initiating the contract termination proceedings under clause – 62 of GCC-2022.
- (p) In the event of any unsafe condition arising at the site of work warranting speed restrictions to be imposed at the site, such work (including any disturbance caused to assets/works of other agencies by the Contractor/his staff executing the work) shall be attended by the Railway immediately, simultaneously giving due information to the contractor. A departmental inquiry will be held and in case it is found that contractor is not properly executing/completing the work or leaving it unsafe at the end of day's work, warranting speed restrictions to be imposed, the labour cost of the work so attended, shall be recovered from the contractor. The supervision charges @ 12.5% of the work and train detention charges @ Rs. 5000/- for every half hour of delay or part thereof, shall also be recovered.
- (q) Any incident involving (i) hitting of contractor's machinery/tools & plants/trolley/ motor vehicle or (ii) hitting of any part of work executed/structure erected arising out of defective/unsafe execution of work(s) with the Railway's rolling stock/departmental vehicle moving on the Railway track(s), shall be treated as violation of safety on the work site and a minimum penalty imposed for each of such incident shall be Rs. 1,00,000/- . The amount of penalty imposed in such cases, as decided by the purchaser, shall be final and binding on the contractor. However, the actual amount of the liability shall be governed by the provisions contained in para-1.2.41(Accidents) of Part-I, Chapter-II, and the imposition of the minimum penalty of Rs. 1,00,000/-, as mentioned above, shall be in addition to (over and above) the actual amount of liability in such cases, as governed by the provisions contained in para-1.2.41 (Accidents) of Part-I, Chapter-II.
- (r) In case of any damage to OFC/Cable occurred due to fault of the contractor, a flat penalty of Rs. 1,00,000/- will be imposed.

RECOVERY FOR DELAY IN COMPLETION: 1.2.44

Extension of Time for delay due to Contractor:

With liquidated Damage (LD): The time for the execution of the work or part of the works specified in the contract documents shall be deemed to be the essence of the contract and the works must be completed not later than the date(s) as specified in the contract. If the Contractor fails to complete the works within the time as specified in the contract for the reasons other than the reasons specified in Clause 17 and 17-A of GCC, the Railway may, if satisfied that the works can be completed by the Contractor within reasonable short time thereafter, allow the Contractor for further extension of time (Proforma at FORM-17) as the Engineer may decide. On such extension the Railway will be entitled without prejudice to any other right and remedy available on that behalf, to recover from the Contractor as agreed damages and not by way of penalty for each week or part of the week, a sum calculated at the rate of Liquidated Damages as decided by Engineers between 0.05% to 0.30% of the Contract Value of the works for each week or

part of the work.

For the purpose of this Clause, the contract value of the works shall be taken as value of work as per contract agreement including any supplementary work order/contract agreement issued. Provided also, that the total amount of liquidated damages under this condition shall not exceed 5% of the contract value or of the total value of the item or groups of items of work for which a separate distinct completion period is specified in the contract.

S.No.	Duration of extension of time under Clause 17-B of GCC	Rate of Penalty
(i)	Up to Twenty Five percent of original period of completion including period of extension of time granted under Section 17A(i) of GCC	As decided by Engineer, between 0.01% to 0.05% of contract value for each week or part of the week
(ii)	Above Twenty Five percent but upto Fifty percent of original period of completion including period of extension of time granted under Section 17A(i) of GCC	0.10 % of contract value for each week or part of the week
(iii)	Above Fifty percent of original period of completion including period of extension of time granted under Section 17A(i) of GCC	0.30 % of contract value for each week or part of the week

Provided further, that if the Railway is not satisfied that the works can be completed by the Contractor and in the event of failure on the part of the contractor to complete the work within further extension of time allowed as aforesaid, the Railway shall be entitled without prejudice to any other right or remedy available in that behalf, to appropriate the contractor's Security Deposit and rescind the contract under Clause 62 of these Conditions (GCC), whether or not actual damage is caused by such default.

NOTE:- In a contract, where extension(s) of time have been allowed once under clause 17B, further request(s) for extension of time under clause 17A can also be considered under exceptional circumstances. Such extension(s) of time under clause 17A shall be without any Liquidated damages, but the Liquidated damages already recovered during extension(s) of time granted previously under clause 17B shall not be waived. However, Price variation during such extension(s) shall be dealt as applicable for extension(s) of time under clause 17B of GCC.

EXTENSION OF TIME: 1.2.45

Subject to any requirement in the contract as to completion of any portion or portions of the works before completion of the whole, the Contractor shall fully and finally complete the whole of the works comprised in the contract (with such modifications as may be directed under conditions of this contract) by the date entered in the contract or extended date in terms of the following clauses:

- (i) **Extension due to Modification:** If any modifications have been ordered which in the opinion of the Engineer have materially increased the magnitude of the work, then such extension of the contracted date of completion may be granted as shall appear to the Engineer to be reasonable in the circumstances, provided moreover that the Contractor shall be responsible for requesting such extension of the date as may be considered necessary as soon as the cause thereof shall arise.
- (ii) **Extension for Delay not due to Railway or Contractor:** If in the opinion of the Engineer, the progress of work has any time been delayed by any act or neglect of Railway's employees or by other Contractor employed by the Railway under Sub- Clause (4) of Clause 20 of GCC or in executing the work not forming part of the contract but on which Contractor's performance necessarily depends or by reason of proceeding taken or threatened by or dispute with adjoining or to neighboring owners or public authority arising otherwise through the Contractor's own default etc. or by the delay authorized by the Engineer pending arbitration or in consequences of the Contractor not having received in due time necessary instructions from the Railway for which he shall have

specially applied in writing to the Engineer or his authorized representative then upon happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer within 15 days of such happening, but shall nevertheless make constantly his best endeavours to bring down or make good the delay and shall do all that may be reasonably required of him to the satisfaction of the Engineer to proceed with the works. The Contractor may also indicate the period for which the work is likely to be delayed and shall be bound to ask for necessary extension of time.

- (iii) **Extension for delay due to Railways:** In the event of any failure or delay by the Railway to hand over the Contractor possession of the lands necessary for the execution of the works or to give the necessary notice to commence the works or to provide the necessary drawings or instructions or any other delay caused by the Railway due to any other cause whatsoever, then such failure or delay shall in no way affect or vitiate the contract or alter the character thereof or entitle the Contractor to damages or compensation therefore, but in any such case, the Railway may grant such extension or extensions of the completion date as may be considered reasonable.

The Contractor shall indicate the period for which the work is likely to be delayed and shall seek extension of time as may be considered necessary under clause 17A(i) or/and 17A(ii) or/and 17A(iii) above, as soon as the cause thereof shall arise and, in any case, not less than 15 days before the expiry of the date fixed for completion of the works. The Engineer shall consider the same and shall grant and communicate such extension of time as in his opinion is reasonable having regard to the nature and period of delay and the type and quantum of work affected thereby. No other compensation shall be payable for works so carried forward to the extended period of time; the same rates, terms and conditions of contract being applicable, as if such extended period of time was originally provided in the original contract itself.

The non-submission of request for extension or submission of request within less than 15 days before the expiry of the date fixed for completion of the works, shall make him ineligible for extension under these sub clauses, subject to final decision of Engineer.

- (iv) **Bonus for early completion of work:** In open tenders having advertised value more than Rs 50 crore and original period of completion 12 months or more when there is no reduction in original scope of work by more than 10% and no extension granted on either railway or Contractor's account, Contractor shall be entitled for a bonus of 1% for each 30 days early completion of work. The period of less than 30 days shall be ignored while working out bonus. The maximum bonus shall be limited to 5% of original contract value. The completion date shall be reckoned as the date of issuance of completion certificate by engineer.

PROVISIONAL ACCEPTANCE: 1.2.46

For FEEDER: 1.2.46.1

- (a) Immediately after completion of works in a section of Over head/Feeder line equipment between two consecutive switching stations including the works of said stations hereinafter referred to as a sub-group, the Contractor shall certify and advise the Purchaser in writing that the section/stations are (i) Complete ready for satisfactory commercial service and (iii) ready to be handed over for operation. He will also place at the disposal of the Purchaser the required staff for checking it and putting it into operation.
- (b) The test or tests as stipulated in part - II, Chapter VII of the specification excluding power collection tests which would be carried out subsequently in connection with the taking over by the Purchaser of the equipment and installations shall be carried out jointly by the Purchaser and the Contractor within a month after the receipt of the

Contractor's notifications, as stated in sub-para above.

- (c) After inspection and satisfactory conclusion of tests and when the Purchaser is satisfied with the satisfactory working of the installations he will issue a 'Provisional Acceptance Certificate' which would be signed by both the parties. The Provisional Acceptance Certificate will not be withheld for any minor defects.
- (d) Should the result/s of inspection and the test/s be not satisfactory, an extension of one month will be granted to the Contractor to make good the defects and deficiencies pointed out by the Purchaser. Fresh inspection and tests will then be carried out after the Contractor has attended to the defects and deficiencies. If these tests are also not satisfactory, the Purchaser may proceed at the Contractor's expenses by all means deemed expedient, to have the installation made satisfactory until they comply with the specifications and approved drawings and designs.
- (e) In such a case, or in case of delay in completing the work under this Contract within the time limit, the Purchaser reserves the right if he deems it possible to use in a reasonable manner any section or any part of the section even if some installations of the sections are not completely erected. The Purchaser will give to the Contractor for this purpose seven days previous notice. The Contractor shall then take at his own expense all necessary steps to complete the works in accordance with the provisions of the contract. In case it becomes impossible to proceed with the above mentioned taking over tests, for reasons other than for which the Contractor is responsible, the "Provisional Acceptance Certificate" shall be issued at or within a mutually agreed reasonable period not exceeding three months after completion of the relevant sections as indicated in sub-para/s above.

NOTE 1): *Provisional Acceptance Certificate for each section/ Sub-group will be issued immediately after all tests (excluding power collection tests) are completed to the satisfaction of the Purchaser. Should the Purchaser be unable to complete the tests and energisation of the line within a reasonable time which shall not exceed one month from the date of Contractor's notification, the issue of Provisional Acceptance Certificate shall not be delayed and shall be issued within a maximum time of three months after notification under para 1.2.46.1(a) has been given. The power collection tests shall normally be carried out for the entire group/s within three months of the date of energisation of the last section in the group/s.*

- (2) *The issue of Provisional Acceptance Certificate shall not be withheld for rectification of minor defects which may reasonably be considered not essential for introduction of commercial service and operation of installation. In such cases, only the value of materials and cost of rectification of minor defects shall be withheld from the payments of Provisional Acceptance until rectification is completed.*
- (3) *Break down maintenance shall continue to be done by OHE & FEEDER contractor even after issue of PAC till Guarantee of work. Payments for materials (contractor supply) used during Break down maintenance done after issue of PAC shall be made at Sch-3, Form-7(Sh. 1 to 26) for OHE & FEEDER rates of the contract. Rly supply materials shall be given by Rly.*

For this purpose, payments shall continue to be made even after PAC payments. Damaged materials during break down shall be handed over by the contractor to Rly.

For SCADA works: 1.2.46.2 -DELETED- Not Applicable-.

DEFECTIVE EQUIPMENTS TO BE CHANGED: 1.2.47

- (a) Notwithstanding the issue of Provisional Acceptance Certificate and partial or full use of any equipment, if the completed equipment or any portion thereof before it is finally taken over at the end of the period be found to be or to have become defective in course of

usage by the Railway due to faulty material, design or workmanship, or otherwise fails to fulfill the requirement of the Contract and/or its purpose, the Purchaser shall normally give the Contractor prompt notice setting forth the particulars of each defects or failure and the Contractor shall forthwith make the defects good or modify or replace the equipment, as may be directed by the Purchaser's Engineer, at his own cost in all respects to make it comply satisfactorily with the said requirements. Should the Contractor fail to do within a reasonable time the service of the said notice upon him or should time not permit of service of such notice, the Purchaser may repair or reject and replace the whole or part of such defective equipment as the case may be, at the cost of the Contractor. The Contractor's full liability under this clause shall be satisfied by the payment to the Purchaser of the extra total cost, if any, of such replacement delivered and erected as provided for in the original Contract, such extra cost being the ascertained difference between the price paid by the Purchaser under the provisions above mentioned for such replacement and the Contractor's price for the plant so replaced, plus the sum, if any, paid by the Purchaser to the Contractor in respect of such defective equipment. Should the Purchaser not so replace the rejected equipment within a reasonable time, the Contractor's liability under this clause shall be satisfied by the repayment by the Contractor of all moneys paid by the Purchaser to him in respect of such rejected equipment. Rejected/defective materials shall be returned to the Contractor to the extent possible.

- (b) Provisions of this para will apply only in respect of the equipments and components supplied by the Contractor or his sub-Contractor.

USE OF REJECTED EQUIPMENT: 1.2.48

In the event of such rejection as aforesaid, the Purchaser shall, without prejudice to his other rights and remedies and, in particular, without prejudice to his rights under the clause just preceding, be entitled to the use of the rejected equipment for a time reasonably sufficient to enable him to obtain other replacement equipment. During such period, if the rejected equipment is used commercially, the Contractor shall not be entitled to the payment on energisation (1.2.14) until such rejected equipment is rectified and/or replaced, but the Purchaser shall not be entitled to claim any damages arising out of rejected equipment in respect of such period.

GUARANTEE: 1.2.49

- (a)(i) **FOR OHE modification/FEEDER Line Works:-** The Contractor shall guarantee satisfactory working of the installations erected by him for a period of **Twenty Four months** from the date of commercial operation or from the date of provisional Acceptance of each section (1.2.46.1) by the Purchaser whichever is **later**. The guarantee for spares should be coincident with the guarantee for erected equipment.
- (b) During the period of guarantee the Contractor shall keep available an experienced engineer and necessary equipment to attend to any defective installations resulting from defective erection and/or defects in the equipment supplied by the Contractor. This engineer shall not attend to rectification of defects which arise out of normal wear and tear and come within the purview of routine maintenance work. The Contractor shall bear the cost of modifications, additions or substitutions that may be considered necessary due to faulty materials, design or workmanship for the satisfactory working of the equipment. The final decision shall rest with the Chief Electrical Engineer/Project/NER/LJN (UP) or his successor(s)/Nominee.
- (c) During the period of Guarantee the Contractor shall be liable for the replacement at site of any parts which may be found defective in the equipment whether such equipment be of his own manufacture or those of his sub-contractor, whether arising from faulty design, materials, workmanship or negligence in any manner on the part of the Contractor provided always that such defective parts as are not

repairable at site are promptly returned to the Contractor if so required by him at his (Contractor's) own expenses. In case of type defects in Contractor's equipment and components detected during guarantee period, Contractor should replace all such items irrespective of the fact whether all such items have failed or not. The Contractor shall bear the cost of repairs carried out on his behalf by the Purchaser at site. In such a case, the Contractor shall be informed in advance of the works propose to be carried out by the Purchaser.

- (d) If it becomes necessary for the Contractor to replace or renew any defective portion of the equipment under the para aforesaid then the provisions of the said para shall also apply to the portions of the equipment so replaced or renewed until the expiration of six months from the date of such replacement or renewal or until the end of the above mentioned period (see sub-para 1.2.49(a)) whichever is later. Such extension shall not apply in case of defects of a minor nature, the decision of the General Manager/NER or his successor/nominee being final in the matter. If any defect be not remedied within a reasonable time during the aforesaid period the Purchaser may proceed to do work at the Contractor's risk and expense, but without prejudice to any other rights and remedies which the Purchaser may have against the Contractor in respect of such defects or faults.
- (e) The repaired or renewed parts shall be delivered and erected on site free of charge to the Purchaser.
- (f) Any materials, fittings, components or equipments supplied under 1.2.34 shall also be covered by the provisions of this paragraph. The liability of the Contractor under the guarantee will be limited to re-supply of equipments, components and fittings made under 1.2.34. Such re-supply shall be effected at the Contractor's depot or, in the event of closure of the depot, at the stores depot of the Engineer-in-charge of maintenance of overhead equipment of the section covered by the contract.
- (g) In the case of materials, components, fittings and equipments supplied by the Purchaser under 1.2.20.1 (b) for OHE & FEEDER, no liability will rest on the Contractor for failures on account of defective materials or workmanship and for any consequential damages. Such defective materials, if not yet erected on line, will be returned by the Contractor to the Purchaser and such quantities will be considered for the purpose of final reconciliation over and above allowance as per part-I, Chapter IV.

FINAL ACCEPTANCE: 1.2.50

- (a) The final acceptance of the entire equipment installed shall take effect from the date of expiry of the period of guarantee as defined in paragraph 1.2.49 of the expiry of the last of the respective periods of guarantee of various sections for which provisional Acceptance Certificates are issued or brought into commercial operation, provided in any case that the Contractor has complied fully with his obligations under clause 1.2.49 in respect of each section, provided also that the attention has been paid by way of maintenance by the Purchaser.
- (b) If on the other hand the contractor has not so complied with his obligation under para 1.2.49 in respect of any section, the Purchaser may either extend the period of guarantee in respect of that section until the necessary works are carried out by the Contractor or carry out those works or being them carried out suo-moto on behalf of the Contractor at the Contractor's expenses. After expiry of the period

of guarantee for each section, a certificate of final acceptance for the section shall be issued by the Purchaser and the last of such certificate will be called the last and final acceptance certificate. The contract shall not be considered as completed until the issue of final acceptance certificate by the Purchaser.

- (c) The Purchaser shall not be liable to the Contractor for any matter arising out of or in connection with the contract or execution of the work unless the Contractor shall have made a claim in writing in respect thereof before the issue of final acceptance certificate under this clause.
- (d) Notwithstanding the issue of final acceptance certificate, the Contractor and the Purchaser (subject to sub-clause as above) shall remain liable for fulfillment of any obligation incurred under the provision of the contract prior to the issue of final acceptance certificate which remains unperformed at the time such certificate is issued and for determining the nature and extent of such obligation the contract shall be deemed to remain in force between the parties hereto.

PAYMENT: 1.2.51

Payments will be governed by the terms specified in Part-I, Chapter IIIA for FEEDER/Feeder work, and in accordance with accepted Schedule of Prices, read with relevant paras of the other parts and Chapters of the Tender Papers. The Purchaser retains the right to withhold money due to the Contractor arising out of this contract for any default of the Contractor from other contracts which the Contractor may have with the Government of India.

- (i) The Contractor shall, whenever required, produce or cause to be produced for examination by the Purchaser any quotation/ invoice, cost of other account, book of account, voucher, receipt letter, memorandum paper or writing or any copy of or extract from any such document and also furnish information and returns verified in such manner as may be required in any-wise relating to the execution of this contract or relevant for verifying or ascertaining the cost of the execution of this Contract (the decision of the Purchaser on the question of relevancy of any documents, information or return being final and binding on the parties). The Contractor shall similarly produce vouchers etc., if required, to prove to the Purchaser, that materials supplied by him are in accordance with the specifications laid down in the contract.
- (ii) If any portion of the work be carried out by a sub-contractor or any subsidiary or allied firm or company the Purchaser shall have power to secure the books of such Sub-contractor or any subsidiary or allied firm or company, through the Contractor, and such books shall be open to his inspection. The Contractor should seek prior permission from the Purchaser for subletting whole and/or part of the work to any sub-contractor.
- (iii) The obligations imposed by sub-clauses (i) and (ii) above are without prejudice to the obligation of the Contractor under any statute, rules or order binding to the Contractor or other conditions of the Contract.
- (iv) It is an agreed term of the contract that the Purchaser reserves to itself the right to carry out post-payment Audit and/or technical examination of the works and the final bill, including all supporting vouchers, abstracts etc. and to make a claim on the Contractor for the refund of any excess amount paid to him if as a result of such examination any overpayment to him is discovered to have been made in

respect of any work done or alleged to have been done by him under the contract.

(v)(a) QUARTERLY STATEMENT OF CLAIMS

The Contractor shall prepare and furnish to the Engineer once in every quarter commencing from the month following the month of issue of Letter of Acceptance an account giving full and detailed particulars of all claims for any additional expense to which the Contractor may consider himself entitled and of all extra or additional works ordered by the Engineer which he has executed during the preceding quarter and no claim for payment for any such work will be considered which has not been included in such particulars.

(b) SIGNING OF NO CLAIM CERTIFICATE

The Contractor shall not be entitled to make any claim whatsoever against the Railway under or by virtue of arising out of this contract, nor shall the Railway entertain or consider any such claim, if made by the Contractor, after he shall have signed a **“No claim certificate”** in favour of the Railway in such forms as shall be required by the Railway, after the works are finally measured up. The Contractor shall be debarred from disputing the correctness of the items covered by the **“No claim certificate”** or demanding a reference to arbitration in respect thereof.

SITE CLEARANCE: 1.2.52

- (a) At the end of each spell or work and on completion of the work, the Contractor shall, as a part of his contractual obligation, leave the tracks, switching/ Booster station sites and their approaches, store yards etc. Cleared of rubbish and obstruction of all kinds according to the instructions of the Purchaser's Representatives. Besides, he shall take all necessary steps in the course of the execution of the works to avoid the presence of loose earth and ballast on platforms, in drainage on the track formation and pathways in the vicinity. If within a fortnight of completion of the particular item of site work the refuse is not cleared, the Purchaser will arrange to get them removed at the cost of the Contractor. However, before the Purchaser actually gets the site cleared he shall send intimation in writing to the Contractor expressing his intention.
- (b) The storage of equipment, tools and machinery used by the Contractor shall be done in an orderly manner and anything used by the Contractor for execution of the works shall in no way constitute a danger or hindrance to the working of the Railway or to the movement of its staff or passengers.

EQUIPMENTS, COMPONENTS AND MATERIALS RECEIVED FOR WORK: 1.2.53

The Contractor shall utilise all equipments, components or materials, procured specifically for the purpose of execution of the work, in the work or other requirements. Any surplus materials left over at the end of the work shall not be disposed off without prior approval of the Purchaser in writing. The Purchaser may within a period of six months from the date of provisional Acceptance of the last section, notify the Contractor of the Purchaser's interest in any or all of the surplus materials and shall have the right to take over the materials at Schedule's, Form-7 (Sh. 1 to 26) prices in case of OHE & FEEDER at prices indicated in Supply column of Schedule's. The materials so notified by the Purchaser shall be taken over by the Purchaser and paid for in full. The Contractor may use in any manner deemed fit, only such surplus materials which are not covered by the Purchaser's notification after getting the approval of the Purchaser in writing.

ARBITRATION AND CONCILIATION: 1.2.54 (As per clause 63 of GCC)

Reconciliation of disputes: This clause is applicable in the tender having advertised value less than or equal to 50 crore.

All disputes and differences of any kind whatsoever arising out of or in connection with the contract, whether during the progress of the work or after its completion and whether before or after the determination of the contract, shall be referred by the Contractor to the "Principal Chief Electrical Engineer" or "Divisional Railway Manager" through "Notice of Dispute" provided that no such notice shall be served later than 30 days after the date of issue of Completion Certificate by the Engineer. Principal Chief Electrical Engineer or Divisional Railway Manager shall, within 30 days after receipt of the Contractor's "Notice of Dispute", notify the name of conciliator(s) to the Contractor.

The Conciliator(s) shall assist the parties to reach an amicable settlement in an independent and impartial manner within the terms of contract.

If the parties reach agreement on a settlement of the dispute, they shall draw up and sign a written settlement agreement duly signed by Engineer In-charge, Contractor and conciliator(s). When the parties sign the settlement agreement, it shall be final and binding on the parties.

The parties shall not initiate, during the conciliation proceedings, any arbitral or judicial proceedings in respect of a dispute that is the subject matter of the conciliation proceedings.

The conciliation proceedings shall be terminated: (per Section 76 of 'The Arbitration and Conciliation Act, 1996.

(a) MATTERS FINALLY DETERMINED BY THE RAILWAY:

All disputes and differences of any kind whatsoever arising out of or in connection with the contract, whether during the progress of the work or after its completion and whether before or after the determination of the contract, shall be referred by the Contractor to the GM and the GM shall, within 120 days after receipt of the Contractor's representation, make and notify decisions on all matters referred to by the Contractor in writing provided that matters for which provision has been made in Clauses 7(j), 8, 18, 22(5), 39, 43(2), 45(i)(a), 55, 55-A(5), 57, 57A, 61(1), 61(2) and 62(1) 63(iv) and 63.2.11 of Standard General Conditions of Contract or in any Clause of the Special Conditions of the Contract shall be deemed as 'excepted matters' (matters not arbitrable) and decisions of the Railway authority, thereon shall be final and binding on the Contractor; provided further that 'excepted matters' shall stand specifically excluded from the purview of Dispute Adjudication Board (DAB) and Arbitration.

(b) Dispute Adjudication Board (DAB): This clause is applicable in the tender having advertised value more than Rs 50 Crore.

1. Any dispute/s if not settled with the Engineer, shall be referred to DAB. The DAB shall consist of a panel of three Retired Railway Officers, retired not below senior administrative grade (SAG). The DAB shall be formed within 90 days of signing of Contract Agreement. For this purpose, a panel of DAB members shall be maintained in the General Manager's office. The complete panel, which shall not be less than five members, shall be sent by Chief Engineer to the Contractor to nominate one member of the DAB from the panel as Contractor's nominee within two weeks of receipt of the panel. On receipt of Contractor's nominee, the Chief Engineer shall nominate one member from the same panel as Railway nominee for the DAB. Both above nominees shall jointly select presiding member of the DAB from the same panel.
2. The appointment of DAB shall be effectuated by way of a tri-partite agreement among the Railway, Contractor and the respective DAB members. The terms of the remuneration of

- each member shall be as fixed by Ministry of Railways from time to time. Each party shall be responsible for paying one-half of this remuneration.
- 3 If one or more of the members appointed refuses to act as DAB member, or is unable or unwilling to perform his functions as DAB member for any reason whatsoever or dies or in the opinion of the Chief Engineer fails to act without undue delay, the parties shall terminate the mandate of such DAB member and thereupon new DAB member shall be appointed in the same manner, as the outgoing DAB member had been appointed.
- 4 The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Railway or the Contractor acting alone. Unless otherwise agreed by both the Parties, the appointment of the DAB (including each member) shall expire upon expiry of this Contract Agreement.
- 5 Before start of DAB proceedings, each DAB member shall give the following certificate to the Railway and the Contractor:
- “I have no any past or present relationship in relation to the subject matter in dispute, whether financial, business, professional or other kind. Further, I have no any past or present relationship with or interest in any of the parties whether financial, business, professional or other kind, which is likely to give rise to justifiable doubts as to my independence or impartiality.”
- 6 DAB proceedings shall be conducted as decided by the DAB. The DAB shall give its decision within 90 days of a Dispute referred to it by any of the Parties, duly recording the reasons before arriving at the decision. The DAB shall decide the issue within terms and conditions of the contract. This time limit shall be extendable subject to the Parties mutual agreement.
- 7 The DAB decision shall not be binding on both the Parties. In case any party is not satisfied by the decision of DAB, then the aggrieved party may approach Arbitral Tribunal for arbitration proceedings.
- 8 No dispute shall be referred to Arbitral Tribunal unless the same has been referred to DAB for adjudication. However, in case DAB is not formed due to any reason, the disputes can be directly referred to Arbitral Tribunal to adjudicate the dispute.
- 9 In the specific cases of any misconduct by any of the members of the DAB, the parties shall have the right to specifically bring it to the notice of the DAB such conduct, through a statement filed with necessary documents in proof of such misconduct and the DAB, after taking NOTICE of such conduct initiate the replacement of the member concerned, in the same manner the member to be replaced was appointed.
- 10 Once the decision is given by DAB, DAB cannot review the decision at its own or on the request of one party, unless both parties agree for review of decision by DAB.
- 11 In case DAB decision is not challenged by either party within 180 days of receipt of decision of DAB, the decision shall be considered as final and parties would be barred for referring the same to Arbitral Tribunal for adjudication.
- 12 The obligation of the Railway and the Contractor shall not be altered by reasons of issue being or under reference to DAB.
- 13 The DAB shall conduct the proceedings at any convenient venue which shall be decided by DAB in consultations with parties.
- 14 It is a term of this contract that the Parties shall not approach any Court of Law for settlement of such disputes or differences unless an attempt has first been made by the parties to settle such disputes or differences through DAB and Arbitral Tribunal.

(b)(i) **Demand for Arbitration:**

In the event of any dispute or difference between the parties hereto as to the construction or operation of this contract, or the respective rights and liabilities of the parties on any matter in question, dispute or difference on any account or as to the withholding by the RAILWAY of any certificate to which the contractor may claim to be entitled to, or if the RAILWAY fails to make a decision within 120 days, then and in any such case, but except in any of the 'excepted matters' referred to in clause 63 of these conditions, the contractor, after 120 days but within 180 days of his presenting his final claim on disputed matters, shall demand in writing that the dispute or difference be referred to arbitration.

- (b)(ii) The demand for arbitration shall specify the matters which are in question, or subject of the dispute or difference as also the amount of claim item wise. Only such dispute or

difference, in respect of which the demand has been made, together with counter claims or set off, given by the RAILWAY, shall be referred to arbitration and other matters shall not be included in the reference.

- (A) The parties may waive off the applicability of sub-section 12(5) of Arbitration and Conciliation (Amendment) Act 2015, if they agree for such waiver, in writing, after dispute having arisen between them, in the format given under Annexure-I of these conditions.
 - (B) The arbitration proceedings shall be assumed to have commenced from the day, a written and valid demand for arbitration is received by the RAILWAY.
 - (C) The claimant shall submit his claim stating the facts supporting the claims along with all the relevant documents and the relief or remedy sought against each claim within a period of 30 days from the date of appointment of the Arbitral Tribunal.
 - (D) The Railway shall submit its defence statement and counter claim(s), if any, within a period of 60 days of receipt of copy of claims from Tribunal thereafter, unless otherwise extension has been granted by Tribunal.
- (b)(iii) No new claim shall be added during proceedings by either party. However, a party may amend or supplement the original claim or defense thereof during the course of arbitration proceedings subject to acceptance by Tribunal having due regard to the delay in making it.
- (b)(iv) If the contractor(s) does/do not prefer his/their specific, and final claims in writing, within a period of 90 days of receiving the intimation from the RAILWAY that the final bill is ready for payment, he/they will be deemed to have waived his/their claim(s) and the Railway shall be discharged and released of all liabilities under the contract in respect of these claims.

(c) Obligation during pendency of Arbitration:

Work under the contract shall, unless otherwise directed by the Engineer, continue during the arbitration proceedings, and no payment due or payable by the RAILWAY shall be withheld on account of such proceedings, provided, however, it shall be open for Arbitral Tribunal to consider and decide whether or not such work should continue during arbitration proceedings.

(d) Appointment of Arbitrator:

- (d) (i) Appointment of Arbitrator where applicability of section 12(5) of Arbitration and Conciliation Act has been waived off:

- (A) In cases where the total value of all claims in question added together does not exceed Rs. 1,00,00,000/- (Rupees one Crore only), the Arbitral Tribunal shall consist of a sole arbitrator who shall be a Gazetted officer of RAILWAY not below JA grade, nominated by the General Manager. The sole arbitrator shall be appointed within 60 days from the day when a written and valid demand for arbitration is received by GM.
- (B) In cases not covered by clause 1.2.54(d)(i)(A), the Arbitral Tribunal shall consist of a panel of three Gazetted RAILWAY Officers not below JA grade Gazetted Officers not below JA Grade and a retired Railway Officer, retired not below the rank of SAG Officer, as the arbitrators. For this purpose, the RAILWAY will send a panel of at least four (4) names of Gazetted Railway Officers of one or more departments of the

RAILWAY which may also include the name(s) of retired Railway Officer(s) empanelled to work as Railway Arbitrator to the contractor within 60 days from the day when a written and valid demand for arbitration is received by the General Manager. Contractor will be asked to suggest to General Manager, at least 2 names out of the panel for appointment as contractor's nominee within 30 days from the date of dispatch of the request by Railway. The General Manager shall appoint at least one out of them as the contractor's nominee and will, also simultaneously appoint the balance number of arbitrators either from the panel or from outside the panel, duly indicating the 'presiding arbitrator' from amongst the 3 arbitrators so appointed. General Manager shall complete this exercise of appointing the Arbitral Tribunal within 30 days from the receipt of the names of Contractor's nominee. While nominating the arbitrators it will be necessary to ensure that one of them is from the Accounts Department. An Officer of Selection grade of the Accounts Department shall be considered of equal status to the officers in SA grade of other departments of the Railways for the purpose of appointment of Arbitrators.

- (C) The serving Railway officer working in arbitral tribunal in the ongoing arbitration cases as per clause 1.2.54(d)(i) A & 1.2.54(d)(i) B above, can continue as arbitrator in the tribunal even after his retirement.
- (d)(ii) Appointment of Arbitrator where applicability of section 12(5) of A&C Act has not been waived off:
 - (A) In cases where the total value of all claims in question added together does not exceed ₹ 50,00,000/- (Rupees Fifty Lakh), the Arbitral Tribunal shall consist of a Retired Railway Officer, retired not below the rank of Senior Administrative Grade Officer, as the arbitrator. For this purpose, the Railway will send a panel of at least four (4) names of retired Railway Officer(s) empanelled to work as Railway Arbitrator duly indicating their retirement dates to the Contractor within 60 days from the day when a written and valid demand for arbitration is received by the General Manager. Contractor will be asked to suggest to General Manager at least 2 names out of the panel for appointment as arbitrator within 30 days from the date of dispatch of the request by Railway. The General Manager shall appoint at least one out of them as the arbitrator within 30 days from the receipt of the names of contractor nominee.
 - (B) In cases where the total value of all claims in question added together exceed ₹ 50,00,000/- (Rupees Fifty Lakh), the Arbitral Tribunal shall consist of a Panel of three (3) retired Railway Officer, retired not below the rank of Senior Administrative Grade Officer, as the arbitrators. For this purpose, the Railway will send a panel of at least four (4) names of retired Railway Officer(s) empanelled to work as Railway Arbitrator duly indicating their retirement date to the Contractor within 60 days from the day when a written and valid demand for arbitration is received by the General Manager. Contractor will be asked to suggest to General Manager at least 2 names out of the panel for appointment as Contractor's nominee within 30 days from the date of dispatch of the request by Railway. The General Manager shall appoint at least one out of them as the Contractor's nominee and will, also simultaneously appoint the balance number of arbitrators either from the panel or from outside the panel, duly indicating the 'Presiding Arbitrator' from amongst the 3 arbitrators so appointed. General Manager shall complete this exercise of appointing the Arbitral Tribunal within 30 days from the receipt of the names of Contractor's nominees. While nominating the arbitrators, it will be necessary to ensure that one of them has served in the Accounts Department.
- (d)(iii) If one or more of the arbitrators appointed as above refuses to act as arbitrator, withdraws from his office as arbitrator, or vacate his/their office/offices or is/are unable or unwilling to perform his functions as arbitrator for any reason whatsoever or dies or in the opinion of the General Manager fails to act without undue delay, the General Manager shall appoint new arbitrator/arbitrators to act in his/their place in the same manner in which the earlier arbitrator/arbitrators had been appointed. Such constituted Tribunal may, at its discretion, proceed with the reference from the stage at which it was left by the

previous arbitrator(s).

- (d)(iv) The arbitral Tribunal shall have power to call for such evidence by way of affidavits or otherwise as the Arbitral Tribunal shall think proper, and it shall be the duty of the parties here to do or cause to be done all such things as may be necessary to enable the Arbitral Tribunal to make the award without any delay. The proceedings shall normally be conducted on the basis of documents and written statements.
- (d)(v) Before proceeding into the merit of any dispute, the Arbitral tribunal shall first decide and pass its orders over any plea submitted/objections raised by any party, if any, regarding appointment of arbitral Tribunal, validity of arbitration agreement jurisdiction and scope of the Tribunal to deal with the dispute (s) submitted to the arbitration, applicability of time 'limitation' to any dispute, any violation of agreed procedure regarding conduct of the arbitral proceeding or plea for interim measures of protection and record its order in day to day proceedings. A copy of the proceedings duly signed by all the members of tribunal should be provided to both the parties.

(e) (i) Qualification of Arbitrator(s):

- (a) Serving Gazetted Railway officers of not below JA Grade level.
- (b) Retired Railway officers not below SA Grade level, one years after his date of retirement.
- (c) Age of arbitrator at the time of appointment shall be below 70 years.

(e)(ii) An arbitrator may be appointed notwithstanding the total number of arbitration cases in which he has been appointed in the past.

(e)(iii) While appointing arbitrator(s) under sub-clause (d)(i)(A), (d)(i)(B), (d)(ii)(A) & (d)(ii)(B) above, due care shall be taken that he/they is/are not the one/those who had an opportunity to deal with the matters to which the contract relates or who in the course of his/their duties as Railway servant(s) expressed views on all or any of the matters under dispute or differences.

A certification to this effect as per Annexure-II shall be taken from Arbitrators also. The proceedings of the Arbitral Tribunal or the award made by such Tribunal will, however, not be invalid merely for the reason that one or more Arbitrator had, in the course of his service, opportunity to deal with the matters to which the contract relates or who in the course of his/their duties expressed views on all or any of the matters under dispute.

(f)(i) The arbitral award shall state item wise, the sum and reasons upon which it is based. The analysis and reasons shall be detailed enough so that the award could be inferred the reform.

(f)(ii) A party may apply for corrections of any computational errors, any typographical or clerical errors or any other error of similar nature occurring in the award of tribunal and interpretation of a specific point of award to tribunal within 60 days of receipt of the award.

(f)(iii) A party may apply to tribunal within 60 days of the receipt of award to make an additional award as to claims presented in the arbitral proceedings but omitted from the arbitral award.

(g) In case of the Tribunal, comprising of three Members, any ruling or award shall

be made by a majority of Members of Tribunal. In the absence of such a majority, the views of the Presiding Arbitrator shall prevail.

- (h) Where the arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period till the date on which the award is made.
- (i) The cost of arbitration shall be borne by the respective parties. The cost shall interalia include fee of the arbitrator(s) as per the rates fixed by the Railway Board from time to time and the fee shall be borne equally by both the parties, provided parties sign an agreement in the format given at Annexure-II to these condition after/while referring these disputes to Arbitration. Further, the fee payable to the arbitrator(s) would be governed by the instructions issued on the subject by Railway Board from time to time irrespective of the fact whether the arbitrator(s) is/are appointed by the Railway Administration or by the court of law unless specifically directed by Hon'ble court otherwise on the matter.
- (j) Subject to the provisions of the aforesaid Arbitration and Conciliation Act – 1996 and the rules there under and relevant para of the standard General Conditions of Contract (GCC) and any statutory modification thereof shall apply to the appointment of arbitrators and arbitration proceedings under this clause.
- (k) **Place of Arbitration:** The venue for arbitration shall be the place from which the Letter of Acceptance of Tender is issued or such other place as the Purchaser at his discretion may determine.
- (l) In case arbitration award is challenged by a party in the Court of Law, 75% of award amount, pending adjudication by Court of Law, shall be made by party to other party. In case payment is to be made by Railway to Contractor, the terms & conditions as incorporated in the Ministry of Railways letter No. 2016/CE(I)/CT/ARB/3(NITI Aayog)/Pt. dated 08th Mar,2017 as amended from time to time, shall be followed. In case Contractor has to pay to the Railway, then 75% of the award amount shall be deducted by the Railway from the Contractor's bills, Performance Guarantee/ Security Deposit or any other dues of Contractor with the Government of India.

PAYMENT DURING ARBITRATION: 1.2.55

Work under the contract shall, unless otherwise directed by the Purchaser, continue during the Arbitration proceedings and no payment due to or payable by the Purchaser shall be withheld on account of such proceedings. Notwithstanding anything contained herein, the Arbitrators/ Umpire, as the case may be, shall have full authority to direct withholding of any payment if such action is considered fit and proper at any time.

REFUND OF SECURITY DEPOSIT: 1.2.56

(See Tender clause 1.2.17)

PROVISIONS OF CONTRACT LABOUR REGULATION AND ABOLITION ACT: 1970: 1.2.57

- (i) The Contractor shall comply with the provisions of the Contract Labour Regulation and Abolition act 1970 and the Contract Labour Regulation and Abolition Central Rules, 1971, as modified from time to time, wherever applicable, and shall also indemnify the Purchaser from and against any claims under the aforesaid Act and the rules.
- (ii) The Contractor shall obtain a valid license under the aforesaid Act as modified from time to time before the commencement of the work and continue to have a

valid license until the completion of the work. Any failure to fulfill this requirement shall attract the penal provisions of the contract arising out of resultant non-execution of the work.

- (iii) The Contractor shall pay to labour employed by him, directly or through Sub-contractors, the wages as per provisions of the aforesaid Act and the rules, wherever applicable. The Contractor shall, notwithstanding the provisions of the contract, cause to be paid the wages to labour indirectly engaged on the work including any engaged by his sub-contractors in connection with the said work, as if the labour has been immediately employed by him.
- (iv) In respect of all labour directly or indirectly employed in the work for performance of the Contractor's part of the contract, the Contractor shall comply with or cause to be complied with the provisions of the aforesaid Act and the rules wherever applicable.
- (v) In every case in which, by virtue of the provisions of the aforesaid Act or the rules, the Purchaser is obliged to pay any amount of wages to a workman employed by the Contractor or his Sub-contractor in execution of the work or to incur any expenditure in providing welfare and health amenities required to be provided under the aforesaid Act and the rules or to incur any expenditure on account of the contingent liability of the Purchaser due to the Contractor's failure to fulfill his statutory obligations under the aforesaid Act or the Rules, the Purchaser will recover from the Contractor the amount of wages so paid or the amount of expenditure so incurred, and without prejudice to the rights of the Purchaser under Section 20 Sub-section (2) and Section 21 Sub-section (4) of the aforesaid Act, the Purchaser shall be at liberty to recover such amount or part thereof by deducting it from the Security Deposit and/ or from any sum due by the Purchaser to the Contractor whether under the contract or otherwise. The Purchaser shall not be bound to contest any claim made against it under sub-section (1) of section 20 and sub-section (4) of section 21 of the aforesaid Act except on the written request of the Contractor and upon his giving the full security for all costs for which the Purchaser might become liable in contesting such claim. The decision of the Purchaser regarding the amount actually recoverable from the Contractor as stated above, shall be final and binding on the Contractor.

PROVISIONS OF APPRENTICES ACT, 1961: 1.2.58

- (a) The Contractor shall be responsible to ensure compliance with the provisions of the Apprentices Act, 1961 and the rules and order issued there under from time to time in respect of Apprentices directly or through petty Contractors or Sub-Contractor's employed by him for the purpose of carrying out the Contract. If the Contractor directly or through petty Contractor's or sub- Contractors fails to do so, his failures will be a breach of the contract and the Railway may, in its discretion, rescind the contract. The Contractor shall also be liable for any pecuniary liability arising on account of any violation of the provisions of the Act.

NOTE: *The Contractors are required to engage Apprentices when the works under taken by them last for a period of one year or more and/ or the cost of work is Rs. one lakh or more.*

EMPLOYMENT UNDER ENGINEERING WORKS CONTRACTS

Under this scheme it is proposed to get employment to un-employed Engg. Graduates/diploma holders with the Railway Contractors. Fresh Engg. Graduates without any experience of any kind will be taken under training by the Contractor on stipend specified by the competent authority. Engg. Graduates/diploma holders who have gained experience and have completed a period of 6 months will be paid at rate specified from time to time by the competent authority.

Under the above provision, the Contractor is required to employ such Engineers/Diploma

holders at the rates specified above and in the ratio for such Employment as indicated below:

Contract Value	No. of Engineer/Diploma holders to be employed	Duration
Rs. 10 lakh and above.	2 Engg. Degree holders and 2 Engg. Diploma holders	Duration of the contract

Under the above scheme it would be obligatory for the Contractor to give a declaration alongwith his Tender to the effect that the Graduate Engineers/Diploma holders having been employed by him under the particular work for which Tender is submitted, are in accordance with the rates and ratios specified above and none of them is related to him (Contractor), failing which the Tender may be disqualified, in case of wrong information having been given by the Contractor which comes to light subsequently, the contract may be rescinded and action taken in accordance with para 1.2.14 of Tender Papers.

PROVISIONS OF PAYMENTS OF WAGES ACT: 1.2.59

The contractor shall comply with the provisions of the payment of wages Act 1936 and the rules made there under in respect of all employees directly or through petty contractors or sub- contractors employed by him in the works. If in compliance with the terms of the contract, the contractor directly or through petty contractors or sub- contractors shall supply any labour to be used wholly or partly under the direct order and control of the Engineer whether in connection with the works to be executed hereunder or otherwise for the purpose of the Engineer such labour shall nevertheless, be deemed to comprise persons employed by the contractor and any moneys which may be ordered to be paid by the Engineer shall be deemed to be moneys payable by the Engineer on behalf of the Contractor and the Engineer may on failure of the contractor to repay such moneys to the Railway deduct the same from any moneys due to the contractor in terms of the contract. The Railway shall be entitled to deduct from any moneys due to the contractor (Whether under this contract or any other Contract) all moneys paid or payable by the Railway by way of compensation of aforesaid or for costs of expenses in connection with any claim thereto and the decision of the Engineer upon any question arising out of the effect or force of this clause shall be final and binding upon the contractor.

PROVISION OF WORKMEN'S COMPENSATION ACT: 1.2.60

In every case in which by virtue of the provision of Section 12, Sub-section (1) of the Workmen's Compensation Act, 1923, Railway is obliged to pay compensation to a workman directly or through petty Contractors or sub-Contractors employed by the Contractor in executing the work. Railway will recover from the Contractor the amount of the compensation so paid, and without prejudice to rights of Railway under Section 12, sub-section (2) of the said Act Railway shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Railway to the Contractor whether under these conditions or otherwise. Railway shall not be bound to contest any claim made against it under section 12, sub- section (i) of the said Act except on the written request of the Contractor and upon his giving to Railway, full security for all costs for which Railway might become liable in consequence of contesting such claim.

PROVISION OF MINES ACT: 1.2.61

The Contractor shall observe and perform all the provisions of the Mines Act, 1952 or any statutory modifications of reenactment thereof for the time being enforce and any rules regulations made there under in respect of all the persons directly or through petty

contractors or sub- contractors employed by him under this contract and shall indemnify the Railway from and against any claim under the Mines Act. or the rules and regulations framed there under, by or on behalf of any persons employed by him or otherwise.

1.2.62: DELETED

LETTER OF CREDIT AS MODE OF PAYMENT: 1.2.63

- (a) For all the tenders having advertised cost of Rs 10 lakh or above, the contractor shall have the option to take payment from Railways through a letter of credit (LC) arrangement.
- (b) This option of taking payment through LC arrangement has to be exercised in IREPS (Indian Railway Electronic Procurement System- the e-application on which tenders are called by Railway) by the tenderer at the time of bidding itself, and the tenderer shall affirm having read over and agreed to the term and condition of the LC option.
- (c) The option of taking payment through LC arrangement, once exercised by tenderer at the time of bidding, shall be final and no change shall be permitted, thereafter, during execution of contract.
- (d) In case tenderer opts for payment through LC, following shall be the procedure to deal with release of payment through LC:
 - (i) The LC shall be a sight LC.
 - (ii) The contractor shall select his Advising /Negotiating bank for LC. The incidental cost towards issue of LC and its operation thereof shall be borne by the contractor.
 - (iii) SBI, New Delhi, Main Branch will be the nodal branch for issue of LCs based on line requests received from Railway Accounts Units for tenders opened in financial year 2018-19. SBI branches where the respective Railway Accounts office has its Account (Local SBI branch) will be the issuance/reimbursing branch for LC issued under this arrangement. The Bank shall remain same for this tender till completion of contract. The incidental cost @ 0.15 per annum of LC value, towards issue of LC and operation thereof shall be borne by the contractor and shall be recovered from his bills.
 - (iv) The LC shall be opened initially for duration of 180 to 365 days in consultation with contractor. The LC shall be extended time to time as per progress of the contract, on the request of the contractor. The value of LC to be opened initially as well as extended thereafter shall be finalized by the engineer in consultation with the contractor on the basis of expected progress of work.
 - (v) The LC terms and conditions shall inter-alia indemnify and save harmless the Railway from and against all losses, claims and demands of every nature and description brought or recovered against the Railway by reason of any act or omission of the contractor, his agents or employees, in relation to the Letter of Credit (LC). All sums payable/borne by Railways on this account shall be considered as reasonable compensation and paid by contractor.
 - (vi) The LC terms and conditions shall inter- alia provide that Railways will issue a Document of Authorisation (format enclosed as Annexre-1) after passing the bill for completed work, to enable contractor to claim the authorised amount from their bank.
 - (vii) The acceptable, agreed upon document for payments to be released under the LC shall be the Document of Authorisation.
 - (viii) The Document of Authorisation shall be issued by Sr.AFA/AFA at HQ level,

against each bill passed by Railways.

- (ix) On issuance of Document of Authorization, a copy of Document of Authorisation shall be posted on IREPS for download by the contractor. A digitally signed copy of Document of Authorisation shall also be sent by Dy.FA & CAO (As mentioned under clause viii above) to Railway's bank (Local SBI Branch).
- (x) The contractor shall take print out of the Document of Authorisation available on IREPS and present his claim to his bank (advising Bank) for necessary payments as per LC terms and conditions. The claim shall comprise of copy of Document of Authorisation, bill of exchange and Bill.
- (xi) The payment against LC shall be subject to verification from Railway's Bank (Local SBI Branch).
- (xii) The Contractor's bank (advising bank) shall submit the documents to the Railway's Bank (Local SBI Branch).
- (xiii) The Railway's bank (issuing bank) shall, after verifying the claim so received w.r.t. the digitally signed Document of Authorisation received from Railway Accounts Office, release the payment to contractor's bank (advising bank) for crediting the same to contractor's account.
- (xiv) Any number of bills can be dealt within one LC, provided the sum total of payments to contractor is within the amount for which LC has been opened.
- (xv) The LC shall be closed after the release of final payment including PVC amount, if any, to the contractor.
- (xvi) The release of performance guarantee or security deposit shall be dealt directly by railway with the contractor i. e., not through LC.

Suspension of Works: 1.2.64

- 1) The Contractor shall on the order of the Engineer, suspend the progress of the works or any part thereof for such time or times and in such manner as the Engineer may consider necessary and shall during such suspension properly protect and secure the work so far as is necessary in the opinion of the Engineer. If such suspension is:
 - (a) Provided for in the contract, or
 - (b) Necessary for the proper execution of the works or by the reason of weather conditions or by some default on the part of the Contractor, and or
 - (c) Necessary for the safety of the works or any part thereof, or Necessary for the safety of adjoining public or other property or safety of the public or workmen or those who have to be at the site, or
 - (d) Necessary to avoid disruption of traffic and utilities, as also to permit fast repair and restoration of any damaged utilities, or
 - (e) Due to instruction of The National Green Tribunal or any other statutory authority due to high level of pollution in the city of worksite.
- 2) The Contractor shall not be entitled to the extra costs, if any, incurred by him during the period of suspension of the works, but in the event of any suspension ordered by the Engineer for reasons other than aforementioned and when each such period of suspension exceeds 14 days, the Contractor shall be entitled to such extension of time for completion of the works as the Engineer may consider proper having regard to the period or periods of such suspensions and to such compensations as the Engineer may consider reasonable in respect of salaries or wages paid by the Contractor to his employees during the periods of such suspension.
- 3) Suspension Lasting More than 3 Months: If the progress of the works or any part thereof is suspended on the order of the Engineer for more than three months at a time, the Contractor may serve a written notice on the Engineer requiring permission within 15 days from the receipt thereof to proceed with the works or that part thereof in regard to

which progress is suspended and if such permission is not granted within that time the Contractor by further written notice so served may, but is not bound to, elect to treat the suspension where it affects part only of the works as an omission of such part or where it affects the whole of the works, as an abandonment of the contract by the Railway.

Off-loading of Part(s) of Work: 1.2.65

At the final stage of completion/ commissioning of work, in case the contractor fails to complete the final part(s) of the work and the value of such part(s) of the work is limited to 5% of the original contract value, the Engineer may allow/decide for offloading of such part(s) of works, either after the Contractor's request in writing to do so or after serving a 14 (Fourteen) days suo- moto notice (as per FORM- 30), if the Engineer is of the opinion that :-

- (i) Such Offloading of works (up to 5% of original contract value) would enable successful completion of contract/work,
- (ii) Termination/ Part termination of the contract at this stage is not be in the interest of the Railway/work; and
- (iii) The anticipated additional cost for execution of such works through other mode would not be substantial and can be recovered from the pending dues of the contractor;

The Contractor shall be informed, in due course, by the Engineer of the mode and cost of execution of such offloaded work through other agency(ies) (as per FORM- 31). The extra expenditure so incurred in execution of the offloaded work, shall be recovered from subsequent Bill(s) or any other dues of the Contractor, but not exceeding the value of Performance Guarantee available in the contract. There shall be no other repercussion of such offloading on execution of the balance contract. The Contractor shall have no claim on account of above mentioned offloading of works.

Working during Night: 1.2.66

The Contractor shall not carry out any work between sun-set and sun-rise without the previous permission of the Engineer. However, if the Engineer is satisfied that the work is not likely to be completed in time except by resorting to night work, he may order the same without confirming any right on the Contractor for claiming any extra payment for the same.

Damage to Railway Property or Private Life and Property: 1.2.67

The Contractor shall be responsible for all risk to the work and for trespass and shall make good at his own expense all loss or damage whether to the works themselves or to any other property of the Railway or the lives, persons or property of others from whatsoever cause in connection with the works until they are taken over by the Railway, although all reasonable and proper precautions may have been taken by the Contractor. In case the Railway shall be called upon to make good any costs, loss or damages, or to pay any compensation, including that payable under the provisions of the Workmen's Compensation Act or any statutory amendments thereof to any person or persons sustaining damages as aforesaid by reason of any act, or any negligence or omissions on the part of the Contractor; the amount of any costs or charges including costs and charges in connection with legal proceedings, which the Railway may incur in reference thereto, shall be charged to the Contractor. The Railway shall have the power and right to pay or to defend or compromise any claim of threatened legal proceedings or in anticipation of legal proceedings being instituted consequent on the action or default of the Contractor, to take such steps as may be considered necessary or desirable to ward off or mitigate the effect of such proceedings, charging to Contractor, as aforesaid; any sum or sums of money which may be paid and any expenses whether for reinstatement or otherwise which may be incurred and the propriety of any such payment, defence or compromise,

and the incurring of any such expenses shall not be called in question by the Contractor.

Sheds, Store houses and Yards: 1.2.68

The Contractor shall at his own expense provide himself with sheds, storehouses and yards in such situations and in such numbers as in the opinion of the Engineer is requisite for carrying on the works and the Contractor shall keep at each such sheds, storehouses and yards a sufficient quantity of materials and plant in stock as not to delay the carrying out of the works with due expedition and the Engineer and the Engineer's representative shall have free access to the said sheds, store houses and yards at any time for the purpose of inspecting the stock of materials or plant so kept in hand, and any materials or plant which the Engineer may object to shall not be brought upon or used in the works, but shall be forthwith removed from the sheds, storehouses or yards by the Contractor. The Contractor shall at his own expenses provide and maintain suitable mortar mills, soaking vats or any other equipments necessary for the execution of the works.

Temporary Works: 1.2.69

All temporary works necessary for the proper execution of the works shall be provided and maintained by the Contractor and subject to the consent of the Engineer shall be removed by him at his expenses when they are no longer required and in such manner as the Engineer shall direct. In the event of failure on the part of the Contractor to remove the temporary works, the Engineer will cause them to be removed and cost as increased by supervision and other incidental charges shall be recovered from the Contractor. If temporary huts are provided by the Contractor on the Railway land for labour engaged by him for the execution of works, the Contractor shall arrange for handing over vacant possession of the said land after the work is completed; if the Contractor's labour refuse to vacate, and have to be evicted by the Railway, necessary expenses incurred by the Railway in connection therewith shall be borne by the Contractor.

Water supply for Works: 1.2.70

Unless otherwise provided in the Contract, the Contractor shall be responsible for the arrangements to obtain supply of water necessary for the works.

Water Supply from Railway System: The Railway may supply to the Contractor part or whole of the quantity of the water required for the execution of works from the Railway's existing water supply system at or near the site of works on specified terms and conditions and at such charges as shall be determined by the Railway and payable by the Contractor, provided that the Contractor shall arrange, at his own expense, to effect the connections and lay additional pipelines and accessories on the site and that the Contractor shall not be entitled to any compensation for interruption or failure of the water supply.

Water Supply by Railway Transport: In the event of the Railway arranging supply of water to the Contractor at or near the site of works by travelling water tanks or other means, the freight and other charges incurred thereby, including demurrage charges that may be levied, shall be paid by the Contractor in addition to the charges referred to in Sub-Clause (2) of the Clause provided that the Contractor shall not be entitled to any compensation for interruption or failure of the water supply.

Supply of Electric Power for Works: 1.2.71

(a) Unless otherwise provided in the contract, the Contractor shall be responsible for arrangements to obtain supply of Electric Power for the works.

(b) Electric Supply from the Railway System: The Railway may supply to the Contractor part or whole of the electric power wherever available and possible, required for execution of works from the Railway's existing electric supply systems at or near the site of works on specified terms and conditions and such charges as shall be determined by the Railway and payable by the Contractor provided the cost of arranging necessary connections to the Railway's Electric Supply systems and laying of underground/overhead conductor, circuit protection, electric power meters, transmission structure, shall be borne by the Contractor and that the Contractor shall not be entitled to any compensation for interruption or failure of the Electric supply system.

Property in Materials and Plant: 1.2.72

The materials and plant brought by the Contractor upon the site or on the land occupied by the Contractor in connection with the works and intended to be used for the execution thereof shall immediately be deemed to be the property of the Railway. Such of them as during the progress of the works are rejected by the Engineer under Clause 25 of these conditions or are declared by him not to be needed for the execution of the works or such as on the grant of the certificate of completion remain unused shall immediately on such rejection, declaration or grant cease to be deemed the property of the Railway and the Contractor may then (but not before) remove them from the site or the said land. This clause shall not in any way diminish the liability of the Contractor nor shall the Railway be in any way answerable for any loss or damage which may happen to or in respect of any such materials or plant either by the same being lost, stolen, injured or destroyed by fire, tempest or otherwise.

Tools, Plant and Materials Supplied by Railway: 1.2.73

The Contractor shall take all reasonable care of all tools, plant and materials or other property whether of a like description or not belonging to the Railway and committed to his charge for the purpose of the works and shall be responsible for all damage or loss caused by him, his agents, permitted sub-contractor, or his workmen or others while they are in his charge. The Contractors shall sign accountable receipts for tools, plants and materials made over to him by the Engineer and on completion of the works shall hand over the unused balance of the same to the Engineer in good order and repair, fair wear and tear excepted, and shall be responsible for any failure to account for the same or any damage done thereto.

Hire of Railway's Plant: The Railway may hire to the Contractor such plant as concrete mixers, compressors and portable engines for use during execution of the works on such terms as may be specified in the special conditions or in a separate agreement for Hire of Plant.

Precaution During Progress of Works: 1.2.74

During the execution of works, unless otherwise specified, the Contractor shall at his own cost provide the materials for and execute all shoring, timbering and strutting works as is necessary for the stability and safety of all structures, excavations and works and shall ensure that no damage, injury or loss is caused or likely to be caused to any person or property.

Roads and Water Courses: Existing roads or water courses shall not be blocked cut through, altered, diverted or obstructed in any way by the Contractor, except with the permission of the Engineer. All compensations claimed for any unauthorized closure, cutting

through, alteration, diversion or obstruction to such roads or water courses by the Contractor or his agent or his staff shall be recoverable from the Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India.

Demurrage and Wharfage Dues: 1.2.75

Demurrage charges calculated in accordance with the scale in force for the time being on the Railway and incurred by the Contractor failing to load or unload any goods or materials within the time allowed by the Railway for loading as also wharfage charges, of materials not removed in time, as also charges due on consignments booked by or to him shall be paid by the Contractor, failing which such charges shall be debited to the Contractor's account in the hands of the Railway and shall be deducted from any sums which may become due to him in terms of the Contract.

ANNEXURE-I

Agreement towards Waiver under Section 12(5) and Section 31A(5) of Arbitration and Conciliation (Amendment) Act

I/we..... (Name of agency/Contractor) with reference to agreement no..... raise disputes as to the construction and operation of this contract, or the respective rights and liabilities, withholding of certificate and demand arbitration in respect of following claims :

Brief of claim:

- (i) Claim 1- Detailed at Annexure-
- (ii) Claim 2-
- (iii) Claim 3-

I/we..... (post of Engineer) with reference to agreement no hereby raise disputes as to the construction and operation of this contract, or the respective rights and liabilities, withholding of certificate and demand arbitration in respect of following claims:

I/we do/do not agree to waive off applicability of section 12(5) of Arbitration and Conciliation (Amendment) Act.

Signature of Claimant _____ Signature of Respondent _____

Agreement under Section 31(5)

I/we.....(Name of claimant)with reference to agreement no.....hereby waive off the applicability of sub section 31-A (2) to 31-A (4) of the Arbitration and Conciliation (Amendment Act. We further agree that the cost of arbitration will be shared by the parties as per Clause 64(6) of GCC.

Signature of Claimant _____ Signature of Respondent _____

*Strike out whichever not applicable.

□□□□□□

Certification by Arbitrators appointed under Clause 63 & 64 of Indian Railways General Conditions of Contract

1. Name:
2. Contact Details:
3. Prior experience (Including Experience with Arbitrations):
4. I do not have more than ten on-going Arbitration cases with me.
5. I hereby certify that I have retired from Railways w.e.f. and empanelled as Railway Arbitrator as per 'The Arbitration and Conciliation Act-1996'.
6. I have no any past or present relationship in relation to the subject matter in dispute, whether financial, business, professional or other kind.

Or

I have past or present relationship in relation to the subject matter in dispute, whether financial, business, professional or other kind. The list of such interests is as under:

7. I have no any past or present relationship with or interest in any of the parties whether financial, business, professional or other kind, which is likely to give rise to justifiable doubts as to my independence or impartiality in terms of The Arbitration and Conciliation Act-1996.

Or

I have past or present relationship with or interest in any of the parties whether financial, business, professional or other kind, which is likely to give rise to justifiable doubts as to my independence or impartiality in terms of The Arbitration and Conciliation Act-1996. The details of such relationship or interests are as under:

8. There are no concurrent Circumstances which are likely to affect my ability to devote sufficient time to the arbitration and in particular to finish the entire arbitration within twelve months.

Or

There are Circumstances which are likely to affect my ability to devote sufficient time to the arbitration and in particular to finish the entire arbitration within twelve months. The list of such circumstances is as under:

PART - I
CHAPTER- III A

PART - I
CHAPTER – III“ A”

**PRICES AND PAYMENT
FOR OHE & FEEDER**

PARA NO.	S U B J E C T
1.3.1	Scope.
1.3.2	Schedule of prices.
1.3.3	Prices of equipments, Components and materials
1.3.4	Prices of additional supplies.
1.3.5	Payment and Recoveries.
1.3.6	Invoicing procedure.
1.3.7	Payments for designs.
1.3.8	Advance payments for foundations.
1.3.9	'On Account' Payments.
1.3.10	Recoveries from the Contractor.
1.3.11	Progress Payments for supply and erection.
1.3.12	Payments for additional supplies.
1.3.13	Tax.
1.3.14	Payments on provisional Acceptance of each Sub-group/Sub-Section.
1.3.15	Payments for surplus materials
1.3.16	Final settlement.
1.3.17	Measurements.
1.3.18	Mobilization Advance.

PART -I

CHAPTER - III“A”

PRICES AND PAYMENT FOR OHE & FEEDER

SCOPE: 1.3.1

This Chapter deals with prices to be paid for supply and/or erection of various items of work or for supplies and other amounts payable in accordance with accepted schedules of prices and rates and terms and conditions of payment mentioned herein.

This is a works contract. The total prices for the completed items of work are the actual prices payable to the Contractor as per the terms and condition of the Contract.

SCHEDULE OF PRICES: 1.3.2

(a) (i) UNIT PRICES FOR ITEM WITH S.O.R for FEEDER work only:

The unit rates given against various items of work in Six Schedule -1 to 6 of the Tender paper are the standard schedule of rates (S.O.R.). The Tenderers are required to quote a single percentage below/at par/above against the S.O.R. cost of each schedule separately while quoting the summary of prices **on IREPS site**. The actual payment to be made against any item of each Schedule-1 to 6, shall be derived after loading the SOR prices of that schedule with the Tenderer's quoted percentage for the same schedule. The prices so obtained shall be the unit prices for the various items of work given in Schedule -1 to 6.

(a) (ii) Rates of NON SOR Items (Non schedule items)(Schedule -6) for FEEDER work only:

The rates of NON SOR items have to be quoted separately **on IREPS site**. The Tenderers are required to quote uniform percentage below/at par/above against the estimated cost for these items while quoting Offered prices on IREPS site. The actual payment to be made against any item of NS item, shall be derived after loading the estimated cost with the Tenderer's quoted percentage. The prices so obtained shall be the unit prices for the various items of works given in Schedule-6.

All Unit prices shall be FIRM irrespective of minor variations in basic quantities and use of alternative types of various components and fittings approved by the purchaser. Minor changes in basic designs shall not affect the unit prices, so long as such changes are mutually agreed to by the Purchaser and the Contractor. All Unit Prices shall be in RUPEES. The prices shall be for materials and erection except for the materials indicated in Annexure-4 for which only erection charges will be payable, and for execution of work in accordance with specifications and approved drawings and designs. The Contractor shall carefully note the items of materials, equipments, fittings and components which will be supplied by the Purchaser.

(b) UNIT PRICES FOR MATERIALS:

The unit prices indicated in Schedule and NS items are inclusive of the prices of materials including all incidental charges for transport, loading/ unloading and handling of materials, commission for arranging dispatch by rail direct from manufacturer's factory and completing all necessary formalities in this respect, such as submission of forwarding notes, arranging

placement of wagon, collection of Railway receipts, all insurance premium, Bankers charges for Bank guarantee, Indemnity Bonds inclusive of cost of stamps etc. as also siding or shunting charges, if any, levied by the Railway.

The prices shall include all taxes, duties and levies (including Octroi etc.) applicable on this works contract. Therefore, they should quote their prices taking into account the rate of taxes as leviable in the event of sale through works contract to the Central Government Organisation in that state. It is clarified that required forms applicable for this purpose will be supplied to the contractor as applicable in the state where the contract is being executed. The price shall also include provision for losses and wastages in transit and erection.

FOR ERECTION:

The unit prices indicated in Schedule 1 to 5 & NS Items are inclusive of cost of erection and testing to be done by the Contractor to the extent indicated in part-II, Chapter-VII and also cover all cost of administration of the contractor, insurance premium, banker's charges for guarantees, cost of stamps, cost of storage, loading and unloading and handling of materials, and for any road transport which the Contractor may use for carriage of materials between his depot and depot/s and site of work. The unit prices shall include cost of works and adjustments necessary to be done by the Contractor during or after the tests carried out by the Purchaser as per Part II, Chapter VII.

However, if the rates for existing GST or cess on GST for Works Contract is increased or any new tax/cess on Works Contract is imposed by Statute after the date of opening of Tender but within the original date of completion/ date of completion extended under clause 17 & 17(A) of GCC and the Contractor thereupon properly pays such taxes/cess, the Contractor shall be reimbursed the amount so paid.

Further, if the rates of existing GST or cess on GST for Works Contract is decreased or any new tax/cess on Works Contract is decreased/removed by Statute after the date of opening of Tender, the reduction in tax amount shall be recovered from Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India.

(c) **COPPER FOR COMPONENTS & FITTINGS** - DELETED-.

(d) **OTHER PRICE ADJUSTMENTS: -**

- (i) Price variation on account of variation in the prices of various materials required for supply of various equipments/fittings/components used in the tendered work will be reimbursable/ recoverable on basic price on each bill submitted by the contractor as per the following formulae:-

1.0 For Schedule-1, Section-1 (General) :-

Percentage variation payable on the gross value of bill of general works(Bills of quantities for general items).

$$= [(W - W_o)/W_o] \times 85$$

Where,

W = Wholesale Price Index: All commodities – as published in the R.B.I. Bulletin for the average price index of the 3 months of the quarter under consideration.

W_o = Wholesale Price Index: All commodities – as published in the R.B.I. Bulletin for the base period.

2.0 For Schedule-1, Section-2 (Concreting) of FEEDER, Pt.-I, Ch.-IV A

Percentage variation payable on the gross value of bill of Concreting (Bill(s) of Quantities for concrete items)

$$= [(Cs - Co) / Co \times 0.4136] \times 85$$

Where,

Cs = Index No. of Wholesale Price Index of sub-group Cement, Lime & Plaster as published in RBI Bulletin for the average price index of the 3 months of the quarter under consideration.

Co = Index No. of Wholesale Price Index of sub-group Cement, Lime & Plaster as published in RBI Bulletin for the base period.

3.0 For Schedule - 1, Section - 3 (Ferrous):-

Percentage variation payable on the gross value of bill of ferrous items (Bills of quantities for ferrous items) net amount of material bill of this section

$$= [0.94 \times (Sf - Sfo) / Sfo + (Z - Zo) / Zo \times 0.06] \times 85 \text{ Where,}$$

Sf = IEEMA price index for Steel Blooms (size 150 mm x 150 mm) for the month which is Two months prior to date of inspection of material.

Sfo = IEEMA price index for Steel Blooms (size 150 mm x 150mm) for the month which is one month prior to date of opening of tender.

Z = IEEMA price index for Zinc for the month which is two months prior to date of inspection of material.

Zo = IEEMA price index for Zinc for the month which is one month prior to date of opening of tender.

4.0 For Schedule-1, Section- 4(a) & 4(b) (Non-Ferrous) :-

Percentage variation payable on the gross value of bill of Non-Ferrous Items (Bill(s) of Quantities for non-ferrous items)

$$= [(Cu - Cuo) / Cuo] \times 85$$

Where,

Cu = IEEMA price index for Copper wire rods for the month which is two months prior to date of inspection of material.

Cuo = IEEMA price index for Copper wire rods for the month which is one month prior to date of opening of tender.

5.0 For Schedule-1, Section-5 (Insulators) :-

Percentage variation payable on the gross value of bill of Insulator (Bill(s) of Quantities for Insulator items).

$$= [(In - Ino) / Ino] \times 85$$

Where,

In = RBI wholesale price index for the sub-group "Insulators" for the month which is two months prior to date of inspection of material.

Ino = RBI wholesale price index for the sub-group "Insulators" for the month which is one month prior to date of opening of tender.

(ii) Price variation on erection:-

Price variation on erection will be reimbursable/recoverable on each monthly bill submitted by the contractor as per the following formula:-

Percentage variation payable on the gross value of erection (Bill(s) of Quantities for Erection Item)

$$= [(I - I_o)/I_o] \times 85$$

Where,

I_o = Consumer Price Index Number for Industrial Workers - All India - Published in R.B.I. Bulletin for the base period.

I = Consumer Price Index Number for Industrial Workers - All India - Published in R.B.I. Bulletin for the average price index of the 3 months of the quarter under consideration.

In case, due to unavoidable reasons, measurements of work executed during the quarterly period are delayed beyond the next quarterly period, the benefit of the price variation in erection due to such delay shall not be allowed to the contractor.

NOTE:

(i) Rates accepted by Railway Administration shall hold good till completion of work and no additional individual claim shall be admissible except:-

(a) Payment/recovery for increase/decrease in GST on works contract or imposition/removal of any tax/cess on Works Contract as per clause 1.3.2 (b).

(b) Payment/recovery for overall market situation shall be made as per Price Variation Clause given hereunder.

(ii) No cognizance will be given for any sort of fluctuations in taxes and other market conditions etc. for any individual items for the purpose of making adjustments in payment except as provided for in the under noted clauses.

(iii) Price Variation Clause (PVC) shall be applicable only in tender having advertised value above Rs. 2 Crores and having completion period above 12 months. Provided further that, in a contract where PVC is applicable, following shall be outside the purview of price adjustments (i.e. shall be excluded from the gross value of the work for the purpose of price variation) :

a) Materials supplied by Railway to the Contractors, either free or at fixed rate;

b) Any extra item(s) included in subsequent variation falling outside the purview of the Bill(s) of Quantities of tender, under clause 39. (1)(b) of Standard General Conditions of Contract of GCC, unless applicability of PVC and 'Base Month' has been specially agreed, while fixing the rates of such extra item(s).

If, in any case, accepted offer includes some specific payment to be made to consultants or some materials supplied by Railway free or at fixed rate, such payments shall be excluded from the gross value of the work for the purpose of payment/recovery of price variation.

(iv) Price Variation during Extended Period of Contract:

The price adjustment as worked out above, i.e. either increase or decrease shall be applicable upto the stipulated date of completion of work including the extended period of completion where such extension has been granted under Clause 17-A of the General

Conditions of Contract. However, where extension of time has been granted due to contractor's failure under Clause 17-B of the General Conditions of Contract, price adjustment shall be done as follows :

- (a) In case the indices increase above the indices applicable to the last month of original completion period or the extended period under Clause 17-A of the General Conditions of Contract , the price adjustment for the period of extension granted under Clause 17-B shall be limited to the amount payable as per Indices applicable to the last month of the original completion period or the extended period under Clause 17-A of the General Conditions of Contract; as the case may be.
- (b) In case the indices fall below the Indices applicable to the last month of original/extended period of completion under Clause 17-A of the General Conditions of Contract, as the case may be; then the lower indices shall be adopted for the price adjustment for the period of extension under Clause 17-B of the General Conditions of Contract.
- (v) The Base Month for 'Price Variation Clause' shall be taken as one month prior to closing of tender including extensions, if any, unless otherwise stated elsewhere. The quarter for applicability of PVC shall commence from the month following Base month. The Price Variation shall be based on the average Price Index of the quarter under consideration.

Base month for applicability of PVC shall be taken as the closing date of the tender & not from the date of negotiation, if any.

- (vi) The price variation as calculated for materials other than concreting materials will be calculated to the extent of 85% only of the total under supply column of Schedule-1 for respective sections (for which on account payment is admissible). The value of price variation shall be increased on pro-rata basis for the remaining 15% of such materials for which on account payment is not admissible. Similarly, the value of price variation shall be reduced pro-rata in case of unused materials, but for which ONA payment has already been made.
- (vii) Adjustment for variation in prices of material, labour, fuel, explosives, detonators, steel, concreting, ferrous, non-ferrous, insulators, zinc, and cement shall be determined in the manner prescribed.
- (viii) Components of various items in a contract on which variation in prices be admissible, shall be Material, Labour, Fuel, Steel, Cement, Concreting, Ferrous, Non-ferrous, Insulator, Zinc, Erection etc. However, for fixed components, no price variation shall be admissible.
- (ix) The demands for escalation of cost shall be allowed on the basis of provisional indices made available by Reserve Bank of India. Any adjustment needed to be done based on the finally published indices shall be made as and when they become available.
- (x) The Price Variation Clause (PVC) of General Conditions of Contract (GCC) shall not apply to such a works contract which is either on Annual Maintenance Contract (AMC) or a Zonal contract.
- (e) - Deleted -
- (f) - Deleted -
- (g) **QUANTITIES**

The approximate estimated quantities of various items of work are included in Schedule-1,

Section-1 to 5 & NS under column quantities.

(h) - Deleted -

(i) **EXPLANATORY NOTES**

Explanatory notes for various items of work included in Schedule 1, Section 1 to 5 & NS are given in Part- I, Chapter IV A.

(j) **NEW ITEMS OF WORK**

(a) Standard Schedule of Rates (SSOR) Items: Any item of work carried out by the Contractor on the instructions of the Engineer which is not included in the accepted Bill(s) of Quantities but figures in the Standard Schedule of Rates (SSOR), shall be executed at the rates set forth in the "Standard Schedule of Rates (SSOR)" modified by the tender percentage as accepted in the contract for that chapter of Standard Schedule of Rates (SSOR). However, the cumulative value of all such extra item(s) together (modified by the respective tender percentage) shall not exceed 10 % of the original contract value.

For item(s) not covered in this sub clause, the rate shall be decided as agreed upon between the Engineer and the Contractor before the execution of such items of work as per sub clause (b).

Other Items: For any item of work to be carried out by the Contractor but not included in the accepted Bill(s) of Quantities and also not covered under sub clause (a) above, the Contractor shall be bound to notify the Engineer at least seven days before the necessity arises for the execution of such items of works that the accepted Bill(s) of Quantities does not include rate or rates for such extra work involved. The rates payable for such items shall be decided at the meeting to be held between the Engineer and Contractor, in as short a period as possible after the need for the special item has come to the notice. In case the Contractor fails to attend the meeting after being notified to do so or in the event of no settlement being arrived at, the Railway shall be entitled to execute the extra works by other means and the Contractor shall have no claim for loss or damage that may result from such procedure.

The assessment of rates for extra item(s) shall be arrived at based on the prevailing market rates of labour, machinery & materials and by taking guidance from the following documents in order of priority:

- i) Analysis of Rates for "Unified Standard Schedule of Rates of Indian Railways (USSOR)".
- ii) Analysis of Rates for "Delhi Schedule of Rates issued by CPWD (DSR)".
- iii) Market Analysis

Provided that if the Contractor commence work or incurs any expenditure in regard thereto before the rates are determined and agreed upon as lastly hereon-to-fore mentioned, then and in such a case the Contractor shall only entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of determination of the rates as aforesaid according to the rates as shall be by the Purchaser. However, if the contractor is not satisfied with the decision of the Purchaser in this respect he may appeal to Chief Engineer within 30 days of getting the decision of the Purchaser, supported by analysis of the rates claimed. The Chief Engineer's decision after hearing both the parties in the matter would be final and binding on the contractor and the Railway.

PRICE OF EQUIPMENTS, COMPONENTS & MATERIALS : 1.3.3

The rates given in any sections of Schedule-3, Form-7(Sh. 1 to 26) of the tender paper

loaded by same percentage increase/decrease quoted by the tenderer against S.O.R. rates for the corresponding section of Schedule-1, Section-1 to 5, items shall be the effective "On account" rates for items given in the above mentioned subsection of the Schedule-3, Form-7(Sh. 1 to 26).

PRICE OF ADDITIONAL SUPPLIES : 1.3.4

The additional supplies will be taken over from the Contractor at the prices indicated in Schedule 3 (para 1.2.34 (c) and 1.3.12).

PAYMENTS AND RECOVERIES : 1.3.5

Subject to any deduction or recoveries which the Purchaser may be entitled to make under the contract, the Contractor shall, unless otherwise agreed to, be entitled to get the following payments subject to the conditions stipulated in subsequent paragraphs:

- i) Payment of mobilisation advance.
- ii) Payment for designs.
- iii) Payments for foundations.
- iv) 'On Account' payments.
- v) Progress payments for supply and erection.
- vi) Payments for additional supplies.
- vii) Reimbursement on account of price variation (para 1.3.2 (d)).
- viii) Payment for provisional acceptance for each sub-group.
- ix) Payment for surplus materials taken over.
- x) Final settlement.

INVOICING PROCEDURE: 1.3.6

- (a) The contractor shall submit his invoicing procedure for approval by the purchaser within 2 months from the date of receipt of Letter of Acceptance of tender. Separate bills will be submitted by the contractor for different activities as being done presently. However, all these bills will normally be submitted once in a month only. More than one bill for one type of payment in a month can be allowed on case to case basis by obtaining Engineers approval. Separate invoices shall be submitted for different type of payments. Each invoice of the bill shall be submitted with original supporting documents wherever these are acceptable to the Purchaser's Engineer, where copies of original documents are required in support of several invoices included in the bill, true certified copies of the original documents may be forwarded to the Purchaser's Engineer with his consent.
- (b) Invoices shall be submitted only on the basis of agreed principles and prices, quantities and measurement of works completed and shall be approved by the Purchaser's Engineer prior to the submission of invoices. For this purpose, the Schedule of quantities and measurements submitted by the Contractor for approval of the Purchaser's Engineer may be only upto the extent of work completed except in the case of payments on provisional acceptance under para 1.3.14.

PAYMENTS FOR DESIGNS: 1.3.7

Payments for designs shall be made on the basis of prices included in item 1, Schedule- 1, Section-1. The amount payable shall be based on assessed quantities against items 1(a) and 1(b) of Schedule 1, Section-1 (Assessment 1) (See para 2.5.9) and payments shall be made in 10 installments.

The amount payable as the first installment shall be 1/10th of the estimated total payments due against item 1(a) and 1(b) of Schedule 1, Section-1 (Assessment 1). The first installment is payable soon after Schedule-1, Section-1, (Assessment 1) is approved and subsequent 8 installments shall be paid thereafter based on progress made as indicated below :-

Payment of five installments due against item 1(a) will be related to the approval of layout plans and cross section drawings, including foundation layout and cross section drawings for Booster Transformer stations and L.T Supply Transformer Stations. Each of these installments will, however, be paid after every 20% of the aforesaid drawings for the entire section have been approved and distribution copies issued.

Payment for three installments due against item 1(a) will be related to the approval of structure erection drawings along with the profiles and the general arrangements drawings, including balance drawings for Booster Transformer Stations and L.T. Supply Transformer stations. Each of these installments will be paid after every 33-1/3% of the aforesaid drawings for the entire section have been approved and distribution copies issued.

Eight installments against item 1(b) will be paid depending upon the progress of Switching Station designs and drawings as mutually agreed.

The 10th and the last installment shall be the balance amount payable to the Contractor against the actual total payment due against item 1(a) and 1(b) based on the final quantities for the completed work. The amount is payable only after design work is completed and completion drawings referred to in Part-II Chapter-V are submitted.

ADVANCE PAYMENTS FOR FOUNDATIONS: 1.3.8

- (a) - Deleted -
- (b) - Deleted -

ON ACCOUNT' PAYMENTS: 1.3.9

- (a) 'On Account' payment will be made for equipments, components, fittings and materials required for the execution of work and additional supplies as described below subject to a maximum of 2 'On Account' bills for items costing up to Rs. 1 lakh. For items costing beyond 1 lakh, the 'On Account' bills shall not be less than 1 lakh. No 'On Account' payment will be made on supplies of concreting materials. 'On account' payment made will subsequently be adjusted against progress payment (para 1.3.11) and against payment due on provisional acceptance of each sub-group/section (See para 1.3.14) and/or against payment due on supply of spares and other supplies (see 1.3.12). All 'On Account' payment shall be covered by a standing indemnity bond in the approved Form (Form No. 16 Pt. V).

NOTE:- All the invoices should be accompanied by the following:-

1. Supplier's challans
2. Inspection Certificate granted by the Purchaser's representative.
3. Certificate of receipt of materials at Contractor's Depot/s duly accepted by the Purchaser's Engineers.
4. Certificate that the stores have been insured.
5. Quality assurance documents (see para 1.2.25).

(b) DELETED

(c) The contractor should furnish a Bank Guarantee for 10% of the amount claimed for 'On Account' payments along with invoices. The Bank Guarantee shall be in the prescribed form from State Bank of India or from any Scheduled Bank/Nationalised Bank duly conforming to the requirements specified in Para-1.1.5 (d). Initial validity of ONA BG shall be one year or up to stipulated contract completion period; whichever is less. In the event of extension to the time of completion, the Contractor shall extend the validity of the Bank Guarantee if the ONA payments are not fully adjusted from progress payments by that time. In case the Contractor is unable to furnish the Bank Guarantee, equivalent cash would be held by the Purchaser from the payments due to the Contractor.

The above mentioned Bank Guarantee may be released progressively after adjustment of the above amount from the progress payments in terms of para 1.3.11 & after obtaining specific approval of CEE/Project/NER/In-Charge of the project. Contractor may furnish BGs in different denominations (maximum five number BGs) for this purpose. Each BG will be released after adjusting the ONA payment to the extent of that particular BG.

(d) LIMIT FOR "ON ACCOUNT" PAYMENTS

"ON Account payment shall be paid in full at Sch-3 rates subject to the condition that ONA payment shall stop when cumulative ONA payment reaches 85% of the total value of materials required to complete the work. For this purpose the total value of the materials required to complete the work should be total of item 1 to 6, as per the latest approved assessment of quantities (para 2.5.9).

- (e) On Account' payments will commence only when Schedule 1, Section-1 to 8 (Assessment-1) is approved by the Purchaser.

RECOVERIES FROM THE CONTRACTOR: 1.3.10

- (a) All the recoveries for materials supplied and services rendered by the Purchaser to the Contractor and other refunds due from the Contractor shall, unless otherwise specified, ordinarily be made by deductions from payments due to the Contractor covering the value of supply and erection in the progress payment for erection (see para 1.3.11) and from payment on provisional Acceptance (see para 1.3.14).
- (b) The cost of materials supplied by the Purchaser under the second sub-para of 1.2.20.1(b) will be recovered in full by the Purchaser at relevant price in schedule-3 or book rate or last purchase rate whichever is higher, to the extent of requirement of such materials for each sub-group, from the payments to be made under paras 1.3.11 and 1.3.14.

- (c) The cost of materials if supplied under para 1.2.21. Will be recovered in the manner indicated in sub-para (a) above.
- (d) The materials supplied under paras 1.2.20.1 & 1.2.21 shall be covered by the standing indemnity bond (see Form No 16, part-V).
- (e) The security deposit shall be as per item 4 of the Preamble/Para 1.2.17 of Part-I, Chapter-II. The amount over and above the initial deposit of Bid security will be recovered from ONA/Progress payment bills of the contractor @ 6 % till it reaches 5% of the contract value.

PROGRESS PAYMENTS FOR SUPPLY AND ERECTION GENERAL: 1.3.11

- (a) (i) The entire sections will be divided into sections of approximately 100 TKMs or part thereof each of which will further be subdivided into agreed sub-sections. The priority of sections will be advised by the purchaser. Progress Payment for foundations, mast erection, bracket erection and wiring shall be as per para 1.3.11(a)(ii).
- (a)(ii) Progress payment for supply and erection are payable against items 2 to 37 of schedule 1, Section- 1 to 6. Only one progress payment per item will be made for each agreed sub- section. In case the Contractor is unable to complete any item of work in particular sub- section for reason accepted as adequate by the Purchaser, progress payments will be made to the extent of work completed in the sub-section. Supplementary progress payments will be made in respect of the left over works when the work is completed.

On completion of each item of work in schedule-1, Section-1 to 6 (Ref. para 1.3.11) on each agreed sub- section, the Contractor shall be due payments to the suitable extent (as detailed in Clause 1.3.11) of the prices for supply and/or erection included in schedule-1, Section-1 to 6 .The portion of the progress payments towards the supply shall be progressively set off against 'On Account' payment for supply made under para 1.3.9 until the entire 'On Account' payments are adjusted. Thereafter the progress payment towards supply shall commence. The progress payments towards erection will be made as follows:-

(b) FOUNDATIONS

- (i) Payment will be made on casting of foundation blocks, with or without Core holes, to the extent of 70% of the Prices for item 2 of Sec.-2 and on the total volume of foundation blocks inclusive of muffs, as included in the approved cross-section drawings or as installed at site with permission of the Purchaser's representative. For this purpose, the entire section to be equipped with Traction overhead equipment under contract will be divided into convenient Sub-section/Sub-groups as may be mutually agreed to. In case the Contractor is unable to cast all the foundation blocks on a particular Sub-section/Sub-groups, due to reasons accepted as justified by the purchaser, payments will be made to the extent of work done in the Sub-section/Sub- group. One more supplementary payment may be made in respect of left-over work when the work is completed.
- (ii) On completion of erection of Mast/Portal/Boom and their grouting the Contractor shall receive payments to the extent of 95% against item No. 2 Schedule -2, less payments made under Para- 1.3.11(b)(i).
- (iii) **- Deleted -**
- (iv) The contractor shall ensure that the mast/portal (& structure) upright shall be grouted immediately after lowering them into core hole. The contractor shall ensure that the erected mast/portal (& structure) upright is in safe condition before /during grouting and even after

grouting is completed. The contractor shall be fully responsible for any unsafe condition arising out of the delay in grouting of the mast/portal (& structure) upright, as per para-1.2.43 (Safety Measures) of Part-I, Chapter-II. In case of failure of the contractor to ensure the grouting of mast/portal (& structure) upright within three (03) days i.e. within D+3 (where “D” is the day on which the mast/portal (& structure) upright has been dropped into the core hole), a penalty of Rs. 500 per mast/portal upright per day (or part thereof) shall be imposed on the contractor for each ungrouted mast/portal (& structure) upright, starting with the fourth (04th) day i.e. w.e.f. D+4 (where “D” is the day on which the mast/portal (& structure) upright has been dropped into the core hole). In case the grouting is not completed within seven (07) days i.e. within D+7 (where “D” is the day on which the mast/portal (& structure) upright has been dropped into the core hole), the rate of penalty shall be Rs. 1000/- per mast/portal (& structure) upright per day (or part thereof), for each ungrouted mast/portal (& structure) upright, starting with the eighth (8th) day i.e. w.e.f. D+8 (where “D” is the day on which the mast/portal (& structure) upright has been dropped into the core hole).

However, during rainy season, in the event of failure on account of the contractor, to adhere to the above mentioned time schedule for the grouting of the masts, the decision of the purchaser’s Engineer regarding the cause of such failure/delay shall be final and binding on the contractor.

(c) MAST AND PORTALS

- (i) On completion of erection of masts and portals of each agreed sub-section, the Contractor shall receive payments to the extent of 85% of the prices for erection of masts and portals under item No.3 of Schedule-3, Section-3.
- (ii) On completion of erection of SPS and Brackets, the Contractor shall receive payment to the extent of 95% against item No.3 of Schedule-3, Section-3 less payment made under para 1.3.11(c) (i) above. However, payment conditions can be relaxed by CEE/Proj/NER / SAG officer Incharge of the project for Second Stage of Progress payment to the extent of 95% if the erection of SPS and Brackets gets delayed by more than TWO months purely on Railway's account. The decision taken in this respect by the Purchaser shall be final and suitable safeguard may be provided to protect Rly's interest.

(d) OTHER ITEMS OF SUPPLY AND/OR ERECTION

- (i) On completion of erection of other items included in schedule-1, Section- 1 to Section-5, on each agreed sub-section, the Contractor shall receive payments to the extent of 85% of the erection prices included in schedule-1, Section-1 to 6.
- (ii) On completion of stringing of feeder wire, AEC,BEC. wire, the contractor shall receive payment to the extent of 95% against respective item of Schedule-1, Section-1 to 6, for that portion of work, less payment made for that item under para 1.3.11(d)(i) above. However, payment conditions can be relaxed by the CEE/Project/NER / SAG officer In-charge of the project to the extent of 95% second stage of progress payment if the stringing of feeder wire, AEC,BEC wire gets delayed by more than TWO months purely on Railway's account. The decision taken in this respect by the purchaser shall be final and suitable safeguard may be provided to protect Rly's interests.

(e) -Deleted-

(f) SWITCHING STATION BUILDING-Deleted

For each Switching station building, 95% payment of total payment due against item No.34(a) to 34(i) and item No.35 of Pt.I, Ch. IVA shall be payable on completion of these works. The contractor shall receive balance 5% payment against these items after issue of PAC.

PAYMENT FOR ADDITIONAL SUPPLIES: 1.3.12

- (a) The contractor shall receive payment for additional supplies ordered in para 1.2.34(c), if any, in accordance with the prices included in Schedule-3, on delivery of such supplies to the purchaser after due adjustment against 'On account' payment made in terms of para 1.3.9."
- (b) **Deleted.**

TAX: 1.3.13

- (a) All applicable tax, duties & levies (including Octroi etc.) arising out of the transactions between the Contractor and his sub-Contractors/Suppliers for this work will be included in the rates quoted by the Contractor in the relevant schedules.
- (b) Wherever the law makes it statutory for the Purchaser to deduct any amount towards applicable tax on works contract, the same will be deducted and remitted to the concerned authority.
- (c) However, if rates of existing GST or cess on GST for Works Contract is increased or any new tax/cess on Works Contract is imposed by Statute after the date of opening of tender but within the original date of completion/date of completion extended under clause 17 & 17A of GCC and the Contractor thereupon properly pays such taxes/cess, the Contractor shall be reimbursed the amount so paid.
- (d) Further, if rates of existing GST or cess on GST for Works Contract is decreased or any tax/cess on Works Contract is decreased / removed by Statute after the date of opening of tender, the reduction in tax amount shall be recovered from Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India.

PAYMENTS ON PROVISIONAL ACCEPTANCE OF EACH SUB GROUP/SUB- SECTION: 1.3.14

On issue of Provisional Acceptance Certificate for any sub-group/ section and on fulfillment of para 2.5.11, the Contractor shall receive payment of balance 5% of the price for supply and/or erection against item 2 to 37 of schedule 1, Section-1 to 5 & NS, in each section for the quantities for which progress payments under para 1.3.11 have already been made.

PAYMENTS FOR SURPLUS MATERIALS : 1.3.15

The Contractor shall receive payment on prices included in schedule 3 for the surplus materials taken over by the Purchaser (see para 1.2.53) on delivery of such materials to the Purchaser.

FINAL SETTLEMENT : 1.3.16

On expiry of the guarantee period and issue of the certificate of final acceptance of the entire installations (see para 1.2.50), the security deposit will be refunded or Bank Guarantee released to the Contractor after adjustment of any dues payable by the Contractor.

MEASUREMENTS : 1.3.17

Payments for field work shall be made in accordance with approved designs and drawings and measured in relevant units except where provided or other wise. In case the dimensions of the work are more than those shown in approved designs and drawings, the Contractor will not be entitled to any extra payment unless dimensions were increased on account of physical impossibility of carrying out the work in accordance with approved drawings and designs. In case the dimensions of work are less than those shown in the approved designs and drawings and the work is accepted without being rejected, payment will be made as per work actually done.

The measurements will be made generally in accordance with standard engineering practice and in conformity with the explanatory notes for schedule 1, Section-1 to 5, NS (Part I, Chapter IV A).

It shall be open to the Contractor and the Railway to take specific objection to any recorded measurement or classification on any ground within seven days of the date of such measurements. Any re-measurements taken by the Engineer or the Engineer's representative in the presence of the Contractor or in his absence after due notice has been given to him in consequence of objection made by the contractor shall be final and binding on the contractor and no claim whatsoever shall thereafter be entertained regarding the accuracy and classification of the measurements.

If an objection raised by the Contractor is found by the Engineer to be incorrect the Contractor shall be liable to pay the actual expenses incurred in measurements.

MOBILISATION ADVANCE : 1.3.18

Payment(s) of Advances are applicable in the tenders having advertised value of more than 50 (Fifty) Crores.

Railway shall make payment(s) of Interest bearing advances, on the request of contractor. The payment and recovery of such Advances shall be made as under:

(a) : Mobilisation Advance –

This shall be limited to 10% of the Contract value and shall be paid in 2 stages : Stage 1– 5% of Contract Value on signing of the contract agreement.

Stage 1– 5% of Contract Value on signing of the contract agreement.

Stage 2 – 5% on mobilization of site-establishment, setting up offices, bringing in equipment and actual commencement of work.

The stage 1 of advance shall be payable immediately after signing of contract agreement.

The stage 2 of advance shall be payable at the time of mobilisation, only after submission of an utilization certificate by the contractor that the Stage 1 advance has been properly utilized in the contract.

These Advances shall be payable against irrevocable guarantee (Bank Guarantee, FDRs) from a scheduled commercial bank of India of at least 110% of the value of the sanctioned advance amount (covering principal plus interest).

The Rate of interest shall be RBI Bank Rate + 5% (Five Percent) simple interest as per Railway Board's guidelines as reviewed from time to time.

The Mobilisation Advance shall be against an irrevocable guarantee (Bank Guarantee, FDRs, KVPs/NSCs) of at least 110% of the value of the sanctioned advance amount (Covering principal plus interest). The Bank Guarantee shall be from a Nationalised Bank in India or State Bank of India in a form acceptable to Railways. This BG will be released after recovery/adjustment of the mobilisation amount from ONA and/or progress payments. Alternatively, contractor may initially submit the BG in four parts each of value 25% of the total Mob. Adv. claimed by them plus estimated interest during recovery period. Each part will be released to the contractor after adjusting the amount to the extent of that particular BG. Initially, interest calculation shall be done for one half of contract completion period on the Mob Adv claimed by the contractor. A watch shall be kept on interest accrual and if principal plus interest are likely to exceed the

amount of BG submitted by the contractor, contractor shall submit additional BG to that extent. Initial validity of BG shall also not be less than one half of contract completion period.

(b) : Advance Against Machinery and Equipment –

This advance shall be limited to a maximum of 10% of the contract value against new Machinery & Equipment, involving substantial outlay, brought to site and essentially required for the work. This advance shall not exceed 75% of the purchase price of such Equipment and shall be payable when Equipment is hypothecated to the President of India by a suitable bond or alternatively covered by an irrevocable Bank Guarantee from a scheduled commercial bank of India for full cost of the Plant & Equipment in a form acceptable to Railways. The Plant & Equipment shall be insured for the full value and for the entire period, they are required for the work. This Plant & Equipment shall not be removed from the site of work without prior written permission of the Engineer. No advance should be given against old Plant & Machinery.

The advances under sub clause (a) and (b) above, are subject to the following conditions –

The full amount of Advances shall be recovered from contractor dues. The recovery shall commence when the value of contract executed reaches 15% of original contract value and shall be completed when the value of work executed reaches 85% of the original contract value. The installments on each “on account bill” will be on pro-rata basis.

Interest shall be recovered on the advance outstanding for the period commencing from the date of payment of advance till date of particular on-account bill/Invoice/Bills (through which recovery of principal is effected) and adjusted fully against on-account bill/Invoice/Bills along with pro-rata principal recovery. In the event of any short-fall, the same shall be carried forward to the next on-account bill/Invoice/Bills and shall attract interest.

The advances shall be used by the Contractor for the purpose of the Contract, and for the purpose for which they are paid. Under no circumstances, shall the advances be diverted for other purposes. Any such diversion shall be construed as a breach of the Contract and the Contractor shall be asked to return the advance at once and pay interest at 15% per annum till the advance is recovered back from him. The Contractor shall return the advance and pay the interest in one go without demur. The Contractor, if required by the Engineer shall provide the details of utilisation of Mobilisation advance.

If the Contractor is found to have contravened the provision, it will constitute a breach of contract and Railway shall be entitled to terminate the contract and forfeit his Performance Guarantee as well as Security Deposit.

In cases, where the Contract is rescinded as per clause 62 of the GCC or short closed under any other condition(s) of the contract, without making full recovery of advances and accrued interest thereon, by the Railway, such balance of advances and accrued interest thereon shall immediately become due and payable by the Contractor to the Railway. The same shall be recovered from any due of Contractor with the Government of India.

Interest:-

The mobilisation advance shall carry a simple interest at the rate of RBI Bank Rate + 5% (Five Percent) and recovery of the mobilisation advance alongwith its interest shall be made from 'On Account' and progress bills including design payment and advance payments for foundations on pro-rata basis.

Interest shall be recovered on the advance outstanding for the period commencing from the date of payment of advance till date of particular Invoice/ bill (through which recovery of principal is effected) and adjusted fully against Invoice/ bill alongwith pro-rata principal recovery. In the

event of any shortfall, the same shall be carried forward to the next Invoice/ bill and shall attract interest.

The recovery of the advance shall commence when the value of contract executed reaches 15% of original contract value and shall be completed when the value of work executed reaches 85% of the original contract value. The installments on each "Invoice/ bills" will be on pro-rata basis.

In case principal and interest could not be deducted progressively from progress/'On Account' bills during the course of the year, the interest on mobilisation advance as accrued in the end of an year will be recovered within the first 30 days of the next year from the progress/ 'On Account' bills or any other bills which may be made by the Railways to the Contractor. If, for any reason whatsoever, no progress/ 'On Account' bill or any other amount is paid to the Contractor, he will still pay to the Railways the accrued interest in full within the said 30 days of the next year. Otherwise, the unpaid interest will be added on to the principal and interest for the next year will be charged on the balance comprising Principal as well as unpaid interest.

In case of extension of the date of completion due to any reason whatsoever the interest on the mobilisation advance outstanding would continue to accrue as specified earlier and the

Contractor/firm would make the payment against the advance in the same manner as specified in para
(b) above.

No advance/extra payment other than stated above shall be payable against the works.

The tenderers shall specifically indicate in their offer whether mobilisation advance is required by them. In case no specific demand has been made in the offer, grant of mobilisation advance shall not be considered subsequently.

--- DELETED ---

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PART - I

CHAPTER – III B PRICES AND PAYMENT for TSS

-DELETED-

P A R T –I

CHAPTER – IIIC PRICES AND PAYMENT for SCADA

- DELETED -

PART-I

CHAPTER-IV A

**EXPLANATORY NOTES OF SCHEDULE
(FOR FEEDER) SCHEDULE OF PRICES**

**PART-I
CHAPTER-IV”A”
Part “A”- FEEDER GENERAL**

1.4.1 Explanatory notes for various items of work in Schedule's are given below:

- 1.4.2 The basic quantities of components and materials required to make up a unit of work for selected items, are indicated for guidance only. There may be minor variations to suit erection but no adjustment in prices of Schedule's (Pt.I, Ch. IVA) shall be made on that account. In estimating the prices for various items of work, provision for loss and wastage in transit and erection should be provided for over and above the basic quantities of components and materials required to make up a unit of work, indicated herein, except where otherwise specified for materials supplied by the Purchaser.
- 1.4.3 In the explanatory notes given in Part-“B”- Particular of this Chapter, the term 'Small parts steel work' is meant to cover fabricated steel work made from rolled steel sections, complete with bolts and nuts and washers where required for fastening the small parts steel work to any structural member. The term "attachment" wherever used is intended to cover castings, forgings, machined or welded components or fittings, which are attached directly to a structural member, or mounted on small parts steel work and shall include bolts and nuts for fastening the attachment to the structural member or small parts steel work.
- 1.4.4 In the explanatory notes given in Part-“B”- Particular of this chapter, the term "bimetallic connection" is meant to cover any connection between a copper conductor and an Aluminum conductor. The clamps used for such connections shall be made of a suitable Aluminum alloy or copper alloy and the Copper/Aluminum conductor shall be wrapped with a bimetallic (Aluminum copper) strip to prevent direct contact between Aluminum and copper.
- 1.4.5 Special notes for measurements are included in Part-“B”- Particular of this chapter under various items, where necessary.
- 1.4.6 Reconciliation of materials supplied by the Purchaser (see para1.2.20).
- (a) The following procedure shall be adopted for the final reconciliation of the various equipments, materials, fittings and conductors supplied by the Purchaser in terms of para 1.2.20.1 (see Annexure 4) for OHE & FEEDER.
- (b) All the materials supplied by the Purchaser shall be correctly accounted for and quantities reconciled on completion of the work by the Contractor. On completion of work, all surplus materials supplied by the Purchaser together with the ones found defective or that have become defective or broken on account of defective materials and/or workmanship shall be returned to him by the Contractor.

- (c) DELETED.
- (d) DELETED.

- (e) (i) **SOLID-CORE-INSULATORS:** Cost of insulators will be paid in Schedule-5.
- (ii) In case the Purchaser chooses to supply to the Contractor the following galvanised steel tubes for bracket assembly, the procedure to be adopted would be as under:-
 - (1) Standard bracket tube (30.0/38.0 mm).
 - (2) Large bracket tube (40.0/49.0 mm).
 - (3) Stay & register arm tube. (28.4/33.7 mm).

Soon after the approval of layout plan and cross section drawings the Contractor shall assess the quantity of the above types of tubes required for the work and submit his assessment indicating the phased requirement of each type of tubes in total running lengths for verification by the Purchaser. Based on this verified assessment the Purchaser will supply the tubes in random lengths varying from 5.5 meter to 6.40 meter meeting either the phased requirement or the entire requirement. On completion of work the Contractor shall return to the Purchaser all the uncut tubes or cut pieces having length more than 2.5m, which have not been utilised.

The cut pieces having length less than 2.5 m need not be returned. For final reconciliation the total length of the tubes deemed to have been utilised for the work shall be as calculated on the basis of total length arrived at as per 'As erected' structure, erection drawings plus 7% wastage/working allowance. The total length of the tubes supplied to the Contractor less the total length returned by the Contractor shall in no case exceed the total length deemed to have been utilised for the work as stated above. In case it exceeds, the Purchaser shall be entitled to recover the cost of such excess length of tubes as per the provision specified in note at the end of para 1.4.6 (f) (Pt. I, Ch.IVA).

- (e) (iii) **SUPPLY OF STEEL BY RAILWAYS:** In case the Purchaser chooses to supply galvanised, rolled steel masts, gantry masts, fabricated steel works, to the Contractor, the cost of rolled steel masts, gantry masts, fabricated steel work damaged or falling short will be recovered at rates specified in NOTE at the end of para 1.4.6 (f) (Pt. I, Ch. IV A).

- (e) (iv) **SUPPLY OF COPPER CONDUCTORS BY RAILWAYS:** In case the Purchaser chooses to supply copper wires and conductors to the contractor, the procedure to be adopted would be as under:-

Soon after the approval of layout plan and cross section drawings the Contractor shall assess the quantity of the wires and conductors required for the work and submit his assessment indicating the phased requirement of each type of wires and conductors in total running lengths or in MT for verification by the Purchaser. The Purchaser will supply to the Contractor all wires and conductors required for the work based on unit quantities, inclusive of erection allowances in accordance with Annexure together with the lengths of finished wires and conductors for new items of work (see para

1.3.2 (j) (Pt.I, Ch. IIIA) and the lengths of wires and conductors under items 31(h) of Schedule's (Pt.I, Ch. IVA). Out of the quantity as calculated above, the contractor shall return to the Purchaser wires and conductors in longest possible bits or in the form of scrap, as calculated on the basis of the final quantities of items of work of Schedule's (Pt. I, Ch. IVA) and the quantities specified in Annexure. The total length of finished wires and conductors deemed to have been erected will be the difference, viz., as calculated on the basis of the final quantities of Schedule's (Pt. I, Ch. IVA) and the bare unit lengths specified in Annexure.

Notwithstanding the above, it is a general condition that the Contractors shall return to the Purchaser all wires and conductors which have been supplied to him but not utilised on

works. Should the Contractor be unable to do so, the Purchaser shall be entitled to recover the cost of such wires and Conductors as specified in NOTE at the end of para 1.4.6 (f) (Pt. I, Ch. IVA). For the purpose of reconciliation the length of wire or conductor deemed to have been supplied by the Purchaser to Contractor will be the length stenciled on the drum and the length deemed to have been returned by the Contractor will be the actual length of cut-pieces and/or the length calculated on the basis of the actual weight of cut pieces scrap and linear density specified.

(e) **(v) SUPPLY OF ATs & INTERRUPTERS BY RAILWAYS: -DELETED-**.

(f) OTHER EQUIPMENTS, FITTINGS AND COMPONENTS:

The Purchaser will supply the requirement of the various other equipments, components or fittings listed in Annexure-4. If there are any shortages during final reconciliation, their cost will be recovered by the Purchaser from the Contractor at the prices inclusive of all charges as specified in note below:-

NOTE: (1) If there are any shortages during final reconciliation, their cost will be recovered by the Purchaser from the Contractor at the book rate or the last purchase rate or the prevailing market rate, whichever is higher, plus 5% on account of initial freight, 2% on account of incidental charges together with supervision charges at 12.5% of the total cost inclusive of material freight and incidental charges. Freight between the Purchaser's source of supply and the Contractor's depot or RE siding shall be to the Contractor's account.

(2) No recovery/reconciliation shall however, be made as per the preceding paras, if the items stated under clause 1.4.6 (Pt. I, Ch. IVA) are made contractor supply by including the respective optional items in the contract.

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PART-I
CHAPTER-IV”A”
Part “B”

FEEDER Particulars “Explanatory Note”
Schedule –I, Section 1 to 5

- (1) Notwithstanding anything to the contrary in this section, the purchaser to the contractor will supply the entire requirement of the equipments components and fittings for the work, listed in Annexure. Railway will supply only Contact wire & Feeder wire for replacement work as on requirement.
- (2) In the case of wires, conductors, etc., the prices for erection shall include any assembly work to be done in the Contractor's depot prior to erection at site, such as fabrication of droppers etc to shapes and sizes required.

ITEM No.1 (a) Preparation of designs and drawings for overhead equipment / FEEDER/AEC/BEC.

The price shall cover verification of Purchaser's overhead equipment pegging plans indicating location of structures which will be furnished by the purchaser, in stages, and preparation of all drawings and designs required to be finalised by the Contractor. The price shall include the following:-

- (i) Making minor modifications with the approval of the Purchaser to the layout of the structures and overhead equipment, if necessary, and submission of overhead equipment layout plans, including stagger, location of cut in insulators etc.
- (ii) Preparation of cross section drawings and structure erection drawings for each structure locations [see para 2.5.6(f)].
- (iii) Choice of type and size of foundations to suit soil and loading conditions, except for the ones which are considered as "Works under other Agencies" (see para 1.2.37).
- (iv) Preparation of long section drawings of overhead equipment where such drawings are required including detailed study of overline structures such as foot over bridges, road over bridges etc. for maintaining the specified height of contact wire and requisite clearances.
- (v) Preparation of other designs and drawings including drawings of small parts steel work (other than those for which RDSO standard drawings are available) and detailed designs for booster transformer stations and LT. Supply Transformer stations (see para 1.2.23).
- (vi) Supply of requisite no. of copies of all drawings, including completion drawings specified in part -II, Chapter V to the Purchaser.
- (vii) Preparation, design, development of Bonding Plans based of Track Circuit plans supplied by the purchaser, clearly specifying the location of various bonds, +ve, -ve rails and other relevant details as required for bonding plan and supply of requisite number of copies of Bonding Plans drawings.
In case preparation of the overhead equipment pegging plans by the Purchaser for any part of the section is delayed, the Contractor may be asked to prepare pegging plans for the

section. No extra payment will be made for the preparation of such pegging plans. The total length of track for which the Contractor may be asked to prepare such pegging plans will not exceed 2% of the final total quantity against this item. This price shall also cover soil investigation and testing in an approved manner\

NOTES FOR MEASUREMENTS : For the purpose of payment against this item, the length of track shall be measured as under :-

1. **General:** By the difference in the chainages of the length under consideration, as incorporated in the layout plans.
2. **Turnouts:** The track taking off shall be deemed as starting from the toe of the switch of the Turnout.
3. **Cross-overs :** The length of track shall be taken as the difference in the chainages of the toes of switches of the two turnouts constituting the crossover.
4. **Diamond crossing with or without slips:** The two tracks crossing each other shall be measured independently as per note 1 above as though there were no crossing. No extra shall be provided for slip points.
5. **Dead ends and tops of loops:** The lengths for payment under this item shall be upto the chainage of anchor mast of the terminating OHE.
6. Feeders and return feeders from grid sub-station to feeding station

This item will also be applicable independently in case of feeders/return feeders/ conductors from grid substation to overhead equipment feeding stations or in a case of feeders/conductors running on independent structures (not supporting OHE) along or across tracks.

In such a case the length of line to be considered for purpose of item (a) shall be measured by the distance between the center of gantries of the grid sub-station and feeding stations in case of feeder/return feeders/conductors line from grid sub-station, or by the distance between the center line of the two structures to which the feeders/ return feeders/conductors are anchored in case of feeders running along the track if such feeder/return feeders/conductors are running completely on independent structures or by the distance between the center of the two structures supporting the OHE on either side of the first and last independent structure in case of feeders/return feeders/conductors running along the track supporting OHE.

ITEM No.1 (b) Preparation of designs and drawings for switching stations (FP/SP/SSP)

The price shall cover on a flat rate basis per switching station, survey, investigation of soil bearing pressure, preparation of cross section drawings, preparation of general arrangement drawings, detailed layout of equipment, bus-bar connections and insulators, layout of earthing system and earth connections, cable run layout, detailed designs and drawings for steel work and structural support, excluding the ones for which supply is made by the Purchaser, suitable concrete plinths for equipment and drawings for equipments, components, fitting and materials supplied by the Contractor. The price shall include supply of requisite number of copies of all drawings, including completion drawings as specified in Part -II, Chapter-V to the Purchaser (see para 1.2.23).

ITEM No. 2 (a)

(i) Concrete for foundation and plinth in hard soil.

(ii) Concrete for foundation and plinth in rocky soil.

(For concrete mix of M 10 and M 15 Grade in Foundation)

The price shall cover excavation, supply and handling of all materials and accessories, temporary arrangements for excavation in hard soil and concrete/masonry drains/walls requiring use of chisel and hammer 2(a)(i) or requiring blasting 2(a)(ii), Shoring where necessary, casting concrete including frame work where necessary, tamping of concrete, grouting of masts and finishing the top of concrete foundation or anchor blocks. The price also includes dismantling of all connected temporary arrangements, back filling with earth and compacting the same to the required height and width as per drawing to ensure safety of

foundation, confining the exposed height of foundation block to within 10 cm., and removal of spoil.

The Purchaser's Engineer shall certify where use of chisel and hammer or blasting has been necessary. The contractor shall arrange for supply of explosives and all tools and plants for blasting operations at his own cost. If half or more of the depth or width of excavation is in hard soil/concrete/masonry drains/walls or in rock, the entire foundations shall be paid for under item 2(a)(i) or 2(a)(ii) as the case may be. If half of the depth or width of the excavation is in hard soil/concrete/masonry drains/walls and the other half is in rock, the entire foundation shall be paid under item 2(a)(ii). The price shall include the cost of cement.

Notes for measurement for items 2 (a) (i) and (ii):-

1. The payable volume of the foundations under item 2(a)(i) and (ii) shall be the designed one as shown in the drawings for which the hole has been blasted, irrespective of the actual configuration assumed by the latter due to the blasting.
2. The depth of the excavation shall be measured from the formation level to the maximum excavated point.

ITEM No. 2 (az) (i) Concrete for foundation and plinth in hard soil.
(ii) Concrete for foundation and plinth in rocky soil.
(for concrete mix of M 15 and M 20 Grade in Foundation)

Same as 2(a)(i) and 2(a)(ii) above.

ITEM No. 2 (b) Concrete for foundation and plinth in other than hard soil and rock.
(for concrete mix of M 10 and M 15 Grade in Foundation)

The price shall include all works mentioned in item 2(a) in all classes of soil except hard soil, concrete or masonry drains and walls and rock.

ITEM No. 2 (bz) Concrete for foundation and plinth in other than hard soil and rock.
(for concrete mix of M 15 and M 20 Grade in Foundation)
Same as 2(b) above.

ITEM No. 2 (c) Reinforced concrete for foundation and plinth in other than hard soil and rock (Grade M-15)

The price shall cover excavation and all reinforced concrete work for foundations excluding supply of steel for reinforcement {which will be paid separately under Item 3(g)} and including other materials shoring where necessary, casting concrete including frame work where necessary, grouting and finishing the tops of foundation blocks. The price shall also include dismantling of all connected temporary arrangements, back filling as required and removal of spoil. The price shall also cover all concrete work for foundation (including that of Height Gauge) or anchor blocks on bridge piers, irrespective of whether they are actually reinforced or not, and counter weight foundations. Rails and fasteners required for counter weight foundations shall be supplied by the Purchaser free at the Contractor's depot or work spot according to convenience of the Purchaser. Dowel bars as may be required for bond with bridge structures shall be supplied and erected free of cost by the Purchaser. Dowel bars will not be considered as reinforcement for the purpose of this item. The price shall, include the cost of cement.

Note : Erection charges for CC/RCC in Hard Soil & rock shall be payable @ erection charges of Item 2(a)(i)/2(az)(i) & item 2(a)(ii)/2(az)(ii) respectively.

ITEM No. 2 (cz) Reinforced concrete for foundation and plinth in other than hard soil and rock (Grade M-20)

Same as for Item 2(c) above except Concrete mix shall be M-20.

Note : (i)Erection charges for CC/RCC in Hard Soil & rock shall be payable @ erection charges of Item 2(a)(i)/2(az)(i) & item 2(a)(ii)/2(az)(ii) respectively.

(ii) Cost of steel for reinforcement if any, shall be payable under item 3(g).

Item No. 2(czz) : Re-inforced cement concrete grade M-25 for foundation and plinth.

This item is exclusively applicable for casting foundation with Reinforced cement concrete of Grade M-25 suitable for special portal structures at stations and yards. Foundation shall be cast as per drawing no. CERC-6575-RC-CE-DC-001 applicable for special portal structures. The prices includes following activities.

- [i] Excavation of pit of appropriate size.
- [ii] Provision of PCC in grade M-10.
- [iii] Casting of RCC in M-25 grade concrete.
- [iv] Provision of 36 mm dia foundation bolts.
- [v] Provision of Reinforcement.
- [vi] Re-filling, compaction, ramming of pit after casting of foundation.

The price shall cover excavation, supply and handling of all materials and accessories, temporary arrangements for excavation in concrete/ masonry drains/ walls requiring use of chisel and hammer, shoring wherever necessary, casting concrete, finishing the top of foundation after erection of portal structures. The price also includes dismantling of all connected temporary arrangements and removal of spoil after completion of casting work.

Note:

- [i] 75 mm thick PCC ratio 1:3:6 (M-10) required for foundation bed shall be paid under item 34 (b).
- [ii] Cost of supply of steel Reinforcement shall be payable against item 3(g) including cutting, straightening, hooking, bending, binding, erecting and placing and keeping in position including all lead and lift and including cost of binding wire.
- [iii] Cost of supply of 36 mm dia Bolts, nuts, washers etc. shall be payable against item 3(m), however, erection price is inclusive in this item.
- [iv] Price is inclusive of re-fillings, compaction, ramming of pit after casting of foundation.

ITEM No. 2 (d) Deleted-

Notes for items 2 (a) to (c)

1. The prices under item 2 shall be same for any shape or size of concrete blocks. In calculating the individual volume of concrete, fraction of a cubic metre beyond the third decimal shall be rounded off to the next nearest third decimal.

2. The prices under items 2(a), (b) and (c) shall apply for concreting of all foundations for mast, gantries, portals, anchor blocks for guy rods, and fencing uprights.

3. For purposes of computation of volume of concrete under item 2, the volume of steel work embedded in the foundation block shall be ignored.

4. Cost of all concrete will be paid for only under item 2 and the prices of other items shall not include cost of concrete except for Item-17.

5. For purpose of computation of volume of concrete under item-2. The volume of concrete shall include the volume of sand and bitumen in sand cored foundation. However, for the purpose of computation of quantity of cement utilised in sand core foundations, the volume of the sand and bitumen used in core hole should be deducted from the total volume of the foundation.

6. For purposes of computation of volume of concrete, the volume of each muff for all masts shall be taken as 0.02 cum except for masts with balance weights and for each column of portal, each headspan mast, 2 or 3 track cantilever masts, and special fabricated masts for which the volume of muff shall be taken as 0.08 cu.m. irrespective of the size and shape of muff, on a flat basis.

7. The prices under items 2 (a), (b) and (c) shall also include the cost of concrete cable trenches and trench covers at the switching stations as well as embodiment of drain pipes, where required.

8. The prices under items 2 (a),(b) and (c) shall also cover the cost of diversion of masonry/earth drain wherever necessary for casting of foundations.

9. Concrete mix for foundation and grouting/muffing under item 2(a),(b) and (c) will be as per para 2.2.4.

10. In case Ready Mix concrete is used, no extra payment shall be payable to the contractor. Payment shall be done at the rates given in the contract irrespective of concrete is nominal or Ready Mix.

ITEM No. 2 (e) Extra for supply & sinking of concrete shells

The price shall cover extra on items 2(a),(b) and (c) for supply and sinking of a concrete shell before casting of concrete for traction structure foundations or anchor blocks including pumping of water where necessary. Purchaser's Engineer shall decide whether sinking of concrete shells is necessary.

NOTE : The above price shall be per concrete shell of standard size specified in para 2.2.7. If more than one concrete shell is used in a foundation, the price shall be proportionately augmented.

Item No.2 (f): Casting of Foundations using mechanised Augur:

The price shall cover excavation, supply and handling of all materials including supply and erection of steel for reinforcement, accessories/temporary arrangements and all associated operations for casting of foundations by mechanised Augur in all type of soils except rocks. All machines, tools and equipment needed for the above shall be supplied by the Contractor at his own cost. The price shall include the cost of cement.

NOTE : 1. The payable volume of the foundation shall be the designed one as shown in the drawings for which the pit has been excavated irrespective of the actual configuration assumed by the latter after auguring.

2. The depth of the excavation shall be measured from the formation level to the maximum excavated point.

ITEM No. 2(h)(i) : -DELETED-

Item 2(j): Concrete for Cylindrical type side bearing foundations (M-15 and M-20) (SBC - 11000 kgf/sqm)

Cylindrical type foundation for side bearing locations for 11000 kgf/sqm safe bearing capacity (SBC) as an alternative to Conventional Side Bearing type foundation for conventional and High Rise OHE as per RDSO's drawing Nos.

- (i) TI/DRG/CIV/FND/RDSO/00002/17/0 Rev-0 for Conventional OHE.
- (ii) TI/DRG/CIV/FND/RDSO/00003/17/0 Rev-0 for High Rise OHE.

The price shall cover excavation of pits with the help of mechanized auger, supply and handling of all materials and accessories including re- reinforcement steel (epoxy coated) conforming to IS: 432 Part -1. The price shall include cutting, bending and binding of re-enforcement bars.

Price shall include shoring if required, concrete grouting of mast and finishing the top of foundation of mast. The price shall also include dismantling of all temporary arrangement and removal of spoil.

Machinery/Plant and Auger required for digging of pit shall be arranged by contractor at their own cost.

ITEM No. 3(a)(i) :Supply and Erection of traction masts fabricated from Rolled mild

steel beam (BFB) of size 152mm x 152mm x 37.1 Kg/m and galvanised in length 9.5 m or 8.5 m long.

The price shall cover the cost of supply of finished traction mast fabricated from Rolled mild steel beam (BFB) 152mm x 152mm x 37.1 Kg/m designated SC-150, table 3.1 of IS-808/1989 duly drilled as per RDSO's Drawing No. ETI/OHE/G/00144, Sh.No.3 Mod-C, with latest mod. and galvanised as per Specification No. ETI/OHE/13 (4/84) with A&C Slip No.1 to 3 with latest spec. The length of mast will be 9.5 or 8.5 meter as required. The steel shall be conforming to IS-2062/2006 (latest) Gr 'A' SK Zinc conforming to IS-209/1992 (or latest).

The price shall cover cost of erection, alignment and setting before grouting of individual traction masts. The price shall also include the cost of repairing of platform shelters in case the shelter is dismantled/removed/damaged during the course of erection of a mast at platforms.

ITEM No. 3(a)(ii): Supply and Erection of traction masts, main mast of Switching

stations and Booster transformer stations fabricated from Rolled mild steel Joist (RSJ) of size 203 mm x 152 mm x 52.0 kg/m and galvanised in various lengths.

The price shall cover the cost of supply of traction mast, main mast of Switching stations and Booster transformer stations fabricated from Rolled mild steel joist (RSJ) 203mm x 152mm x 52.0 Kg/m designation WB-200, table 2.2 of IS-808/1989 duly drilled as per RDSO's Drawings given below for various types of masts and galvanised as per Specification No. ETI/OHE/13 (4/84) with A&C Slip No.1 to 3, with latest spec. The steel shall be conforming to IS-2062/1992 (latest) Gr 'A' SK Zinc conforming to IS-209/1992 (or latest).

Drg No.	(i) ETI/OHE/G/00144, Sh.No.3 latest Mod	9.5 M long
	(ii) ETI/C/0030 latest Mod	11.4 m (S1)
	(iii) ETI/C/0031 latest Mod	11.4 m (S2)
	(iv) ETI/C/0036 latest Mod	8.0 m (S4)
	(v) ETI/C/0181 latest Mod	12.4 m (S6)
	(vi) ETI/C/0184 latest Mod	9.4 m (S9)

The price shall also cover the cost of supply of any other structures fabricated out of RSJ beam.

The price shall cover cost of erection, alignment and setting before grouting of individual traction masts and main masts of Switching and Booster Transformers stations including those for head spans. The price shall also include the cost of repairing of platform shelters in case the shelter is dismantled/removed/damaged during the course of erection of a mast at platforms.

ITEM No. 3(b)(i) :Supply and erection of fabricated and galvanized structures (O,N&R type portals) with necessary components other than masts.

The price shall cover the cost of supply of O, N and R type portals with components as per RDSO's Drg. No. :

- (i) ETI/C/0008 Sheet No.1 latest Mod for 'N' type
- (ii) ETI/C/0017 Sheet No.1 latest Mod for 'O' type
- (iii) ETI/C/0011 Sheet No.1 latest Mod for 'R' type

The structures shall be fabricated from steel conforming to IS:2062/2006, Gr.E-250 (Fe 410 W), Quality-A, IS-808/1989 and galvanised as per RDSO's specification No.ETI/OHE/13 (4/84) with A&C slip Nos 1 to 3 , with latest spec.

The price shall cover, cost of erection, alignment and setting before grouting, wherever required, of portals assembly of boom components and erection of the same. The prices shall also include supply and erection of galvanised bolts, nuts washers etc. wherever required as per approved designs and drawings. The price shall cover assembling, adjustment and erection of all types of booms including TTC booms and any special structures across the track, not covered under item 3(b)(iii). The price shall also include the cost of repairing of platform shelters in case the shelter is dismantled/ removed/damaged during the course of erection of a portal at platforms.

ITEM No. 3(b)(ii) : Supply and erection of structural steel (traction mast) fabricated and galvanized, of all type B-Series Mast.

The price shall cover the cost of supply of B-Series traction mast 9.5 m and/or 11.4 m long i.e. B-Series Mast fabricated and galvanized as per RDSO Drg No. ETI/C/0071 (Mod-E), TI/DRG/CIV/B-Mast/00001/ 13/0 with latest mod and specification No. ETI/OHE/13 (4/84), with latest spec. Steel shall be conforming to IS-2062/2011 Gr. A and Zinc conforming to IS-209 latest.

The price shall also cover the supply of all size of B-Series mast required which has not been mentioned.

The price shall cover cost of erection, alignment and setting before grouting of individual traction masts and main masts of Switching and Booster Transformers stations including those for head spans. The price shall also include the cost of repairing of platform shelters in case the shelter is dismantled/removed/damaged during the course of erection of a mast at platforms.

Note: 11.4 m long masts shall have provision for erection of Brackets (Cantilevers) for conventional as well as for High Rise OHE.

ITEM No. 3(b)(iii) Supply and erection of special fabricated & galvanised steel structure other than portals and traction masts not covered under item 3(b)(i) & 3(b)(ii).

The price shall cover the cost of supply and erection of special fabricated & galvanised steel structures (other than BFB/RSJ/B-Series masts and portals) for conventional and High Rise OHE. The structure to be supplied under this item shall be TTC, G-type, BFB type portals, Bridge masts, emergency masts and double/fabricated "S" series masts such as S3, S5, S7, S8, S-100, S-101, T-150, Dwarf Masts etc. Any other similar structure required during the execution of work shall also be supplied under this item.

The price shall include the cost of steel, fabrication, galvanisation, and supply at site for erection. Steel shall be conforming to IS-2062 Gr.'A ' SK 2011 (latest), Zinc conforming to IS- 209/1997 (latest) and galvanization to RDSO's specification No. ETI/OHE/13(4/84) with A&C slip No.1 to 3, with latest spec. The various structures covered under this item are:-

SN	Description	Drg No.	Mod
1	TTC with 5.5/8.0m boom	ETI/C/0009 sheet 1	Latest
2	G-type portal upright & end pieces	ETI/C/0056	Latest
3	BFB portal	ETI/C/0026 Sh.1	Latest
4	S-7,12.4m	ETI/C/0182	Latest

5	S-8,12.4m	ETI/C/0183	Latest
6	S-100, for LT, transformer at SWS	ETI/C/0043	Latest
7	S-101, for Isolators inside SWS	ETI/C/0044	Latest
8	S-3,11.4m	ETI/C/0180	Latest
9	S-5,11.4m	ETI/C/0042	Latest
10	T-150, for LT supply transformer	ETI/PSI/037	Latest
11	Dwarf Mast	ETI/OHE/G/1402	Latest
12	Special BFB Portal for 5 tracks (General Arrangement) for High Rise OHE	TI/DRG/CIV/BFB-POTAL/00001/13/0 Sh. No. 1	Latest
13	G-Type Portal Special Upright and End Piece for High Rise OHE	TI/DRG/CIV/G-PORTAL/00001/13/0	Latest
14	Two Track Cantilever Structure (TTC) General Arrangement for High Rise OHE	TI/DRG/CIV/TTC/00001/13/0 Sh.-1	Latest

The price shall cover, cost of erection, alignment and setting before grouting , wherever required, gantries, including tower/ steel tower/steel work for feeders for traction sub-station, drop arms, standard super masts and suspension brackets for feeders and return conductors, dwarf masts or stub masts for anchoring, complete with anchor plates drilled and welded in position, multiple cantilever cross arm, chairs, adopters for bracket assemblies and all other small part steel works, the erection of which is carried out by the Contractor irrespective of whether they are supplied by the Purchaser or the Contractor. The prices shall also include supply and erection of galvanised bolts, nuts washers etc. wherever required as per approved designs and drawings. The prices shall also include the cost of repairing of platform shelters in case the shelter is dismantled/ removed/damaged during the course of erection of a mast/portal at platforms.

Note for Item 3(a)(i), 3(a)(ii), 3(b)(i), 3(b)(ii) & 3(b)(iii) :

(i) The price for the items 3(a)(i), 3(a)(ii) and 3(b)(i), 3(b)(ii) , 3(b)(iii) shall also include the cost of stenciling of location number on masts/portal uprights in the manner as directed by the Purchaser. The price shall also include straightening of masts/portals uprights wherever approved by the purchaser and cutting of mast/portals/upright to suit the site condition.

(ii) For the purpose of payment for supply and/or erection, the black weights as per respective RDSO drawing for individual traction masts (RSJ, BFB & B series, S-1, S4, S-6 & S-9), head span, Portal structures (O, N & R type), special steel structures (TTC, BFB, G & P type portal, Dwarf masts, S3, S5, S8, S100, S101, T-150 etc) shall be payable to the contractor.

(iii) For the purpose of payment for supply and/or erection, of bridge mast or any other structures which are not covered in RDSO's drawings, if any, the black weights of such structures including all components as shown in respective approved drawing, shall be payable to the contractor by purchaser.

(iv) No payment is permissible for increased weight of any structure or their components on account of galvanization.

(v) The payment shall be made on the basis of the final lengths/weight of the structures, in case the same are cut or modified as indicated above before erection.

(vi) In case of any dispute in unit weights mentioned in drawings, the matter will be decided by the CPM of the project and decision taken in the matter will be final and binding on to the contractor.

Standard weights of Galvanised structures

S. No.	Structure Type	Standard Length in Meters	Black Wt. (kg) as per Drawing	Weight of finished Galvanised Structure (kg)
A	B	C	D	E
1	RSJ	9.50	494.00	499.77
2	BFB	9.50	352.45	357.64
3	B-150	9.50	369.69	378.67
4	B-175	9.50	422.89	432.40
5	B-200	9.50	474.19	483.95
6	B-250	9.50	659.27	672.34
7	NU	10.445	365.26	385.30
8	NE1	5.38	183.88	193.63
9	NE2	5.88	199.18	209.80
10	NB 1.5	1.5	68.83	70.33
11	NB 3.0	3.0	110.99	113.69
12	NB 4.5	4.5	160.58	164.47
13	NB 6.0	6.0	210.20	215.14
14	NB 7.5	7.5	252.36	258.50
15	NB 9.0	9.0	301.95	309.28
19	RU	10.58	627.48	651.87
20	RE-1	11.6	634.33	662.13
21	RE-2	12.1	660.56	689.75
22	RB 7.5	7.5	432.58	440.78
23	RB 9.0	9.0	507.71	517.15
24	RB 10.5	10.5	586.49	597.65
25	RB 12.0	12.0	665.26	677.78
26	RB 13.0	13.0	717.88	731.60
Note: The tolerance of (+/-) 2.5% of the weight of finished galvanized structures as per column-E above will be the limit.				

Note: This list is only indicative in nature and weight of finished galvanized structures or weight of galvanisation in structures shall be governed by latest guidelines issued by RDSO in this regard.

Item 3(b) (iv) : Design, Supply, Fabrication, Erection & Painting of Height Gauge at level crossings (for clear span up to 7.3m and / or above 7.3m upto 12.2m)

The price shall cover supply of Height Gauges duly fabricated painted complete in all respect. However, provision of particular type of Height Gauge at various level crossings shall be decided and advised by the purchaser during execution of work. Contractor shall procure the structures/Steel required for the work accordingly. Following RDSO/ CORE drawings are applicable for different types of Height Gauges.

SN	Description	RDSO/CORE Drg. No.
1	Standard Plan, Details of Height Gauge for span 7.3 m to 10.0 m, Details of structure and foundation.	CORE Drawing No. RE/CIVIL/S/148-2011 Mod-1 & 2 OR TI/DRG/CIV/HGAUGE/RDSO/00001/14/0 Mod-A
2	Standard Plan, Height Gauge for level crossing (For clear span up to 7.3 m) Details of structures and foundation.	TI/DRG/CIV/HGAUGE/RDSO/00001/05/0

3	Standard plan, Height Gauge for level crossing (For clear span above 7.3 m up to 12.2 m) Details of structures and foundations.	TI/DRG/CIV/HGAUGE/RDSO/00002/05/0
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Price shall cover supply of various steel sections conforming to IS 2062/2011, IS 808/1989, Fabrication at site or supply duly fabricated from CORE/IS approved sources for structures & SPS. Price shall cover supply of bolts, nuts & washers etc necessary for fastening the components of Height Gauge.

Price shall cover cost of painting of Booms & upright with Red Oxide / Zinc Chromate to IS: 2074 as first coat and 2nd coat with enamel paint to IS: 2933-1975 Black and white colour alternatively 300 mm wide band.

Crash Barrier and Rail Barricading shall be provided as required and as per provision in drawings.

The price shall cover cost of erection, alignment and setting while grouting of upright and side supports. The price shall cover labour charges required for welding / fabrication of side supports / uprights and other components at site.

Note:-

- (i) For the purpose of payment against item 3(b)(iv) for all the components (upright, boom, side supports, crash barrier / Barricading etc.), weight of structures/ fabricated steel works will be calculated according to standard unit weight of respective sections for required quantity. Contractor will be required to submit Bill of materials for each type of Height Gauge along with Black weight thereof for approval by the purchaser before claiming the payment.
- (ii) In case of any dispute in unit weights, the matter will be decided by the CPD of the project and decision taken in the matter will be final and binding on to the contractor.
- (iii) No crane / tools & Plants will be provided by purchaser for fabrication, erection or transportations of Height Gauge or black steel required for the work.
- (iv) Prices for foundation works (CC & RCC) shall be admissible under item 34(b) and 2(cz) respectively.

Item 3(b)(v) : Supply and Erection of special type portal structures including uprights, Booms and components.

The price shall cover the cost of supply of special type portal structure with components as per Drawing to be supplied by the purchaser.

The structure shall be fabricated from steel confirming to IS - 2062/ 2006 No. E - 250 (Fe 410W) quality- A, IS - 808 / 1989 and galvanised as per RDSO specification No. ETI/OHE/13 (4/84) with A&C slips Nos 1 to 3.

The price shall cover, cost of erection, alignment and setting before grouting, wherever required of portal assembly of boom components and erection of the same. The prices shall also include supply and erection of galvanised bolt, nuts, washers etc wherever required as per approved designs and drawings. The price shall cover assembling, adjustment and erection of booms. The price shall also include the cost of repairing of platform shelters in case the shelter is dismantled/ removed/ damaged/ during the course of erection of a portal at platform.

The Price shall also cover the cost of stenciling of location number on the portal upright in the manner as directed by the purchaser. The price shall include cost of straightening of uprights/Booms if required.

ITEM 3 (c) : Supply only of fabricated steel work other than mast

The price shall cover the cost of supply only of all fabricated steel work excluding fasteners which are required to be supplied by the Contractor. The cost of erection for such steel work, if carried out by the Contractor shall be paid for under item 3(b)(iii).

For standard fabricated steel work for which RDSO'S approved drawings are available, the weight of steel work as specified in RDSO'S drawing shall be considered for payment. However, in case the unit sectional weight of any member indicated in RDSO's drawing is not in conformity with the unit sectional weight as per the latest IS specification, the weight of the fabricated steel work shall be calculated on the basis of latest IS specification and the same will be considered for payment. For the non-standard fabricated steel work, the calculated weight to be considered for payment under this item shall be included in the relevant drawing based on, latest IS sectional weight at the time of submitting the designs for approval of the Purchaser.

The price shall include the cost of supply of bracket top and bottom mast fittings suitable for PSC masts.

ITEM No. 3(d) - DELETED-

Notes for Items 3(a)(i), 3(a)(ii), 3(b)(i), 3(b)(ii), 3(b)(iii) & 3(c)

1. For the purpose of payment against items 3(a)(i), 3(a)(ii), 3(b)(i), 3(b)(ii), 3(b)(iii) & 3(c), weight of structures or fabricated steel work will be calculated according to the weight of black steel given in section books for the lengths of various members shown in the approved drawings. There will be no addition for increased weight due to galvanizing or painting or weld material or reduction for holes or skew cuts.

2. The rates against item 3(b)(iii) shall be applicable to the erection of small part steel work, which are not covered under the various other items of work. Unless specifically indicated none of the other items of work shall include the cost of supply and/or erection of small part steel work, which will invariably be paid for under item 3(b)(iii) or and 3(c) as applicable.

ITEM No. 3(e)(i) : Supply and erection of a Guy Rod Assembly

The price shall cover supply and erection of Guy Rod Assembly, for both conventional and High Rise OHE, of various lengths for traction masts, feeder line towers or supports complete with mast guy rod fittings, guy rod with adjustments and part/s be grouted in the anchor block. The price shall not include the cost of supply and erection of a dwarf or stub mast with anchor plates drilled and welded in position, where required, for anchorage, and small parts steel work, complete with bolts and nuts etc., if any for attaching the mast guy rod fittings to the mast/structure which shall be paid for separately under the relevant item. Prices indicated against all other items should be exclusive of the price of supply and erection of guy rod, if any which will be paid for under this item.

COMPONENTS REQUIREMENT

Rly. Id. No.	Description of components	Qty. per unit
3232	Mast guy rod fitting (welded) complete with 4 short bolts, nuts, lock nuts and washers for attachment to mast/S.P.S including appropriate fittings.	1 off
5001/ 5001-1/ 5001-3	Anchor bolts (complete with nuts lock nuts and split pins)	1 Set
5002	Guy rod stirrup	1 off
5004 or 5005 or 5005-2 or 5006-1 or 9070 or 9071 or 5006-2	Guy rod with nut, lock nut, washer and split pin	1 off
5007-1	Anchor 'v' bolt	2 off
5008	Anchor	2 off
5220	Guy rod double strap assembly	1 off or 2 off (as required)

NOTE:

1. In case the Contractor desires to adopt a different design for guy rod assembly, the same shall be indicated by him in the Tender and the components required should be clearly listed under this item as deviation.

2. Supply and erection of guy rod assembly at anticreep portals will also be paid for under this item.

ITEM No. 3(e)(ii) : Supply and erection of Anchoring Arrangement of traction mast with Galvanised steel stranded wire

The price shall cover supply and erection of Anchoring Arrangement with Galvanised steel stranded wire of required length for traction masts, feeder line towers or supports complete with mast guy rod fittings, Galvanised steel stranded wire of 9.3 or 9.7 m and part/s be grouted in the anchor block as per RDSO's drawing No. TI/DRG/OHE/GSSW/0002/09/0. The price shall not include the cost of supply and erection of a dwarf or stub mast with anchor plates drilled and welded in position, where required, for anchorage, and small parts steel work, complete with bolts and nuts etc., if any for attaching the mast guy rod fittings to the mast/structure which shall be paid for separately under the relevant item. Prices indicated against all other items should be exclusive of the price of supply and erection of guy rod, if any which will be paid for under this item.

COMPONENTS REQUIREMENT

Rly.Id.No.	Description of components	Qty. per unit
3232	Mast guy rod fitting (welded) complete with 4 short bolts, nuts, lock nuts and washers for attachment to mast/S.P.S including appropriate fittings	1 of
5023-1	Eye Bolt (complete with M24 nut, Lock nut Plain washer, thimble and split pins 5x40	1 Set
5002	Guy rod stirrup	1 off
5004-1or 5005-1	Galvanised Steel Stranded Wire 12.5 mm dia	1 off
5007-1	Anchor 'v' bolt	2 off
5008	Anchor loop	2 off
5220	Guy rod double strap assembly	1 off or 2 off (as required)

Item No.3(f) : Erection of PSC Mast.

The erection price shall cover cost of erection, alignment and getting before grouting of individual PSC masts wherever these are to be located. The price shall also include the cost of stenciling of location number on masts in the manner directed by the purchaser.

Item No.3(g) : Supply of steel reinforcement for RCC work including cost of cutting , straightening, bending , biding, erecting and placing & keeping in position including all lead & lift & including cost of binding wire

The item covers the price of supply of tested quality of steel for reinforcement of appropriate size and for reinforcement steel above 8 mm or suitable dia shall be High strength deformed steel bars conforming to IS:1786/1985 and below 8 mm dia shall be mild steel and medium tensile steel bars conforming to IS:432(Pt.I)/ 1982.

Price shall cover the cost towards cutting, straightening hooking, bending, binding, erecting and placing and keeping in position including all lead and lift and including cost of binding wire.

Test certificates for steel will be furnished by the Contractor at his own cost from a laboratory approved by the Engineer-in-Charge. Nothing extra will be paid for unauthorised overlaps and wastage of steel involved in cutting the bars to their required sizes.

Item No.3(h)(i) : -DELETED-

Item No. 3(h)(ii) : -DELETED-

Item No.3(i) : Supply and Erection of 25 kV Caution Boards/Plates

The price shall cover price of material including Caution Boards, SPS items, nuts, bolts etc. as required and erection charges Caution Boards shall be of two types.

- (i) General Caution Notice at entrance to Railway station (Hindi & English). No. ETI/OHE/G/7551 latest Mod.
- (ii) Caution Plate 25000 V. No. ETI/OHE/G/7531 latest Mod.

Price shall be inclusive of Sales tax, Excise duty, Freight etc. Boards shall required to be installed on a steel structure/Rail post/wall of a building therefore mode of erection shall be as per requirement of the site.

ITEM No.3(j) : Supply and erection of protective screen on ROB/FOBs

The price shall cover on per track basis on both sides of ROB/FOB, the cost of all material required for fabrication of protective screen including angle, Tee, expanded metal (Jali), GI sheet, paints etc. The price shall also include the labour cost for fabrication, erection and painting at various locations. The fabrication and erection work shall be done as per RDSO Drg.No.ETI/C/0068 latest Mod.

Item 3(k) Supply and erection of Danger Plate on a Height Gauge

The price shall cover supply of Danger Board (as per RDSO drawing No. ETI/C/0069 Rev-C) including necessary Bolts, Nuts, Washers etc and erection thereof on the boom of each Height Gauge

ITEM No.4(a) (i) : Supply without Insulator and erection of a single bracket assembly

The price shall cover on a flat rate basis any bracket assembly on a traction mast or support on drop arm and shall include those on high/low level platform, in the vicinity of turnouts, over bridges or and at locations with reduced encumbrance or terminating wires. The price shall include the cost of supply of all components including galvanised steel tube, dropper wires, bolts and nuts etc. but excluding small parts steel work and solid core insulators. Cost of insulators will be paid in Schedule-1, Section-5 and cost of SPS will be paid under item 3(c) of Schedule-1, Section-3. The price shall cover erection of all components including insulators, small parts steel work and dropper wires. However, this does not include the anticreep arrangement at masts/structures. The price shall include:

Rly. Id No.	Description of components	Qty. per unit
3020-1	Mast fitting for hook insulator (Forged)with 2 off bolts, nuts, lock nuts and washers of 16 dia.	1 set
2400	Tubular stay arm assembly (including galvanised steel tube).	1 set
2110/ 2130/ 2380	Catenary suspension bracket assembly or hook bracket	1 off
1160)	Suspension clamp	1 off

2120, 2140, 2040, 2080	Bracket tube assembly complete with tube cap and sleeve where required (including galvanised steel tube).	1 set
3070-1/2)	Mast bracket fitting assembly including 2 off bolts, nuts, lock nuts and washers of 16 mm for attachment to structure or to small part steel work.	1 set
2151-2, 2152-2, 2161-2, 2162-2	Register arm hook Top & Bottom complete (Forged) with bolts, nuts and lock nuts.	1 off
2420 or 2430, 2270-4 or 5	Register arm assembly or raised register arm assembly (including galvanised steel tube).	1 set
2460 Style 02 or 2470Style 02	Register arm dropper assembly including dropper wire complete with bolts, nuts etc.	1 set
2391- 1, 2540/2520	Steady arm hook (BFB) (Forged) or bent steady arm (where required)	As required
2361-1, 2491-2, 2492-2	25 mm drop bracket (Forged) with bolts & locknuts. 25 mm Steady arm clamp (Forged) with bolts & locknuts.	-do-
1220/1370/-1	Contact wire swivel clip or raised register arm clamp	1 off
2550-1/2	Antiwind clamp	As required

ITEM No. 4(a)(ii) : Extra on 4(a) (i) for supply and erection of additional fittings on a single bracket assembly for supporting two OHEs

The price is applicable as an extra to item 4(a) (i) or 4(a) (v) for the provision of additional fittings required to support an additional OHE on a single bracket assembly payable under item 4(a)(i) or 4(a)(v). The price shall include supply of all extra fittings excluding the double contact wire swivel clip. The price shall include erection of all extra fittings, including the double contact wire swivel clip.

ITEM No. 4(a)(iii) : Supply without insulator and erection of a single bracket assembly suitable for tramway type overhead equipment (regulated).

The price shall cover on a flat rate basis any bracket assembly, on a traction mast or support on drop arm, and shall include those on high level platform, in the vicinity of turnouts, over bridges or over-laps and at locations with reduced encumbrance or terminating wires. The price shall include the cost of supply of all components including galvanised steel tubes, dropper wires, bolts and nuts etc. but excluding small parts steel work and solid core insulators (Cost of insulators will be paid in Schedule-1, Section-5). Cost of SPS will be paid under item 3(c) of Schedule-1, Section-3. The price shall cover erection of all components including insulators, small part steel work and dropper wires. However, this does not include the anticreep arrangement at masts/structures. The price shall include:

Rly. Id. No	Description of Component.	Qty. per Unit.
3021-1	Mast fitting for hook insulator (Forged) with 2 off bolts, nuts, lock-nuts & washers of 16 mm dia.	set 1
2400	Tubular stay arm (including galvanised steel tube).	set 1
2403-1, 2402	Tubular stay sleeve with Adjuster.	set 1
2380	Hook bracket	set 1
2140	Large catenary direct clamp	set 1
2160-1	Large register arm hook	set 1
2080	Large bracket tube assembly (49 mm) (including galvanised steel tube).	set 1

3070-1/2	Mast bracket fitting assembly including 2 off, bolts, nuts, lock-nuts and washers 16 mm.	set 1
2540-1	BFB steady arm assembly	set 1
2550-3	Standard anti-wind clamp	set 1
1220	Contact wire swivel clip	set 1

ITEM No.4(a)(iv) : Extra on item 4(a)(iii) for supporting two tramway type OHE (Regulated).

The price is applicable as an extra to item 4(a)(iii) for the provision of additional fittings required to support an additional OHE on complete bracket assembly payable under item 4(a)(iii). The price shall include supply of all extra fittings, excluding the double contact wire swivel clip.

ITEM No.4(a)(v) : -DELETED-

Item No.4 (ax): Supply of Insulators for item Nos.4 (a)(i) & 4 (a) (iii).

The price shall cover only supply of the following Insulators mentioned against each items required for execution of work covered under items 4(a)(i) & 4(a)(iii). Erection cost of insulators are inclusive in items 4(a)(i) & 4(a)(iii) respectively.

Item No.	Insulator
4(ax)(i)	Stay Arm Porcelain (CD-1050 mm)
4(ax)(iv)	Bracket Porcelain (CD-1050 mm)
4(ax)(ii)	Stay Arm Composite (CD-1050 mm)
4(ax)(v)	Bracket Composite (CD-1050 mm)
4(ax)(iii)	Stay Arm Composite (CD-1600 mm)
4(ax)(vi)	Bracket Composite (CD-1600 mm)

ITEM No. 4(b)(i) : Supply without insulator and erection of pull-off arrangement for one OHE

The price shall cover supply of all components required for a pull-off arrangement to pull one equipment only including supply of copper conductors, small jumper(50) wire, head-span mast fittings complete with M.S. angle, equalising plate assembly, steady-arm, catenary dropper clip, contact wire swivel clip and fittings excluding solid core insulators (Cost of insulator will be paid in Schedule-1, Section-5). The price shall cover erection of all components including solid core insulators, small jumper wire and conductors.

- NOTE : (i) For composite OHE' a catenary dropper clip with necessary bimetallic strip/washer to be used in place of catenary dropper clip (Id. No.1192).
- (ii) 5 mm diameter Hard drawn Copper wire shall be used for Register Arm Dropper for all locations except for those on long Girder Bridges, where wear rate is high for which 7 mm diameter Hard drawn Copper wire shall be used for Register Arm Dropper.

ITEM No. 4(b)(ii): Extra for each additional equipment pulled.

The price shall cover as an extra to item 4(b)(i) supply and erection of all additional fittings required including the supply of required conductors/ jumper wires, in case the pull off pulls more than one equipment the prices applicable for each extra equipment pulled.

ITEM No. 4(b)(iii) Supply without insulator and erection of a pull-off arrangement for regulated Tramway type OHE.

The price shall cover supply of all components including conductors required for a pull off arrangement to pull one equipment only, complete with steady arm, contact wire swivel clip and

fittings, including solid core insulator (Cost of insulator will be paid in Schedule-1, Section-5), . The price shall cover erection of all components including solid core insulators, small jumpers.

ITEM No. 4(b)(iv) : DELETED

ITEM No.4 (bx) : Supply of Insulators for item Nos. 4 (b)(i) & 4 (b)(iii)

The price shall cover only supply of following Insulators mentioned against each item required for execution of work covered under items 4(b)(i) & 4(b)(iii). Erection cost of insulators are inclusive in items 4 (b)(i) & 4 (b)(iii) respectively.

Item No.	Insulator
4(bx)(i)	Porcelain 9 Tonne (CD-1050 mm)
4(bx)(ii)	Composite 9 Tonne (CD-1050 mm)
4(bx)(iii)	Composite 9 Tonne (CD-1600 mm)

ITEM No. 5(a)(i) : Supply and erection of mounting arrangement for span wire.

The price shall cover supply of all components including adjusters, terminal fittings and mast attachments required to attach a span wire or a head-span wire or a cross span wire or a steady span wire or a support span wire for supporting contact wire only, at both ends, to traction masts/structures or special brackets. The price shall include the cost of solid core insulators (Cost of insulator will be paid in Schedule-1, Section-5), and small parts steel work, if any. The price shall cover erection of all components including mounting arrangements for span wire and solid core insulators but excluding small parts steel work, if any.

ITEM No. 5(a)(ii): Supply and erection of a span wire

The price shall cover supply and erection of a span wire per meter. The payable length in case of head span wires shall be the horizontal distance between the inner faces of all traction masts/structure on which the mast attachments are mounted, and in case of Large Span Wire, the actual length shall be measured at the time of erection. No extra payment shall be made on account of the sag. The price is applicable for all types of span wires including Large Span Wires. Erections of a meter beyond the first decimal shall be rounded off to the nearest first decimal.

ITEM No. 5(az)(ii): Supply and erection of a span wire

Same as item 5(a)(ii) but excluding supply of Catenary wires

NOTE : The quantity for which the payment is made for the supply and erection of large span wire under this item shall be deducted from the corresponding length in the span for which payment is made under item 6(a).

ITEM No. 5 (b): Supply without insulator and erection of suspension of one conventional OHE/ composite OHE from headspan

The price shall cover supply of a suspension assembly to carry complete all copper OHE/ Composite OHE on head spans inclusive of all dropper assemblies (exclusive of dropper wire) and from head-span, cross-span steady wire attachment, steady arm/rod, catenary suspension clamps and other fittings required to make complete suspension arrangements for copper OHE/Composite OHE on head span. The price shall cover the erection of all components, fittings, and droppers for suspension of OHE from head span.

ITEM No. 5 (c) : Supply of without insulator and erection of Suspension /registration of contact wire only

The price shall cover supply dropper wire and supply and erection of all fittings required for suspension/ registration of a contact wire only whether under head spans carrying other types of OHE or not or on any bracket for carrying contact wire only. The price shall include the followings:-

- (i) Vee clamp or double vee clamp with adjuster, or steady arm with steady wire clamp.
- (ii) Contact wire swivel clip.

ITEM No.5 (ax): Supply of Insulators for item 5(a)(i), 5(b) and 5(c)

The price shall cover only supply of any of the following Insulators mentioned against each item required for execution of item covered under items 5(a)(i), 5(b) and 5(c). Erection cost of insulators are inclusive in items 5(a)(i), 5(b) and 5(c) respectively.

Item No.	Insulator
5(ax)(i)	Porcelain 9 Tonne (CD-1050 mm)
5(ax)(ii)	Composite 9 Tonne (CD-1050 mm)
5(ax)(iii)	Composite 9 Tonne (CD-1600 mm)

ITEM No. 6 (a): Supply and erection of overhead equipment only.

The price shall cover the supply of contact wire (107 Sqmm HDGCC), catenary(65 Sq. mm 19/2.1mm), dropper wire(5mm), jumper wires (50 Sq.mm, 19/1.80mm or) as per the specifications indicated under para 2.4.9 of the tender paper.

The price shall cover supply of all components including dropper clips, parallel clamps for jumpering and splices (where their use is approved) and small parts steel works complete with bolts and nuts etc. for attachment of number plates to mast/structure, if any. The price shall cover erection of all components and wires and conductors including contact wire, catenary, droppers, jumpers and terminating wires, if any, but excluding small parts steel work, if any. The price shall be excluding the cost of erection of large span wire, which will be paid under item 5(a)(ii).

The price shall include provision of Retro reflective number plates on traction masts or structures. The prices shall exclude supply of small parts steel work for fixing of retro reflective number plate (like as Clamps & plates) will be paid under item no.3(c). The price shall include bolts and nuts for attachment of Retro reflective number plates to masts/ structures. The price shall also include the cost of painting the setting distance and rail level on masts/structures, stenciling of symbol for direction of emergency telephone socket. The price shall not include termination of conductors which will be paid for under item 8.

Rly. Ident No.	Description of components	Qty. for unit
1040-2 or SK-534/1 & SK-575/2 or SK- 576/1 & SK-535/2 or 1041-3.	Contact wire parallel clamp small	As required
1180/SK-572/1 &SK-572/2	Contact wire dropper clip (107)	-do-
1192	Catenary dropper clip complete with bolts, nuts etc	-do-
7501/7503	Enameled/ Retro reflective number plates complete with 2 Galv. MS. bolts m 10x35/30, nuts and lead washer for m 10 bolts but excluding SPS for attachment of number plate to masts/structures.	-do-
1110-2	Contact wire ending clamp	-do-
1120	Catenary ending clamp	-do-

1140	Large span wire clamp (130)	-do-
5020-1/5020-2	9-T, Adjuster (Forged)	-do-
5030	Anchor double strap assembly	-do-
5191/5192	Compensating plate/equalizing plate	-do-

ITEM No. 6 (az) : Supply and erection of overhead equipment only

Same as item 6(a) but excluding supply of Contact and Catenary wires.

ITEM No. 6 (ax)(i) : Supply of Hard Drawn Grooved Copper Contact Wire 107 Sq. mm required for item nos. 6(az), 6(bz), 6(cz), 10(az), 10(bz), 10(cz), 12(az), 12(cz) and 31(gz).

The price shall cover only supply of 107 Sq. mm Hard Drawn Grooved Copper Contact Wire required for item nos. 6(az), 6(bz), 6(cz), 10(az), 10(bz), 10(cz), 12(az), 12(cz) and 31(gz) in MT.

ITEM No. 6 (ax)(ii) : Supply of Cadmium Copper Catenary Wire 65 Sq. mm, 19/2.10mm required for item nos. 5(az)(ii), 6(az), 9(dz), 9(ez), 10(az), 10(bz), 10(cz), 12(cz), 15(az)(iii) and 31(gz).

The price shall cover only supply of 65 Sq. mm, 19/2.10mm, Cadmium Copper Catenary Wire required for item nos. 5(az)(ii), 6(az), 9(dz), 9(ez), 10(az), 10(bz), 10(cz), 12(cz), 15(az)(iii) and 31(gz) in MT.

ITEM No. 6(b) : Supply and Erection of contact wire only

The price shall cover the supply of contact wire (107 Sqmm HDGCC as per the specifications indicated under para 2.4.9 of the tender paper, and erection of contact wire only. The price shall exclude termination which will be paid for under item 8. The price shall include provision of Retro-reflective and enameled number plates on traction masts/structures and painting of setting distance structures and rail levels on masts/structures. The price shall exclude the supply of small part steel works complete with bolts and nuts for attachment of enameled number plates to masts/structures.

Description	Qty. for unit	Supplied by
Contact wire (107 Sq mm)	As required	Contractor
Retro-reflective and Enameled number plates	As required	Contractor

ITEM No. 6(bz) : Supply and Erection of contact wire only

Same as item 6(b) but excluding supply of Contact wires.

ITEM No. 6(c) : Supply and Erection of contact wire only (regulated with bridle wire)

The price shall cover the supply of contact wire (107 Sqmm HDGCC), dropper wire (5mm), 7/2.10, 20 Sq.mm Bridle wire as per the specifications indicated under para 2.4.9 of the tender paper, erection and provision of bridle wires with clamps and two droppers including clips, Retro-reflective and enameled number plates on traction masts/structures, painting of setting distance and rail levels on masts/ structures, stenciling of symbol for direction of emergency telephone socket if required. The price shall exclude supply of required small part steel works complete with bolts and nuts for attachment of enameled number plates to masts/ structures. The price shall exclude termination which will be paid for under item 8.

ITEM No. 6(cz) : Supply and Erection of contact wire only (regulated with bridle wire)

Same as item 6(c) but excluding supply of Contact wires.

ITEM No. 6(d) : DELETED

Note: All bolts and nuts below 14mm dia on current carrying parts of OHE shall be stainless steel.

Note for Measurement:

1. For the purpose of payment against item 6(a), (b), (c), & (d) the length of over head equipment, which shall include terminating wires, shall be measured from the center lines of the traction masts/structures at which the two ends of each tension length of over head equipment are anchored.

2. The length shall be the difference between the actual chainages of the two traction masts/structures at which the ends of each tension length are anchored or by the sum of the actual spans between the same two points whichever is higher as included in the "As Erected" layout plans. No extra payment will be made on account of either due to sag in these wires/conductors or scraps generated.. The price under items 6(a),6(b),6(c) & 6(d) does not cover the cost of supply and erection of cut-in-insulators, the supply and erection of which shall be paid for under item 11.

3. For the purpose of progress payment reference to layout plans "As Approved" shall be made. However, the price under this item shall be adjusted according to the final length of OHE indicated in the "As Erected" layout plan.

Note for Number Plates:

(i) Retro-reflective OHE number plates should be provided generally at all locations. (Reference-Railway Board's letter No. 2001/Elect(G)/170/1 Dated 22/23.12.2016)

(ii) Sigma Board in fogg prone area only, for identification of all signals shall be provided two masts prior to all signal locations for easy identification during foggy weather. (Reference-Railway Board's letter No. 2001/Elect(G)/170/1 Pt. Dated 07.05.2012)

ITEM No. 7(a): Supply and Erection of all Aluminum 25 KV feeder/return conductor (Single Spider)

The price shall cover supply and erection of Hard-drawn stranded All Aluminium conductor conforming to IS-398(Pt.I) with ammendment-1 and of size 19/3.99mm (240 Sq.mm) feeder/return conductor (along or across the tracks). The price shall not include the cost of suspension assembly (which will be paid for under item-11) and termination (which will be paid for under item-8.) and small part steel work, complete with bolts and nuts etc, if any. The price shall also cover on a flat rate basis, the cost of supply of splices to the extent required.

ITEM No. 7(b) DELETED -

ITEM No. 7(c) : Supply and erection of earth wire

The price shall cover supply and erection of earth wire made of 7/4.09 mm steel reinforced aluminium conductor (RACCOON) excluding termination which will be paid for under item 8 and shall include cost of fittings on structures for supporting the earthwire including bonding of the earth wire to the structure and the structure to earth electrodes or a non-track circuited running rail or impedance bond which will be provided by the Purchaser. The price shall include disc insulators, cut-in-insulator to isolate sections of earth wire which will be paid for under item 11(c) and the cost of small part steel works complete with bolts and nuts to attach the earth wire mast clamp to masts/structures, if any.

Note for Measurement:

1. The prices under items 7(a) and (b) shall not include. Termination which will be paid for under item 8. The connection (a) between feeders, or return conductors and (b) of feeders, or return conductors to a bus bar, overhead equipment or isolator switch which will be paid for under item 15, & cut-in-insulators and suspension insulators which shall be paid for under item 11.

2. For the purpose of payment against item 7 (a) and (b) the length of feeders, return conductors or earth wire shall be measured from the center lines of the mast/structure at which the two ends of each length of feeder or conductor run are anchored, by adding actual spans. In case of feeders/return conductors crossing a track, the length shall be measured between the faces of traction masts/structures at which the two ends of the cross feeder or return conductors are anchored, as indicated in the as erected structure erection drawings for traction masts/structures. No payment will be made for the extra length of the conductor/s on account of sag or scrap.

3. For purposes of progress payment reference to "As Approved" drawings shall be made. However, the price under this item shall be adjusted according to the final length of OHE indicated in the "As Erected" layout plan/drawings

Item No.7(d): Supply and Manual Erection of All Aluminium 25 kV Feeder/Return (Single Spider).

Same as item 7 (a) but the work is to be executed manually instead of with wiring train. as per RDSO TI/IN/0042 dt 23.10.2020 with latest amendment if any.

Item: 7(e) : Supply and Erection of Copper cross feeder wires (37/2.25 mm HDBC) across the track at SP/SSP/FP/BT locations.

The price shall cover the supply and erection of 25KV feeder wire across/ along the track at the location of SP/SSP/FP/BT/Gantries stations. Feeder wire shall be made of hard drawn bare copper conductor of size 37/2.25 mm. The price shall be inclusive of cost of feeder wire but exclusive of termination (which will be paid under item 8(b)(ix) and small parts steel work complete with bolts, nuts etc if any.

ITEM No. 8(a)(i) : DELETED

ITEM No. 8(a)(ii) : DELETED

ITEM No. 8(a)(iii) : DELETED

ITEM No. 8(a)(iv) : DELETED

ITEM No. 8(a)(v) : Supply and erection of regulating equipment (3 pulley type) with Counter weight assembly for conventional/composite OHE.

The price shall cover supply and erection of counter weight assembly (for both conventional and High Rise OHE) including 5 ton adjuster with double strap assembly and normal/anti-theft guide tube assembly, the supply of regulating equipment and stainless steel wire rope (of various length as required) required for the regulating equipment and small part steel work, if any. The price shall also cover adjustment of the entire regulating equipment. The price shall not include supply and erection of termination, which will be paid for under item No. 8(b).

ITEM No. 8(a)(vi) : Supply and erection of a regulating equipment (3 Pulley type) with counter weight assembly for Tram Way Type OHE (Regulated)

Same as 8(a)(v) above but with counter weight assembly conforming to style – 01 of the relevant termination arrangement drawing No.: ETI/OHE/G/04212, with latest mod.

ITEM No.8(a)(vii) : DELETED

ITEM No. 8(a)(viii) : DELETED

ITEM No.8(a)(ix) : DELETED

ITEM No. 8(a)(x) : Supply and erection of a regulating equipment (3 Pulley type) with counter weight assembly for conventional/ composite OHE

Same as item 8(a)(v) but excluding stainless steel wire rope required for the regulating equipment. For shorter tension lengths OHE (like Emergency x-overs) GI Sleeve of 20 mm dia to be inserted in the hexagonal tie rod of ATD of cross-over OHE in accordance with RDSO's SMI No.TI/MI/0035 (Rev-O).

ITEM No. 8(a)(xi) : Supply and erection of a regulating equipment (3 pulley type) with counter weight assembly for tramway type OHE (Regulated)Same as item 8(a)(vi) but excluding stainless steel wire rope required for the regulating equipment.

Same as item 8(a)(vi) but excluding stainless steel wire rope required for the regulating equipment. For shorter tension lengths OHE (like Emergency x-overs) GI Sleeve of 20 mm dia to be inserted in the hexagonal tie rod of ATD of cross-over OHE in accordance with RDSO's SMI No. TI/MI/0035 (Rev-O).

ITEM No. 8(a)(xii) : Marking of 'Y' measurement at BWA locations

The price shall cover marking/ painting of temperature and 'Y' measurement on OHE masts at BWA locations including cost of paint.

ITEM No. 8(b)(i) : Supply without Insulator and erection of materials for termination of single conductor of overhead equipment or a terminating wire.

The price shall cover supply of all material necessary for the termination of single conductor of overhead equipment or terminating wire on a traction mast or structure, including appropriate mast anchor fittings, clevis assembly, adjuster, anchor double straps, ending clamp for the catenary or contact wire or terminating wire and fittings including 9 ton insulator (Cost of insulator will be paid in Schedule-1, Section-5), assembly and terminating wire, if any. The price shall cover erection of all materials including the 9 ton insulator assembly and terminating wire, if any.

NOTE : In case of "V" type anchorage is adopted for terminating a single conductor such an arrangement would be counted as two off under item 8(b)(i), for the purpose of payment.

ITEM No. 8(b)(ii) : Supply without Insulator and erection of materials for termination of double conductors.

The price shall cover supply of all materials necessary for the yoked termination of two overhead equipment conductors on a traction mast or structure, including appropriate mast anchoring, clavis assembly, two adjusters, ending clamps for catenary and contact wires, anchor double strap assembly, equalising/ compensating plate and fittings including 9 ton insulator (Cost of insulator will be paid in Schedule-1, Section-5), assembly and terminating wire, if any. However, the price shall cover erection of all materials including the 9 ton insulator assembly.

ITEM No. 8(b) (iii): Supply without Insulator and erection of materials for termination of all Aluminum 25 KV feeder/return conductor (single SPIDER).

The price shall cover supply of all materials required for the termination of an All Aluminium 25 KV feeder/return conductor (SPIDER), including appropriate mast anchor fittings adjuster, strain clamp end fitting including 3 KV cut-in-insulator and 9 ton insulator assembly. However, the price shall cover erection of all materials including the 9 ton insulator (Cost of insulator will

be paid in Schedule-1, Section-5) assembly and 3 KV cut-in-insulator(Cost of insulator will be paid in Schedule-1, Section-5).The price shall include the cost of 9 ton insulator assembly and erection cost thereof.

ITEM No. 8(b)(iv) : DELETED

ITEM No. 8(b)(v) : Supply without Insulator and erection of materials for termination of an earth wire.

The price shall cover supply and erection of all materials required for the termination of an earth wire including appropriate mast anchor fittings, adjuster, terminal clamp and fittings.

ITEM No. 8(b)(vi) : Supply without Insulator and erection of materials for termination of tramway type OHE (Regulated).

The price shall cover supply and erection of all materials required for the termination of a single contact wire (regulated) and will exclude the parts covered under item 8(a)(iii)/(vi).

ITEM No. 8(b)(vii) : Supply without insulator and erection of materials for termination of double conductors for composite OHE.

The price shall cover supply of all materials necessary for the yoked termination of two overhead equipment conductors on a traction mast or structure including appropriate mast anchor fittings clevis assembly three adjuster, ending clamps for aluminium Alloy catenary and copper contact wires, anchor double strap assembly, unequal tension compensatory plate and fittings excluding the 9 ton insulator (Cost of insulator will be paid in Schedule-1, Section-5), assembly and terminating wire, if any. The price shall cover erection of all materials including the 9 ton insulator assembly.

ITEM No. 8(b)(viii) : Supply without insulator and erection of materials for termination of an aluminium conductor of the composite overhead equipment.

The price shall cover supply of all materials necessary for the termination of single Aluminium conductor of composite OHE or terminating wire on a traction mast or structure, including appropriate mast anchor fittings, clavis assembly, adjuster, anchor double straps, ending clamps for the aluminium catenary or terminating wire and fittings including 9 ton insulator(Cost of insulator will be paid in Schedule-1, Section-5), assembly and termination wire, if any. The price shall cover erection of all materials including the 9 ton insulator assembly and termination wire, if any.

Item : 8(b)(ix) : Supply without insulators and erection of materials for termination of copper cross feeder with gantries.

The price shall cover the supply of all materials required for termination of copper cross feeder wire (37/2.25 mm HDBC) including appropriate mast anchor fitting (3231), 18 mm Single clevis (5040), 9-Tone adjuster (5020-2), Feeder ending clamp (1130), double clevis (3010) and other components as necessary excluding 9-Ton insulator (Cost of insulator will be paid in Schedule-1, Section-5), assembly. The price shall also cover the erection of all materials including 9-Ton insulator assembly and termination of cross feeder at either ends. Fittings/components required for termination of one cross feeder at both ends constitute one set.

Notes to item 8 :

(1) Small parts steel work complete with bolts and nuts wherever required, will be paid under item 3(a) or 3(b) and 3(c) as applicable and shall not be including in this item.

(2) The prices under item 8(b)(iii) shall not include the cost of jumper connection (i) between feeders or return conductors and (ii) or feeders or return conductors to a busbar, overhead equipment or isolator switch which will be paid for under item 15.

(3) The prices under items 8(b)(i) to 8(b)(viii) shall also include the cost of double eye distance rod (ID no. 5183), if provided for any type of terminations.

(4) Supply and erection of materials for termination of catenary wire on either side of the portals at anticreep locations, will also be paid for under this item.

ITEM No. 8 (bx) : Supply of 9-T Insulators for item 8(b)(i), (ii), (iii), (vi), (vii), (viii) & (ix)

The price shall cover only supply of following 9 tonne insulator assembly required for termination of OHE covered under item 8(b)(i), 8(b)(ii), 8(b)(iii), 8(b)(vi), 8(b)(vii), 8(b)(viii) & 8(b)(ix). Erection cost of insulators are inclusive in items 8(b)(i), 8(b)(ii), 8(b)(iii), 8(b)(vi), 8(b)(vii), 8(b)(viii) & 8(b)(ix) respectively.

Item No.	Insulator
8(bx)(i)	Porcelain 9 Tonne (CD-1050 mm)
8(bx)(ii)	Composite 9 Tonne (CD-1050 mm)
8(bx)(iii)	Composite 9 Tonne (CD-1600 mm)

ITEM No. 9(a) : Supply without Insulator and erection of anti creep with Galvanised steel wire.

The price shall cover supply of all materials for anti-creep including adjusters, galvanised steel wire, mast anchor fittings at its terminations on either side on structures, ending clamps and fittings excluding 9 ton insulator assembly (Cost of insulator will be paid in Schedule-1, Section-5) and small parts steel work, if any. Cost of SPS will be paid under item 3(c) of Schedule-1, Section-3. The price shall cover erection of all materials including 9 ton insulator assembly and small parts steel work, if any.

RLY.IDENT No.	DESCRIPTION OF COMPONENTS	QTY. PER UNIT
-	Galvanised steel wire (19/2.50 mm)	As required
6020	9 ton insulator assembly.	As required
1360	Steel wire ending clamp	2 off
5020-1/5020-2	9 ton adjuster (Forged)	2 off
5030	Anchor double strap assembly	As required
3010/5040	Clevis assembly	2 off
3231	Mast anchor fitting with bolts, nuts etc.	2 sets.
1170	Double suspension clamp	1 off
Less 1160	Suspension clamp	(-)1 off
5183	Double eye distance rod	As required.

ITEM No. 9(b) : Supply without insulator and erection of anti-creep with galvanized Steel wire suitable for tramway type overhead equipment (Regulated)

The price shall cover supply and erection of all materials (Cost of insulator will be paid in Schedule-1, Section-5) for anti-creep for the tramway type equipment (Regulated) similar to the fittings catered for an item 9(a).

ITEM No. 9(c) : DELETED

NOTE for 9(a) & 9(b) :

1. The price shall include the cost of any additional cut-in or suspension insulator which will be paid for under item 11(a) (i) or 11(a) (ii) as applicable.

2. In case the anti-creep extends beyond one span on either side of anti creep center, payment for the supply and erection of extra length shall be paid additionally at the rate of 20% of the rate for 9(a) for each extra span.

ITEM No. 9(d) : Supply without Insulator and erection of anti-creep with cadmium wire in polluted area.

The price shall cover the supply of all materials for anti-creep including adjusters, mast anchor fittings at its terminations on either side, structure ending clamps, fittings and cadmium copper catenary wire but excluding 9-ton insulator assembly and small parts steel work, if any. The price shall cover erection of all materials including cadmium copper catenary wire, 9-ton insulator assembly and small parts steel work, if any.

RLY. Ident No.	Description of components	Qty. per unit
-	Cadmium copper catenary wire (65 sq.mm)	As required
6020-1	9 ton insulator assembly	As required
1120 or 1122or1123	Catenary ending clamp (65)	2 off
5020-1/5020-2	9 ton adjusters (Forged)	2 off
5030	Anchor double strap assembly	As required
3010/5040	Clevis assembly	2 off
3231	Mast anchor fitting with bolts, nuts etc.	2 sets
1170	Double suspension clamp	1 off
Less 1160	Suspension clamp	(-) 1 off
5183	Double eye distance rod.	As required

ITEM No. 9(dz) : Supply without Insulator and erection of anti-creep with cadmium copper catenary wire in polluted area.

Same as item 9(d) but excluding supply of Catenary wire.

ITEM No. 9(e) : Supply without Insulator AND Erection of anti-creep with cadmium copper catenary wire suitable for tramway type OHE (Regulated) in polluted area.

Same as ITEM 9(d) (Cost of insulator will be paid in Schedule-1, Section-5) with the following changes:

- Id No. 2140, large catenary contact clamp to be used in place of Id. No. 1170

ITEM No. 9(ez) : Supply without Insulator AND Erection of anti-creep with cadmium copper catenary wire suitable for tramway type OHE (Regulated) in polluted area.

Same as item 9(e) but excluding supply of Catenary wire.

NOTE :- Note 1&2 given under item 9(a) shall also be applicable for item 9(b) to 9 (ez).

ITEM No.9(ax) : Supply of 9-T Insulators for Items 9(a), 9(b), 9(c), 9(d) and 9(e)

The price shall cover only supply of any of the following 9 tonne insulator assembly to be supplied at site for execution of work under items 9(a), 9(b), 9(c), 9(d) and 9(e). Erection cost of insulators are inclusive in items 9(a), 9(b), 9(c), 9(d) and 9(e) respectively.

Item No.	Insulator
9(ax)(i)	Porcelain 9 Tonne (CD-1050 mm)
9(ax)(ii)	Composite 9 Tonne (CD-1050 mm)
9(ax) (iii)	Composite 9 Tonne (CD-1600 mm)

ITEM No. 10 (a), (b) & (c) : Extra on item 6(a), 6(b) & 6(c).

- (i) For supply and erection of additional fittings. &
- (ii) Required at a turnout, diamond crossing or over-lap.

The price shall cover on flat rate basis supply of additional components and fittings required at turnouts, crossings or over-laps (insulated or un-insulated) including overlaps, knuckle or crossing equipment at a turnout, or a diamond crossing and parallel clamps/bimetallic parallel clamp for jumper connections between two sets of overhead equipment conductor at a turnout, diamond crossings, overlaps or neutral section. The price shall cover supply of required copper conductors & jumper wires and erection of all materials including jumper wire, and all adjustments required at turnouts, crossings, overlaps and neutral sections.

The price shall also cover erection of potential equaliser jumpers at insulated overlaps and neutral sections.

The price shall not include extra bracket assemblies, overhead equipments, termination of overhead equipment and cut-in-insulators in the case of insulated overlaps and neutral section which will be paid for under items 4, 6, 8, and 11 respectively.

ITEM No. 10 (az), (bz) & (cz) : Extra on item 6(az), 6(bz) & 6(cz).

Same as item 10(a), (b) & (c) but excluding supply of Contact and Catenary wire.

NOTE : A cross-over shall be paid for as 2 off of Item 10, special configuration of OHE commonly known as half overlap shall be paid for as 1 off under this item. This shall apply in case of half overlap used in changing over from regulated to unregulated equipment or unregulated to regulated equipment.

ITEM No. 11(a)(i) : Supply without insulator and Erection of a cut-in (9 Tonne) insulator

The price is applicable to the provision of the an additional 9 Tonne cut-in-insulator on a flat rate basis such as in a head-span, cross span or in span wire or an overhead equipment conductor at an insulated overlap, anti-creep not provided for in other items.

The price shall cover supply of all components required for the cut-in-insulators assembly, including appropriate terminal fittings for the conductor but excluding the cost of 9 ton insulator assembly. This price shall cover erection of all components, including the 9 ton insulator. This price shall also be applicable as an adjustment price for non-provision of insulators under items 8(b)(i) to 8(b)(viii).

ITEM No. 11(a)(ii): Supply without insulator and Erection of a suspension insulator.

The price is applicable to the provision of 9 ton suspension insulator assembly for suspension of an All Aluminium 25 kV feeder (single or double SPIDER), 130 sq.mm or 65 sq.mm overhead equipment conductor or any other similar type of suspension.

The price shall cover supply of all components, required for the suspension assembly including the appropriate suspension clamp but excluding 9 ton insulator assembly and small parts steel work with bolts nuts etc., if any. The price shall cover erection of all components, including the 9 ton insulator assembly but excluding small parts steel work, with bolts and nuts etc. if any.

The price shall include the cost of provision of a flat armour tape only to be used in connection with suspension of 'SPIDER' conductor.

ITEM No. 11(ax) : Supply of 9-Tonne Insulators for Item 11(a)(i) & 11(a)(ii)

The price shall cover only supply of any of the following 9 tonne insulator assembly to be supplied at site for execution of work under items 11(a)(i) & 11(a)(ii) respectively. Erection cost of insulators are inclusive in items 11(a)(i) & 11(a)(ii) respectively.

Item No.	Insulator
11(ax)(i)	Porcelain 9 Tonne (CD-1050 mm)
11(ax)(ii)	Composite 9 Tonne (CD-1050 mm)
11(ax) (iii)	Composite 9 Tonne (CD-1600 mm)

ITEM No. 11(b): Supply without Insulator and Erection of a 25 kV Post Insulator.

The price is applicable to the provision of a 25 kV Post Insulator to support copper or aluminium jumper/busbars. The price shall cover supply of all components and fittings/angle iron (outrigger) to support the jumpers but excluding post insulator and small parts steel works with bolts and nuts etc., if any. The price shall cover erection of all components required for the assembly, including post insulator, but excluding small parts steel work with bolts and nuts etc. if any.

ITEM No. 11(bx): Supply of a 25 kV Post Insulator for Item 11(b)

The price shall cover only supply of 25 kV Post insulator to be supplied at site for execution of work under items 11(b). Erection cost of insulators is inclusive in items 11(b).

ITEM No. 11(c): Supply without insulator and Erection of a 3 kV Disc Insulator.

The price is applicable to the provision of a 3 kV Disc Insulator for suspension of an All Aluminium return conductor or any other similar type of suspension. The price is also applicable to a 3 kV cut-in-insulator for earthwire.

The price shall cover supply and erection of all components required for the assembly, including appropriate suspension clamp, ending clamp for cut-in-insulator on earth wire, but excluding 3 kv Disc Insulator and small parts steel work, with bolts and nuts etc., if any. The price shall include the cost of provision of a flat armour tape to be used in connection with the suspension of SPIDER/RACCOON conductor.

ITEM No. 11(cx) : Supply of 3 kV Disc Insulator for Item 11(c).

The price shall cover only supply of 3 kv Disc Insulator to be supplied at site for execution of work under items 11(c). Erection costs of insulators are inclusive in items 11(c).

ITEM No. 11(d) : Supply without insulator and Erection of a 11 kV Post Insulator.

The price shall cover, on a flat rate basis for supply of all necessary fittings for erection of 11 KV post insulator to support return conductor, Aluminium or copper busbars or return conductor jumper connections but excluding 11 KV post insulator and small parts steel work with bolts and nuts etc. if any. The price includes the erection of all the fittings including 11 kV Post Insulator.

ITEM No. 11(dx) : Supply of 11 kV Post Insulator for Item 11(d).

The price shall cover only supply of 11 kV Post Insulator to be supplied at site for execution of work under items 11(d). Erection cost of insulator is inclusive in item 11(d).

ITEM No. 12(a) : Supply without Insulator and erection of a Section Insulator Assembly.

The price shall cover supply of all components required for a standard section insulator assembly (serving both the overhead equipment conductors) including supply of copper

conductors, dropper wires for special droppers for supporting the equipment and all terminal fittings for conductors and the section insulator assembly including 9 ton Insulator (RI No.6020) (Cost of insulator will be paid in Schedule-1, Section-5) on the catenary and Sectioning insulator (RI No.6110). The price shall cover erection and adjustment of all components including section insulator assembly, 9 ton insulator on the catenary, Sectioning Insulator and droppers.

Rly. Ident. No.	Description of components	Qty. per Unit
1120/or SK/ or 1122 & 1123	Catenary ending clamp	2 off
1192/ETI/OHE/SK/333	Catenary dropper clip assembly.	As required
6170	Parallel clamp for double contact wire	12 off
6180	Section insulator dropper assembly.	3 sets
6100	Section insulator assembly	To be supplied by the Contractor.
6020	9 ton insulator assembly	To be supplied by the Contractor.

ITEM No. 12(az) : Supply without Insulator and erection of a Section Insulator Assembly.

Same as item 12(a) but excluding supply of Contact and and dropper wires.

ITEM No.12(ax) : Supply of 9 Tonne and Sectioning Insulators for Item 12(a) & 12(az)

The price shall cover only supply of Sectioning Insulator with any of the following 9 Tonne Insulator for execution of work under item 12(a). Erection cost of insulators is inclusive in items 12(a).

Item No.	Insulator
12(ax)(i)	Porcelain 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(ax)(ii)	Composite 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(ax)(iii)	Composite 9 Tonne (CD-1600 mm) & Sectioning Insulator

ITEM No. 12(b) : Supply without Insulator and erection of a double wire section insulator assembly.

The price shall cover supply of all components required for a double wire section insulator assembly (to serve both wires of two overhead equipments and special droppers, including supply of dropper wires, for supporting this equipment) at any location, including terminal fittings for the conductors and the double wire section insulator assembly including 9 ton insulator (Cost of insulator will be paid in Schedule-1, Section-5). The price shall include erection and adjustment of the entire assembly including double wire section insulator assembly, droppers and the 9 ton insulators.

ITEM No.12(bx) : Supply of 9 Tonne and Sectioning Insulators for Item 12(b)

The price shall cover supply of 2 Nos Sectioning Insulators and any of the following 9Tonne Insulator only for execution of work under item 12(b). Erection cost of insulators is inclusive in items 12(b).

Item No.	Insulator
12(bx) (i)	Porcelain 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(bx)(ii)	Composite 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(bx)(iii)	Composite 9 Tonne (CD-1600 mm) & Sectioning Insulator

ITEM No. 12(c) : Supply without Insulator and erection of a Section Insulator Assembly suitable for tramway type OHE (Regulated)

The price shall cover supply of all components required for a standard Section Insulator Assembly including special arrangements for supporting the equipment and terminal fittings for conductors and the section insulators assembly as required with Sectioning Insulator (RI No.6110) (Cost of insulator will be paid in Schedule-1, Section-5). The price shall cover the supply of required copper conductors, erection and adjustment of all components including sectioning insulator.

ITEM No. 12(cz) : Supply without Insulator and erection of a Section Insulator Assembly suitable for tramway type OHE (Regulated)

Same as item 12(c) but excluding supply of Contact and Catenary wires.

- NOTE : (1) The same price will apply if the section insulator is provided in the tramway type equipment (contact wire only).
- (2) The supply and erection of a bracket assembly shall be paid under item 4(a) (iii). No adjustment of price due to non-provision of steady arm, in this case, shall be made.

ITEM No.12(cx):Supply of Sectioning Insulators for Item 12(c) and 12 (cz)

The price shall cover only supply of Sectioning insulator for execution of work covered under item 12(c) and 12 (cz). Erection cost of insulators are inclusive in items 12(c).

ITEM No. 12(d): Supply and erection of Ceramic/ beaded Glass fibre type (PTFE) short neutral section assembly.

The price shall cover Supply of Ceramic/Glass fibre or PTFE type short neutral section assembly and erection and adjustment of Glass Fibre or PTFE type short neutral sections, which will be supplied by the Contractor. The price would cover fittings for contact and catenary wire as necessary including supply of required dropper wire.

ITEM No. 13(a) & (b) : Supply without Insulator and erection of 25 KV SP Isolators without earth contact assembly.

The prices under sub-items (a) and (b) shall cover supply and erection of Isolator switches of approved make, complete with arcing horns, operating rods, operating rod guides, mounting base including cost of 25 KV Solid Core Post and Operating rod insulator (Cost of insulator will be paid in Schedule-1, Section-5).The price shall also cover supply and erection of a number plate of approved design for each isolator. The price shall not include supply and erection of small parts steel work complete with bolts and nuts etc. for support of isolators and for support of operating rods on gantries/ masts, and insulator to support jumper and jumper connectors.

ITEM No. 13(c): Supply without Insulator and erection of 25 KV Double Pole Isolator.

The price shall cover supply and erection of a Double Pole Isolator complete with mounting base, operating rod and operating rod guides including the cost of Operating Rod Insulator and 25KV Solid Core Post Insulator required for the operation of the isolator (Cost of insulator will be paid in

Schedule-1, Section-5). The price shall also cover supply and erection of Al-Cu strips, a padlock and a number plate of approved design for each isolator. The price shall not include supply and erection of small parts steel work for support of isolators and for support of operating rods on gantries masts.

ITEM No. 13(d) : Extra for supply and erection of an earth contact assembly in an isolator.

The price shall be payable as extra for erection of an earth contact assembly in any isolator

The price shall cover the cost of supply and erection of 3x25 mm copper connections between the earth contact assembly and the structures.

ITEM No. 13(e): Extra on item 13(a), (b) or (c) for an interlocking device.

The price shall cover supply and erection of an inter locking mechanism on an isolator to permit working of two or more isolators or an isolator and an interrupter in a desired sequence. This item shall be applicable individually for each isolator or interrupter.

NOTE: Prices under item 13 do not include the cost of supply and erection of (i) any post insulator to support jumpers/busbars which shall be paid for under item 11(b), (ii) flexible jumper connection which will be paid for under item 15 and (iii) busbar/bus-rod terminals which will be paid for under item 26(b) or (c). The price does not include also the cost of supply and erection of an aluminium/copper busbar or a copper bus rod the cost of which will be paid for under item 26(a)(i) or 26(a) (ii), as applicable.

ITEM No. : 13(ax), 13(bx) and 13(cx) : Supply of Post and Operating Rod Insulators for Single and Double Pole Isolator for Item 13(a), 13(b) & 13(c)

The price shall cover only supply of 25 kV Solid Core Post and Operating Rod Insulators for execution of work covered under item 13(a), 13(b) & 13(c) respectively. Erection cost of **insulators are inclusive in items 13(a), 13(b) & 13(c).**

ITEM No. 14: Supply and erection of connection between return conductor and the rail.

The price shall cover fabrication and erection of connections between all aluminium return conductor to cross rail/impedance bond (both of which as required will be supplied by the Purchaser free of cost at the Contractor's Depot) excluding the aluminium jumper connections from the return conductor to the steel flat which will be paid for under item 15(b) and any 11 KV post insulator for supporting the jumper which will be paid under item 11(d).

The price shall include the cost of necessary supports on the traction structure, terminal connections and covering the mild steel flats with two coats of red oxide zinc chromate primer to IS:2074, CNSL based and finished with 2 coats of Bitumen 85/25 blown grade.

ITEM No. 15(a)(i): Supply and erection of 105 Sq. mm (19/7/1.02 mm) Large copper jumpers.

The price shall cover the supply of Large jumper wire size 105 Sq.mm(19/7/1.02mm) made of annealed stranded 100% pure copper conductor as per RDSO's specification No.ETI/OHE/3(2/94) with A&C Slip No 1(latest spec.), and on a flat rate basis, the supply of all components and fittings required for providing a flexible copper large jumper connection, including supply of parallel clamps, bi-metallic and Aluminium Copper Al-Cu strips, wherever required, and bolted type terminal connectors where ever required.

The price shall also cover the erection of the complete jumper assembly including jumper wire. The price shall not, however, be applicable for jumper connections already including under item 6(a) and 10, but shall be applicable for any jumper of 105 Sq.mm (19/7/1.02mm) connections in any combination between feeders, lightening arrestors, isolators and boosters stations. Continuity jumper at Boom anchor anti-creep will be payable under this item.

ITEM No. 15(a)(ii):Supply and erection of 50 Sq.mm(19/1.8 mm) small copper jumpers.

The price shall cover supply of Small jumper wire size 50 Sq.mm(19/1.80 mm) made of annealed stranded 100% pure copper conductor, and on a flat rate basis, the supply of all components and fittings required for providing a flexible small copper jumper connection, including supply of parallel clamps, bi-metallic and Aluminium Copper Al-Cu strips, wherever required, and bolted type terminal connector where ever required.

The price shall also cover the erection of the complete jumper assembly including jumper wire. The price shall not, however, be applicable for jumper connections already including under item 6(a) and 10, but shall be applicable for any small jumper connection in any combination required for lightening arresters and isolators etc. Anti-theft jumper as per drawing No. ETI/OHE/G/05107, with latest mod. for connecting out-of-run OHE with the in running OHE at insulated/un-insulated over-lap locations and also anticreep locations at polluted zone wherever considered necessary will be payable under this item.

ITEM No. 15(a)(iii): Supply and erection of a copper jumpers (65 Sq mm catenary)

The price shall cover the supply of 65 sq mm catenary wire & 50 sq mm Small Jumper and on a flat rate basis, the supply of all components and fittings required for providing a flexible copper jumper connection, including supply of parallel clamps, bi-metallic and Aluminium Copper Al-Cu strips, wherever required and bolted type terminal connector where ever required.

The price shall also cover the erection of the complete jumper assembly including jumper wire. The price shall be applicable for jumper connections using 65-Sqmm catenary wire in any combination required for lightening arresters and isolators etc., not included under item 6(a), 10, 15(a)(i), and 15(a)(ii). The supply of all components and fittings including catenary wire and the erection of all the components and fittings including the catenary wire for providing double catenary contact wire in place of catenary under overline structures as per DRG. No. ETI/OHE/SK/446 and ETI/OHE/SK-529, with latest mod. respectively will also be payable under this item, treating the double catenary as one jumper irrespective of its length including the catenary/contact wire ending clamp.

ITEM No. 15(az)(iii):Supply and erection of a copper jumpers (65 Sq mm catenary)

Same as item 15(a)(iii) but excluding supply of Catenary wire.

ITEM No. 15(a)(iv) : Supply and erection of copper jumpers (5 mm dia dropper wire).

The price shall cover supply of conductors/ jumper wires, and on a flat rate basis, the supply of all components and fittings required for providing a single strand / flexible copper jumper connections not included under items 6(a), 10, 15(a)(i), 15(a)(ii) & 15(a)(iii), including supply of parallel clamps, bi-metallic and Aluminium Copper Al-Cu strips, wherever required, including supply of bolted type terminal connector where ever required.

The price shall also cover the erection of the complete jumper assembly including jumper wire, to be provided between the Over head equipment and L.T. Transformers, drop out switch.

NOTE for items 15(a)(i), 15(a)(ii) & 15(iii): Please see the note under item 15(e).

ITEM No.15 (b) : Supply and erection of an aluminium jumper.

The price shall cover on a flat rate basis the supply and erection of an aluminium jumper complete with all components and fittings required for providing jumper connection, including parallel clamps, bimetallic ALCU strips wherever required, and terminal or tee clamps at either end. The price shall be applicable for any aluminium jumper/connections in any combination between feeders, return conductors, overhead equipment, isolators and out going busbars or switching stations and booster stations. Jumper connections for 25 KV feeders at angle tower traction sub-station or at feeding stations will also be paid under this item.

ITEM No.15 (c) : Supply and Erection of Insulated Catenary cable in the span under Over-Line Structure.

The price shall cover supply of insulated catenary wire, catenary splice (1090) for each location and required dropper clip and erection of the same for each location. The prices shall also cover erection and adjustment of special droppers wherever required. The insulated catenary wire to be supplied shall be as per RDSO's specification No.ETI/OHE/75(04/95) with A&C slip Nos.1&2(with latest spec.). The work shall be executed in accordance with drawing No.ETI/OHE/ SK/570, with latest mod. The price shall also cover the cutting of existing Catenary wire, supply and erection of all materials and components including adjustment of dropper wires.

Item : 15 (d) : Supply of materials and erection of a large copper jumper 160 Sq. mm between Aluminium bus and cross feeder.

This jumper shall be provided between 36 mm Aluminium bus and the copper cross feeder at SP/SSP/FP/BT locations. The price shall cover the supply of 160sqmm flexible copper jumper wire, made of annealed stranded 100% pure copper conductor as per RDSO's specification ETI/OHE/3(2/94) with A&C Slip No 1 (latest spec.), all components and fittings required for providing a flexible copper jumper (160 Sq. mm) and connection between 36 mm Aluminium bus and cross feeder including Terminal connector 19mm multiple hole bolted type (1009), parallel clamps (1050-3), Al-Cu bimetallic strips, fasteners. The price shall also cover the erection of the complete jumper assembly including jumper wire.

Item : 15 (e) :Supply of materials and erection of a large copper jumper 160 Sq. mm between cross feeder and OHE.

This jumper shall be provided between copper cross feeders and OHE. The price shall cover supply of 160 sqmm flexible copper jumper wire, made of annealed standard 100% pure copper conductor as per RDSO's specification ETI/OHE/3(2/94) with A&C Slip No 1(latest spec.), and all components and fittings required for providing a flexible copper jumper (160 Sq. mm) between copper cross feeder and existing OHE, including Parallel clamps (1030-3 & 1050-3) complete with fasteners etc as required. The price shall also cover the erection of the complete jumper assembly including jumper wire.

ITEM No.16 (a)(i) : Supply and erection of a structure bond

The price shall cover supply of all materials including mild steel flat required to provide a structure bond connecting a traction mast or structures to the nearest non-track circuited rail, or earth electrode, including all fasteners at both ends. The price shall include shaping and drilling of the bond and erection of all materials including the bond. The price shall also include provision of heat shrinkable PVC tube for structure bond under track circuited rail. This would also cover connection or earthing terminals of equipments like L.T. Transformers with structure and then to rails as per relevant drawings.

The price shall cover provision of buried rail to running rail as per RDSO drawing No.ETI/OHE/G/05306, with latest mod and shall include supply, fabrication and erection of all connections (including drilling at both ends) and refilling of buried rail pit. The digging up of 1 m deep pit for the purpose of buried rail shall be done by the Railways.

ITEM No.16 (a)(ii) : Supply and erection of a Galvanised steel stranded Wire structure bond

The price shall cover supply of all materials including Galvanised steel stranded wire required to provide a structure bond connecting a traction mast or structures to the nearest non-track circuited rail including all fasteners at both ends as per RDSO's drawing No. TI/DRG/OHE/GTBLUG/ RDSO/0001/04/0. The price shall include fixing of lugs and drilling of the rails and erection of all materials including the bond.

The price shall also include provision of heat shrinkable PVC tube for structure bond under track circuited rail. This would also cover connection or earthing terminals of equipments like L.T. Transformers with structure and then to rails as per relevant drawings.

ITEM No. 16(b): Supply and erection of longitudinal bond

The price shall cover the supply of all materials including mild steel flats, fasteners etc. required to provide longitudinal bond connecting two rails at the rail joint at the locations to be specified by the Purchaser. The price shall include shaping and drilling of the bond and erection of all materials including the bonds.

ITEM No.16(c) : Supply and erection of transverse and special bond

The price shall cover supply of all materials including mild steel Flats, fasteners etc. required to provide transverse bond connecting rails of the same/ adjacent tracks at the locations to be specified by the Purchaser. The price shall also cover the supply of all materials including mild steel flat to provide special bonds at a level crossing, foot over/road over bridge/protective screen etc. for which the location will be specified by the Purchaser. The price shall include shaping and drilling of the bond and erection of all materials including the bond.

ITEM No. 17(a) : Supply and erection of single earth electrode

The price shall cover supply and erection of an earthing station with a single pipe embedded into the ground by driving or otherwise complete with protective concrete box and lugs suitable for directly connecting two mild steel flats of minimum size 50 mm x 6 mm.

ITEM No. 17(b) : Extra for special embodiment of earth electrode.

The price shall be payable as extra on item 17 (a) where an earth electrode is embedded by driving or otherwise in an earth pit filled with charcoal and salt. The price shall cover supply and erection of all additional materials required for embedding the earth pipe.

ITEM No. 17(c) : Supply and erection of earth bus.

The price shall cover the supply of all materials including 50 mm x 6 mm mild steel flats for providing earth bus. The price shall also cover erection of earth bus either buried at a depth of 300 mm below ground level painted with 2 coats of red oxide zinc chromate primer and 2 finishing coats of bitumen as per the particulars specified in para 2.1.49 or fixed on wooden gutties on walls. It shall include connecting the earth bus to earth electrodes and to various floor-or-wall-mounted equipments or structures to be earthed and also connections to non-track-circuited rails, wherever required it shall also cover the cost of making recesses in concrete foundation blocks or floor or cubicles and covering them up. The connection of earth strips to each other shall be made either by riveting or by welding. The connection of earth strips to various equipment, structures or fencing post shall be made with G.I. bolts and nuts and spring washer/lock-nuts.

ITEM No. 17(d) : Supply and erection of copper strips for equipment earthing.

The price shall cover supply and erection of 25mmx3mm copper strips to connect the earth terminals of equipments like potential transformers, lightening arrestors, L.T. supply transformers and booster transformer to the main masts of the gantries on which they are mounted. The price shall cover all fastenings required for fixing the copper strips along any structure member of the gantry.

ITEM No. 17(e) : Supply and erection of 8 SWG G.I WIRE for earthing.

The price shall cover supply and erection of 8 SWG G.I wire per Meter, used for earthing at remote control cubicles and fencing panels.

ITEM No. 17(h) Supply and Erection of Earthing station at Switching Posts (SSP & SP) with Conventional earthing system.

The rate covers cost of supply & erection of one set of earthing station for single line / single track. The earthing station using 13 meter long Buried Rail, shall be as per RDSO SMI No. TI/SMI/0032 with the latest amendments thereof.

The released Rail shall be made available by the purchaser to the contractor at any location on “as is where is” basis. Contractor shall transport the rail upto site of installation. The price covers transportation of rail, excavation of trench 0.6X15mX1m from the ground level, lowering of Rail duly prepared into the trench and refilling the soil including compaction and making the surface good after connection to earth electrodes and Running Rails.

The price shall cover the cost of supply of 75X8 mm Galvanized flats for connection between Buried Rail and Earth electrode /Running Rail and erection of 75X8 mm Galvanized flats for connection between Buried Rail and Running Rail. Price shall also cover cost of required Nut Bolts, Copper rivets, Plain/Spring Washers etc. including shaping and drilling of 75X8 mm galvanized flats.

Price does not cover:-

- (i) Cost of supply and erection of 2 nos earth electrodes which is payable under item 17(a) in schedule-1 section 3.
- (ii) Connection between Buried Rail and these earth electrodes, which is payable under Erection portion of item 16(a)(i) in schedule-1 section 3.

ITEM No. 18(a) : Supply and Erection of 25 kV, SF-6 gas filled Interrupters.

The price shall cover supply of 25 KV, AC, 50 Hz, Single Pole, outdoor type, SF-6 Gas Interrupters complete with all accessories and components as per RDSO's specification No.ETI/PSI/167(09/97), with latest spec. at site and erection of the same complete with supporting frame-work and terminal connectors. The price for erection shall include alignment and grouting of the Interrupter on its foundation block and mounting of accessories, if any, in their respective positions. The required SF-6 gas will be supplied by the Contractor and make his own arrangements for filling of the same. The price shall also cover supply and erection of enameled number plates. All necessary tools, equipments instruments, including power supply required for carrying out necessary checks, tests and commissioning shall be arranged by the Contractor.

NOTE: The replenishment of SF6 gas required due to leakages during the warranty period shall be done by the Contractor at his own cost.

ITEM No. 18(b) : Supply and Erection of 25 kV, vacuum type Interrupters.

The price shall cover supply of 25 kV, AC, 50 Hz, Single Pole, outdoor type, vacuum Interrupters complete with all accessories and components as per RDSO's specification No.ETI/PSI/167(09/97), with latest spec. at site and erection of the same complete with supporting frame work and terminal connectors. The price for erection shall include alignment and grouting of the Interrupter on its foundation block and mounting of accessories, if any, in their respective positions. The price shall also cover supply and erection of enameled number plates. All necessary tools, equipments, instruments including power supply required for carrying out necessary checks, tests and commissioning shall be arranged by the contractor.

ITEM No. 19 :] Supply and erection of 25 KV Potential Transformers (Type-I).

The price shall cover supply and erection of a 25 kV potential transformer type-I complete with all fittings and accessories as per relevant specifications, including terminal connectors and fixing bolts. The price for supply and erection shall include proper alignment of the transformer in

position. The price shall also cover the supply and erection of an enameled number plate and fixing bolts. The price shall not include the cost of any small parts steel work.

ITEM No. 20(a) : Supply and erection of 42 kV lightening arrestors.

The price shall cover supply and erection of 42 kV lightening arrestors complete with all fittings and accessories as per relevant specifications including terminal connectors. The cost of supply and erection shall include proper alignment of the lightening arrestor in position. The price shall not cover supply and erection of cadmium copper jumper (65) which will be paid under ITEM No 15. The price shall not include the cost of any small parts steel work.

ITEM No. 20(b) : Supply and erection of lightening arrestors 7.5 kV.

The price shall cover supply and erection of 7.5 kV lightening arrestor complete with all fittings and accessories. The cost of supply and erection shall include proper alignment of the lightening arrestor in position. The price shall not include the cost of any small parts steel work.

ITEM No. 21 : Supply and erection of terminal boards in control cubicles.

The price shall cover supply and erection of a wall mounted terminal board with six numbers of two-way terminal blocks for connecting the cables from the outdoor equipment of a switching station as per Railway Drawing given in Annexure-1(Part-IV).

ITEM No. 22(a) : Supply and erection of an iron clad 110 V D.C. fuse box.

The price shall cover supply and erection of a 15A, 110V iron clad two way fuse box on the wall inside the remote control cubicles. The fuse box shall be complete with two fuse carriers and bases.

ITEM No. 22(b): Supply and erection of iron clad 230 V A.C. fuse box.

The price shall cover supply and erection of a 15A, 230V,A.C. iron clad 4-way fuse box on the wall inside the remote control cubicle, for heater supply of interrupters. The fuse box shall contain four fuse carriers and bases.

ITEM No. 23 : Supply and erection of lead acid batteries.

The price shall cover supply and erection of 110V, 40AH lead acid battery complete with stand, accessories and a tool board. The price for erection shall include installation and connecting up of the battery, but exclude the cost of connecting cables (cable will be supplied by the purchaser), erection of which will be paid for under item 25. Price shall include supply of 110V, 40AH lead acid battery complete with accessories and connectors as per relevant RDSO's specification given in Annexure-1. Price shall also cover supply of Mild Steel stand, electrolyte and Tool Board with thermometer, hydrometer & wrench.

ITEM No. 24 : Supply and erection of battery chargers.

The price shall cover supply and erection of battery charger for a 110 V, 40 AH lead acid battery complete with connecting lead and plug for connection to 230 V A.C. supply. The price for erection shall include mounting of the charger in position and connecting it up to the 230 V A.C. distribution boards, which will be provided by the Purchaser in the control cubicles. The price shall not include supply and erection of any cable for connecting the charger to the 110 V battery which shall be paid for under item 25.

ITEM No. 25: Supply and Installation of Cables for:-

ITEM No. 25 (a) Control and Indication.

The price shall cover supply, installation and connecting up of cables for control and indication from the interrupter to the terminal board. The price shall include supply and erection of terminal connectors at both ends, if required the conduits may be provided where it is necessary.

ITEM No. 25 (b) Heater Supply.

The price shall cover supply, installation and connecting up of heater supply cable from interrupter to interrupter or from the interrupter to the 230V A.C. fuse box mounted on wall inside the control cubicle and from this fuse box to L.T. distribution board inside the control cubicle. The price shall include cost of supply and erection of terminal connectors at each end, if any required, and conduit, if any at the interrupter end.

ITEM No. 25 (c) Catenary Indication

The price shall include supply, installation and connecting up of cable for catenary indication, between potential transformer Type-I and the terminal board inside the control cubicle. The price shall include supply and erection of terminal connectors at both the ends if required and conduit to be embedded between the steel work based and the cable trench and shall include all fastenings on masts and structural members to support them.

ITEM No. 25 (d) L. T. Power Supply

The price shall cover supply, installation in trenches and connecting up of L.T. Power supply cable between the L.T. supply transformer at switching station and L.T. distribution board, inside the control cubicle. The price shall cover supply and erection of suitable cable boxes, if required, and connectors at both ends.

ITEM No. 25 (e) 110 V D. C. Supply

The price shall cover supply, installation and connection up of cable between 110V battery charger and battery, between battery and the D.C. fuse box and between the D.C. fuse box and terminal board. The price shall include terminal connectors, wherever required.

NOTE : 1. The length of cables shall be the actual distance measured along the lengths of the cable between the starting and terminating points of each cables.

2. for purposes of payment fraction of a metre in the total length of cable of each type used at a switching station shall be rounded off to the next higher metre.

3. Price under item 25 do not include cost of concrete cable trenches which will be paid for under item 2(c).

ITEM No. 26(a) : Supply and erection of bus bars

(i) Aluminum bus bar 36 mm x 28 mm

The price shall cover supply and erection of aluminium bus bars 36mm x 28mm including bending, shaping and clamping on to insulators, connectors or equipment terminals.

(ii) Solid copper bus bar 18 mm

The price shall cover supply and erection of solid copper busbar 18mm including bending and shaping.

NOTE:- The price under item 26(a)(i), (a)(ii) does not cover the cost of terminal connectors which will be paid for under items 26(b) or (c) as applicable.

ITEM No. 26(b) (i) to (vii) : Supply and erection of aluminium bus-bar connectors

The price shall cover supply and erection of bus-bar junctions and connectors of various types specified, including bolts, nuts etc, required at junctions or terminations of bus-bars.

ITEM No. 26(c) (i) to (iv) : Supply and erection of solid copper bus-bar connectors

The price shall cover supply and erection of solid copper bus-bar junctions and connectors of various types specified, including bolts, nuts, etc, required at junctions or terminations of solid copper bus-bars.

ITEM No. 27(a) : Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V 10 kVA L.T. supply transformers.

The price shall cover Supply of 25 kV/240V 10 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre- commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/ checks/tests and commissioning shall be arranged by the contractor.

ITEM No. 27(b): Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V, 5 kVA L.T. supply transformers.

The price shall cover supply of 25 kV/240 V, 5 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre- commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/ checks/tests and commissioning shall be arranged by the contractor.

ITEM No. 27(c) : Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V, 25 kVA L.T. supply transformers.

The price shall cover Supply of 25kV/240V 25 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre- commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/checks/tests and commissioning shall be arranged by the contractor.

ITEM No. 27(d) : Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V, 50 kVA L.T. supply transformers.

The price shall cover supply of 25kV/240V, 50 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the

same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre-commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/checks/tests and commissioning shall be arranged by the contractor.

NOTE for item 27(a), 27(b), 27(c) & 27(d): The replenishment of the transformer oil on account of testing and leakages during the warranty period shall be done by the Contractor at his own cost.

ITEM No. 28 : Supply without Insulator and Erection of 25 kV D.O. Fuse Switch

The price shall cover supply and erection of 25 kV drop out fuse switch complete with all mounting accessories and terminal connectors as required but without the cost of the supply of 25 kV solid core insulator. The price shall not include erection of small parts steel work.

ITEM No.28(x) : Supply of Post Insulators for Item 28

The price shall cover only supply of 25 kV Solid Core Insulators (Post Insulators) for execution of work covered under item 28. Erection cost of insulators are inclusive in item 28.

ITEM No. 29(a) : Erection, oil filtration, testing and commissioning of Booster Transformers

The price shall cover erection of a 150 or 100 KVA booster transformer supplied by the purchaser complete with terminal connectors on a gantry. The price shall include proper alignment of the transformer on the gantry, but shall exclude any steel work required for mounting the transformer. The price shall also cover supply and erection of an enameled number plate. The price shall also cover oil filtration and pre-commissioning tests as approved by the Railways. The contractor shall make his own arrangement for oil filtration equipments as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration /checks/tests and commissioning shall be arranged by the contractor.

ITEM No. 29(b) : DELETED

ITEM No. 30(a)(i) : Supply and erection of fencing panels at Switching Stations

The price shall include supply and erection of fencing panels painted with two coats of red oxide zinc chromate primer to IS:2074:1979 and finished with two coats of aluminium paint. The prices shall not include supply and erection of fencing up-rights, anti-climbing devices but shall include the cost of fasteners and the price shall be for a metre length of the panels, 2.4 meter height measured in the plan view of the appropriate approved drawings.

(ii) Supply and erection of fencing uprights

The price shall cover supply and erection of fencing uprights panels painted with two coats of red oxide zinc chromate primer to IS:2074:1992 and finished with two coats of aluminium paint. The price shall be on the basis of black weight of the steel with no deduction for holes or skew cut or no increase for weld materials. The cost of foundation of uprights will be paid under item-2.

ITEM No. 30(b) :

(i) Supply and erection of anti-climbing device at Switching Stations

The price shall cover supply and erection of an anti-climbing device consisting of galvanised steel fixtures mounted on the fencing panels as per approved design. The price shall be per metre length of the panel.

(ii) Supply and erection of anti-climbing device for B.T. Stations

The price shall cover on a lump sum basis the supply and erection of anti-climbing device consisting of galvanised steel fixtures mounted on the masts, of the gantry below the transformer. The price shall be for each B.T. Station provided with the device.

(iii) Supply and erection of anti-climbing devices for L.T. Supply Transformer Stations.

The price shall cover on a lump sum basis the supply and erection of anti-climbing device consisting of galvanised steel fixtures mounted on the masts below the transformer. The price shall be for each mast provided with the devices.

(iv) Supply and erection of Anti Monkey Menace.

The price shall cover supply and erection of anti monkey menace consisting of Hot dip galvanized fixtures (MS angle 60mm x 60mm x 8mm) including all bolts, nuts, MS Flat and barbed wire as per requirement, mounted on masts as RDSO's drawing Nos. TI/SK/OHE/ANTIMON/RDSO/00001/08/0 & TI/SK/OHE/ANTIMON/RDSO/00001/09/0. The location for provision of "Anti Monkey Menace" if any shall be advised by the concerned project after award of the contract. All components shall be hot dip galvanized after fabrication and take approval from the project with the type of mast also.

ITEM No.31 : Modifications to erected equipment

The price under this item shall cover various modifications required to be carried out, in a section of completely erected overhead equipment energised or fit to be energised, certified as such by the Purchaser's Engineer provided such modifications are not on account of non-compliance of specifications, approved drawings and instructions given by the Purchaser for the execution of the work from time to time, during the progress of the work. All the prices are on a flat basis and cover only the important and most frequent type of modifications required to compensate the contractor for additional work involved. No payments shall be admissible for other minor modifications which may be necessary in the course of work. All work originally done shall be paid for at normal rates for items 1 to 30 of schedule 1 as applicable. Dismantling of foundations and masts/structures shall be done by the Purchaser at his own cost.

In all the following cases, the dismantled equipment shall be handed over by the contractor to the Purchaser's Engineer at the spot of dismantlement or at the contractor's Depot, as required by Purchaser's Engineer. Where prices under this item are applicable, the Contractor shall finalise the quantities of work jointly with the Purchaser's Engineer before taking the work in hand.

ITEM No. 31(a) Transfer of equipment from one mast or support to another

The price shall cover transfer of overhead equipment to a bracket assembly on a new mast or support and dismantling of the erected bracket assembly from the old mast of support and consequent adjustment to overhead equipment required such as re-spacing of droppers (including cost of dropper wire), leveling etc. the foundation and steel work and bracket assembly for the new mast or structure will be paid for under appropriate items 2,3 and 4 respectively.

ITEM No. 31(b) : Provision of an additional bracket assembly/assemblies on mast or support

The price shall cover dismantling of an existing bracket assembly/assemblies and provision of a multiple cantilever cross arm wherever required, supplied free of cost by the Purchaser and erection of bracket assemblies on the multiple cantilever cross arm. The price shall include any consequential adjustment to traction overhead equipment such as re-spacing of droppers, leveling, etc. This prices shall not include the price for supply and erection of any additional bracket assemblies, which will be paid for under item 4.

ITEM No. 31(c): Re-adjustment of a head-span

The price shall cover the re-adjustment of the head span polygon to enable the additional equipment/s to be suspended from the head span. Payment for the suspension of additional overhead equipment shall be made for under item 5 as extra to item 31(c).

ITEM No. 31(d): Dismantling of overhead equipment

The price shall cover cost of dismantling of equipment including Terminations, tensioning devices, guy rod assemblies, bracket assemblies and associated small parts steel work(excluding components embedded in concrete).

ITEM No. 31(e): Dismantling of feeder/return conductor

The price shall cover dismantling of feeder, or return conductor including guy rods, terminations, suspension assemblies, super masts and associated small parts steel work.

ITEM No. 31(f): Splicing and extension of anchored overhead equipment

The price shall cover splicing of terminated overhead equipment for extension and consequent adjustment of the affected equipment. The dismantled equipment (excluding portions embedded in concrete) shall be returned to the Purchaser's Engineer. The cost of dismantling of overhead equipment would be paid for under item 31(d) for the whole length of the anchoring span irrespective of the physical position of the splices. The extended overhead equipment shall be deemed as starting from the center line of the structure preceding the old terminating structure and the extended overhead equipment shall be paid for under item 6(a) or 6(b) or 6(c) as applicable.

ITEM No. 31(g): Dismantling of a section insulator

The price shall cover cost of 107 sq mm contact wire, 65 sq mm catenary wire, dropper wire and dismantling of an section insulator, splicing of catenary and contact wires and the necessary adjustments to droppers. The price shall include the supply of required copper conductors for the adjustment. The dismantled equipment shall be handed over to the Purchaser's Engineer at the spot of dismantling or at the contactor's Depot/s.

ITEM No. 31(gz): Dismantling of a section insulator

Same as item 31 (g) but excluding supply of Contact and Catenary wires.

ITEM No. 31(h): Slewing and putting back of OHE in original shape

The price shall cover for temporary slewing or lowering of erected OHE adjusted and /or unadjusted to ground for special works, at the request of the Purchaser and restoration and re-adjustment of the equipment after completion of special works. The price shall be per span or part thereof, including anchoring spans.

Additional components or materials used during such restoration or re-adjustment will be paid for at rates included in schedule 3 plus handling charges of 10% provided such use has, in the opinion of the Purchaser, become necessary due to reasons beyond the control of the Contractor.

ITEM No. 31(i) Dismantling of an isolator

The price shall cover cost of dismantling of an isolator, single or gang-operated, including dismantling of connections to the overhead equipment and associated small parts steel work.

ITEM No. 31(j) Dismantling of a post/pin insulator

The price shall cover cost of dismantling of a pedestal pin insulator including dismantling of jumper connections, if any and associated small parts steel work.

NOTES FOR ITEM No. 31 : All claims under this item have to be supported by the following certificate to be furnished by the Contractor on the connected bill.

(a) The modifications are not on account of non-compliance of specifications approved and instructions given by the Railways for execution of works.

(b) The quantities of work involved for modification have been finalised jointly with the Railway's Engineers before taking the work in hand.

(c) The dismantled material have been handed over to the Purchaser's representative.

ITEM No. 31 (m)(i) & 31(m)(ii):

Manning of Switching Stations/Traction Sub-stations

The prices shall cover the payment/wages to the staff to be deployed at each switching station and traction sub-station as directed by purchaser's Engineer. Manning shall be done round the clock. The staff to be deployed must be skilled and fully conversant with operation of various equipments installed in switching station and traction sub-stations. The staff shall be deployed after test and trial by purchaser and on issue of competency certificate. The staff deployed shall act in accordance with instructions/ directions given by Traction Power Controller/representative of purchaser. The staff shall not leave the working place (Switching station and Traction Sub-station) in any case without prior permission of purchaser's representative. The price shall cover conveyance charges to the staff for going and coming to the working place. The period of manning shall be decided by the purchaser during execution of contract and manning shall commence on receipt of intimation in writing from the purchaser one month in advance.

Note: In case Feeding Post is situated in adjacent to TSS same will also be included for manning alongwith TSS.

ITEM No. 32: Extra on erection rate for work under a power block

The price under this item cover extra charges over and above erection rates of item 3 to 15 and 18 to 31 of Schedule 1, (Pt. I, Ch. IVA) for erection of equipment in the vicinity of energized overhead equipment and feeders or erection of equipment with joints equipment already energized or on energized equipment which calls for a power block (shut off of traction power). The price payable under this item shall be 100% extra over the erection rates of the item referred to above, provided such work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the Purchaser from time to time.

The extra erection rate under this item will not be payable, if power block is given for a total duration of a 4 hour or more in a day. Where the prices under this item are applicable, the Contractor shall finalise the quantities of various items of work to be done under a power block, jointly with the Purchaser's Engineer prior to taking the work in hand.

ITEM No. 33(a):

Extra on erection rates for stringing work manually under Item No. 6(a) to 7(c)

The price under this item covers extra charges over and above the erection rates of item 6(a) to 7(c) of Schedule-1(Pt. I, Ch. IVA) without use of Wiring Train/Tower Wagon. The price payable under this item shall be 50% extra over the erection rates of the items referred to above, provided such

work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the Purchaser from time to time.

ITEM No. 33(b) : Extra on erection rates for steel work manually under Item 3(a)(i), 3(a)(ii), 3(b)(i), 3(b)(ii) & 3(b)(iii)

The price under this item covers extra charges over and above erection rates of item No. 3 (a) (i), 3 (a)(ii), 3 (b)(i), 3 (b)(ii) & 3 (b)(iii) of Schedule-1(Pt. I, Ch. IVA) without use of rail crane. The price payable under this item shall be 50% extra over the erection rates of items referred to above, provided such work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the purchaser from time to time.

Note : Where the works under these item 33(a) i.e "Manual Stringing" and 33(b) i.e "Manual Erection of Masts" are feasible, the Contractor shall finalise the quantities of various items of work jointly with the purchaser's engineer prior to taking up the work in hand, subject to a maximum of two percent each for item 6(a) to 7(c) and 3 (a) (i), 3 (a)(ii), 3 (b)(i), 3 (b)(ii) & 3 (b)(iii) of Schedule-1.

ITEM No.34(a): Supply of materials and construction of Super-structure of SP/SSP building

The price shall cover the construction of Control room of SP/SSP building above plinth and will include labour and material cost for the following works:-

- i) RCC work in plinth, lintels, chajja, Roof slab.
- ii) Pre-cast RCC slab, RCC jali.
- iii) Cement concrete in flooring and cable trench.
- iv) Brick masonry in walls.
- v) Plastering works.
- vi) Provision of Doors, windows grills, Rolling shutters, water pipe line ventilators and painting thereof.
- vii) White washing and colour washing.
- viii) Acid proof or painting of floor and wall in battery room.
- ix) Spreading of stone metal.
- x) Provision of RCC pipe etc.
- xi) Any other item of work required to complete the work which has not been mentioned/included above shall also be done by the contractor and nothing extra shall be paid the same.

Construction of switching station shall be done strictly as per RDSO's drawing No.ETI/C/0067 (Latest version as given in Annexure-1) and Technical specification included in Part-II Chapter-VIII of the Tender Papers.

The price shall cover the provision of all shuttering, frame works, arrangement of water, all tools and plants required for the work, consumable materials etc.

The materials used for the work such as brick, sand, stone aggregates, steel for door frame, grill/Rolling shutters, RCC pipe shall be of best quality in accordance with Railways specification.

The price shall also cover the provision of suitably sized of opening on the wall, for installation of Exhaust fan in the battery room.

ITEM No.34 (b) : Cement concrete for foundation with stone ballast 40 mm nominal size rammed in layers not exceeding 15 cm thick in cement and sand, ratio 1:3:6 :-

The price covers the supply of all necessary materials for casting cement concrete including cement, sand, ballast, arrangement of water and labour. The price shall cover the arrangement of all tools and plants such as mixer, vibrator (mechanical/electrical).

The price shall cover provision of shuttering and dismantling thereof. The price shall cover cost of screening and washing of aggregate mixing as well grinding of mortar, preparation, deposition and curing of concrete and rendering or finishing the exposed surface were required. The price shall cover the cost of transportation of all materials, tools and plants to the site or from the site.

Item No. 34 (c) : RCC work of foundation

The price shall cover the price of reinforcement concrete work for construction of column including supply of cement, concrete, structuring arrangements and dismantling thereto but excluding cost of steel required for reinforcement which has been covered under item 3(g). The concrete mixture shall also be before casting in accordance with IS:456/2000.

Item No. 34(d) : Brick work in foundation, plinth ,Retaining walls and drainage

The price shall cover all labour and materials including cement and brick. The price covers supply, fixing, erecting, and removal of scaffolding, timber or steel frame work, shuttering, centering etc. The price covers arrangement of water at site, mixing of mortar, soaking bricks and all watering during the work and prescribed period of curing afterwards. The price shall cover the arrangement of all tools and plants required for work. The price shall cover all consumable materials e.g. fuel, oil, string, rope, wedges etc.

Item No. 34(e)(i):

Construction of retaining wall with Random rubble masonry in cement & sand 1:6

The price shall cover all labour and materials including cement. The price shall cover supplying, fixing, erecting, and removal of scaffolding, timber or steel frame work, Shuttering, centering etc. The price shall cover watering during the work. The price covers the arrangement of water at site.

NOTE:- In case the stone rubbles are not available nearby the work site then the Retaining wall shall be constructed by Brick Masonary work and the payment should be made to the contractor under item 34 (d).

Item No. 34(e)(ii) : Construction of retaining/baffle wall with RCC M-20

The price covers the supply of all necessary materials for casting cement concrete (RCC) including cement, sand, ballast, arrangement of water and labour. The price shall cover the arrangement of all tools and plants such as mixer, vibrator (mechanical/electrical).

The price shall cover provision of shuttering and dismantling thereof. The price shall cover cost of screening and washing of aggregate mixing as well grinding of mortar, preparation, deposition and curing of concrete and rendering or finishing the exposed surface where required. The price shall cover the cost of transportation of all materials, tools and plants to the site or from the site. The price shall be exclusive of the cost of Steel required for Reinforcement which shall be paid under Item 3(g). The price shall also include dismantling of all connected temporary arrangements, back filling as required and removal of spoil.

Note: Normally construction of retaining/Baffle wall requires digging for base preparation. Erection charges up to ground level will be paid as per erection rate of item 2(b)/2(bz) for soil other than hard soil & rock. For hard soil & rock, erection rate for base preparation up to ground level shall be paid as per erection rate of Item 2(a)(i)/2(az)(i) & item 2(a)(ii)/2(az)(ii) respectively.

Item No. 34(f) : Earth work in excavation and filling

The price shall cover the earth filling at the site of SP/SSP control room at specified area upto required level. The price covers all labour and materials required including arrangement of

necessary tools and plants required for the work. This price also includes the transportation cost of earth in case, earth is not available for filling up the nearby area. The price covers the watering and ramming of levelled/ filled earth either manually or by mechanical means. The price shall cover arrangement of necessary water required for the work.

Item No. 34(g) : Earth work in excavation for foundation

Same as for above, item No.34(f) except that no watering and ramming of earth is required in this case, but includes the disposal of excavated earth /leveling etc. for foundations, drainage etc.

Item No. 34(h) :

Excavation of pile 100 to 200 mm dia with Single under ream up to 3.5 m deep

The price shall cover the cost of all labour tools and plants required at site during making of a 100 to 200 mm dia bare hold along-with single under ream upto a depth of 3.50 metre. The excavated earth from the bare hole shall be disposed off and leveled all around. The price shall also cover the cost of all consumable materials and water required at site during execution of work.

Item No. 34(i) : Plastering of Retaining wall

The price shall cover the supply of all materials and labour cost including cement for plastering of Retaining wall either constructed by Ruble masonry work or by Brick work. Plastering work shall be done by cement mortar in 1:4 (1cement and 4 sand). The price shall also cover the cost of arrangement of necessary water required for the work. The price shall cover the cost of necessary tools and plants required for the work and necessary consumable items. Nothing extra shall be paid to the contractor for any rehandling of materials from the place of delivery to place of work. The price shall cover the cost of cleaning and wetting the surface of the work. The price shall also cover the cost of curing of the plastered surface as per extant practice.

Item No. 35 : Supply & Erection of materials for Internal and External Lighting of Switching Station Building (SP/SSP).

The price shall cover all cost of labour and materials required for the work. Wiring work shall be done in accordance with IE rules, IS-732 and specifications given in Part-II Chapter-VIII of the tender paper. The price shall also cover the cost of testing and commissioning of the installations. The various activities involved in the work are as follows:-

Fixing of MS conduits on wall and drawing of wires for circuit and point wiring.

Provision of C.I. Switch boxes of appropriate size concealed in wall at appropriate height with phenolic laminated (Hylum) sheet for fixing of switches, plugs etc. Provision of Main Board and Distribution Boards and connection thereof.

Provision of light fittings, Exhaust fan, Outdoor luminaries complete with tubes and bulbs.

Provision of Earthing station and connection between earthing station to Main Board with the help of 8 SWG GI wire. Earthing work shall be done in accordance with IS:3043/1987.

Materials such as light fittings, Exhaust fan, switches sockets, Ceiling Rose, Socket outlets all shall be with ISI mark and shall be one of the make mentioned in technical specification.

Provision of Switches, sockets outlets, Ceiling Roses on respective switch boards and points in appropriate numbers and connection thereof.

Provision of 150 Watt HPSV street light fitting complete in all respect including lamp on the wall of the building.

After completion of wiring work necessary testing of wiring and Earthing station shall be done and results submitted to the site-in-charge duly signed by representatives of both the contractor and purchaser.

Item 36 (a) : Unloading of all type of Steel Structures :

The price shall cover unloading charges for all type of steel structures (BFB/ RSJ, B-Series, Spl structures, N,O, R type structures etc) from BFR/ trailer/ truck over and above the requirement given by the contactor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.

Item 36(b): Loading of all type of Steel Structures:

The price shall cover loading charges for all type of steel structures (BFB/ RSJ, B-series, Spl structures, N,O & R type structures etc) into BFR/ trailer/ truck over and above the requirement given by the contactor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.

Item 37 (a)]: Unloading of all type of Copper & Aluminium conductors :

The price shall cover unloading charges for all type of copper conductors (contact wire, catenary wire, Dropper, Bridle wire, Jumpers etc) and Aluminium conductors (spider conductor etc) into BFR/ Tower wagon/ trailer/ truck over and above the requirement given by the contactor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.

Item 37 (b) : Loading of all type of Copper & Aluminium conductors :

The price shall cover loading charges for all type of copper conductors (contact wire, catenary wire, Dropper, Bridle wire, Jumpers etc) and Aluminium conductors (spider conductor etc) into BRF/ Tower wagon/ trailer/ truck over and above the requirement given by the contactor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.

NON SCHEDULE ITEMS:

NS-1	<u>Dismantling of released Cantilever</u> : The price shall cover dismantling of released cantilever with insulator and top & bottom attachment from mast or support and proper stacking at suitable location/TRD store as per direction of Rly engineer.
NS-2	<u>Cutting and removal of released OHE mast/portal</u> : The price shall cover cutting & removal of old/released OHE mast fabricated structure and upright of portal and putting away from the track as per direction of Rly Site Engineer.
NS-3	<u>Dismantling of released SPS</u> : The price shall cover dismantling of released SPS from mast or supports and proper stacking in site TRD store of site In-charge.
NS-4	<u>Removal of foundation from bottom lever and cleaning the site</u> : This price shall cover the cost of removal of CC foundation from bottom level and clearing the site. This price shall also include the cost of breaking the foundation manually/mechanized including cutting of mast/portal stubs.
NS-5 & 6	<u>Supply & erection of 12.24 mm dia ACSR Raccoon arial earth conductor with required fittings on mast/potal/TTC as per RDSO drg., specification and perexplanatory note</u> : The Price shall cover the Supply & erection of Arial Earth Conductor (AEC) with necessary accessories, fittings and fasteners on mast/portals as per RDSO TI/IN/0042 dt 23.10.2020 with latest amendment if any. As per RDSO drawing number TI/dawning/OHE & FEEDER/earthling/RDSO/00001/20/0 12.27 mm diameter ACSR Raccoon conductor for Arial Earth Conductor (AEC), Earth clamps with fasteners, etc shall be provided on back side of the mast/portals as approved in the RDSO instruction. ACSR conductor jointing, Anchoring/ termination arrangement as and where required in one TKM as per site conditions. The above recommendation is as per prevalent practice used in 2X25 kV system.
NS-7 & 8	<u>Supply & erection of BEC 20mm dia galvanized steel conductor with necessary accessories fittings fasteners including tee & lug connector</u> : The price shall cover Supply & erection of Buried Earth Conductor (BEC) including Erection and laying of Buried Earth Conductor (BEC) with necessary accessories, fitting and fasteners tee & lug connector and other items required for erection. As per latest Rdso spec
NS-9	<u>Provision of digging of trench 300 mm deep and refilling in all soil and repair of PF area</u> : This price shall cover Provision of digging of trench 300 mm deep for BEC as per latest RDSO drawing laying and re filling in all types of soil. This price shall also include cost of repair of PF area if any due to digging as per instruction of site incharge.
NS-10	<u>Transportation of Railway supply materials from Railway depots to work site or Released material from Work site to Railway depot</u> : The price shall cover cost of loading/unloading and transportation of all release OHE material i.e. mast, cantilever, portal, isolator, guyrod, DA, chair, wire etc. from site to TRD depot/scrap depot/project depot for DS-8 or as desired by Railway SSE. The price also cover trnaportation of any other material which not includes in items.
NS-11	<u>Supply & erection of feeder cable termination kit</u> : This price shall cover supply and erection of all accessories/fitting fasteners connector and other itmes required for feeder cable termination.
NS-12	<u>Supply & erection of straight through jointing kit</u> : This price shall cover supply and erection of all accessories/fitting fasteners connector and other itmes required for feeder cable jointing of feeder cable as required.
NS-13	<u>Supply of feeder cable (25kV feeder cable of suitable size of voltage grade 26kV/45kV (52kV) as per IEC 60840 for 600 amp current carrying capacity as used in Metros may be provided)</u> : This price shall cover supply of feeder cable as

	specified with all accessories fittings as required for feeder cable.
NS-14	Laying of feeder cable: This price shall cover laying of feeder cable with all accessories/fitting fasteners connector and other itmes required for feeder cable laying and erection as per RDSO specification Railway board guideline and engineer incharge instruction.
NS-15 & 16	Provision of supply & erection of retro-reflective number plate for feeder mast with SPS as per specifications & explanatory note: This price shall cover supply and erection of retro-reflective structure No. plate as per RDSO drawing No. OHE/33A(12/97/12)REV.8 or latest on clamp and GI nut & bolt.
NS-17	Tree trimming/Pruning/cutting of branches of Various types of trees dangerous to FEEDER/OHE line: This price shall cover cutting/trimming/pruning of tree to maintain a minimum clearance of 5 to 6 mtr of Feeder/OHE. This price shall also includes clear the track from small & big branches of tree.
NS-18	Marking and Painting of Elementary section/rail level and implantation on OHE structure as per explanatory notes and technical specification: This price shall includes marking of implantation of OHE structure from Rail level on the face of mast structure, marking of ERL, pending of elementary section painting marking may be carried out on black letter and base of marking should be with yellow paint other color paint also required for various painting and marking. General arrangement of marking and painting should be as per guideline for standardization of color code scheme on mast structure issue by CAMTECH or RDSO or Railway Board. However, there will be slide changes as per type of structure.
NS-19	Digging and filling of trench size 0.4 x 0.8 mtr as per spec. (trench work may be on kuchha/pucca/RCC/PCC land and all type of soil as per site requirement and without protective layer of brick): This price shall cover excavation of 0.4 mtr width and 0.8 mtr deep trench in all kind of soil/surface for laying of HDPE/concerete height for under cable refilling and after work completion. Work should be after satisfaction of site engineer.
NS-20	Dismantling of PTFE Neutral section :- The price shall cover dismantling of PTFE Neutral section complete set. The released material should be returned back to Railway (Concerned SSE/TRD) in safe condition.The prices shall include transportation charges of released material from site to nearest Depot/ Store.
NS-21 & 22	Supply & Erection of 2x25 KV(55/66KV) DP Isolator: This price shall cover supply & Erection of 55 /66 Kv DPI complete with sps, isolator, jumper, fastener, connector for mounting at TTC/Potal/Mast as per RDSO specificationETI/PSI/133. DPI of 1600 amp rating. With pad lock and 3 key. As per RDSO instruction TI/IN/0042 with latest amendment, etc
NS 26	SUPPLY Erection OF PULLEY BLOCK (SET OF THREE PULLEY) FOR 3:1, 3 PULLEY TYPE REGULATINGEQUIPMENT (2400 KGF):The price will cover supply of 3 pulley type Regulating Equipment with 2400 kgf tension in Overhead Conductors as per RDSO' s Specification No. TI/SPC/OHE/3PHTATD/0150 with A&C Slip No.-1 or latest, if any, (Ref. RDSO' s Drg. No. TI/DRG/OHE/ATD2400/RDSO/00001/16/1,TI/DRG/OHE/ATD2400/RDSO/00002/16/1, TI/DRG/OHE/ATD/RDSO/00008/05/0, TI/DRG/OHE/ATD/RDSO/00005/02/1 & ETI/OHE/P/5341, Rev.- "A") complete with SS Wire Rope conforming to RDSO' s Specification No. TI/SPC/OHE/WR/1060 with A&C Slip No. 1, 2, 3 & 4 or latest, if any, including 01 Set Forged Clevis & Eye Assembly (RI No. 5322-1), 02 Sets of 9-tonne Adjusters (RI No. 5021), 01 No. 20 mm dia. Double Eye Distance Rod (RI No. 5183), 02 Sets of Anchor Double Strap Assembly (RI No. 5031), Mast Anchor Fitting with Backing Angles and Through Bolts for fixing the Anti-falling Rods with the masts as per site condition. The price will also include supply of 01 No. Porcelain 9-Tonne

	Insulator (1050 mm CD) as per RDSO' s Specification No. TI/SPC/OHE/INS/0070 (04/2007) with A&C Slip Nos. 1 & 2 or latest, if any. The price will exclude cost of along with Counter Weight Eye Rod Assembly
NS 27	<p>SUPPLY Erection OF CENTRAL EYE ROD TO INCORPORATE ADDITIONAL COUNTER WEIGHT OF 135 KG. FOR-3:1, 3 PULLEY TYPE REGULATING EQUIPMENT (2400 Kgf).</p> <p>The price shall cover supply of 1.8 mtr. Length Central eye rod as per RDSO' s Drg No. ETI/OHE/SK/588 Rev-B to incorporate additional Counter Weight of 135 Kg. suitable for 3:1, 3 Pulley Type Regulating Equipment complete painting etc.</p>
NS 28	<p>DISMANTLING AND ERECTION OF COUNTER WEIGHT ASSEMBLY.</p> <p>The price shall cover dismantling of existing counter weight assembly on the existing OHE mast/new mast/portal/TTC for making the OHE system as per 160 kmph High speed with proper protection of regulating equipment. Care should be taken during dismantling so that any arrangement for execution of central eye rod with additional 135 KG (will be supplied by Railway) counter weight (i.e. total 800 KG) to be done. Erection of 800KG counter weight assembly to be completed without affecting/damaging other OHE assets. New ATD should be provided / replaced as per RDSO Drawing No. ETI/OHE/SK/587 Rev. B. X-Y value adjustment chart for high speed work. Tenderer shall use the released balance weight of 665 Kg and reutilized in the new ATD to make 800 kg for an additional tension. The price of the contact & catenary ending clamp is also included in this item required for shifting of ATD in new mast. If other item required for the extension of ATD at new location, material shall be arrange by the Tenderer. During replacement work, tenderer shall take the spare balance weight from the depot in the section and depot in-charges shall provide the four sets of each additional balance weight during replacement work if required on returnable basis. For this work, Tenderer may also provide the same from the new additional balance weight. The price will also include painting of counter weight movement marking, i.e. "Y" - values by bands of width 20 mm at 350 C by Red Enamel paint over two coats of Enamel Yellow base paint and at 50 C & 550 C by Black Enamel paint over two coats of Enamel Yellow base paint respectively as per the Tension Temperature Chart on the new ATD mast on the facing side of the mast as well as on the opposite side of the counter weight.</p>
NS 29	<p>Dismantling of guy rod with termination</p> <p>The price shall cover the dismantling of complete equipment of guy rod assembly with associated fittings and the same to be handed over to Rlys as per direction of RLY's Engineer. The price shall also cover cost of dismantling of termination assembly including dismantling of mast fitting and other associated small parts steel work and the same shall be handed over to Rlys.</p>
NS 30	<p>Erection of new dropper and re-adjustment of dropper (5mm dropper wire and contact & catenary clips with bolt, nut, washer nut and split pin etc.</p> <p>The price shall include the erection of 5mm dropper wire and contact &</p>

	catenary improved as per RDSO parameters for 160kmph. Loading, unloading and transportation of material will be done by contractor. Supply rate of dropper is incorporated in item no. 31.
NS 31	Adjustment of OHE and Tower Wagon checking The price shall include the shifting of OHE load to the newly erected cantilever/ existing cantilever with supply of dropper wire (as required) and necessary adjustment of OHE after provision of counter weight assembly and or any necessary modification of OHE under power block. Also, tower wagon checking for adjustment of OHE suitable for 160 Kmph speed trains. Tower Wagon will be supplied by the purchaser during checking.
NS 32	Supply of additional balance weight (03 Nos. 40Kg& 01 No. 20Kg) for ATD as per RDSO specification no.TI/SPC/OHE/3PHTATD/0150with ACS-1. This price shall cover the supply of additional balance weight (03 Nos. 40Kg& 01 No. 20Kg) for ATD as per RDSO specification no.TI/SPC/OHE/3PHTATD/0150with ACS-1. Or latest
NS 33	Supply & erection of 160 sq.mm copper jumper as per latest RDSO/railway board guidelines

Extra on erection rates for work under power block for Schedule & Non Schedule items:

The price under this item cover extra charges over and above erection rate of items as per Annexure for erection of equipment in the vicinity of energized overhead equipment and feeders or erection of equipment with joints equipment already energized or on energized equipment which calls for a power block (shutoff of traction power).

The price payable under this item shall be 100% extra over the erection rate of the items referred to above, provided such work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the purchaser from time to time.

Where the prices under this item are applicable, the contractor shall finalize the quantities of various items of work to be done under a power block, jointly with the purchaser's Engineer Prior to taking the work in hand.

Note: This work will be executed in Power Block and Contractor shall submit the power block program well in advance (one week before) to concerned SSE In-Charge for taking permission from operating department as well as from SSE/TPC, so that work may be executed well in time in power block.

Signature of Contractor

SPECIAL CONDITIONS

1.	<p>Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..</p> <p>In the subject Tender, the existing 1x25 kV Electric Traction System to be upgraded by 2x25 kV Electric Traction System in the entire section between Utaratia- Maharani Paschim section of NR. The work constitutes the following:</p> <p>New Feeder wire along with new AEC & BEC wire are to be erected along with Feeder wire as per RDSO design instruction for 2x25 kV system. In case any deviation in the design, AEC (Aerial Earth Conductor), BEC (Buried Earth Conductor) in the entire section, contractor may suggest and joint to be made with the Divisional authorise representative for sort out the problems. According to RDSO instruction TI/IN/0042 with latest amendment or any modification in OHE, feeder line, AEC, BEC, ATD issued thereafter etc.</p>
2.	<p>The said work will be executed in LKO division. CEE/Project/NER/LJN is the main coordinator of the work in their respective Zone. If any dispute observed during execution of work, the problems may be sorted out mutually agreed.</p>
3.	<p>All T&P like Tirfors, Pull lifts, Pulleys, Slings, Come along clamps. Discharge rods etc. required during modification/replacement work shall be tested <u>Monthly</u> as per Railway's parameters to avoid any mis-happening and safe working during execution of work & separate record has to be maintained. Report to be submitted on same date to Railway. However cross checking by Railway representative has also to be done. Depot In-charges or Authorised Railway representative shall also make a register for the same with joint signature of Contractor representative. Each and every testing date has to be mentioned on tested T&P.</p>
4.	<p>Sufficient T&P & adequate resources shall be arranged by the contractor to avoid any delay.</p>
5.	<p>New 3rd Line between UTR-MWP section is likely to be commissioned. The subject work includes in all the main line section (UP, DN).</p>
6.	<p>Contractor shall depute Authorised representative for collecting all the progress of entire section daily in the evening preferably at 18.00 Hrs and advise to CEE/Project/NER representative for further onward submission to HQ.</p>
7.	<p>Project office has to develop a format for progress of work duly approved by CEE/Proejct/NER. Progress of the work shall be filled by the Railway representative and Contractors in same manner on daily basis.</p>
8.	<p>Register & DPR shall be maintained by the Depot In-Charges or Authorised Railway representative as well as contractor for each and every items, location cum item wise material, foundations used to avoid any duplicity in the work.</p> <p>A "Site Order Book" will be maintained at site of work by the successful Tenderer as well as by Railway representative for day-to-day instructions, regarding execution of work. Tenderer will keep qualified authorized representative at site of work on his behalf and afford all necessary facilities of inspection to authorized officials of CEE/Project/NER/LJN.</p>
9.	<p>Field officers and Depot In-charges or Railway representative will monitor the progress of work on daily basis.</p>
10.	<p>The contractor shall store/stock the required & adequate quantity of the material at suitable site after providing the Indemnity bonds. However, suitable site will made available by Railway as per site availability where contractor will make temporary depot with required Tools & Plants. The Railway shall not be responsible for any loss, theft or damage to contractor material/equipment, tools and plants etc. from any cause, what so ever. However, any loss or damage to Railway's property/assets, Contractor will make it good to the satisfaction of Railway.</p>

11.	This is a targeted work and Tenderer shall ensure that the work should be completed in 24 months (twenty four Months)/stipulated time schedule . Before start of the work, the contractor has to submit the Bar Chart along with details plan with men & material to complete the work to the competent authority. For the purpose of completion of work at different stages, the entire section will be sub-divided into smaller sections. Time period for different stages of completion of work shall be binding upon the contractor subject to fulfilment of obligations of the Purchaser.
12.	In case of non-completion of any stage of work, action shall be taken for that stage as per provision of GCC-April 2022 and its amendment . In case contractor is fail to achieve the target of completion of a particular stage as defined in Para 1.1.11(a) but able to achieve the cumulative target within the target date of subsequent stage, then the amount so withheld under Para 1.1.11(d) for that particular stage, shall be released.
13.	Contractor shall deploy at least 2 gangs per Depot according to OHE & Feeder work given in the Tender Schedule after finalization of design & drawing from the competent authority.
14.	The Railway representative shall take all release material i.e., C/L, structure Balance weight, SS wire rope & Eye Rod etc from the contractor, if any.
15.	All foundation shall be done according to RDSO Instruction TI/IN/0042 dt 23.10.2020 with latest amendment, if any and furnish the details in excel sheet developed by the CEE/project/NER office LJN & approved by DyCEE/Project/NER. i) All mixture machine or any heavy or light vehicle shall not be near to Track. It must be at least six meter far away from the Track during work. ii) All foundation work shall be done in day hours and no foundation shall be left without casted in night. iii) It should filled back and covered with Iron sheet to avoid any falling of human beings. The protective caution board to be provided during excavation and casting of foundations. iv) In the section of LKO division, permanent barricading has been done by the Railway to avoid enter of any animal in the vicinity of Railway Track. Contractor will not open any boundary without approval of authorized Railway Representative. CEE/Project/NER is authorise to issue instruction to open the covered boundary after taking the written assurance from Contractor that after entering men and machines, the boundary will be closed with temporary gates and one watch man will be provided round the clock till the final work and no any animal or any unauthorised person/Vehicles will be entered from the gate. Any CRO occurred due to entering of any animal from these gate, shall be the responsibility of Contractor and any detention occurred due to this, the damage cost of OHE as well as Train detention shall be borne by the Contractor. Railway will deduct the damage cost from their running bill.

16.	<p>During excavation & casting of foundation, following action shall be taken:</p> <p>a) After excavation of foundation, clear Photo of pit may be taken by the contractor's supervisor for assurance of work and to be submitted to concerned Railway representative.</p> <p>b) During filling of concrete in the pit, about 01-minute video clip of vibrator at different stages shall be taken and to be submitted to concerned Railway representative for record.</p> <p>c) Mixing of concrete shall be done by mixture machine as per Railway Board norms. In case at a particular location, where mixing machine is not possible to operate, prior approval for hand mixing shall be taken from CEE/Project/NER/LJN one week advance.</p> <p>d) Cement bags used for foundation work, shall be duly cut and signed by Contractors and Railway representative mentioning locations of each Mast/Portal/TTC/Anchor location etc, to be deposited and kept in record.</p>
17.	Contractor supervisor may take Video Clip/recording during casting of foundation work at each location and same to be sent to concern Railway supervisors/Depots for assurance of quality of work, if required.
18.	<p>All the safety precautions for men and material working within Railway premises should be taken by the contractor. The contractor shall be responsible in all respect, if any of their workmen meets with an accident due to non-observation of the safety precautions. Tenderer shall indemnify Railway against any or all claims which may arise because of any reason under any circumstances/ incident/accident.</p> <p>Railway representative shall counsel the Contractors staff during working in addition to counselling by Contractor itself to their staff and all precautionary measure shall be taken to avoid any mis-happening or sabotage.</p>
19.	<p>The entire section (Mail lines & Yards) is electrified with 25 kV OHE and Contractor has to execute all modification/replacement work during Power Block in the electrified section.</p> <p>Contractor has to submit the Rolling Block programme for two weeks in advance or as per instructions issued by Railway Board/ NER/HQ time to time.</p>
20.	Before execution of the work, Contractor shall certify that all staffs are well known and have knowledge of 25 kV OHE charge line section and working system.
21.	Power cum Traffic Block shall be taken by the Authorised Railway representative from TPC and after that Permit to Work will be given to Contractor.
22.	<p>All safety instruction issued by Railway time to time must be followed by Contractor and their staff during execution of any type of work near OHE.</p> <p>For smooth and safe execution of foundation & other Erection Works, PCEE/NER instruction and other Safety Circular with latest amendments must be taken into cognisance.</p> <p>Proper Earthing arrangement shall be done by the Contractor staff during replacement/modification work. The Earthing shall be done after ensuring proper clamps & cables of discharged rod. Discharge rods shall be provided by the contractor staff and for this, proper training and competency shall be given by the Railway's. The Contractor Authorised representative & Railway Authorised representative has to ensure that red Banner flag, red and green flag, whistle, Siren/hooter shall be made available to all staff, who have been deputed for provision of discharge rod and before the discharged rod, red banner flag and red flag have been provided to protect the movement of trains/engines etc. on both sides before start of OHE work as per decision taken by Railway representative.</p>

23.	Before start of the work, Railway representative shall confirm the location of discharge rod, which will be earthed the OHE for making dead of section and then Contractor staff will dead/earth the OHE in presence of Railway representative, for that no extra shall be paid by the Railway. Before clamping of discharge rod clamps, Contractor shall ensure that Earthing clamps shall be done on Traction rail & Mast.
24.	All operations of Isolators shall be done by Railway's Authorised representative.
25.	During Tower wagon working, all precautions shall be taken by the contractors as per AC Traction Manual.
26.	<p>Earthing before Commencement of Work:</p> <ol style="list-style-type: none"> 1. All metallic parts within reach (either directly or through tools etc.) shall be earthed, after they are made dead. 2. Each working party shall be protected by at least two independent Earths, one on each side of a working party. If the distance between the working parties exceeds 1000 m, intermediate Earths shall be provided in such a manner as to ensure that the distance between Earths does not exceed 1000m. 3. Even when Earthing is provided by Isolator Switches with Earthing heels, additional temporary earths as above shall also be provided.
27.	<p>Procedure for Providing Temporary Earths:</p> <p>The following sequence of operations shall be carried out while providing temporary earths on OHE:</p> <ol style="list-style-type: none"> 1. Men shall be posted on both sides of the site of work to warn the working party of any approaching train on the same track and adjacent track(s). 2. The permit-to-work shall be obtained from Railway representative prior to commencing of work & make sure that power supply has been switched off. 3. For providing temporary earth on the OHE or other equipment after it has been made dead, only discharge/ Earthing pole assembly specially designed for this purpose alone should be used. The cable shall be flexible and should have adequate cross-section (40 mm²) to be able to withstand short circuit currents. 4. Fix the Earthing-clamp securely to a mast at least one span away on one side of the work site after making sure that the mast-to-earth rail bond of this mast is intact. Alternatively, the clamp may be fixed to the bottom flange of one of the traction rails, taking the cable under the rails. 5. The Mast-end or Rail-end clamp of the Discharge/Earthing Pole assembly should be checked for tightness just before connecting the top clamp on to the OHE as the Earthing clamp fixed to the Rail or mast in advance could have worked loose. 6. Hook securely with a snap action, the top clamp of discharge/Earthing pole assembly to the OHE conductor close to the Mast/Structure and tie the Earthing pole to the Mast/Structure. Never hook on the top hook of the Earthing cable to the OHE, till the other end has been first connected to earth. Before connecting the discharge rod to OHE conductor, it should be tested on cantilever to check whether the section is alive or dead. Discharge rod shall not be hooked directly on the contact wire. 7. After temporary earths have been fixed on the OHE on both sides of the work site, staff may proceed with the maintenance work. <p>After work is completed and men, materials and tools have been removed and the OHE is clear, the above Earthing rods may be removed in the reverse order i.e., first remove the hook on the OHE and then the clamp fixed to the rail or mast/structure. After warning all staff that supply will be restored and that they should keep away from live equipment, the Permit-To-Work (PTW) may be returned and supply restored.</p>

28.	<p>Precautions in regard to Discharge/Earthing Pole Assembly:</p> <p>The continuity of the cable connection between the top clamp and the Earthing clamp should be checked once a fortnight. Cable should be renewed if more than 20% strands are broken. During use, cable should be continually examined for fraying and breakage of strands.</p> <p>During accidents when slewing the OHE and in similar circumstances, the Discharge/ Earthing Pole assembly should be provided at a location where it is not likely to be interfered with during crane working or due to work on the permanent way.</p>
29.	<p>Work on OHE or any Conductor having a Sectioning Point:</p> <ol style="list-style-type: none"> 1. When work is to be carried out on OHE or conductors, which are not electrically bonded, following additional precautions are required. 2. The two sections of conductors or ends of conductor which may have snapped may be at different potentials. Each end should, therefore, be separately earthed at two points after switching off supply to both parts, of the OHE or conductor. 3. This precaution should also be observed when working on or in the vicinity of a sectioning point and cut-in insulators.
	<ol style="list-style-type: none"> 4. Neutral Sections should be treated as live equipment and earthed separately at two points on either side of the work party before commencing work. <p>When work is to be carried out on an isolator, both sides of the isolator should be earthed at two points or more conveniently, while isolator should be jumpered temporarily.</p>
30.	<p>Rules for use of Ladders:</p> <ol style="list-style-type: none"> 1. It shall be the responsibility of the supervisor to ensure that ladders are stored in a protected enclosure, properly maintained and reconditioned as often as required. A ladder should never be in such a position so as to likely to fall on a live part. 2. Ropes used with ladders should be of cotton or jute. Use of metallic ropes is prohibited. A ladder should be held by one person on the ground to prevent slipping, while the top end should be tied to the supporting structure or conductor to keep. It in position and prevent it sliding away. 3. Ladders should never be allowed to fall on or rest against the contact wire. 4. If the nature of the work involves risk of the conductor breaking into two parts (due to opening out of sleeves or splices) the ladder shall not be rested against the conductor. Trolley ladders shall be used in such cases. 5. More than one person shall not normally be allowed on a ladder as far as possible. 6. Climbing on a ladder with wet or slippery foot-wear is forbidden. 7. Ladders should not be used for transporting materials. <p>A rope should be used to pass tools or any equipment to the men working on a ladder.</p>

31.	<p>Other Important Precautions to be taken while Carrying out Works on OHE:</p> <ol style="list-style-type: none"> 1. The useful cross section of a conductor shall not be reduced while making joints. 2. Any contact with conductors, which are not specifically earthed, is forbidden. 3. The strength of the anchoring rope should be not less than that of the cable to be anchored. 4. Temporary anchoring of conductors should only be done by using stranded flexible steel cable at least of the same tensile strength as the cable to be anchored. Use of two cables of different strengths joined together is prohibited. Use of cotton, jute or other non-metallic ropes for anchoring is forbidden. 5. Structure bonds and cable connections of the structure to earth shall be maintained in proper condition. No heavy materials should be stacked on the rail bonds; transverse bonds between two rails of the same track as well as rails of different tracks shall also be maintained in proper condition. 6. Where rails to which structures are connected are replaced, the structure shall be connected to the new rail immediately after it has been laid.
32.	<p>Isolator:</p> <p>Isolating Switches on the 25 kV system shall not be opened or closed when current is passing through them. Normally, isolators should only be opened or closed, after power supply to the section has been switched off by opening the appropriate interrupter.</p>
33.	<p>Permit to work before commencing work on any part of the dead OHE or within 2m of live OHE, a permit-to-work shall be obtained from authorized Railway person.</p>
34.	<p>Railway doesn't have any responsibility for loss or damage during execution of work.</p>
35.	<p>During OHE/Feeder Line work, no any tools/pipe/ladder etc. shall be projected towards adjacent live OHE and Track to avoid any mis-happening.</p>
36.	<p>During OHE/Feeder line work, if there is any damage to OHE, Contractor representative shall rectify the same at the earliest and there shall be no train detention on this account. Thereafter, damages charges will be borne by the Contractor.</p>
37.	<p>During execution of OHE/Feeder line work, Contractor and their staff should keep in mind that execution of work shall be done only on the specific line on which Permit to work has been granted by Railway official. In case Contractor representative/ working staff moved to charged line i.e. adjacent to Track and any mis-happening occurs or any loss of life due to Electrical accident, Contractor will only be responsible for the same, hence Railway shall not be responsible. Contractor/Authorised representative shall ensure that all the safety measures shall be taken during execution of work as per guidelines given in ACTM (AC Traction Manual of Indian Railway).</p>

38.	All the workmen provided by the contractor, shall be utilized as such that more works to be completed in the given Power Block per day. Contractor or his representative shall make the plan of Power/Traffic Block in consultation with concerning Project Incharge/Field Officers in one week advance and submit it to Office /Division. Tenderer has also to intimate the planning just one day advance before the each working day to concerning / Project Incharge Depot In-Charges/Field Officers for close monitoring of the work accordingly.
39.	Tenderer shall arrange more Ladder/Ladder Trolley's for completion of work and if desires, Railway may give the Tower wagons, Deck coaches, Diesel Engine etc. on chargeable basis on specific request by contractor.
40.	The work for replacement of contact wire/catenary wire, if any shall be carried by Tower wagon. For which contractor shall demand tower wagons from concerned DyCEE, depot In-Charge/Sr.DEE/TRD for laying and completion of work on Chargeable basis. For any work, Work train/diesel power/deck coaches etc shall be arranged by the Railway on Chargeable basis on demand of contractor.
41.	All the masts/TTC/Portals shall be erected by the Tenderer by Rail Crane. Contractor may also arrange for the same for early execution of work. No Derek or some other means shall be used for erection of mast. No any extra cost for erection of mast/portal/TTC upright by Derek shall be paid. However, the transportation of Mast/TTC/Portals uprights or other materials may be done by the Contractor through wiring trains or other Railways means as per availability on chargeable basis on demand of contractor.
42.	At the T/o & X/o locations, adjustment of dropper/provision of C jumpers etc in the particular span shall be adjusted/replaced by Tower wagon on Chargeable basis. At other locations, droppers, C Jumpers and other OHE assets etc shall be replaced by ladders as far as possible, if contractor demand Rly. Tower wagon, then same may be provided by Railway on chargeable basis.
43.	Tower wagon checking must be done in the section after completion of work by the contractor and TRD depot In-charges/Rly representative must ensure the same for smooth running of Panto and no repercussion to traffic.
44.	Railway will arrange sufficient Power block & Traffic Block for erection of mast by Rail Crane and for modification in OHE /Feeder line work, if required.
45.	All latest RDSO issued guidelines for 2x25 kV Electric Traction must be followed.
46.	Normally Daily Power Block of adequate Hrs/day/gang/depot for OHE/Feeder line work shall be arranged in the concerned TRD depots jurisdiction and as per plan submitted, Contractor shall complete the OHE work accordingly within stipulated Power/Traffic Block. However the availability of Power Block may vary as per train movement/ traffic conditions on day to day basis. Contractor has also to be ready for night working. Power/Traffic Block will not allowed to be busted by Contractor gang in any circumstances. In case power block has been busted by the Contractor, penalty @ Rs. 1000/- shall be levied for first 30 minutes or part thereof and there after Rs. 2000/- for every 30 minutes or part thereof.
47.	The design for the OHE/Feeder line work, where supply and erection of new mast/portals are required, then there shall be provision of super mast, feeder wire, earth wire etc.

48.	Chargeable rates for following assistance to Contractor: These assistance may be arranged by Railway based on availability & convenient.		
	(i)	4 wheeler Tower wagon per day	Rs. 10,640/-
	(ii)	8 wheeler Tower wagon per day	Rs. 18,160/-
	(iii)	Diesel Engine per hour	Rs. 21,607/-
	(iv)	Deck Coaches per day	Rs. 1,122/-
	v)	Rail Crane with 1 BFR/BRN per day	Rs. 18,160/-
49.	The contractor shall carry out the work daily on Railway working days by their experienced skilled labour as per rule. The contractor shall ensure that the workmen deployed by him are in proper dress code (as decided by Railway) with all safety norms to be followed including ID cards, safety Helmets, Safety Belts, Safety Jackets (luminous), Safety shoes etc. duly approved by Railway & all these must be wear/taken during the execution of work or even present at site.		
50.	LKO division has several OHE Depots in between UTR-MWP. Tenderer must deploy One site Engineer, Graduate/Diploma Engineer having at least 2 year OHE work experience in each OHE Depots for planning and execution of the OHE modification work daily & accordingly deploy minimum two gangs within jurisdiction of each Depots having experienced supervisors, Diploma Engineer/ITI holder having 6 months OHE work experience with each gang, to complete the work within stipulated DOC.		
51.	Contractor has to prepare the chronology for execution of work, so that there shall be no double execution of works, i.e. (1) Foundation work, (2) Replacement of Mast/Portal, (3) Erection of mast/portal/TTU/etc, (4) Erection of feeder wire work, (5) Spanning, jumper and other feeder wire related work. (6) Provision of AEC & BEC wire and Other works in the schedule. Firm shall make a plan in consultation with Railways Officials before start of work.		
52.	The work shall be planned by the contractor in consultation with concerned depot In-charges/Railway Authorised representative to avoid any interruption to normal power supply and train movements.		
53.	The works shall be carried out to the full satisfaction of representative of CEE/Project/NER or his successor.		
54.	To and fro transportation, loading and unloading of T & P and material from the firm's works place to Railway site shall be arranged by the contractor.		
55.	The rates quoted by the Tenderers and accepted by the Railway administration shall hold good till completion of the work and no additional individual claims will be admissible on account of the fluctuation in market rates, increase in taxes/levies/GST/ toll taxes etc.		
56.	Railway reserves the right to reject all or any Tender without assigning any reason thereof or relax or change any of the conditions/ specifications stipulated in the Tender.		
57.	The contractor shall intimate inspection programs of the work in advance. The equipment's/instruments required for checking at site or in office place shall be arranged by the contractor.		
58.	The basic quantities of components and materials required to make up for selected items, are indicated for guidance only. There may be minor variation to suit erection but no adjustment in prices of schedule shall be made on that account. In estimating the prices for various items of work provision for loss and wastage in transit and erection should be provided for over and above the basic quantities of work, indicated herein, except where otherwise specified for materials supplied by the purchaser.		

59.	In the explanatory notes given in this chapter, the term “Small parts steel work (SPS)” is meant to cover fabricated steel work made from rolled steel sections, complete with bolts, nuts and washers work to any structural member. The term “Attachment” where ever used is intended to cover castings, forgings, machined or welded components or fittings, which are attached directly to a structural member, or mounted on small parts steel work and shall include bolts and nuts for fastening the attachment to the structure member or small parts steel work.
60.	In the explanatory notes given in this chapter, the term “Bimetallic connection” is meant to cover any connection between a copper conductor and aluminium conductor. The clamps used for such connection shall be made of a suitable aluminium alloy and the Copper/Aluminium conductor shall be wrapped with a Bimetallic (aluminium copper) strip to prevent direct contact between aluminium and Copper.
61.	Reconciliation of material supplied by the purchaser:
62.	The following procedure shall be adopted for the final reconciliation of the various equipments, materials fittings and conductors supplied by the purchaser.
63.	All the materials supplied by the purchaser shall be correctly accounted for and quantities reconciled on completion of the work by the contractor. On completion of work, all surplus materials supplied by the purchaser together with the ones found defective or that have become defective or broken on account of defective or materials and/or workmanship shall be returned to him by the contractor.
64.	All supplied insulators shall be tested by the Contractor representative at OHE depots/suitable place/Contractor’s temporary store in presence of Railway representative with the help of Insulator testing machine. Insulators testing Machine shall be arranged by the Contractor. After testing date and colour coding shall be mentioned in the metallic part of Insulators. All insulators shall be tested as per RDSO SMI: TI/MI/0042/(12/2008) Rev’0’ and latest amendment, if any.
65.	All flash/chipped/punctured released insulators shall be broken and its metallic part shall be deposited to Store Depot, after taking approval for Scrap. For broken of Insulators no extra payment shall be made.
66.	In case if released insulators are in good condition having latest manufacturing date, shall be handed over to the Concerned depot.
67.	In stone pelting area composite insulators shall be arranged by the Railways or same may be used in that area with the approval of CEE/project/NER or DY CEE/project.
68.	The Successful tenderer shall ensure availability of multi utility vehicle at each Depot under the supervision of Depot Incharges for monitoring and execution of Work. The Vehicle shall be in good condition & will be utilised for to & fro transportation from depot to site & site to depot along with man and material.
69.	The Cube Test of the concrete shall be done at NABL Lab by the contractor itself and no extra payment shall be incurred by the Railway.
70.	Contractor shall prepare the design and drawing of the bridge mast if required for feeder & OHE work. Railway will not pay any extra amount for the same.
71.	The New AEC Wire will run through feeder line only or as per site requirements.
72.	The laying of feeder under ROB/RUB/FOB/Tunnel shall be done only after taking approved from competent authority and as per guidelines issued by RDSO’s time to time for feeder work in 2, 3 & 4 line system.
73.	BEC shall be erected according to approved design & drawing by competent Railway’s authority and as per RDSO’s instructions TI/INS/0042 Rev 0 with latest amendments for 2x25 kV System.

74.	Preparation of EIG application for the commissioning of subjected work as per HQ/NCR checklist shall be done by the tenderer and submit to Sr.DEE/TRD for further processing duly signed with stamp/sealed from field supervisors and officers.
75.	<p><u>NOTE:</u></p> <p>If there are any shortage during final reconciliation, their cost will be recovered by the purchaser from the contractor at the book rate or the last purchase rate or the prevailing market rates whichever is higher plus 5% on account of initial freight, 2% on account of incidental charges together with supervision charges at @12.5% of the total cost inclusive of material freight and incidental charges. Freight between the purchaser's source of supply and the contractor's depot or residing shall be the contractor's account.</p>
76.	<p>Released Material:</p> <p>The contractor shall return to railway all the released OHE materials from the existing system/site at the first available opportunity, but not later than a week, at the respective TRD Depot in concerned area. If the contractor fails to return the released material in specified time, the cost of released material will be recovered from the progress bill before releasing any payment.</p>
77.	Latest guidelines issued by RDSO for 2x25 kV Electric Traction for Bonding and Earthing must be complied during execution of Work.
78.	<ul style="list-style-type: none"> • RDSO has issued various guidelines and compliance of queries issued by various Railways. Same is attached as Annexure in IREPS. Tenderer has to comply the same during execution of Work. Approval is mandatory from the Competent Authority for any variation or deviation from the guidelines. • Tenderer has to ensure to follow the latest RDSO's guidelines/specifications while designing, supply of materials etc and cost differ shall be borne by the Tenderer.
79	<ul style="list-style-type: none"> • The quantity of items may vary as per actual site condition at the decision of CEE/PROJECT/NER/Lucknow.
80	<ul style="list-style-type: none"> • The remaining steel of earlier projects of CEE/Project office NER shall be utilized appropriately in this project. Hence quantity of steel may vary.

Tenderer's Signature

PART II

CHAPTER I

GENERAL SPECIFICATIONS

PART II
CHAPTER I

GENERAL SPECIFICATIONS

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**Section-3: Switching Stations, Booster Transformer
Stations and L.T. Supply Transformer
Stations.**

-DELETED-

Section-4: TRACTION SUB-STATIONS

-DELETED-

Section-5: SCADA WORKS

-DELETED-

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**PART II CHAPTER I
GENERAL SPECIFICATIONS
SECTION I GENERAL**

INTRODUCTION: 2.1.1

This part of Tender papers is divided into eight Chapters and contains general, technical and other specifications for Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..

(a) . as per RDSO Instruction TI/IN/0042 with latest amendment, if any & complete from existing 25 kV A.C. 50 Hz single phase Traction Over head & feeder Equipment, with foundations, structures, Return Conductors and 25 kV Feeders, if any. This part also gives reference to technical specifications of materials and components, procedure for submission of designs and drawings of basic arrangements, components and fittings designs and other typical designs relating to Over head & feeder Equipment. A list of the standard drawings is included in Annexure-1, Part-IV.

(b) SCOPE OF WORK:

Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway.. If any deviation in the design, drawing and other materials, components, the RDSO Instruction TI/IN/0042, dated 23th Oct 2020 with latest amendment for 2x25 kV Electric Traction system as per schedule, if any to be followed. The sections of the Indian Railways to be equipped with Traction Over head & feeder Equipment in accordance with this specification are detailed in part-III, where the particular features of the sections to be electrified and their special requirements are indicated.

(c) Indian Railways Schedule of Dimensions:

To avoid infringements of various parts of OHE {Structures, Foundation, live parts, equipments etc. included in Para - 2.1.12 (d) "insulation clearance", 2.1.17 (a) "clearance" and 2.6.9(c) "infringement to standard dimensions"} with standard dimensions mentioned in "Indian Railways Schedule of Dimensions 1676 mm Gauge (BG) Revised - 2004 with Addendum & Corrigendum Slip Nos.1 to 16 or its latest revision, issued by Railway Board" shall be followed.

CLIMATIC DATA: 2.1.2

The data pertaining to section are given in part-III.

WIND PRESSURE: 2.1.3

For design of layout for 2x25 kV Electric Traction system for upgradation on existing 1x25 kV Over head & feeder Equipment maximum span etc. to be followed as per RDSO Instruction TI/IN/0042 with latest amendment, if any, for Wind pressure shall be taken as specified in part-III. Structures and foundations of Over head & feeder Equipment shall be designed for the wind pressure indicated in part-III.

SYSTEM PARTICULARS: 2.1.4

For design of layout for 2x25 kV Electric Traction system for upgradation on existing 1x25 kV shall be as per **RDSO Instruction TI/IN/0042 & latest amendment, and As per PSI Guidelines for Increasing Speed Potential to 160kmph on Indian Railways, issued by RDSO: Technical Instruction No: TI/IN/0043 Rev. Dated:25.02.2022 latest amendmend if any.** The nominal voltage of the Over head & feeder Equipment will be 25 kV A.C. 50 Hz, single phase. The supply voltage may,

however rise upto 27.5 kV. One terminal of the 25 kV system will be solidly earthed at the Traction Sub-station and also connected to the running Rails. The other terminal will be connected to the Over head & feeder Equipment through switchgear provided at the Traction Sub-station and at the Feeding station.

ROLLING STOCK: 2.1.5

(a) LOCOMOTIVES

The Electric locomotives will generally be equipped with DC motors fed through rectifiers installed on the locomotives.

(b) OVERSIZE CONSIGNMENTS - DELETED- (NA).

The specific requirement in regard to movement of steam locomotives and over size consignments for each section are indicated in part-III.

POWER SUPPLY: 2.1.6

(a) TRACTION SUB-STATIONS –DELETED- (NA).

Electric power will be supplied at 25 kV A.C. 50 Hz. single phase from Traction Sub-stations to Feeding stations spaced 50 to 80 km apart along the track.

(b) SWITCHING STATIONS –DELETED- (NA)

Power supply will be controlled to the different sections of Traction Over head & feeder Equipment by switching stations. At these stations the switching will be effected by means of "Interrupters" which are single pole, non-automatic oil circuit breakers capable of repeatedly interrupting normal full load current. There are three types of switching stations: -

- (1) Feeding stations;
- (2) Sectioning stations, and
- (3) Sub-sectioning stations.

(c) FEEDING STATIONS – DELETED- (NA)

Supply will be effected to the Over head & feeder Equipment through switchgear installed at feeding stations. All feeding stations will be located normally near the track.

(d) SECTIONING STATIONS– DELETED- (NA)

The Sub-stations cannot, as a rule be paralleled and consequently a neutral section of Over head & feeder Equipment with insulated overlaps on either side will be provided approximately midway between two consecutive feeding stations. Neutral sections may also be provided at feeding stations. Facilities to bridge the neutral section between feeding stations will be provided at sectioning stations.

(a) SUB-SECTIONING STATIONS – DELETED- (NA)

In order to facilitate maintenance of Over head & feeder Equipment and to

permit isolation of faulty sections and expeditious restoration of power supply in healthy sections, sub-sectioning stations with insulated overlaps will be provided between the feeding stations and the sectioning stations.

(b) RETURN CONDUCTORS – DELETED- (NA)

In order to reduce interference to telecommunication circuits arising from A.C. 50 Hz. single phase Traction current in the Over head & feeder Equipment, a Return Conductor may be provided for each main running track. These Return Conductors shall be connected at intervals to booster transformers and to the rails. The sections in which Return Conductors shall be provided are indicated in part-III.

(c) BOOSTER STATIONS- DELETED- (NA)

Booster transformer stations are provided in conjunction with Return Conductors to reduce inductive interference to telecommunication circuits arising from single phase 25KV AC Traction. The Booster stations are located along the track.

- (d)** Supply and erection of Traction Sub-stations mentioned in sub-para (a) above do not come within the purview of this specification feeding stations will be provided at sectioning stations.

(a) SUB-SECTIONING STATIONS – DELETED- (NA)

In order to facilitate maintenance of Over head & feeder Equipment and to permit isolation of faulty sections and expeditious restoration of power supply in healthy sections, sub-sectioning stations with insulated overlaps will be provided between the feeding stations and the sectioning stations.

(b) RETURN CONDUCTORS – DELETED- (NA)

In order to reduce interference to telecommunication circuits arising from A.C. 50 Hz. single phase Traction current in the Over head & feeder Equipment, a Return Conductor may be provided for each main running track. These Return Conductors shall be connected at intervals to booster transformers and to the rails. The sections in which Return Conductors shall be provided are indicated in part-III.

(c) BOOSTER STATIONS- DELETED- (NA)

Booster transformer stations are provided in conjunction with Return Conductors to reduce inductive interference to telecommunication circuits arising from single phase 25KV AC Traction. The Booster stations are located along the track.

- (d)** Supply and erection of Traction Sub-stations mentioned in sub-para (a) above do not come within the purview of this specification.

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SECTION 2

OVER HEAD & FEEDER EQUIPMENT

TRACK: 2.1.10

Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway.. as per RDSO Instruction TI/IN/0042 Dated 23.10.2020 with latest amendment, if any, for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System. The Tenderer shall provide new Feeder line & modify the existing OHE according to new RDSO instruction and as per requirement and schedule given.

(a) GAUGE AND TRACK CENTERS:

The track gauge is 1676 mm (5'-6"). In multiple track zones, the normal distance between track centers varies between 4270 mm (14'.ft) and 4420 mm (14'-6").

(b) SPEED:

(As per RDSO Instruction TI/IN/0042 Dated 23.10.2020 with latest amendment, if any) for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System.

The Over head & feeder Equipment which shall be of the simple polygonal type and pre-sag should be designed for a maximum speed of 160 km/h (Approx.100 miles/h OR above) for regulated, unless otherwise specified in Part-III for any particular section.

Note: (i) The OHE shall be with swiveling type of cantilever having tension in the conductors regulated automatically, with a pre-sag of 50/100 mm and **as in TI/IN/0042 dt 23.10.2020 with latest amendment if any must be followed for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System.**

(ii) Maximum Contact wire gradient shall be 1 mm per meter and maximum difference in contact wire gradient between two adjoining spans shall be 0.5 mm per meter as in TI/IN/0042 dt 23.10.2020 to be followed **for 2x25 kV Electric Traction system.**

(c) CURVES:

The minimum radius permissible is 175 m (573 ft.) i.e. a 10° curve. Inside station limits, the curvature at a 1 in 8.5 turnout is 8 degree, i.e. of radius 219m (716 ft.).

(d) SUPER ELEVATION:

The maximum super elevation is 165 mm (6.5"). On curves, the minimum setting of structures shall be decided on the basis of maximum super elevation (see para 2.3.10). For purposes of design and erection of Over head & feeder Equipment, the actual super elevation as existing at site or as indicated to the contractor shall be adopted.

(e) LOW JOINTS:

For low or loosely packed rail joints a difference of 25 mm (1") in the level of opposite rails may be taken as the basis for estimating the displacement of the pantograph with respect to its normal position.

(f) FORMATION:

Generally, sections with more than one track have common formation. In certain lengths, however, the formation for different tracks may be separate (See relevant drawing listed in Annexure-1, Part-IV).

(g) DISPLACEMENT:

The general design of Over head & feeder Equipment shall permit a displacement of ± 100 mm of tracks without difficulty and any adjustment of the Over head & feeder Equipment on this account shall be of such a nature as could be done conveniently without changing any component of the Over head & feeder Equipment.

SECTIONING: 2.1.11

(a) INSULATED OVERLAPS:

Insulated overlaps are provided for facility of isolation. Some of the overlaps may be provided with manually operated isolators switches. In addition for connecting the Over head & feeder Equipment to booster transformers, insulated overlaps are indicated in the sectioning diagrams (see part-III).

(b) YARD SUPPLY:

The sectioning diagram/s also indicate the tracks in stations yards and siding whose equipments is electrically independent from those of other tracks.

The Over head & feeder Equipment in yards and sidings may be fed through isolator switch or interrupter in accordance with arrangement indicated in the sectioning diagram/s.

(c) SECTION INSULATORS:

Section Insulators shall be provided as indicated in the sectioning diagrams, or cross-over between main tracks and to isolate sections of Over head & feeder Equipment in yards and sidings. Section Insulators may also be used to form neutral sections at special locations as indicated in the approved drawings.

(d) Deleted.

(e) FEEDERS & RETURN FEEDERS 25 KV ALONG TRACK FEEDERS (NA):

25 kV along track Feeders may connect sections of Over head & feeder Equipment to a switching station or an isolator switch or gantry. Such Feeders will be run usually on Traction structures and sometimes on independent masts. A single 'SPIDER' conductor shall be used for such Feeders

(f) RETURN CONDUCTOR (NA):

Return Conductor may be run on Traction structures or masts. A single 'SPIDER' conductor shall be used for such Return Conductors.

(g) SCHEMATIC ARRANGEMENTS (To be as per RDSO TI/IN/0042 with latest amendment, if any):

The different arrangements of Feeders, Return Feeders, 25 kV along track Feeders and Return Conductors are shown in the drawing listed in Annexure-1 (Part-IV).

(h) SECTIONING DIAGRAM:

The provisional sectioning diagram/s of the sections to be electrified is/are included in part-III.

PANTOGRAPHS: 2.1.12

(a) The outline of the pantograph, its dimensions and its current collecting area are shown in a drawing listed in Annexure-I (Part-IV).

(b) NUMBER AND PRESSURE:

Each locomotive will be equipped with two pantographs, but only one pantograph generally the trailing one will be in use at a time. The working pressure of the pantograph on the contact wire may vary between 5 and 15 kg.

(c) SPACING IN MULTIPLE HEADED TRAINS:

The distance between adjacent running pantographs in the case of multiple heading would normally be 20 meter. This distance may, however, be reduced to 7.9 meter between two pantographs in very exceptional cases.

(d) INSULATION CLEARANCE:

The electrical clearances for the pantograph on tangent tracks and on curves for design and erection of Over head & feeder Equipment shall be based on the schedule of Dimensions mentioned in Para - 2.1.1(c) "Indian Railways Schedule of Dimensions".

OVER HEAD & FEEDER EQUIPMENT: 2.1.13

(a) BRIEF DESCRIPTION (To be as per RDSO TI/IN/0042 with latest amendment if any) for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System:

Essentially the Traction Over head & feeder Equipment shall consist of a standard catenary wire from which a grooved contact wire is suitably suspended by means of droppers. In order to cater for a speed of 160 kmph the contact wire is given a pre-sag of about 50/100mm for 72 m span and reduced suitably for other spans.

(b) CATENARY:

The catenary wire shall be of cadmium copper 19/2.10mm, 65mm².

(c) CONTACT WIRE:

The contact wire shall be grooved and made of hard drawn copper having 107sq.mm cross section.

(d) DROPPERS : (To be as per RDSO TI/IN/0042 with latest amendment, if any)

Droppers shall be made of hard drawn round copper wire; approximately 5 mm dia.

Droppers shall be spaced not more than 9 m apart (see Annexure-1 (Part-IV)).

(e) ENCUMBRANCE: (To be as per RDSO TI/IN/0042 with latest amendment any)

As a general rule, the nominal "Encumbrance" i.e. the center distance between the catenary and the contact wire at the support shall be 1.40 m. Deviation from this figure will be permitted in special cases (e.g. spans near over-bridges, structures with more than one cantilever etc.).

(f) JUMPERS : (To be as per RDSO TI/IN/0042 with latest amendment if any)

All jumpers connected to OHE conductors shall be of copper only. The In-span Jumpers (potential equaliser Jumpers) at Insulated Overlaps and Neutral Section, shall be of 50 mm sq. nominal, 19/1.8mm size in each span. 160 sqmm Flexible jumpers of nominal section shall be used at Overlaps, Turnouts, Crossings etc.

(g) BRIDDLER WIRE – DELETED (NA):

Bridle wire for supporting contact wire for regulated Tramway equipment shall be of Cadmium copper 7/2.10 mm in size.

(h) ANTI THEFT JUMPER:

Antitheft jumper of 50 mm sq. nominal, 19/1.8 mm in size shall be used in out of run wire of conventional OHE and Copper Cadmium Anticreep wire as an anti-theft measure.

The jumper connecting the Al Conductors to any other conductors terminal or clamp shall be made with the aid of suitable bi-metallic clamps. All Aluminum jumpers of size 19/7/1.4 mm bare 3/4 hard shall be used to connect other Aluminum conductors such as return conductor. The tail ends of feeder wires from the strain clamps at the termination of a feeder, return feeder or Return Conductor may be connected directly to a terminal or clamp, where feasible to avoid the use of a separate jumper wire.

TYPE OF EQUIPMENT: 2.1.14

The Over head & feeder Equipment used shall normally be either of the regulated or unregulated type. Unregulated tramway type equipment (contact wire only) may be adopted where specially indicated by the purchaser.

In the regulated type of Over head & feeder Equipment, the tension of both the catenary and the contact wires shall be maintained at a constant value at all temperatures by means of automatic tensioning devices desired to take up the variation in the length of Over head & feeder Equipment due to temperature variation.

An anti creep shall be provided at a point approximately midway between two tensioning devices and not more than 750 meters from any one of them. The general arrangement of an anti-creep is shown in a drawing listed in Annexure-1. The arrangement shall generally consist of the galvanised steel wire anchored on the masts adjacent to the anti-creep central mast in accordance with the relevant drawing listed in Annexure-1. Part IV. Alternatively, the arrangement may consist of anchoring the catenary on either side of the boom of a portal with the contact wire running through and providing a jumper connection as per general arrangement shown in typical drawing listed in Annexure-1, Part IV. The Purchaser shall indicate the type of anti-creeps to be adopted in the pegging plans.

(a) UNREGULATED:

The unregulated type of Over head & feeder Equipment has no provision for automatic regulation of tension of either the catenary or the contact wire.

(b) TRAMWAY TYPE EQUIPMENT REGULATED CONTACT WIRE ONLY:

In Tramway type equipment regulated, only a contact wire is provided without a continuous catenary or droppers. The tension in the contact wire is regulated. At support, Bridle wire is used for supporting the contact wire.

(c) The section in which different types of equipment should be provided are indicated in part-III.

PLANE OF CONTACT: 2.1.15:

(a) REGULATED:

The regulated Over head & feeder Equipment shall be so erected that the contact wire has the designed sag.

(b) UNREGULATED:

In the case of unregulated equipment the contact wire shall have no sag at an ambient temperature of 35°C.

(c) TRAMWAY TYPE:

In Tramway type equipment, the contact wire will have its own natural sag when erected.

(d) DROPPER:

Dropper charts to be used for standard span of regulated and unregulated Over head & feeder Equipment would be supplied by the Purchaser. Dropper for non-standard spans, span with Section Insulators and special locations shall be calculated by the Contractor in accordance with the method indicated by the Purchaser and submitted to the Purchaser for approval.

TENSIONS: 2.1.16

(a) REGULATED:

- (i) In regulated equipment the tension in the catenary and in the contact wire shall be 1000/1200 kgf in each conductor.
- (ii) Deleted.

(b) UNREGULATED:

In unregulated equipment the tension in the catenary and in the contact wire at 35 degree C without wind shall be 1000 kgf in each conductor.

(c) TRAMWAY TYPE:

In regulated type tramway equipment, the tension shall be 1000 kgf.

CLEARANCE: 2.1.17

(a) GENERAL:

The distance between live parts and parts at earth potential (for parts likely to be earthed) shall be as large as possible. In all cases, the clearances must not infringe the values given in schedule of Dimensions mentioned in Para - 2.1.1 (c) "Indian Railways Schedule of Dimensions".

(b) OVER BRIDGES & TUNNELS:

The clearances which are to be made available at over bridges, signal, gantries and other over line structures shall be based on the above rules. 7 mm droppers are to be provided at long girder bridges.

(c) PLATFORM SHEDS AND OTHER STRUCTURES:

In the course of checking the Over head & feeder Equipment pegging plans, the Contractor shall prepare a list of platform sheds and other structures in the vicinity of track to be wired. The clearances to these structures shall be in accordance with those shown in the relevant drawings listed in Annexure-1, Part. IV. If these clearances are not available, the Contractor shall advise the Purchaser in time to enable the later to take up necessary modifications.

HEIGHT OF CONTACT WIRE: 2.1.18

- (a)** Normally, the minimum height of contact wire above Rail level shall be 5.50 m at mid span under the worst temperature conditions. This height may be reduced under bridges and in tunnels to the extent permitted by the purchaser. In electric locomotive sheds and over Electric locomotive inspection pits, the minimum height shall be 5.80 m. At level crossings the minimum height shall be 5.50 m. Any infringement restricting minimum height at level crossings will be removed by the Purchaser.

(b) GRADIENT OF CONTACT:

Reduction of Contact wire Gradient to be done from 3mm/m to 2mm/m & Relative gradient from 1.5mm/m to 1mm/m.

STAGGER: 2.1.19:

To ensure uniform wear of contact strips of pantographs, the contact wire shall normally be staggered in a manner which will be indicated by the Purchaser.

TERMINATION: 2.1.20

(a) GENERAL:

Traction overhead lines shall be terminated using components specified to Chapter 2.4. The termination may be carried forward by one or two spans if anchoring facilities so require.

- (b) Terminating wires shall be electrically connected to the conductors with which they are likely to approach closely or come into contact under normal conditions.

(c) **SUPPLEMENTARY INSULATION**

If a terminating wire passes a live conductor to which it should not be connected, i.e. in a different elementary section, the portion of the terminating wire close to the live conductor shall be separated by means of insulators. The insulators swept shall be located in such a manner as to clear the zone of the pantograph under the worst conditions and as far away as is possible from live conductors.

TYPES OF STRUCTURES: 2.1.21 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any) for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System:

- (a) The Over head & feeder Equipment of main tracks in case of multiple tracks section shall be electrically and mechanically independent of the one another by provision of independent cantilever masts to the maximum extent possible (see Annexure-1 for general arrangement drawings).

(b) **HEAD SPANS -Deleted- (NA).**

- (c) **PORTALS (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System):**

In cases where the tracks in a multiple track section do not permit location of independent masts and where automatic tensioning of Over head & feeder Equipment is required, rigid portals may be used. Also in the vicinity of points and crossings, portals may be used, provided it is not possible to have prescribed setting with independent cantilever masts. These structures shall be equipped with standard bracket assemblies for supporting individual equipment of different tracks. The use of such structures is to be avoided as far as possible and for this purpose, the Purchaser will arrange to slew the tracks, if practicable. A single portal shall normally not cover more than five tracks (See also 2.3.7). Portal structures shall also be employed at Anticreep central locations and such portals will have necessary guy arrangement.

- (d) **FOUNDATIONS (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System):**

Foundations for all structures shall be designed in an economical manner by following the methods of design indicated by the Purchaser and observing the schedule furnished by him (See part -II, Chapter- II).

CANTILEVER ASSEMBLY: 2.1.22

The bracket assembly carrying Over head & feeder Equipment shall be of the swiveling type. The assembly shall be such that the tubes adopted will permit easy adjustment of the whole equipment after erection to cater for displacement of the track during maintenance upto the extent of 100 mm on either side except as otherwise relaxed by the Purchaser (see Para 2.1.10 g). In special locations, pull-off arrangements may be used with the approval of the Purchaser (See Annexure-1 for drawings of the bracket assembly and components).

OVERLAPS: 2.1.23

Overlaps shall be provided at suitable intervals such that neither the tension length exceeds 1,500 m nor the fixed anchor to balance weight anchor exceeds 750 meters.

(a) GENERAL:

The two contact wires at the overlapping zone shall be parallel to each other in a plane parallel to the track and run separated from each other (see Annexure-1 for general arrangement drawings).

(b) INSULATED:

In the case of insulated overlaps, the separation between the two contact and the two catenary wires shall be 0.5m (See Annexure-1 for general, arrangement drawings).

POINTS & CROSSINGS: 2.1.24 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System):

Arrangements of Over head & feeder Equipment of different types e.g. regulated, unregulated or tramway at points and crossings shall be in accordance with the standard drawings listed in Annexure -1.

SECTION INSULATORS: 2.1.25 (See also Para 2.1.11(c))

(a) BRIEF DESCRIPTION:

The Section Insulators shall provide effective electrical isolation of two elementary electrical sections of Over head & feeder Equipment and permit smooth passage of the pantograph in either direction at all speeds upto 70 Kmph. The outline of a Section Insulator is shown in a drawing listed in Annexure-1. The Section Insulators shall be of the single wire type.

(b) SIZE AND WEIGHT:

The Section Insulator assembly shall be such that it should be possible to install the insulator in the Over head & feeder Equipment provided the axial distance between the catenary and the contact wire with Section Insulator in position is not less than 450 mm. The weight of the complete assembly shall not be more than 45 kg for single wire type excluding the weight of the catenary insulator and the catenary ending clamps.

ISOLATORS: 2.1.26 (Double Pole Isolators are to be provided as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System):

Manually operated isolators single or double pole type, with or without earth contact assembly may be required to bridge certain Section Insulators or insulated overlaps (See para 2.1.11). In certain large yards, Isolators controlling different lines may be grouped together on a gantry (See Annexure- 1).

AERIAL EARTH CONDUCTOR AND BURIED EARTH CONDUCTOR : 2.1.27 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any)

AEC (Aerial Earth Conductor) & BEC (Buried Earth Conductor) shall be provided to contain the touch & step potential of the track. AEC of 12.24 mm dia. ACSR Raccoon conductor should be erected on the back side of the OHE masts/Portals. Similarly BEC of 20 mm dia. (cross section 238.64 mm²), galvanized steel conductor should be laid underground along the UP and DN track separately, 300mm below ground surface and approximately one meter away (or as per site conditions) from the OHE foundation towards opposite direction of track. The BEC will be connected to each OHE mast/Portal and Feeder mast by same conductor having Tee Connector & Lug Connector as per Drawing No. TI/DRG/OHE/TC/RDSO/00001/20/0 & TI/DRG/OHE/SC/RDSO/00001/20/0 for BEC end and Lug for connection with mast/portal. The cross bonding of the UP BEC –UP Mast/Portal-UP Traction Rail-DN mast/Portal –DN BEC should be done by 50X6 mm MS/GS flat at every 450 mtr. The details of the AEC/BEC and cross bonding scheme are given in drawing no TI/DRG/OHE/EARTHING/RDSO/00001/20/0.

At stations, BEC conductor should be laid underground for Loop lines & platform also. BEC can be run on the side wall of Platform (platform coping) with suitable clamp & bolt grouted in the coping. BEC should be connected to Earth Pit as per Drawing No. ETI/OHE/P/7020 Rev. B at every 450m wherever it is exposed above the ground. At Bridges/Platform coping laying arrangement of BEC should be as given in RDSO Instruction TI/IN/0042 with latest amendment, if any.

For Three line and four line section separate BEC should be provided for each line.

The above recommendation are as per prevalent practice used in 2X25 KV system with 12 KA fault current adopted by other projects in country. However the adequacy and efficacy of this earthing and bonding system should be verified by the simulation studies/measurements of the touch and step potential of the rail in normal load and short circuit condition for compliance with EN 50122-1 and IEC 62128-1 (2013).

BRIDGES AND TUNNELS: 2.1.28 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System):

(a) OVER BRIDGES:

The complete Over head & feeder Equipment (i.e. both the catenary and the contact wires) shall normally pass under over-line structures. Additional intermediate suspension points shall be provided, if necessary, to ensure the specified minimum height of contact wire being maintained. In special cases catenary may be anchored on either side of the Over Line structure and the contact wire carried underneath.

(b) TUNNELS AND CUTTINGS:

The arrangements proposed for the equipment in tunnels and cuttings shall take into account the special features of each location and shall be in accordance with general design specified in part -II.

(c) SAFETY SCREENS:

On Over-Bridges, metallic protective screens shall be provided in order to prevent any person from coming into contact with the live Over head & feeder Equipment. Such screens shall be properly earthed.

(d) HEIGHT GAUGES AT LEVEL CROSSINGS:

Height gauges will be provided at all level crossings in accordance with the general arrangement drawings listed in Annexure-1.

BONDING AND EARTHING: 2.1.29 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System);

- (a) Bonding and Earthing shall be done in accordance with the code for Bonding and Earthing.

(b) **LONGITUDINAL AND TRANSVERSE BONDING:**

Longitudinal and transverse bonding of tracks, bonding of structures including Traction structures to rails and associated earths shall be provided in accordance with the above code.

(c) **TRACTION STRUCTURE BONDING:**

Every Traction mast or structure shall be bonded to a non-track circuited rail unless it is provided with a continuous earth wire or it is individually earthed by means of an Earthing station. For general arrangement drawings, see Annexure-1.

(d) **DOUBLE RAIL TRACK CIRCUIT:**

Where track circuits are provided on both rails, Traction masts/structures shall not be bonded to rails but shall be provided with an earth wire made of steel reinforced aluminum conductor consisting of 6 strands of aluminum and one strand of steel each of 4.09 mm dia (RACCOON) [conforming to IS:398 Pt II (latest revision as indicated in Annexure-1)]. The earth wire shall be run on Traction masts or structures. They shall be divided into different electrical sections not exceeding 1,000 m long. The earth wire in each such section shall be connected at two Traction structures, situated at a distance not exceeding 250 m on either side of the mid-point of the section to 02 Nos. 10 Ohm earth stations which will be provided by the Contractor. Sections on which earth wire is required to be provided are indicated in Part-III.

L.T. SUPPLY TRANSFORMER STATIONS: 2.1.30 (See para 2.1.40(c)) -DELETED-(NA):LIGHTNING ARRESTORS: 2.1.31

No lightning Arrestors will be provided on the Traction Over head & feeder Equipment.

CERAMIC BEADED GLASS FIBER TYPE SHORT NEUTRAL SECTION ASSEMBLY: 2.1.32

Ceramic beaded glass fiber type Section Insulator assembly shall consist of resin bonded fiber glass (or equivalent) insulators covered with either Teflon (or equivalent) or ceramic beaded with PTFE spacers (or similar) adequately dimensioned and rated for the application. The insulators shall have suitable end fitting for connections to the contact wire through end fitting. For smooth passage of pantograph without any shock from contact wire to insulator and vice-versa, suitable runners preferably of stainless steel shall be provided. The centre position of the assembly along with arc trap shall be solidly earthed as the later with earthing clamp is provided to trap any arc current caused by break of contact between pantograph and live contact wire when it passes from contact wire to insulator. The distance between arc trap and nearest line position shall be adjustable upto a maximum of 320 mm Suitable means of suspension of the components of the assembly from the catenary conductor shall be provided. The complete assembly shall be as light as possible and so constructed that adjustments of components can easily be made during erection of maintenance and also for ensuring smooth passage of pantograph.

In the catenary conductor, resin bonded fiber glass insulators with suitable covering shall be provided. The insulators shall have suitable end fittings for connections to catenary wire through end fittings. The central portion shall be solidly earthed.

The neutral section assembly shall be suitable for erection symmetrically on either side of the cantilever bracket support with regulated or unregulated conventional/ composite OHE where one point each for suspension of catenary conductor and contact wire is available as also shown in GA drawing under Annexure-I.

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PART-II
CHAPTER -II
FOUNDATIONS

PART-II
CHAPTER -II
FOUNDATIONS

PARA NO	SUBJECT
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**PART-II
CHAPTER-II
FOUNDATIONS**

SCOPE: 2.2.1 Foundation scheme shall be followed as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System for running of new Feeder line in the entire Section along with OHE modification work at obligatory and other locations:

- (a) This chapter deals with the design of foundations and anchor blocks for Traction structures carrying Over head & feeder & Feeder Equipment (including those on bridges), structures at switching stations and booster stations and other concrete work. It also deals with the specification for concrete.
- (b) While casting a foundation, care shall be taken to ensure that no part of it and mast erected therein do not infringe the dimensions given in Schedule of Dimensions as mentioned in Para - 2.1.1 (c) **"Indian Railways Schedule of Dimensions"**.

DESIGN OF FOUNDATION: 2.2.2

(a) SOIL PRESSURE:

For design of foundations for Traction structures carrying Over head & feeder & feeder Equipment, the Contractor shall determine the type and allowable bearing pressure of soil at suitable intervals and adopt the type and size of foundations, suitable for particular locations with the help of the approved employment schedules. In cases of particularly weak soil, the bearing pressure may have to be determined for each location where so advised by the Purchaser. Soil bearing pressure using SPT (falling weight equipment) should be determined generally for every 5 kilometer interval or less wherever change of soil is encountered. In general, IS code of practice (IS 6403:1981) should be followed. In addition, at every 250 m the soil bearing pressure should be determined by dial gauge type Penetrometers. Dial gauge type penetrometers shall also be made available by the Contractor at each foundation site so as to facilitate cross check at each individual location.

For design of foundation for masts and gantries at switching stations and booster stations, the Contractor shall determine the type and allowable bearing pressure of soil at the locations of such stations and shall prepare designs for the foundations suitable for each location to suit the bearing pressure of the soil in consultation with the Purchaser.

(b) STRUCTURES CARRYING OVER-HEAD EQUIPMENT:

Foundations for Traction structures carrying Over head & feeder & feeder Equipment shall be either of the side bearing side gravity or new pure gravity type according to their location, formation of the sub-grade and bearing pressure of the soil. In new filled up soil or cinder formation, pure gravity sand-filled core foundations, or foundations with cast-in-site reinforced concrete piles, or cantilever types foundation with counter- weights or guyed foundations may be adopted.

(c) ON BRIDGE PIERS:

Complete design of foundations for Traction structure on bridges to suit different locations and local conditions will be furnished by the Purchaser.

- (d) **MASTS & FABRICATED STRUCTURES AT SWITCHING STATIONS/TSS**
for 2x25kV Electric Traction system on existing 1x25 kV Electric Traction System)

Foundations for the masts of gantries at switching stations and TSS shall be of the pure gravity type, the base of which shall rest on consolidated soil.

- (e) **FENCING POSTS:**

Foundation for fencing posts shall rest on consolidated soil if the depth of unconsolidated soil is less than 1.5 m below the datum level and shall be rectangular parallel piped in shape. If the depth of unconsolidated soil is more than 1.5 m the foundation block shall rest on reinforced concrete piles cast-in-site or reinforced concrete foundation may be adopted as desired by the Purchaser.

- (f) **TYPICAL DESIGN:**

Typical design and drawings of side bearing and new pure gravity and side gravity type foundations are included in the drawings listed in Annexure-1. Employment schedules for standard foundations for Traction structures for various locations and types are also included in the drawings listed in Annexure- 1, Part IV.

- (g) **SPECIAL FOUNDATIONS:**

- (i) In the case of foundations at locations not covered by the employment schedules furnished by the Purchaser, the Contractor shall prepare special designs and furnish full design calculations justifying the choice of the type of foundations for such locations. In black cotton soil especially pile foundations of under reamed type as per RDSO'S standard designs (Reference RDSO'S Drawings No.ETI/C/0062 MOD-B or latest) or any other approved design may have to be cast at limited locations for trial purpose. The Tenderer may furnish the technical details of alternative design, construction methods proposed to be adopted and their previous background/experience, if any.

- (ii) **Foundation in Contact/Buried under Non-aggressive Soil/Ground Water:**

The Foundation Concrete shall be of M-15 Grade. The Core concrete shall be M-20 Grade. It shall be adopted in the areas where concrete is in contact/buried under Non-aggressive soil/Ground water as per IS: 456-2000.

- (iii) **Foundation in Coastal Areas:**

The Foundation Concrete shall be of M-20 Grade. The Core concrete shall also be M- 20 Grade. It shall be followed in the areas where concrete is exposed to Coastal Environment as per IS: 456-2000.

- (iv) For casting the OHE foundation in Soft Rock and Hard Rock, RDSO drawings mentioned at SI. No. - 123 of LIST OF STANDARD DRAWINGS AND SPECIFICATIONS (ANNEXURE - 1 of Part-IV) of tender Document.

The decision of the Purchaser with regard to feasibility and suitability of adoption of the alternative design for each type of foundation will be final.

(h) EQUIPMENT PEDESTALS:

Pedestals for interrupters and L.T. supply transformers where required, shall be of mass concrete with the base resting on consolidated soil. Pedestal for Power transformers shall be made of mass concrete with base resting on consolidated soil. Foundation for circuit breakers supported on steel structures and for other items of equipments such as isolator, instruments transformers, bus bar support insulators etc. shall be of the pure gravity type, the base of which shall rest on consolidated soil, and shall be left with core holes into which the legs of the supporting structures shall be suitably fixed by grouting.

(j) CABLE TRENCHES:

The cable trench shall rest on original ground if the depth of unconsolidated soil is less than 0.5 m. If the depth of the unconsolidated soil is more than 0.5 m., the cable trench shall be made of reinforced cement concrete of approved design supported at suitable intervals on concrete pillars.

BEARING PRESSURE: 2.2.3

GUIDING INFORMATION:

Subject to Para 2.2.2 (a) above, the following allowable bearing pressures may generally be expected for various kinds of soil. The information is given for general guidance only.

- (i) Average good soil in banks and cutting... 11,000 kg/sq.m.
- (ii) Moorum soil in cutting ... 22,000 kg/sq.m
- (iii) New banks & bad soils in banks and cutting 5,500 kg/sq.m.
- (iv) Black cotton soil-pure gravity foundation shall normally be adopted. However, under reamed pile foundations may be adopted at the option of the Purchaser in limited locations for trial purpose.

In the case of dry black cotton soil, the soil should be subjected to a bearing pressure as close as possible but not exceeding 16,500 kg/sq.m. the depth of the foundation block being not less than 2.8m. In the case of wet black cotton soil, the soil should be subjected to a bearing pressure as close as possible but not exceeding 8,000 kg/sq.m.

In the case of hard rock, a hole should be blasted in the rock, or by means of any other drilling and pneumatic method and the mast sealed into it with concrete.

CONCRETE: 2.2.4

Concrete for foundations shall be nominal mix / Ready mix of grade M 10 (or M 15) obtained by mixing cement, coarse aggregate, fine aggregate and water in accordance with proportions given vide Table 3 of IS:456 (Latest version as indicated in Annexure-1) reproduced below. For grouting, muffing, embedding of structures in foundations and for cable trenches at switching stations, nominal mix concrete M 15 (or M 20) obtained by mixing materials in proportions as indicated in Table-3 of IS:456 (Latest version as indicated in Annexure-1) shall be used. Volume batching may be adopted vide clause 9.2.2. of IS:456

(Latest version as indicated in Annexure-1) reproduced below: - **IS: 456-2000** (latest version)

TABLE - 3: PROPORTIONS FOR NOMINAL MIX / READY MIX CONCRETE:*(Clause 9.3 and 9.3.1)*

Grade of concrete	Total quantity of dry aggregate by mass per 50 kg of cement, to be taken as the sum of the individual masses of the fine and coarse aggregates kg max.	Proportion of fine aggregate of coarse aggregate (by mass)	Quantity of water per 50 kg of cement (max.liters)
1	2	3	4
M 5	800		60
M 7.5	625	Generally 1:2 but subject	45
M 10	480	to an upper limit of 1:1.5	34
M 15	350	and a lower limit of 1:2.5	32
M 20	250		30

- NOTE:** (i) *The proportions of the fine to coarse aggregates should be adjusted from upper limit to lower limit progressively as the grading of the fine aggregates becomes finer and the maximum size of coarse aggregate becomes larger. Graded coarse aggregate shall be used.*
- (ii) *Minimum grade of concrete shall be not less than M - 20 in reinforced concrete work.*

Example:

For an average grading of the fine aggregate (that is zone II of Table 4 of IS: 383 (Latest version as indicated in Annexure-1) the proportions shall be 1:1.5, and 1:2 and 1:2.5 for maximum size of aggregate 10 mm, 20 mm and 40 mm respectively.

* Specification for coarse and fine aggregates from natural sources for concrete (second revision).

"Volume batching may be allowed only where weigh-batching is not practical and provided accurate bulk densities of materials to be actually used in concrete have earlier been established. Allowance for bulking shall be made in accordance with IS: 2386 (Part-3) (Latest version as indicated in Annexure-1). The mass volume relationship should be checked as frequently as necessary, the frequency of the given job being determined by Engineer — In charge to ensure that the specified grading is maintained."

In judging the acceptability of the materials, quality of concrete and the method of work, the Purchaser will generally observe the provisions of the "Indian Standard code of Practice for Plain and Reinforced Concrete, IS:456 (Latest version as indicated in Annexure-1). The crushing strength of concrete shall not be less than the limits given below: -

Specified characteristic Compressive strength of 15 cm cubes at 28 days.

Grade of Concrete	At 28 days age
(a) M. 10	10 N/mm ²
(b) M. 15	15 N/mm ²
(c) M 20	20 N/mm ²

NOTE: (a) *Test specimen of works tests shall be taken at the site of work from mixture of concrete ready for pouring into the foundation hole. All tests shall be carried out in accordance with IS: 516 (Latest version as indicated in Annexure-1). The sample of concrete from which test specimens are made shall be representative of the entire batch.*

(b) Age is reckoned from the day of casting.

(c) The Cube Test of the concrete shall be done at NABL Lab by the contractor itself and no extra payment shall be incurred by the Railway.

SIZE AND GRADING OF AGGREGATES: 2.2.5

The graded coarse aggregate 40 mm nominal size (table 2 of IS: 383 (Latest version as indicated in Annexure-1)) shall be used for foundation. A coarse aggregate for grouting muffs and embedding shall be of 20 mm graded nominal size as per table 2 of IS: 383 (Latest version as indicated in Annexure-1) (specification for coarse and fine aggregate from natural sources for concrete).

Fine aggregate shall be graded from 10 mm downwards. The maximum size of aggregate for under reamed pile foundation shall be 20 mm graded nominal size.

SAND CORED FOUNDATIONS: 2.2.6

After erection of masts in sand-cored foundations, the core hole of the foundation blocks shall be filled with dried sand and covered with a layer of bitumen of 80 mm thickness below 30 mm from top level of the block. A hemispherical shaped muff shall be provided on such foundations in lieu of standard type.

SINKING OF CONCRETE SHELLS: 2.2.7

Where the water-table is high, one or more sections of reinforced concrete shells may have to be sunk before casting concrete. The size of each of shell shall be 1,200 mm outside dia x 50 mm thick x 600 mm high reinforced with 6 mm (1/4") dia rods spaced 150 mm apart, both longitudinally and circumferentially, the concrete shall be of grade M.20 as per provisions of para 2.2.4.

TYPE OF FOUNDATION IN BLACK COTTON SOIL: 2.2.8

The foundations in dry black cotton soil should be of type BC or NBC or any other type as approved by the Purchaser.

CEMENT: 2.2.9

The cement to be used in the construction of PCC / RCC structures should be of Ordinary Portland Cement to IS: 269 (Latest version as indicated in Annexure-1) or Portland Pozzolana cement (fly ash based) as per IS: 1489 Pt-I (Latest version as indicated in Annexure-1).

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PART - II
CHAPTER - III
STRUCTURES

PART - II
CHAPTER - III
STRUCTURES

Para No.	Subjects
2.3.1	Scope.
2.3.2	Types.
2.3.3	Design.
2.3.4	Cantilever masts.
2.3.5	Anchor masts.
2.3.6	Head-Spans.
2.3.7	Portals.
2.3.8	Structures on Bridges.
2.3.9	Special structures.
2.3.10	Setting of structures.
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2.3.12	Steel work for switching stations and gantries.
2.3.13	Steel.

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PART - II
CHAPTER - III
STRUCTURES

SCOPE: 2.3.1 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System).

Note:

- a) For 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System, B series mast shall be erected at all locations, if possible.
 - b) Design of the bridge mast for **suitability of 2x25 kV Feeder mast along with provision of additional load of cantilever, ATD, ACC, AEC etc** shall be done by the contractor. The design must comply all the RDSO's/Railway guidelines and RDSO's instruction **TI/IN/0042 Rev 0 with latest amendments**. The cost of design, testing and approval will be borne by the contractor.
 - c) Approval of the bridge mast design must be taken only from Government approved institutions.
1. This chapter deals with the design of steel structures and steel work for overhead equipment, switching stations, booster transformer stations and L.T. supply transformer stations and the specification for steel and pre stressed concrete trial mast.
 2. This Chapter deals with the design of all structural steel work including gantry structures, supporting structures and small parts steel work including chairs, brackets and other fabricated steel-work for mounting various equipments, bus-bars, cables etc. at Traction sub-stations, feeding stations and shunt capacitor banks.

TYPES: 2.3.2

Structures and gantries may consist of any or more of the following types:-

- (i) Rolled steel joists (I section).
- (ii) Fabricated steel Structures (welded/bolted).
- (iii) Broad flange beam

Structure/uprights shall generally be embedded in concrete foundation blocks in special cases Structures may be secured by means of holding down bolts. Limited quantity (approx. 700 nos.) of circular spun pre stressed concrete masts may also be used at the sole discretion of the Purchaser.

DESIGN: 2.3.3

FOR OHE: 2.3.3.1

(a) STEEL STRUCTURES:

Designs for steel Structures shall, except where otherwise Provided, comply with the Indian standard code of practice for use of structural steel in General Building Construction- IS: 800 (Latest version as indicated in Annexure-1). The thickness of smallest steel sections used shall be 5 mm for galvanised members.

- (b) All the steel Structures and small part steel for carrying Over head & feeder Equipment are to be fully galvanised after drilling and fabrication as per specification **ETI/OHE/13(4/84)** (Latest version as indicated in Anexure-1) and no painted structures are to be used.

FOR TSS: 2.3.3.2 – DELETED- (NA).

(a) **GENERAL:**

The steel structures may be of riveted, bolted or welded construction as convenient for installation. The thickness of smallest steel section used shall not be less than 6 mm (or 1/4"). Legs of gantry structures/portals and supporting steel work and uprights or bus-bar supports shall generally be embedded in concrete foundation blocks and for equipment and in special cases secured by means of holding down bolts.

(b) **DESIGN:**

- a) All the steel structures like gantries/portals, other supporting members, small part steel work etc. shall be galvanised after fabrication with a minimum value of average mass of Zinc coating being not less than 610 g/m² as per RDSO's specification No.ETI/OHE/13 (4/84) with Amendment No.1,2 & 3.
- b) All designs for special steel work shall be furnished by the Contractor, for approval of the Purchaser. Designs for steel structures shall except where otherwise provided, comply with the "Indian Standard Code of Practice for use of Structural steel in General Building Construction" - IS: 800 - 1984, other relevant IS Specifications and statutory regulations.
- c) For purposes of design, all possible loads which may occur in the worst combination shall be considered.

c) **Steel Structures:**

For calculation of wind load on structures, conductors and equipment, the basic wind pressure shall be taken as 112.5 Kg/sq.m.

- d) For purposes of design of gantries, the tension in the 220 kV incoming/outgoing lines shall be taken as 200 kg. at 4 degree C (without wind) in each conductor and 150 kg. at 4°C (without wind) in the earth wire. The tension in the 66 kV strung bus-bars and earth screen wire at 66/25 kV sub-stations shall not exceed 200 kg. at 4 °C (without wind).

e) **Uprights and fencing posts:**

Uprights carrying equipment such as potential transformers, current transformers, lightning arrestors, bus-bar support insulators, shall be made from standard metric steel sections viz. channels, angles or small joists, either single or fabricated.

f) **Notwithstanding the provisions contained in I.S. and other regulations referred to in Para 2.3.3.2(b) above regarding permissible deflection, the following should apply.**

The deflection at the top of the mast or structure shall be limited to one eightieth (1/80) of its height above foundation.

- g) The Torsional rotation of the mast due to permanent loads shall not exceed 0.1 radian.

CANTILEVER MASTS: 2.3.4

- (a) **LOAD (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System):**

For purposes of design the worst possible combination of all loads that may occur shall be considered.

The load shall include the following (weights to be assumed for design of Structures are shown against important items).

- (i) Weight of Over head & feeder Equipment (1.60 kg/meter for each conventional and 1.32 kg/meter for each composite OHE).
- (ii) Weight of Bracket supporting the Over head & feeder Equipment (60 kg/normal Bracket).
- (iii) Weight of a man (60 kg).
- (iv) Weight of an earth wire (0.32 kg/meter).
- (v) Weight of feeder, Return Conductor or other special equipment wherever they occur.
- (vi) The effect of eccentricity of vertical and horizontal loads on the bracket due to variation in temperature.
- (vii) Wind loads perpendicular and parallel to the track. The wind pressure adopted shall be taken as that indicated in part-III.
- (viii) Radial forces on the mast, due to stagger, curvature, anchorage etc.
- (ix) Weight of the mast itself.
- (x) Any other load or loads that may occur due to special location of the Structures.
- (xi) AEC (Aerial Earth Conductor).

- (b) **DEFLECTION:**

Notwithstanding the provisions contained in IS:800 (Latest version as indicated in Annexure-1) referred to in para 2.3.3 above regarding permissible deflection, the following shall apply.

- (i) The deflection at the top of the mast due to permanent loads shall not exceed 8 cm and the mast shall be so erected that it becomes reasonably vertical after application of permanent loads.
- (ii) The additional deflection under maximum wind pressure shall not exceed 8 cm at the level of the contact wire.

- (c) **TORSION:**

The torsional rotation of the mast due to permanent loads shall not exceed 0.1 radian.

- (d) **TYPICAL DESIGN:**

The typical design of a Traction mast is included in the set of standard drawings listed in Annexure-1, part-IV. Employment schedules for standard masts for various locations and types are included in the standard drawings listed in Annexure-1, part IV, to enable selection of suitable type for different locations and local conditions.

ANCHOR MASTS: 2.3.5

- (a) Masts at which Over head & feeder Equipment will be anchored shall also normally be of the same type as those in other locations. Anchor masts shall normally be provided with suitable guys but struts may be permitted in special cases.

(b) DWARF MASTS:

At certain locations where due to local conditions it is not feasible to anchor the guy rod on a foundation block in the ground, a Dwarf mast shall be used in accordance with approved designs.

HEAD SPANS: 2.3.6 (See paras 2.1.21 and 2.4.19).

(a) LOAD:

The loads to be considered shall be as detailed in para 2.3.4 (a) as far as applicable and at their worst combination.

(b) SAG FOR HEAD SPAN WIRE:

The sag of the head span wire shall be approx. one-tenth (1/10) of the span.

(c) MINIMUM TENSION IN CROSS SPAN & STEADY SPAN WIRES:

For purpose of design, a minimum tension of 200 kg, shall be ensured in the span wires for worst combination of temperature and wind load.

(d) DEFLECTION OF MAST:

Deflection at the top of the mast or Structure shall be limited to one-eightieth (1/80th) of its height above foundation.

(e) TYPICAL DESIGN:

Typical design for head span mast carrying Over head & feeder Equipment for 4 tracks will be furnished to the contractor.

PORTALS: 2.3.7 (See 2.1.21)

(a) GENERAL:

Portals shall be of fabricated steel of standard types of purchaser's designs. The most important designs are covered by Drawings listed in Annexure-1, part-IV.

(b) LOAD:

The load shall be as detailed in para 2.3.4 (a) as applicable.

STRUCTURES ON BRIDGES: 2.3.8

- (a) The structure may be either cantilever masts or portals (hinged or fixed at base) depending on the type and condition of bridge pier capping. As far as possible cantilever masts grouted in foundations blocks on pier will be used. Where this is not possible cantilever masts with holding down bolts or suitable portals (hinged or fixed at the base) may be adopted.
- (b) Designs of structures on bridges to suit different locations and local conditions will be furnished by the contractor & approved by the Purchaser.

SPECIAL STRUCTURES: 2.3.9

In the case of structures at locations not covered by the employment schedules furnished by the Purchaser, the contractor shall furnish complete design calculations justifying the choice of the type of structures for such locations and the same will be approved by Railway.

SETTING OF STRUCTURES: 2.3.10

- (a) The setting is the distance from the Central line of the track, on straight or curve to the face of the mast/structure of fitting located on the mast.
- (b) On straight and outside of curve, the standard setting shall be as per the relevant drawing included in Annexure-1, Part IV. Minimum setting of structures shall be 2.8 M plus curve allowance as required. Whenever this distance cannot be provided, specific approval of Purchaser shall be obtained before erection. Setting of portal upright overlap/ turn-out structures, anchoring structures and other masts carrying more than one OHE will be 3.0 m wherever possible.

- (c) **EXTRA CLEARANCE ON CURVES:**

The minimum setting of structures on curves shall be determined by adding to the above minimum figures an extra clearance indicated in the table included in the set of standard drawings listed in Annexure-1, Part-IV.

- (d) **STRUCTURES WITH COUNTER WEIGHTS:**

In case of structures carrying counter-weight assemblies, the term "Setting" shall refer to the minimum distance of the counter-weight from the track center under the worst conditions of wind.

- (e) **STRUCTURES ON PLATFORM:**

The setting of structures on platform shall be not less than 4.75 m.

- (f) **STRUCTURES NEAR SIGNALS:**

In the vicinity of signals, structures shall be located in a manner which shall ensure good visibility where necessary, the setting shall be increased as per the relevant drawing included in Annexure- 1, Part-IV.

- (g) **SETTING OF STRUCTURES:**

The value of setting of masts/structures shall be painted on each mast/structure. The figure shall be 25 mm in size in white on a red background. In addition, the track level shall also be marked on the mast/structure by a horizontal red painted stroke.

NUMBERING OF STRUCTURES CARRYING OVER HEAD & FEEDER EQUIPMENT: 2.3.11

All structures shall be numbered in accordance with the numbering given in the approved Over head & feeder Equipment layout plans. Enameled/Retro-Reflective number plate shall be provided on each mast or structure as per approved designs (See Annexure-1, Part-IV).

STEEL WORK FOR SWITCHING STATIONS AND GANTRIES: 2.3.12 -DELETED- (NA).

- (a) **HORIZONTAL MEMBERS OF GANTRY:**

Horizontal member of main as well as auxiliary gantry carrying isolator switches, insulators, potential transformers etc. shall be made from steel sections viz. channels, angles and small joists, single or fabricated. They shall

preferably be attached to masts by means of clamps to avoid drilling of masts sections.

- (b) For purpose of design, all possible loads which may occur in the worst combinations shall be considered. The loads shall include the followings:-
- (i) Weight of insulators, instrument transformers, isolator switches, bus-bars, and their accessories.
 - (ii) Loads caused by Feeders, along and across tracks, return Feeders etc.
 - (iii) Loads caused by anchorage due to guying of anchored masts (where applicable).
 - (iv) Pull or Push on the structures due to anchorage and radial tension (where applicable).
 - (v) Wind load on the different structures, conductors and equipment. The wind pressure shall be taken as that indicated in part-III.
 - (vi) Weight of men working on the structures.
 - (vii) Weight of structure itself.
 - (viii) Erection loads.
 - (ix) Any other load or loads which may occur due to special equipment, wherever they occur.

(c) TENSION OF CONDUCTORS:

For purpose of designs, the maximum tension of different conductors, without windload, shall normally be as under: -

- (i) Deleted.
- (ii) Maximum tension in the cross Feeders at switching stations under worst conditions: -
 - (1) For spans less than 18 m... 100 kgf.
 - (2) For spans more than 18 m ... 200 kgf.
- (iii) Maximum tension in longitudinal Feeders running parallel to the track at the switching stations under worst conditions. 1500 kgf.
- (iv) Tension in anchored Over head & feeder Equipment in case of sectioning and paralleling stations 2,000 kgf.

(d) DEFLECTION OF GANTRY MASTS:

Deflection under the permanent loads (at an average temperature of 35°C without wind) at the top of the fabricated structures of mast shall be limited to one eightieth (1/80) of its height above foundation.

- (e) Masts of the gantry at which feeder or Over head & feeder Equipment will be anchored at the switching stations shall normally be provided with suitable guys, but struts shall not be permitted.

(f) CHAIRS AND BRACKETS:

Chairs, brackets and supporting steel work carrying potential transformers, lighting arrestors, insulators, etc, shall be made of fabricated steel and be mounted on the main auxiliary gantry preferably by means of clamps to avoid drilling of mast sections.

(g) UPRIGHTS AND FENCING:

Uprights carrying operating handles of isolators and fencing posts shall be made from steel sections, viz. channels, angles or small joists, either single or fabricated.

STEEL: 2.3.13

Steel conforming to IS: 2062 (Latest version as indicated in Annexure-1) shall be used for all fabricated steel work.

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PART-II
CHAPTER-IV

EQUIPMENTS, COMPONENTS AND MATERIALS

PART-II
CHAPTER-IV
EQUIPMENTS, COMPONENTS AND MATERIALS

PARA NO.	SUBJECT
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2.4.2	Compliance with standard specification.
2.4.3	Quality assurance
2.4.4	Prototype test.
2.4.5	Inspection and tests.
2.4.6	Test certificates.
2.4.7	Bulk manufacture.
2.4.8	Inter-changeability.
2.4.9	Technical specifications.
2.4.10	Nomenclature and marking.
2.4.11	Steel work and protection against rust.
2.4.12	Bracket assembly components.
2.4.13	Droppers.
2.4.14	Insulators.
2.4.15	Ending fittings and splices.
2.4.16	Electrical connections for Over head & feeder Equipment.
2.4.17	Terminal connection for other equipments.
2.4.18	Regulating equipment.
2.4.19	Head span construction.
2.4.20	Isolator
2.4.21	Insulation level.
2.4.22	Bus-bars(at switching stations, booster stations and Gantries.)
2.4.23	Cabling.
2.4.24	Literature for equipment.

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PART-II
CHAPTER-IV
EQUIPMENTS, COMPONENTS AND MATERIALS

GENERAL: 2.4.1 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System).

- (a) This chapter deals with the details and specifications of the equipment, components and materials to be used for Traction Over head & feeder Equipment. This chapter does not cover structures and foundations, which are dealt with in Part-II, Chapter-II and III. In general, based on the specifications issued by various bodies, such as Bureau of Indian Standards, British Standard Institution etc. Specifications have been issued by the Purchaser. Such specification may be bought separately from the office of the Purchaser. All these specifications are included in the set of drawings and specifications referred to in Para 1.1.10.
- (b) This chapter deals with details and specifications of the equipments, components and materials to be used at the Traction Sub-station, feeding station and shunt capacitor bank. It does not cover foundations and structures which are dealt with in Chapters II and III respectively. The detailed specifications for various items of equipment and materials issued by the Purchaser may be bought separately from the design office of the Purchaser's Engineer (See 1.1.10).

COMPLIANCE WITH STANDARD SPECIFICATION: 2.4.2

In the technical specifications of equipments, components and materials, references are made to the following standard specifications:

- (i) International Electro Technical Commission (abbreviated as IEC) publications.
- (ii) British Standards (abbreviated as BS).
- (iii) Bureau of Indian Standards (abbreviated as IS).

Tenderers may, however, offer equipment in accordance with the appropriate national standard specifications of the country of manufacture, but such offers will be treated as deviations and should be quoted for in the manner specified in Para 1.1.7 (d). English rendering of the text and illustrations of the national standard specifications and explanatory notes on the specific deviations from IEC, British or Bureau of Indian Standards in question, shall also be submitted in the relevant Annexures. In case of doubt, the Purchaser shall decide the clause and specification applicable and the contents of the specification and standard mentioned above shall guide such decisions.

QUALITY ASSURANCE: 2.4.3

The provisions of part-I for quality assurance will apply, including facilities to be provided by the manufacturer (See para 1.2.25)

PROTO TYPE TESTS: 2.4.4

- (a) **FITTINGS, COMPONENTS AND MATERIALS:**

All the fittings, components and materials to be supplied by the contractor, in terms of this contract, the requisite number of prototypes of components shall be supplied free of cost to the Purchaser for tests and approval. The tests will be conducted in a laboratory selected by the Purchaser.

(b) EQUIPMENTS:

This comprises inspection and tests conducted on the first equipment of a specified manufacturer, which the Purchaser considers sufficient to prove that the design is in conformity with the specification at the manufacturer's factory. The type tests shall be conducted on each equipments as indicated in the individual specifications referred to in para 2.4.1 above, in the presence of the Purchaser's representative. The contractor shall arrange to get these tests conducted at his own cost.

(c) RESPONSIBILITY:

Any testing and approval by the Purchaser of prototype shall in no way absolve the contractor of his responsibility under the terms of the contract for the equipment supplied and erected.

(d) EXEMPTION FROM PROTOTYPE TESTS:

If prototype samples of equipments, components or fittings of any manufacturer have already been approved in connection with the electrification of other sections of Indian Railways, on the 25 KV 50 HZ single phase A.C. system prototype samples of such equipments, components or fittings will be exempted from the tests. Supply of bulk quantities shall, however, be effected only after the Purchaser's prior approval is obtained in writing.

- (e)** The results of prototype tests will be communicated to the Contractor as expeditiously as possible. Any delay in this respect will be ground for extension of time for completion under para 1.2.45.

INSPECTION AND TESTS: 2.4.5

These comprise inspection and tests conducted at the manufacturer's factory for ensuring quality of manufactured items as part of the quality Assurance Programme.

TEST CERTIFICATES: 2.4.6

Three copies of the test certificates of successful prototype tests carried out at the manufacturer's factory on all equipments shall be furnished to the Purchaser within a month after completion of the prototype tests. Three copies of the routine tests carried out on each equipment shall also be furnished, after the equipment is passed by the Purchaser's representative for inspection (See para 1.2.25).

BULK MANUFACTURE: 2.4.7

Bulk manufacturer may be undertaken only after specific written approval of the Purchaser or his representative has been obtained indicating that tests on the prototypes are satisfactory. Where prototypes have already been approved in connection with it manufacturer may proceed after exemption from prototype tests is received from the Purchaser in writing.

INTER CHANGEABILITY: 2.4.8

All equipments, components and fittings shall be inter-changeable and supplies shall be in accordance with the Purchaser's designs unless otherwise specifically approved by him. Components such as fuses, indication lamps etc. should be replaceable with substitutes available indigenously, as far as possible. Important components and fittings and their drawings have been listed in Schedule-3.

TECHNICAL SPECIFICATIONS: 2.4.9

Please see at **Anexure-1** (A, B, C, D, E, F & G). List of standard RDSO drawings, RDSO specifications and IS specifications for important materials, components and equipments [As per version available as on date of opening of tender (Packet-A)].

NOMENCLATURE AND MARKING: 2.4.10

- (a) All components and fittings supplied by the Contractor's shall bear the respective identification number and a mark to identify the source of supply except in the case of galvanised tubes, bolts and nuts and/or any other fittings as may be agreed to by the Purchaser.
- (b) In case of insulators, galvanised steel tubes, stainless steel wire rope and conductors, name of manufacturer shall be specified in "As Erected" drawings for identification.

STEEL WORK AND PROTECTION AGAINST RUST: 2.4.11

(a) GALVANISING:

All ferrous materials and fittings shall be hot dip galvanised according to the specification ETI/ OHE/13 (4/84) (Latest version as indicated in Anexure-1).

(b) PAINTING:

Some components or parts may, with the approval of the Purchaser, be protected only by paint and parts so protected shall be given two coats of composite Aluminium primer and two coats of Aluminium paints. The second coat of Aluminium paint shall be applied after erection.

(c) RECTIFICATION AT SITE:

In case of modifications which would damage the protective coat, repairs to such damage would be allowed only in exceptional circumstances. The part damaged shall be protected in accordance with the method indicated in specification **ETI/OHE/13 (4/84)** (Latest version as indicated in Annexure-1) or any other method approved by the Purchaser. The Contractor shall in all such cases obtain prior permission from the Purchaser before carrying out repairs.

BRACKET ASSEMBLY COMPONENTS: 2.4.12 (see para 2.1.22)

(a) **ARRANGEMENT FOR NORMAL OHE:**

The arrangement of the different fittings and structural components of bracket assemblies are shown in drawings listed in Annexure-1, Part-IV. The employment schedule of bracket will be furnished to the Contractor.

(b) **BRACKET**

Bracket tubes shall be of seamless cold drawn or electric resistance weld steel complying with **ETI/OHE/11 (5/89)** (Latest version as indicated in Annexure-1) with an insulator near the support. The length of the tubes shall be such that there is a free length of about 200 mm beyond the catenary Suspension Bracket. To facilitate adjustment during track maintenance [(see para 2.6.10 (b))].

(c) **TUBULAR STAY ARM:**

Steel tubes with adjustable steel rods shall be used for tubular stay arm of all Bracket assemblies.

(d) **REGISTER ARM:**

The register arm shall also be electrical resistance weld or cold drawn steel tubes or proper dimensions duly formed. It shall be suspended by a dropper from the catenary suspension clamp/bracket tube. A hook and eye arrangement shall be used at the bracket end to permit free movement in every direction.

(e) **STEADY ARM:**

Steady arm shall normally be fitted in all assemblies for Over head & feeder Equipment in running. The steady arm shall be of light alloy BFB section arranged to work always in tension in accordance with **ETI/OHE/21(9/74)** (Latest version as indicated in Annexure-1). Steady arms of secondary tracks may be of solid galvanised steel Rodding. The contact wire shall be fixed by a simple swivel clip without threaded parts. Steady arms shall normally be 1.0 m long but for special locations such as turnouts, diamond crossing etc. Steady arms shall be longer as indicated in the relevant drawings listed in Annexure-1, part- IV.

Bent steady arms of aluminum alloy tube conforming to Spec. **ETI/OHE/21 (9/74)** (Latest version as indicated in Annexure-1) shall be used for neutral section overlap and in the central mast of a 4 span insulated overlap.

(f) **BRACKET FOR UNREGULATED TRAMWAY TYPE EQUIPMENT:**

Brackets provided on cantilever masts for tramway type unregulated equipment shall normally span two tracks and the contact wires carried on V-type clamps suspended from a span wire. The span wire shall be provided with a turn buckle at only one end.

DROPPERS: 2.4.13 (see para 2.1.13).

- (a) **GENERAL DESIGNS** (To be as per RDSO Instruction **TI/IN/0042 with latest amendment, if any**).

The droppers shall generally be designed as shown in standard drawings and made of copper wire about 5 mm diameter conforming to **IS:282** (Latest version as indicated in Annexure-1) and shall be attached to the catenary wire by a copper dropper clip. The contact wire shall be held by a clip of aluminum bronze as shown in the standard drawings. The distribution of dropper shall be in accordance with standard designs. At long girder bridges 7 mm droppers must be used.

(b) LOADING (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any):

The droppers shall be able to withstand a vertical load of 200 kg at the point of attachment to the contact wire and the clip shall not slide under a horizontal load of 120 kgf.

(c) The permissible tolerance in the overall length of a dropper will be ± 5 mm.

INSULATORS: 2.4.14 NO COMPOSITE TYPE INSULATORS SHALL BE USED.

All insulators except those on Return Conductors and earth wires shall be of the solid core type. Disc insulators shall be used on Return Conductors and earth wires or other locations as desired by the Purchaser. All solid core insulators shall conform to TI/SPC/OHE/INS/0070 (Latest version as indicated in Annexure-1) or Specification No.TI/SPC/OHE/INSCOM/0991 (Latest version as indicated in Annexure-1) is for Composite Insulators wherever applicable.

(a) INTER-CHANGEABILITY:

For free inter-changeability only the following types of insulators shall be used. While the shapes of the insulators may vary slightly from those shown in the drawings, the essential dimension of the galvanised malleable cast iron caps as given in standard drawings shall be adopted.

(i)	Stay arm Insulators:	These insulators will be used in conjunction with the tubular stay arm of all bracket assemblies.
(ii)	Bracket Insulators:	These will be used at the base of each bracket assembly in conjunction with bracket tubes.
(iii)	9-Tonne Insulators:	These will be used at all places for cut-in and Terminal insulation including those in Return Conductors, but excluding those in earth wire.
(iv)	Solid core post insulators:	These will be used at all places for supporting Isolators mechanisms, bus-bars, jumpers etc. of 25 kV.
(v)	Disc insulators 255 mm:	Clevis type 255 mm disc insulators will be used for Return Conductor suspension and for earth wire Cut-in insulator.
(vi)	11 kV post insulators:	These will be used at all places for supporting bus-bars, jumpers etc. In conjunction with Return Conductor/return Feeders.

(b) The pedestal insulators for service voltage of 220/132/110 kV shall be of Solid Core type conforming to specification as indicated in Annexure-1. The pedestal

insulators for service voltage of 25 kV shall be of the solid core type conforming to specification as indicated in Annexure-1.

ENDING FITTINGS AND SPLICES: 2.4.15

(a) GENERAL DESIGNS:

Terminating or ending fittings and splices on copper conductor shall be of the cone type clamping on both the inner and outer strands of conductor except for contact wire ending clamps which may be of wedge type. The arrangement shall be easy to install and also be such as would apply the clamping pressure gradually without shock (See TI/SPC/OHE/Fittings/0130) (Latest version as indicated in Annexure-1). For Aluminum Alloy/conductor, the end fittings shall be either cone type, strain clamp type or any other type as approved by the Purchaser.

(b) LOADING:

All the parts shall be capable of withstanding without damage, a load greater than the ultimate strength of the wires to which they are fitted. In the case of thread no damage shall occur when they are subjected to a load equal to two third of the ultimate strength of the wires.

(c) RESTRICTED USE OF SPLICES:

The use of splices shall generally be avoided and their use shall be restricted to the minimum necessary. Over main tracks, there shall be no splice in the contact wire on first erection. Elsewhere, not more than one splice be used in any tension length (i.e. anchor to anchor) for which prior approval shall be taken from the Purchaser. Additional splices may, however, be provided to enable retention of conductors which are found defective during and/or after erection. Splices may also be permitted for repair of damage due to thefts or Railway accidents.

(d) STRENGTH OF ASSEMBLED FITTINGS:

The strength of fittings assembled with appropriate conductors or wires shall be not less than that of the conductor or wire itself.

(e) ADDITIONAL TERMINATING WIRES:

Cadmium copper stranded wire of 65 sq. mm nominal section or 37/2.1 mm (as used in head span construction) may be used as additional terminating wires for extending single and double conductors respectively, if termination at the nearest structure is not feasible.

ELECTRICAL CONNECTIONS FOR OHE: 2.4.16

(a) GENERAL DESIGNS:

All electrical connections between conductors shall be made by parallel clamps. The general arrangements of connections are shown in the standard drawings, listed in Annexure-1.

(b) JUMPERS (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25

kV Electric Traction System): Copper jumpers shall be of any of the followings:

- (i) Large jumpers of annealed copper in accordance with specification **ETI/OHE/3 (2/94)** (Latest version as indicated in Annexure-1).
- (ii) Small jumper of annealed copper in accordance with the specification **IS:9968(PT.2)** (Latest version as indicated in Annexure-1).

Aluminum jumpers wherever used, shall be of all Aluminum stranded conductor 19/7/ 1.4 mm bare 3/4 H generally conforming to IS:8130 (Latest version as indicated in Annexure-1).

(c) BUS BARS:

Bus-bars or rigid jumpers of copper where used shall be of 18mm dia copper rod in accordance with RE/30/OHE/5(11/60) (Latest version as indicated in Annexure-1). Aluminium bus-bars wherever used shall be of 36/28 mm tubing (See 2.4.22). Aluminium tubular bus-bars shall be made of Al. Alloy grade 63401 (WP condition) to IS:5082 (Latest version as indicated in Annexure-1). The tolerance on diameter and thickness shall be as per class I, IS:2673 (Latest version as indicated in Annexure-1).

(d) FEEDERS:

Feeders shall be of all Aluminum conductor 19/3.99 mm (SPIDER).

(e) RETURN CONDUCTOR: (NA).

The Return Conductor shall be of all Aluminum conductor 19/3.99 mm (SPIDER). The arrangement of Return Conductor carried on Traction structures is shown in a drawings listed in Annexure-1, Part IV.

- (f) The general characteristics of all wires and conductors is included in a drawings listed in Annexure- 1, Part IV.
- (g) Earth wire shall be of steel reinforced Aluminium conductor 7/4.09 mm (RACCOON) conforming to **IS:398-(part-II)** (Latest version as indicated in Annexure-1).

TERMINAL CONNECTORS FOR EQUIPMENTS: 2.4.17 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System).

Booster Transformer along with the terminal connectors suitable for taking jumpers/ bus bar as required shall be supplied by the Purchaser.

However, Power Transformer, Circuit Breaker, and L.T. supply Transformer shall be supplied by the Contractor along with the terminal connectors suitable for taking jumper/bus-bar as required including Al-Cu strips for bimetallic connections wherever required. The Al-Cu strips required for the connection of Booster Transformers shall also be provided by the Contractor if following equipment will be under the scope of Supply as per Annexure-4, otherwise Tenderer shall make its own arrangement to provide.

REGULATING EQUIPMENT: 2.4.18 (To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System).

(a) GENERAL:

A general arrangement is shown in the standard drawings listed in Annexure-1, Part IV. The regulating equipment should have a minimum adjustment range of 950 mm. Stainless steel wire rope in accordance with TI/SPC/OHE/WR/1060 (Latest version as indicated in Annexure-1) shall be used in these equipments and these shall be sufficiently flexible for the purpose.

(b) COUNTER WEIGHT:

Counter weights and arrangements used shall be such that these could be accommodated within 330 mm (13 inches) measured transverse to the track under the worst conditions of wind. The vertical upward movement shall be limited with a fixed top.

(c) REDUCTION RATIO:

Reduction ratio in the arrangement used shall be five for winch type and three in case of three pulley type.

HEADSPAN CONSTRUCTION: 2.4.19 (See para 2.1.21 and 2.3.6.)

(a) SIZE AND FACTOR OF SAFETY:

All span wires used in head-span construction shall be of stranded cadmium copper conductor 65 sq. mm or 130 sq. mm cross section. All the wires shall be designed with a factor of safety of not less than 4 under the most unfavorable conditions.

(b) TURN BUCKLES:

Each span wire shall be equipped with a turn buckle at each end of the span.

(c) ADDITIONAL INSULATORS:

Additional insulators shall be provided as necessary in head span, cross span and steady span, wires to ensure electrical independence between the equipment in different elementary electrical sections.

ISOLATORS: 2.4.20

25 kV Isolator switches shall comply with specifications as indicated in para 2.4.9.

(To be as per RDSO Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system on existing 1x25 kV Electric Traction System).

INSULATION LEVEL: 2.4.21- Deleted (NA).

- (a) Interrupters, Potential Transformers line indication type, 42kV Lightning Arrestors and other equipments shall be suitable for insulation levels indicated in the relevant specifications.
- (b) All equipment including insulators to be used at the Traction Sub-stations, feeding station and shunt capacitor banks shall be suitable for the insulation level specified below:-

SN	TEST	SERVICE VOLTAGE				
		220 kV	132 kV	110 kV	66 kV	25 kV
i)	Power frequency 1 min. wet withstand test-kV (rms).	460 kV	275 kV	230 kV	275 kV	100 kV
ii)	Impulse (1.2/50 microsecond) withstand test positive and negative Polarity (crest value) – KV (peak).	1050 kV	650 kV	550 kV	650 kV	250 kV

BUSBARS: 2.4.22- Deleted (NA).

- (i) ACSR Conductors used as bus-bar or bus-bar connections shall be of ZEBRA ACSR size 61/3.18mm (28.62 mm dia) at 220 or 132 or 110/25 kV Traction Sub-station.
- (ii) Aluminum tubes used as bus-bars or bus-bar connections shall be of dia 50X39 mm for Traction Sub-station and Shunt Capacitor banks and of size 36/28 mm for Feeding Stations. Aluminum tubular bus-bars shall be made of Al. Alloy grade 63401 (WP condition) to IS:5082 and IS: 6051-1970 (Latest version as indicated in Annexure-1). The tolerance on diameter and thickness shall be as per class I, **IS: 2673** (Latest version as indicated in Annexure-1).
- (iii) Bus-bar junctions and connectors shall be made with aluminum alloy Grade 4600 M to IS: 617- 1994 or equivalent. The bus-bar shall be clean, smooth mechanically sound and free from surface and other defects. No splices will be allowed in the bus-bar unless the length of bus-bar exceeds 6m. The ends of the tubular bus-bar shall be covered with suitable end caps. The joints in bus-bars where unavoidable, shall be mechanically and electrically sound so that the temperature rise under normal working conditions does not exceed 40 degree centigrade for a max. ambient temp. of 45 degree centigrade.

CABLING: 2.4.23 Deleted (NA).**(a) CABLE FOR L.T. SUPPLY- Deleted (NA).**

240 V A.C. supply from L.T. supply transformer at switching stations shall be brought and terminated on the L.T. A.C. distribution board in the remote control cubicles at the switching stations by 1100 Volt 25 sq.mm Aluminum two-core PVC insulated PVC sheathed and steel armoured heavy duty cable conforming to IS:1554(part-I) (Latest version as indicated in Annexure-1).

(b) CONTROL AND INDICATIONS CIRCUITS- Deleted (NA).

All other cables for control and indication at switching stations shall be 1100-V

grade PVC insulated and sheathed un-armoured (heavy duty) complying with IS: 1554(part-I (Latest version as indicated in Annexure-1). The cables shall be provided as indicated in the Table below:-

c) **Cables for heater circuits- Deleted (NA).**

The 240 V AC supply to space heaters provided in control cabinets of various equipments shall be provided by means of 4 sq.mm. 2-core Aluminum PVC insulated (heavy duty) cables complying with IS: 1554 (Part-I)-1988. Three circuits shall be provided on the LT A.C. distribution board for this purposes, one for the heaters in the control cabinets of 220/132/110 KV circuit breakers, the second for the heaters in the control cabinets of 25 KV circuit breakers and bridging Interrupters and the third for heaters in marshalling box of Traction transformers. Each circuit shall be provided with a fuse of approved type and suitable rating in the LT A.C. distribution Board.

d) **Cables for Battery Charger- Deleted (NA).**

240 V A.C supply to each of the battery chargers in the Control Room shall be provided by means of 4 sq.mm. 2 core PVC insulated, PVC sheathed (heavy duty) copper cables complying with IS: 1554 (Part-I)-1988. Two circuits each with a fuse of approved type and suitable rating in the LT A.C. distribution board shall be provided for the two battery chargers in the Control Room.

The 240 V A.C. supply to Control Board from A.C. distribution board shall be provided by means of 2.5 sq.mm. 2- core PVC insulated PVC sheathed (heavy duty) copper cable complying with IS:1554(Part-I)-1988.

e) **Cables for blower fans- Deleted (NA).**

240 V A.C. supply to blower fans fixed on the Traction transformer shall be provided by means of 2 core 25 sq.mm. Aluminum conductor cables. The cables shall be PVC insulated, PVC sheathed and armored cables of 1100 V grade complying with IS:1554(Part-I)-1988. Separate cables shall be laid from the L.T. A.C. distribution board in the control room to marshalling box of each Traction Transformer. Individual circuits from the LT A.C. distribution board shall be provided for this purpose with each circuit protected by a fuse of suitable rating.

- f) The cable shall be resistant to decay, mechanical abrasion, acids, alkaline and othercorrosive materials.

- NOTE:** (i) In case of feeding stations which are located within the Traction Sub-station premises, the cables shall be run from individual equipment and terminated inside the Sub-station control room.
(ii) Notwithstanding the sizes of cables given above, the Tenderer shall assure himself that various cables would suit the ratings of equipments offered by him.

(g) **SPECIFICATION: Deleted (NA).**

The cables shall be resistant to decay, abrasion, acids, alkalies and other corrosive materials. All indoor wiring on walls shall be clamped neatly on teak wood battens fixed to the wall by means of wall plugs/wooden pegs. The cable run layout at a typical switching stations is shown in the relevant drawing already included in Annexure-1.

LITERATURE FOR EQUIPMENT: 2.4.24

The Contractor shall, within six months of issue of Letter of Acceptance of Tender, supply 5 copies of booklets containing manufacturer's instructions for operation and maintenance of each of the items of equipments the supply of which is, Herded by the contract. In addition, 25 copies of detailed schedule of components, catalogues and drawing of all parts of the equipment shall also be supplied.

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PART-II
CHAPTER -V
DESIGNS AND DRAWINGS

PART-II
CHAPTER -V
DESIGNS AND DRAWINGS

PARA NO.	SUBJECT
2.5.1	General
2.5.2	Contractor's Drawings
2.5.3	Standards for Drawings
2.5.4	Basic Designs
2.5.5	Special Designs
2.5.6	Particular Designs and working drawings for OHE
2.5.7	Particular Designs and working drawings for SWS & BT Stations
2.5.8	Booster and L.T. supply Transformer Stations drawing.
2.5.9	Schedule of Quantities
2.5.10	Submission of Drawings and schedules.
2.5.11	Completion drawings and schedules.
2.5.12	Addresses.

PART - II
DESIGNS AND DRAWINGS

GENERAL: 2.5.1

- (a) This chapter deals with the procedure for approval of designs and drawings.
- (b) Tenderer has to prepare the design and drawing as given in the explanatory note for the work of Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway. including feeder wire, AEC (Aerial Earth Conductor), BEC (Buried Earth Conductor), Double Pole Isolator and other assets after detailed survey. All the design and drawings shall conform to RDSO specifications & Instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system.
- (c) The type designs shall be as few as possible to cover the largest field of application consistent with economic consideration.
- (d) In all drawings as far as possible only such symbols as are in international use, shall be used.

CONTRACTOR'S DRAWINGS: 2.5.2

- (a) The Contractor shall submit to the Purchaser for approval except where otherwise specified below, all detailed designs and drawings which are necessary to ensure correct supply of equipments, components and materials and to enable correct and complete erection of Over head & feeder Equipment in an expeditious and economic manner.

(b) RESPONSIBILITY:

It is to be clearly understood that all original designs and drawings shall be based on a thorough study. General designs and dimensions shall be such that the Contractor is satisfied about the suitability of the designs for the purpose. The Purchaser's approval will be based on these considerations and notwithstanding the Purchaser's acceptance; the ultimate responsibility for the correct design and execution of the work shall rest with the Contractor in terms of the conditions of Contract.

STANDARDS FOR DRAWINGS: 2.5.3

All designs, legends notes on drawings and schedules of materials shall be in English and shall be prepared in the metric system. All designs and drawings shall for 2x25 KV High speed work as approved by RDSO/Railway Board.

BASIC DESIGNS: 2.5.4 (To be followed TI/IN/0042 with latest amendment, if any).

(a) STANDARD DESIGNS:

Where the Contractor adopts designs and drawings conforming to the standard designs, drawings, and specifications of the Research, Designs and Standards Organisation. Manak Nagar, Lucknow-226 011 (RDSO) for basic arrangements, equipments, components and fittings of Traction Over head & feeder Equipment and adopts employment schedules furnished by the Purchaser, he shall verify such designs, drawings and employment schedules and satisfy himself that these are correct before use. Within two months of

the issue of letter of Acceptance of Tender the contractor shall indicate to the Purchaser, the list of standard basic arrangements, components and fittings drawings and employment schedules, which he will adopt for the purpose of the work. The procedure outlined in para 1.2.23 shall be followed for approval of basic designs. The contractor for his use and reference shall obtain Ferro copy each of such standard basic arrangement, component and fittings drawings and employment schedules if available from CEE/project/NER or Sr. DEE/TRD/Office on payment as per the prescribed rates.

(b) DEVIATIONS:

Normally deviations from the standard drawings of the Purchaser will not be accepted. However, in exceptional cases where the Contractor desires to suggest improvements as a result of his experience or other development, he shall justify his proposals with supporting explanatory notes.

(c) STANDARD DRAWINGS EMPLOYMENT SCHEDULES ETC. (To be followed TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system):

SPECIAL DESIGNS: 2.5.5 (To be followed TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction system):

- (a) In cases where standard designs, drawings or employment schedules do not cover requirement of special locations or site conditions, the Contractor shall submit his own designs or drawings along with supporting calculations and notes for scrutiny and approval of the Purchaser.
- (b) Such special designs shall generally be in conformity with basic designs furnished by the Purchaser and in accordance with the specifications. If the Contractor wishes to adopt special designs which do not conform to the general basic designs of the Purchaser, he shall submit alternative designs and drawings justifying his proposals.

PARTICULAR DESIGNS & WORKING DRAWINGS: 2.5.6 (To be followed TI/IN/0042 with latest Amendment, if any for 2x25 kV Electric Traction system).

FOR OHE: 2.5.6.1

(a) PURCHASER'S PEGGING PLANS- DELETED (NA):

The pegging plans for sections to be equipped indicating the type of Over head & feeder Equipment, locations of masts and other general particulars prepared on the basis of the latest survey will be furnished by the Purchaser. The Contractor shall verify and check these plans at site.

(b) CONTRACTOR'S PEGGING PLANS:

If the Contractor is called upon to carryout survey and prepare Over head & feeder Equipment pegging plans, he shall submit such plans for approval after checking their feasibility as per site.

(c) PRINCIPLES OF LAYOUT:

The Contractor shall in all cases ensure that the final pegging plans are in conformity with the latest 'Principles of preparation and checking of OHE layout plans and sectioning diagram' issued by RDSO. However, old LOP of the said section shall be given by Railway to Contractor for preparation of New LOP for 2x25 kV system as per latest RDSO Instructions.

(d) PROVISIONAL LAYOUT PLANS:

The Contractor shall prepare and submit Over head & feeder Equipment layout plans incorporating the following in formations:-

- (i) The run of wires in different thickness or colour in special cases and termination.
- (ii) The run of wires for future wiring indicated to the Contractor, in dotted lines.
- (iii) Exact position of all cut-in-insulators, including Section Insulators.
- (iv) Direction and value of stagger at each Traction structure location.
- (v) Clearance of live conductors to Structures in the vicinity including bridges, signals gantries etc.
- (vi) Layout of Feeders.
- (vii) Jumper connections and connection to switches and switching stations.
- (viii) List of infringements.
- (ix) Kilometer numbers and type of Structures.
- (x) Location and numbers of switches.
- (xi) Schematic sectioning diagram drawn to convenient scale showing Section Insulator, number of switches, elementary sections and connections to switches and switching stations.
- (xii) Table giving references of approved profile drawings, feeder layout plans and other relevant drawings.

(e) OHE PROFILE DRAWINGS:

After completion of the Over head & feeder Equipment layout plans, the Contractor shall prepare an Over head & feeder Equipment profile drawings showing the actual height of the contact wire under each Over Line Structure the gradient and height of the contact wire on either side of the Structure and the encumbrances at Structures until normal height of contact wire and encumbrances are restored.

(f) CROSS SECTION DRAWINGS:

While the layout plans are being finalised, the Contractor shall submit for approval, in- so-far as yards between outer most points and crossing are concerned, cross-section drawings for each Structure showing guy rods, if any, indicating the cross-section of the formation, height and nature of soil, type of foundation block, structure proposed, reverse deflection of the Structure and all necessary particulars for erection of the foundation and the Structures. In the preparation of drawings, care shall be taken to show all obstructions such as signal wires, points rods and their correct location in references to track/tracks as well as underground obstructions like pipes cables, etc. after collecting such information from the site.

In open line sections, cross-sections shall be submitted in the following proforma, separately for each Railway line for special foundation drawings with all necessary details shall be submitted to the Purchaser. In case of side bearing foundation with extra depth, formation details at such location and necessary details of anchor foundation will be submitted.

CROSS SECTION FOR THE OPEN ROUTE SECTION -----Km. ----- to -----

SI. No.	1	2	3	4	5	6	7	8	9	10	11	12	13
	14	15											
LOCATION No.													
CHAINAGE													
SETTING DISTANCE IN 'm'													

STEP DISTANCE IN 'm'	
F.B.M. CODE	
SOIL TYPE & PRESSURE	
FOUNDATION TYPE AND SIZE	
MAST SIZE & LENGTH IN 'm'	
MAST EMBEDDED LENGTH 'M'	
REVERSE DEFLECTION in cm	
SUPER MAST LENGTH (m)	
CROSS ARM LENGTH (m)	
ANY OBSTRUCTION	

FINAL LAYOUT PLANS: (As per RDSO TI/IN/0042 with latest amendment, if any TI/IN/0042 with latest Amendment, if any for 2x25 kV Electric Traction system).

After all the cross section drawings in a section covered by the layout plan are finalised and foundations are cast, the Contractor shall revise the layout plans to take into account any modifications to the locations of Structures during the process of casting of foundations.

STRUCTURE ERECTION DRAWINGS: (As per RDSO TI/IN/0042 with latest amendment, if any TI/IN/0042 with latest Amendment, if any for 2x25 kV Electric Traction system).

The Contractors shall then submit Structure erection drawings for each structure incorporating all the details included in the cross section drawing for the structure and as erected at site and the details of the bracket assembly, mast extensions, isolator mounting frame and anchorage of Over head & feeder Equipment, feeder or Return Conductors proposed for each structure together with all particulars necessary for the correct erection of Over head & feeder Equipment at the structure. For structure with isolators, the details of electrical connections shall also be incorporated. In open line sections the Contractor shall submit structure erection particulars in the typical proforma as given below separately for each main line track in addition to particular details as indicated in the proforma for cross-section drawings.

Modification to this proforma is found necessary will be finalised at time of structure erection drawings.

Sl.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LOCATION No.															
CHAINAGE															
1. ENCUMBRANCE															
2. CONTACT WIRE HEIGHT.															
3. STAGGER i) CATENARY ii) CONTACT															
4. STAY ARM i) (a) ii) CODE															
5. BRACKET i) (b) M ii) CODE															
6. REGISTER : i) C/D (M) ii) CODE															
7. STD/BENT CODE															
8. IDENTIFICATION MARK (SEE PARA 2.5.11)															
OTHER REFERENCES/CODES FOR MISC. ITEMS LIKE STEEL WORK FOR STAY/BRACKET ATTACHMENT FOR SINGLE/DOUBLE CAT. ETC. WILL BE INDICATED ITEMS:-															

Tolerances to be adopted while Erection of Bracket Assembly, conducting SED checking & Tower Wagon checking:

Sl.No.	Item	Limits/Tolerances
(i)	Register Arm Tube Projection	150 - 200 mm in case of Push off locations. For Pull off locations, it shall project over Contact Wire Plane.
(ii)	Bracket Tube Projection	150 - 200 mm
(iii)	Dip between Register Arm Tube & Steady Arm	200 - 250 mm on Tangent Track. (BFB Steady Arm). 250 - 320 mm on Curves. (BFB Steady Arm & Bend Tubular Steady Arm).
(iv)	Encumbrance	± 50 mm
(v)	Length of 'A' Dropper (1 st Dropper from Support)	± 5 mm
(vi)	Spacing of 'A' Dropper (1 st Dropper from Support)	± 30 mm
(vii)	Length of Other Droppers	± 5 mm
(viii)	Spacing of Other Droppers	± 50 mm

(ix)	Stagger of Catenary Wire	± 30 mm
(x)	Height of Catenary Wire	± 50 mm
(xi)	Stagger of Contact Wire	± 10 mm
(xii)	Position of Compensation Plate	It shall be in vertical plane.
(xiii)	Difference between mainline Contact Wire and the Crossover Contact Wire at Support.	50 mm (minimum)

(j) SUB-STATION FEEDER DRAWINGS - Deleted.

NOTE: The proforma for SED at individual locations shall be as per standard proforma already circulated and to be adopted in consultation with Purchasers.

SCHEDULE OF QUANTITIES: 2.5.9

Within 02 months of issue of Letter of Acceptance of Tender, the Contractor shall assess the quantities of various items of work including various components and fittings as covered in Schedule 1 and submit Schedule 1 (Assess.1) along with the corresponding quantity of various fittings and components included in Schedule 3 for approval of the Purchaser. Such an assessment shall be revised at suitable intervals after the first assessment is approved till the work is completed. Such re-assessments denominated as Schedule 1 (Assess. 2) (Assess. 3) etc., shall also be submitted for approval of the purchaser.

On receipt of approval of each final layout plan from the Purchaser, the followings Schedules of quantities relating to each layout plan shall be submitted within a fortnight.

- i) Schedules of number of masts, types, weight of different masts and total weight of masts;
- ii) Schedules of number of foundation, types, volume of different foundations and total volume;
- iii) Schedule of quantities of various items of work other than masts and foundation under Schedule-1.
- iv) Schedule of net tension lengths of contact, catenary and feeder wires and lengths required to be ordered;
- v) Schedule of lengths of other wires and conductors required to be ordered;
- vi) Schedules of small parts steel work to be supplied; either by the Contractor or the Purchaser.

SUBMISSION OF DRAWINGS & SCHEDULES: 2.5.10

- (a) The submission of designs and drawings for approval shall be done in the manner indicated (See also para 1.2.23). In case Contractor wish to deviate from standard drawings he should submit to the purchaser revised drawings with full details of deviation sought explaining the necessity of deviation, calculations and other supporting documents. The purchaser, if satisfy about the necessity and adequacy of deviations, shall refer the matter to RDSO for necessary approval. In case of deviations on working drawings decision shall be communicated by the

purchaser to the Contractor. The numbers of copies of drawings which shall be submitted are indicated in the following sub-paras. The purchaser will return one copy of the drawings either with approval subject to modification where necessary or with comments. The purchaser shall endeavor to return this copy within a period of fifteen days from the date of receipt and shall normally return the copy within a month. Where drawings are returned with comments or approval subject to modifications, the Contractor shall submit to the purchaser within fifteen days of receipt of such advice revised drawings for approval taking into account the comments or modifications. Also the Contractor shall as far as possible avoid correspondence on such comments and shall endeavor to settle any difference of opinion on the comments by discussions with the purchaser's Engineers. No drawings shall be resubmitted without incorporating the modifications required by the comments of the purchaser, unless the purchaser has agreed to the deletion of such comments.

(b) DEVIATION FROM STANDARD DESIGN:

In case of deviation from standard designs and drawings, copies of correspondence and drawings shall be sent in duplicate to the CHIEF Electrical Engineer/Project/NER or his successor/nominee (whose address will be intimated in due course). In the particular case of deviations in the design of fittings the drawings submitted by the Contractor shall be actual manufacturing drawings complete with tolerances and full specifications of the materials used. In addition, four samples of the modified fittings shall also be submitted, after the drawings are approved (see para 1.2.23).

(c) SPECIAL DESIGNS:

Special designs to meet the requirement of particular locations and local conditions shall be submitted in due time in duplicate for approval.

(d) PURCHASER'S PEGGING PLANS- DELETED (NA):

Two copies of the purchaser's pegging plans shall be sent back after verification if found correct. If modifications are required, fresh pegging plans incorporating the modifications shall be submitted in two copies for approval (see para 2.5.6).

(e) CONTRACTOR'S PEGGING PLANS:

When the Contractor is called upon to survey and prepare pegging Plans, he shall send three copies of such plans, while submitting them for approval.

(f) CROSS-SECTION DRAWINGS:

Cross-section drawings shall be submitted for approval in two copies for a convenient section at a time separately for sections within station limits and section outside station limits. Such drawings shall be submitted progressively and as far as possible without gaps (see para 2.5.6).

(g) OHE LAYOUT PLANS AND PROFILE DRAWINGS:

Over head & feeder Equipment layout plans, provisional and final and profile drawings for 2x25 kV OHE shall be submitted for approval in three copies (See para 2.5.6).

(h) STRUCTURE ERECTION DRAWINGS:

Structure erection drawings shall be submitted for approval in two copies for a section at a time separately for sections within station limits and sections outside station limits, progressively and without gaps.

(j) SCHEDULE OF QUANTITIES:

Schedules of quantities for each approved layout plan/switching station shall be submitted for approval in two copies.

(k) SUB-SECTION FEEDER DRAWINGS- DELETED (NA):

- (l)** All drawings for switching stations, booster transformer stations and L. T. supply transformer stations shall be submitted for approval in three copies.

(m) DISTRIBUTION COPIES

On receipt of purchaser's unqualified approval to the Contractor's Drawings, Schedule of quantities, the Contractor shall submit original tracings of those drawings and schedules for the signature of the purchaser in token of approval within seven days of the receipt of approval and the purchaser shall as far as possible return the same to the Contractor within 7 working days thereafter. On receipt of these tracings from the purchaser, the Contractor shall submit copies for distribution to field officers and other departments as indicated below within 7 days of receipt of approved tracings:

- | | |
|---|-----------|
| i) Standard designs including fittings drawings as per para 2.5.10(b) | 8 copies |
| ii) Special designs | 8 copies |
| iii) Final pegging plans | 8 copies |
| iv) Structure Cross-section drawings | 6 copies |
| v) OHE layout plans | 14 copies |
| vi) OHE profile drawings | 8 copies |
| vii) Structure erection drawings | 8 copies |
| viii) Deleted. | |
| ix) Schedule of quantities | 6 copies |

In all the above cases, the Contractor has the option to supply only six copies of the approved drawings provided one of them is a transparent paper print.

COMPLETION DRAWINGS & SCHEDULES: 2.5.11

After completion of works, all drawings and designs submitted by the Contractor for 2x25 kV OHE & Feeder line and approved by the purchaser shall be made upto date incorporation actual supply and erection particulars including the name and make of insulators, galvanised steel tubes, stainless steel wire rope. The mark of conductors shall be specified in the "As erected" OHE layout plans, SED and other relevant drawings for identification. Such drawings and schedules shall then be verified and corrected, if necessary, by the Contractor jointly with the purchaser's representatives. The verified and corrected drawings shall be supplied in four sets, one of which shall be transparencies of linen or film reproduction or any other durable material approved by the purchaser. In addition, the contractor shall also supply the soft copy of approved drawings. The soft copy shall be in Auto Cad, Coral draw or any other similar format as mutually agreed between the contractor and the purchaser.

ADDRESSES: 2.5.12

Addresses to which designs and drawings should be submitted are indicated in part-III.

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PART - II
CHAPTER - VI

ERECTION AND INSTALLATION OF EQUIPMENT

PART - II
CHAPTER - VI
ERECTION AND INSTALLATION OF EQUIPMENT

Section-1: PRINCIPLES

PARA No.	SUBJECT
2.6.1	Scope
2.6.2	Method of erection
2.6.3	Sectioning
2.6.4	Inspection
2.6.5	Measurements
2.6.6	Bolts, nuts etc.
2.6.7	Damage to galvanizing, painting
2.6.8	Foundations
2.6.9	Masts and Structures
2.6.10	Over head & feeder Equipments
2.6.11	Isolators
2.6.12	Busbars and connections
2.6.13	Earthing
2.6.14	Tolerances
2.6.15	Supplementary Instructions
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Section - 2: WIRING PROCEDURE

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PART - II
CHAPTER - VI
ERECTION AND INSTALLATION OF EQUIPMENT
SECTION - 1: PRINCIPLES
SCOPE: 2.6.1 (As per RDSO TI/IN/0042 with latest amendment, if any).

This chapter deals with the methods of erection and installation of Traction equipment, including casting of foundations and erection of structures.

METHODS OF ERECTION: 2.6.2

All work shall be done in accordance with methods of erection and installation of equipment approved by the Purchaser.

SECTIONING: 2.6.3

The entire equipment shall be erected in accordance with the finally adopted sectioning diagram and in such a way so as to facilitate sectioning which may be required in future and which will be indicated by the purchaser.

INSPECTION: 2.6.4

All erection and installation work shall be subject to inspection by the purchaser to ensure that the work is done in accordance with the specification, approved designs and drawings and is of the best quality suitable for the purpose.

MEASUREMENTS: 2.6.5

All measurements for location of structures and foundations shall be made with the aid of steel tapes. On curves, these measurements shall be taken on the outer rail of the middle track in the case of odd number of tracks and on the inner rail of the first outer track from the centre of the formation in the case of an even number of tracks, structures on curves shall be located in the radial offset of the location as determined.

BOLTS, NUTS ETC.: 2.6.6

All bolts, nuts, locknuts, screws, locking plates & split cotter pins etc. shall be properly tightened and secured. Contractor shall carry out systematic inspection of this aspect of work after all adjustments to Over head & feeder Equipment/installation are completed and prior to offering completed sections of equipment/Sub-station to the purchaser for inspection and testing. No bolts may project more than 10mm beyond the nut/locknut after full tightening.

DAMAGE TO GALVANISING PAINTING: 2.6.7

In loading, transport and erection, all galvanized/ painted materials shall be handled with care to avoid damage to galvanising/painting. If galvanising/painting is damaged in spite of all care taken, the damaged part of component shall be put up for inspection, to obtain permission from the purchaser to carry out repairs as per para 2.4.11(c).

FOUNDATIONS: 2.6.8

- (a) The Contractor shall carry out soil pressure tests in accordance with methods approved by the purchaser to determine permissible bearing pressure of various representative types of soils in the presence of the purchaser's representative during the pegging out of site inspection. He shall adopt only those values as accepted by the purchaser for the design of foundations.

(b) LOCATION:

The location of each foundation or anchor block shall be set out correctly in accordance with approved structure cross-section drawings or foundations layout drawings, as the case may be, in the presence of the Purchaser's representative.

(c) METHOD OF INSTALLATION:

As per provision in Clause 10.3 of IS: 456/2000, only mechanical mixers are to be used for mixing of concrete required anywhere in RE works including concrete for OHE foundation.

In exceptional circumstances, such as mechanical breakdown of mixer, work in remote areas or power breakdown and when the quantity of concrete work is very small, hand mixing may be done with the specific prior permission of the Engineer in writing subject to adding 10% extra cement. When hand mixing is permitted, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the concrete is uniform in colour and consistency.

He may erect Traction masts or structures in the same operation as casting of foundations or erect them subsequently in cored holes left in foundation blocks and grout them separately **in line with clause 1.3.11(b)(iv)**. In any case, the method of casting of foundation blocks and erection of masts or structures shall be subject to the approval of the purchaser.

(d) EXCAVATION:

Normally, excavation of soil for foundations or anchor blocks alongside the tracks may be done upto length of 1 to 1.2 m and depth of 0.8 to 1 m without shoring, provided the excavated hole is concreted immediately and not left overnight. Shoring shall otherwise be done unless the hole is re-filled with soil and temped. In case the length of excavation is 1 to 1.2 m and depth of excavation for foundations and anchor blocks alongside the tracks is more than 0.8 to 1 m, the excavation may be undertaken only after certification by the purchaser's representative to be safe and concrete is cast on the same day. Shoring shall be done to the satisfaction of the purchaser's representative, if the excavated hole is left overnight. All water logged locations will come under the purview of this para. In poor soil or ash banks, no excavation shall be done without adequate shoring and piling. For large foundations and water logged locations shoring shall be done in accordance with drawings submitted by the Contractor and approved by the purchaser. Shoring/ shuttering of the pits should be provided effectively to the satisfaction of the purchaser. Core hole covers should be provided promptly on casting of foundation (within 48 hours) and their edges cemented to the foundation blocks. Prior to doing so, water should be filled in the core hole so as to assist in curing. The date of casting should be inscribed on the foundation block. In case of platform areas and Level crossings, the core holes should be filled with sand before provision of core hole covers so as to prevent any injury to rail users even if the core hole cover gets damaged or is displaced. The track ballast should be restored to its original from promptly after casting of the foundation block. The excavated earth should be removed well clear of the area so as to avoid any mixing up with the track ballast or any obstruction to the track drains. In case of cuttings, the earth should be thrown well away from the shoulders so that there is no risk of its flowing back to the drain during the rains.

(e) CONCRETING:

All concreting or grouting shall be done in accordance with para 2.2.4 with ballast graded for the purpose specified in para 2.2.5. The concrete shall be poured and temped properly in accordance with the method approved by the

purchaser. The Contractor shall arrange to provide concrete testing samples for tests once every week or as and when required by the Purchaser, to determine crushing strength after 7 days or 28 days curing as required. Testing shall be arranged by the Purchaser at his own cost.

(f) MUFFS:

(i) FOR OHE:

All anchor blocks and foundations of structures carrying Over head & feeder Equipment shall be provided with concrete muffs. The top of these muffs shall be above the level of ground of the track formation and of adequate height of not less than 15 cm to afford reasonable protection during rainy weather. Muffs may be installed at the same time masts are grouted or after the mast/structure is loaded with equipment. The foundations of structures for switching stations need not, however, be provided with muffs. The top of such foundations shall be given a slope of 1 in 50 towards the edge to ensure that water does not collect at the base of the structure of the frame work of the equipment.

(ii) FOR Foundation Level of TSS: DELETED (NA).

MASTS AND STRUCTURES: 2.6.9

(a) ERECTION:

In case Traction masts or structures are erected in cored foundations, till such time they are grouted, they shall be properly wedged to prevent them leaning towards the track and endanger safety of moving vehicles. In case Traction masts or structures are erected simultaneously with the casting of the foundations, the Contractor shall provide suitable temporary supports approved by the Purchaser. The masts/structure shall be embedded in the foundation blocks for the correct length specified in approved drawings.

NOTE: Mast/uprights should be grouted on the same day they are dropped in the foundations.

(b) REVERSE DEFLECTION:

All Traction masts and structures shall be erected with the correct reverse deflection so that they become reasonably vertical after they are loaded. The method of erection of masts with the correct reverse deflection shall be submitted to the Purchaser for approval.

(c) INFRINGEMENT TO STANDARD DIMENSIONS:

In erection, care shall be taken to ensure that no part of the Traction mast, structure or any fitting located on such mast or structure infringe the Schedule of Dimensions mentioned in Para - 2.1.1 (c) "Indian Railways Schedule of Dimensions".

(d) ALINGMENT OF MAST AT GANTRIES:

The main masts of gantries shall be carefully aligned to enable easy and good assembly of fabricated steel work.

OVER HEAD & FEEDER EQUIPMENT: 2.6.10

- (a) A suggested method for erection of Traction Over head & feeder Equipment which would ensure good speed and quality erection is included in section 2 of this chapter. The Contractor may, however, follow other methods which they consider would speed up and ensure good quality work, subject to the approval of the Purchaser. Any wiring method should take into consideration appreciable stretch of the catenary and contact wires in the initial days after they are strung and put under tension.

(b) **BRACKET TUBES:**

In the erection of bracket assemblies, it shall be ensured that the free length of the bracket tube beyond the catenary suspension bracket is at least 200mm to facilitate adjustment during maintenance.

(c) **STAY ARMS:**

The choice of stay arms shall be such that their adjusters are capable of adjustments of minimum of 90 mm in either direction except as otherwise relaxed.

(d) **INSULATORS:**

Before insulators are used in bracket assemblies or dispatched to work site for erection from Contractor's Stores Depot, they shall be tested as specified for routine mechanical test. NO chipped or cracked insulators shall be installed. All insulators shall be cleaned before offering complete sections of equipment for inspection and testing. For testing of all types of Insulators, RDSO's Guidelines No. TI/MI/0011 (05/01) Rev.1 & TI/MI/ 0042 (12/2008) Rev. 0 or latest are to be followed.

(e) **STRINGING CATENARY:**

Care shall be taken to avoid kinking or bird caging of the catenary wire in stringing and subsequent operations. While stringing the wire shall be suspended from pulley blocks hung from the suspension clamp eye of bracket assemblies. The pulleys shall be fitted with ball bearing and shall be of the swiveling type to permit free movement in all directions to prevent damage to the strands of the wire. The design shall also be such that it will prevent slipping off of the wire during stringing operations. The designs of the pulley shall be submitted to the Purchaser for approval. After initial stringing of the catenary, it shall be maintained at the 'no load tension' (see section 2 of this chapter) for a minimum duration of 48 hours before the pulley blocks are removed and the catenary is clamped to suspension clamps of bracket assemblies. Shorter periods may, however, be allowed by the Purchaser.

(f) **STRINGING CONTACT WIRE:**

Care shall be taken to avoid formation of kinks, twists and damage to contact wire in stringing and subsequent operations. While stringing the contact wire, it shall be suspended from pulleys hung from droppers fitted to the catenary in their final position. In curves, the contact wire shall be run in pulleys located at Traction masts or supports, corresponding to the approximate final position of the wire.

(g) **LOCATION OF DROPPERS:**

Droppers shall be correctly positioned in each span to ensure correct level of contact wire as per dropper chart applicable to the span.

(h) **CLIPPING DROPPERS:**

The dropper shall be clipped on the contact wire only after a minimum duration of 48 hours from the time the automatic tensioning device is brought into action. Shorter periods may, however, be allowed by the Purchaser.

(i) -NIL-.

(j) AUTO TENSIONING DEVICE (As per RDSO TI/IN/0042 with latest amendment. if any):

The auto-tensioning device shall be erected with the correct height of the counter-weight above rail level with corresponding distance between the pulleys of the device for a temperature of 35° C before it is connected to the Over head & feeder Equipment and put into action. The installation of the device shall be such as to permit free, easy and unobstructed movement of counter-weight. RDSO's Guidelines No.TI/MI/0035 (09/01) Rev. 1 shall be followed at crossovers and short tension length ATDs.

(k) CUT-IN-INSULATORS:

All insulators in out of run shall be so positioned that they are away from the sweptzone of the pantographs and will not foul with them. The live parts of these insulators shall also be so located that they are at least 2 m away from Structures other than those supporting Traction Over head & feeder Equipment.

(l) SECTION INSULATORS:

All section, insulators shall be so located that they are beyond the swept zone of the pantograph running on adjacent tracks and there is no unusual sag due to the same.

Where Section Insulators are installed, the contact plane of the runners of the insulators as well as those of Over head & feeder Equipment connected to it shall be parallel to the track plane.

(m) ANTI -WIND CLAMP:

Anti-wind clamp shall be provided as shown in drawing (Annexure-1).

(n) CONNECTIONS:

All jumper connections including anti-theft jumpers shall be made properly with parallel clamps and finished neatly without any loose wire or cables. The length of flexiblejumpers shall be adequate to avoid any disturbance to Over head & feeder Equipment or restraint in the relative movement of conductors, but the jumpers should not be excessively long. The ends of jumpers shall be tinned, including the portion inside the first parallel clamp.

(o) SEPARATION BETWEEN OHE:

In erection, the physical separation required between Over head & feeder Equipments and bracket assemblies on the same Structure at insulated overlaps shall be ensured.

(p) GRADIENT OF CONTACT WIRE:

The gradient of the contact wire on either side of Over Line Structures with restricted clearances shall be correctly adjusted and adequate clearance maintained between the Over Line Structure and live equipment.

(q) ADJUSTMENT AT TURN-OUTS ETC.:

Careful adjustment of equipment shall be made on equipments at Turnouts, cross overs, diamond crossings, overlaps and special Locations, for position of bracket assemblies, stay arms and height of contact wire to ensure that pantographs of electric rolling stock on the run will not foul with any parts of the bracket assemblies and change over of the contact wire is effected smoothly.

- (r)** For wiring in large Yards, the Contractor shall, prior to the execution of works, submit to the Purchaser's Engineer for the approval the sequence of stringing of catenary and contact wires to arrange for proper crossing of wires. Endeavor will be made to arrange for traffic blocks to suit approved sequence of wiring.

(k) ISOLATORS: 2.6.11 (As per RDSO TI/IN/0042 with latest amendment, if any for upgradation into 2x25kV system).

Isolator switches shall normally be so mounted that when the switches are operated, the operator faces the directions of the motion of trains. The operating handles and contact blades shall be correctly aligned for easy operation.

BUS BARS AND CONNECTIONS: 2.6.12

- a) The bus-bar connections on the incoming side, shall be as tight as possible, all similar connections in adjacent bays being uniformly shaped and bent to give a good appearance. The tubular Aluminium bus-bars shall be supported at a uniform height throughout. Wherever tubular bus-bars are required to be bent, the radius of the bend shall not be less than 375 mm.
- b) All Aluminium bus-bar joints shall be made carefully. The contact surfaces of the bus-bars and the connectors shall be cleaned vigorously either by hand with a dry coarse emery cloth or by power driven wire wheel brush. The surfaces shall be smeared with a suitable corrosion inhibiting joint compound approved by the Purchaser. The joint closed-up as soon as possible thereafter and a final light application of joint compound shall be made. Similar procedure shall be followed while connecting the equipment terminals to be bus-bar by means of bi-metallic connectors.

EARTHING: 2.6.13

FOR OHE: (AEC & BEC to be provided as per TI/IN/0042 with latest amendment, if any for upgradation into 2x25kV system).

The copper earth strips or MS flats used for earthing shall be bent and shaped neatly before connection to the structure or frame work of equipment. The connection of MS flats to steel work shall be made at a height not exceeding 15 cm from the datum level of a switching station. Before making earth connections the ends shall be cleaned thoroughly and tinned for copper strips. All junctions shall be properly secured to avoid loose contact. Portions of copper earth strips which remain visible above the ground level should be painted with suitable paint to make them inconspicuous.

FOR TSS: Deleted (NA).

Typical clamping arrangement of M.S Flat inside Control Room is shown in the

relevant drawing in Annexure-1. The joints on mild steel flats shall be welded type. The welds shall be treated with barium chromate before painting the welded surfaces. The connections to the various items of equipments shall be made with galvanised steel bolts (16mm dia), nuts with locknuts or spring washers as required. The earth connections to the structural members shall be made at height not exceeding 150 mm from the ground level. The steel flats shall be bent and shaped neatly before connection to the structures or frame work of equipment. The earth flats to run along the structures for connections of equipments to earth mat shall be properly supported on the structures with galvanised steel bolts (12mm dia), nuts with lock- nuts or spring washers, as required, at suitable intervals.

TOLERANCE: 2.6.14

The permissible tolerance in dimensions for erections from those included in the appropriate drawings or schedules for different items are given below :-

(a) MEASUREMENTS:

The span length shall not vary more than ± 50 mm as measured along the appropriate rail (see para 2.6.5).

The cumulative error of measurement of all spans in a kilometer shall be not more than 1000 mm.

(b) SETTING OF STRUCTURES:

The setting of structures shall be not less than that included in the appropriate cross section drawings, especially those with the minimum setting of 2.36m. A tolerance of ± 20 mm will be permitted subject to minimum specified value after approval of PCEE, if the structure is not located in between tracks.

(c) HEIGHT OF CONTACT WIRE:

± 20 mm will be permitted on the height of contact wire at points of supports as shown in the relevant structure erection drawings, except under over line structures where no tolerance will be permitted.

(d) STAGGER : Generally ± 200 mm will be permitted for stagger.

(e) DROPPER LENGTHS : ± 5 mm will be permitted for dropper lengths.

(f) DROPPER LOCATION : ± 100 mm will be permitted for dropper locations.

SUPPLEMENTARY INSTRUCTIONS: 2.6.15

Further working instructions will be issued if considered necessary by the Purchaser should be considered that the standard of work of the Contractor requires to be improved.

EQUIPMENT: 2.6.16- DELETED (NA)

The installation of the equipment shall be carried out strictly in accordance with the instructions issued by the Manufacturer. The equipment shall be leveled carefully before being fixed finally in position. The bushings of insulators shall be protected adequately during erection of equipment to avoid chipping or damage to the porcelain. The following methods shall be adopted for mounting the various equipments.

CABLING: 2.6.17 –DELETED (NA).

a) Laying of cables:

All PVC cables provided out-door shall be either laid in trenches or neatly clamped to the structures as approved by the Purchaser. If it becomes necessary to take the cable connections along the steel supports for the equipment, the cables shall be laid through bent or shaped G.I. pipes embedded in concrete while the foundations are being cast. All cables in the cable trenches and along the structures shall be neatly secured with proper clamping arrangement at suitable intervals. Each cable in the cable trench/on the structure shall also be provided at suitable intervals with identification labels of durable material bearing indelible engraved or punched markings to facilitate easy identification.

b) Termination of cables:

The cables shall be terminated neatly and the cores arranged and dressed properly. Suitable terminal strips and ferrules made of PVC or other durable materials shall be provided on terminals and wire ends respectively to facilitate identification. The marking on the terminal strips and ferrules shall be either engraved or punched so as to be indelible.

c) Indoor wiring:

As far as possible all cables shall be laid in the trenches/ pipes provided for the purpose in the Control Room. Wherever necessary indoor wiring on walls shall be clamped neatly on teak wood battens/M.S flats fixed to the wall by means of rag bolts grouted in the wall. The typical clamping arrangement is shown in the relevant drawing in Annexure-1.

SECTION 2: WIRING PROCEDURE

WIRING PROCEDURE: 2.6.20 (TO BE AS PER RDSO INSTRUCTION TI/IN/0042 with latest amendment, if any).

This sections deals with wiring procedure which may be adopted for erections of normal Over head & feeder Equipment.

The following procedure for erection of Over head & feeder Equipment has been formulated with a view to ensure that

- (i) Bracket assemblies (brackets) and regulating equipment are correctly installed in their final position.
- (ii) The conductors are correctly tensioned, and
- (iii) The need for final adjustments of Over head & feeder Equipment immediately before energisation and commissioning is virtually eliminated.

GENERAL: 2.6.21

In the case of regulated Over head & feeder Equipment when the regulating equipments are in action, the tension in the conductors should remain constant, irrespective of variations in the ambient temperature. As the regulating equipments are brought into action a few days after the stringing of conductors the equipments is unregulated in the intervening period. Any of the following two procedure may be followed for tensioning and clamping of conductors of regulated Over head & feeder Equipment during stringing operations, i.e. before the regulating equipments are brought into action.

(i) The catenary is tensioned to 1000/1200 kgf, the stipulated tension at the mean temperature of 35° C, whatever may be the ambient temperature during the stringing operations. In this case, at the time of clamping the catenary to the bracket, the brackets should be placed at angular positions corresponding to temperature at the time of clamping, and proportionate to their distance from the anti-creep.

(ii) The aluminum alloy catenary is tensioned at the calculated tension to correspond to 1000/1200 kgf, the stipulated tension at the mean temperature of 35°C whatever may be the ambient temperature during the stringing operations.

iii) The catenary is strained to a stringing tension corresponding to the ambient temperature for the equipment span of the tension length. In this case, the brackets are placed in the mean position, i.e. at right angles to the track, when the catenary is clamped or the regulating equipment commissioned.

The advantage of the second method is that once the catenary is strung at the proper tension, there would be no necessity to adjust each bracket separately at the time of clamping the catenary or commissioning the regulating equipment. The erection work is, thus considerably simplified and the possibility of errors greatly reduced. This is also applicable to erection of unregulated Over head & feeder Equipment.

ERECTION OF BRACKETS: 2.6.22

After the brackets are fabricated correctly in the Contractor's Depot, in accordance with the approved structure erection drawings, and provided with indelible labels or/painted marking indicating the intended locations for each bracket, they are removed to the site of work and erected on Traction masts or supports. The brackets are swiveled to a position at the right angles to the track and secured in that position by means of steel wires tied to similar brackets located on the opposite side of the track or other suitable means.

ANTICREEP: 2.6.23

The anti-creep of the tension length is then installed in its final positions.

LOCKING THE REGULATING EQUIPMENT: 2.6.24

In the case of regulated Over head & feeder Equipment, the regulating equipments are erected on the terminal masts or structures and their movement locked by suitable means in the middle position, with the distance between the pulleys of the regulating equipment corresponding to 35 degree centigrade.

TEMPORARY ARRANGEMENT: 2.6.25

A pulley approximately 30 cm. dia. is attached to the Over head & feeder Equipment and of the regulating equipment by means of temporary accommodation fittings at both ends of the tension length to be wired. Over this pulley a flexible stranded wire is passed over. At each end of the wire two ending clamps, one for catenary and one contact wire, are attached. The wire is also clipped in the middle by 'U' clamps. The length of this temporary arrangement from the regulating equipment to the extremities of the stranded wire passing over the temporary pulley shall be a little longer than the distance between the regulating equipment and the ends of the catenary and contact wires in their final position, to permit easy clamping of terminal fittings during the final termination of the wire.

STRINGING CATENARY: 2.6.26

The catenary is initially terminated in the ending clamp of the temporary arrangement at one end of the tension length. The catenary is then paid out from the reel of the wiring train and run on pulley blocks hung from the suspension clamp eyes of brackets until the terminating point at the other end of the tension length is reached.

TENSIONING OF CATENARY: 2.6.27

The catenary is strained up to the 'Stringing tension' corresponding to the 'equivalent' span of the tension length and the ambient temperature at the time of stringing with the aid of a dynamometer, and terminated at the tension. For this purpose, the ambient temperature shall be deemed to be the temperature registered by a thermometer tied to a length of catenary wire 3 to 4 meters long, laid flat on the top platform, on one of the wagons of the wiring train. Subsequently, the tension in the wire is checked by measurement of sag with the help of leveling the attached to suspension points and to the catenary at midspan by a ladder working party. The sag shall be measured in two spans, each preferably greater than 54 meters, and situated on either side of anti-creep approximately midway between the anti-creep and the termination points. The value of sag measured by this method should be within $\pm 5\%$ of the theoretical value for the corresponding stringing tension, and the temperature at the time of this measurement. In case the

discrepancy is more, the tension should be adjusted again and sag re-checked as above (see note 1). After the sag is checked the catenary is terminated at the ending fitting of the temporary arrangement at the terminating point. In order to restrict the duration of traffic blocks to the minimum, into first block, the catenary is strained to the stringing tension with the aid of dynamometers and the catenary is terminated. In a subsequent block, the sag is checked and the tension readjusted with ladders, if necessary.

CLAMPING THE CATENARY: 2.6.28

The catenary is clamped on the brackets placed at right angles to the track " See Note 2 under Para 2.6.34).

DROPPERING: 2.6.29

Droppers are fitted to the catenary at the correct locations. At the contact wire ends these droppers may be provided with small pulleys or hooks to act as temporary supports when the contact wire is strung.

Hooks made of scrap contact wire, suspended from the catenary Wire, may also be used as temporary supports.

STRINGING CONTACT WIRE: 2.6.30

The contact wire is initially terminated in the contact wire ending clamp of the temporary arrangement at one end of the tension length. The wire is then paid out from the reel wagon of the wiring train and supported on the pulleys hung from droppers or on hooks until the terminating point at the other end of the tension length is reached (See Note 3). In curves, the contact wire shall be registered on pulleys located at Traction masts or supports corresponding to the approximate final position of the wire. The axes of these pulleys should be more or less vertical.

TENSIONING OF CONTACT WIRE: 2.6.31 .

The contact wire is strained to a tension as per RDSO TI/IN/0042 with latest amendment, if any corresponding to the ambient temperature and terminated in the ending clamp of the temporary arrangement.

REGULATING EQUIPMENT IN ACTION: 2.6.32

The regulating equipment is put into action with the counter weight at the correct height above rail level and with distance between pulleys or the regulating equipment corresponding to a temperature of 35°C. The regulating equipment is then released and brought into action. The 'U' clamp connecting the flexible stranded wire passing round the temporary pulley is also removed.

FINAL ADJUSTMENT: 2.6.33 (As per RDSO TI/IN/0042 with latest amendment, if any).

The entire installation is left in this condition as long as it is possible, preferably for a period not less than 15 days (See Note 4). The temporary pulleys are removed and the conductors terminated in the permanent ending fittings, compensating plates, insulators and turn buckles (See Note 5). The equalizer plate is kept vertical or at a slightly inclined position (by 2 or 3 cm the contact wire being shorter than the catenary) and the position of the regulating equipment is checked in relation to, the temperature at the time. The contact wire is clipped on to the droppers (in the vertical position) and on the steady arms. Contact wire height at the bracket is adjusted as also the stagger and register arm clearance.

CONCLUDING REMARKS: 2.6.34

If the above method is followed with care no further adjustment may be needed.

NOTE:

(1) It should be ensured that sagging is done carefully and accurately. The adjustment of tension in the catenary after checking of sag, if required, would be easy if a temporary, turn buckle is inserted in the temporary termination.

The use of leveling lathes is recommended for the following reasons:

- (i) The accuracy of adjustment is greater than that with a dynamometer.
 - (ii) No traffic block is required for this operation.
 - (iii) It obviates the necessity initial tensioning of the catenary accurately thus permitting a deduction in the period of traffic block required for the wiring train.
- (2) If feasible, without any hindrance to progress of works, the catenary may be maintained at stringing tension for a period of 48 hours before checking sag and clamping it to the brackets. This would ensure equalisation of tension in the different spans.

Before clamping the catenary to the brackets, the sag should however, be checked in two spans as indicated in Para 2.6.27.

- (3) If it is difficult to obtain a separate traffic block for stringing contact wire, the wire may be paid out at the same time, as the catenary, with the following precaution.
- (i) The contact wire is run and suspended from independent pulleys hooked on to the brackets, separately from the catenary pulleys, to avoid twisting together of the two conductors a special hook designed for this purpose.
 - (ii) The contact wire should not be suspended from the catenary until the latter is clamped on to the brackets.
 - (iii) The tension in the contact wire before termination should be about 1,500 kgf. This will ensure that sag is not excessive.

(iv) The adjustment of tension and checking of sag of the catenary wire is carried out as if the contact wire had not been strung. Only after adjustment of tension and checking of sag is completed, the contact wire is transferred to the pulleys attached to the droppers or to hooks suspended from the catenary and the tension is adjusted as indicated in Para 2.6.31.

(4) When the contact wire is under tension, creep takes place which results in a increase in the length of wire and, consequently, the droppers and the equaliser plates would become oblique.

Though creep may continue for a long time, about a year, the bulk of it would occur during the days following stringing. If sufficient period of time is allowed the contact wire may be clipped to the droppers and the equaliser plates, all in the vertical position, and the necessity for any further adjustments before energisation and commissioning of the OHE may be reduced to a great extent. If this precaution is not taken, at the time of energisation of the OHE, the droppers may not all be vertical and staff would have to be detailed for shifting the dropper clips which is attendant with risk of damage to the contact wire.

(5) Before the temporary arrangement is removed a reference mark should be made on each conductor. After final termination of the conductors, It should be ensure that two marks are in the same relative longitudinal position as they were before the removal of the temporary arrangement.

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PART - II
CHAPTER-VII

INSPECTION AND TESTING

PART - II

CHAPTER - VII

INSPECTION AND TESTING

PARA NO.	Subject
2.7.1	Scope
2.7.2	Overall performance.
2.7.3	Responsibility.
2.7.4	Tests on Over head & feeder Equipment.
2.7.5	Inspection and testing of switching stations etc.
2.7.6	Earthing.
2.7.7	Detailed procedure for tests.

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PART - II
CHAPTER - VII
INSPECTIONS AND TESTING

SCOPE: 2.7.1

This chapter deals with the inspection and testing of completely erected Over head & feeder Equipment, switching stations, booster transformer stations, L.T. supply transformer stations and Traction Sub-station as provided in Part -I.

OVERALL PERFORMANCE: 2.7.2

The overall performance of the Over head & feeder Equipment should be such as would permit collection of current by electric rolling stock with full load at speeds, upto and including the maximum specified for the design of Over head & feeder Equipment, smoothly, without mechanical shocks or prejudicial sparks (See para 2.1.10) and without undue heating in the case of other equipments.

RESPONSIBILITY: 2.7.3

The general tests of overall performance stipulated below are only supplementary to other tests on structures, foundations, equipment, components and fittings as specified in Part - II, Chapter - II, III and IV. Any testing and acceptance by the Purchaser of overall performance shall be subject to the general terms of guarantee which shall continue to be valid as provided for in Part - I, Chapter - II.

TESTS OF OHE: 2.7.4

(a) GENERAL:

As soon as a section is ready for inspection and testing, the Contractor shall advise the Purchaser in writing. Tests to be carried out by the Purchaser will be done in the presence of the Contractor's representative and shall include the following apart from other reasonable tests that the Purchaser may like to conduct with a view to ensure, himself of the soundness of the equipments and their erection in strict compliance with the specifications.

(b) INSULATION:

The strength of the insulation and the dielectric strength of the entire equipment as installed shall be tested with a 2500V Megger.

(c) CONTINUITY:

The electrical continuity of the line and the existence of bad Contacts, if any, will be tested with a Megger.

(d) ELECTRICAL INDEPENDENCE:

The electrical independence of individual elementary sections in relation to one another shall also be tested with a Megger.

(e) SWITCHES:

All isolators shall be tested for smooth and trouble free operation.

(f) TENSION DEVICES:

All automatic Tensioning devices installed shall be tested for sensitive functioning and adjustment.

(g) STAGGER AND HEIGHT

The stagger and height of contact wire over the entire section of completed Over head & feeder Equipment and the clearances available shall be measured and the measurement shall be checked against approved drawings. These measurements shall be carried out at low speed with a vehicle or device to be arranged by the Purchaser, the movement of which will follow the track levels as closely as possible. Tolerance that will be permitted on the dimensions indicated in the approved drawings are shown in Part - II, Chapter - VI.

The actual position of the two contact wires, relative to each other, at overlaps and turnouts shall also be checked. Special attention shall be paid to a smooth movement of Pantographs over Section Insulators, particularly those which are likely to be frequently traversed.

(h) MECHANICAL BEHAVIOR

The mechanical behavior of the entire equipment shall be tested at various speeds under normal pantographs pressure without energising the Over head & feeder Equipment.

(i) ENERGISING

If the Over head & feeder Equipment, after being subjected to the above tests in an un- energised condition, is found to be satisfactory, it will be energised with the normal 25 KV A.C. supply.

- (j)** Tests shall then be conducted to check if the power collection performance of the Over head & feeder Equipment is satisfactory after ensuring that the contact wire is adequately clean. For this purpose, an observation car shall be attached next to the electric locomotive. The behavior of the Over head & feeder Equipment will be watched at various speeds. Power collection shall be considered unsatisfactory if a long blue flash is observed, indicating that the contact between the contact wire and the pantograph is not continuous.

INSPECTION AND TESTING OF SWITCHING STATIONS ETC.: 2.7.5 -DELETED- NOT APPLICABLE.

(a) GENERAL:

As soon as a switching station, booster transformer station or LT supply transformer station and Traction Sub-station is ready for inspection and testing, the Contractor shall advise the Purchaser in writing. Testing will be carried out by the Purchaser at his cost jointly with the Contractor. These shall include the tests which the Purchaser may like to conduct with a view to assure himself of the soundness of the equipments and their erection in compliance with these specification. However, testing equipments such as those indicated below and staff required for the tests shall be provided by the Contractor free of charge.

- (i) Oil testing equipment.
- (ii) 5000V/2500 V & 500 V meggers.
- (iii) Earth megger and accessories.
- (iv) Continuity test apparatus.

- (v) Avometer
- (vi) Relay testing kit.
- (vii) Primary injection test set.

The Contractor shall take full responsibility for these tests inter-alia his other responsibilities.

(b) VISUAL INSPECTION:

Visual inspection which shall include check for satisfactory workmanship shall cover all connections, Painting, Plastering, Cleanliness of all insulators etc. and compliance with Indian Electricity Rules.

(c) OPERATIONS TEST:

This tests will be conducted on every individual items of equipment such as interrupters, isolators, relays etc. to ensure that the equipment as a whole is functioning properly and is mechanically sound, i.e. in the particular case of isolators the fixed contact and knife blade have been correctly aligned and operations does not cause undue strain on the equipment. The operation tests will be carried out with the high tension installation dis-connected from the supply, but by actuating power devices where such are provided. Continuity test of high tension connections after setting such interrupter and isolator in their respective positions shall also be conducted as part of the operation test.

(d) INSULATION:

The strength of insulation of the various items of equipment and of the entire installation as a whole shall be tested with a 5000V/2500 V/500 V megger, as required.

(e) DI-ELECTRIC STRENGTH OF OIL:

The di-electric strength of the oil of the Instrument Transformers (except if they are of sealed construction), Booster transformer Circuit Breaker & LT supply transformer, at each station shall be tested before commissioning in accordance with IS:335 (Latest version as indicated in Annexure-1) should this be found not correct, the Contractor shall arrange at his own expenses to have it rectified.

(f) ISOLATORS:

All isolators will be tested for smooth and trouble free operation. Correct function-ing of interlocking device shall be checked.

(g) INTERRUPTORS:

Operation of trip and close coils for interrupters shall be tested for satisfactory performance with the respective equipments de-energised.

(h) Instrument Transformer:

Tests shall be conducted to check the polarity of current and potential transformers.

(i) Ammeter and Voltmeter:

The Calibration of ammeters and voltmeters provided on the control board shall be checked.

(j) Protective Relays:

The Contractor, shall arrange for all protective relays to be tested and calibrated in a recognised test laboratory at his own cost, just prior to installation on the control board, and shall submit six copies of the test certificates to the Purchaser.

(k) Primary & Secondary Injection tests:

Operation of all protective relays, auxiliary relays and trip and close coils for circuit breakers shall be tested for satisfactory performance with the respective equipments de-energised. Correct functioning of all electrical interlocks inter- tripping etc. shall also be checked during these tests.

(l) Performance tests:

To verify the performance of the complete capacitor bank, tests as specified in respective clause of RDSO specification No. TI/SPC/PSI/FC & SR/0100 (01/2010) shall be carried out at site after installation.

EARTHING: 2.7.6

- (a) Earth wires will be checked for continuity and electrical isolation every 1000 m approx.
- (b) Clearances between earth wires and out-of-run wires of Over head & feeder Equipment and signals shall be checked.
- (c) Earth resistance shall be measured separately for each earth electrode. In the case of interconnected earth electrodes, the net resistance of the interconnected electrodes shall also be measured.
- (d) Earth resistance will be measured separately for each earth electrode and when they are connected together and to the equipment at each Sub-station, feeding station and shunt capacitor bank.

DETAILS PROCEDURE FOR TESTS: 2.7.7

The detailed procedure for inspection and testing will be furnished to the contractor. The contractor shall submit the results of tests in the proforma which will be furnished by the Purchaser, in quadruplicate.

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PART - II
CHAPTER - VIII

SWITCHING STATION BUILDING

-(DELETED)-(NA)

PART – III

PARTICULAR SPECIFICATIONS

PART - III

PARTICULAR SPECIFICATIONS

Para No.	Subject	
3.1	Introduction	
3.2	Location	
3.3	Tracks to be wired	
3.4	General particulars	
3.5	Climatic Conditions	
3.6	Rolling stock	
3.7	Over dimensional consignments	
3.8	Power supply	
3.9	L.T. Supply Transformer Stations	
3.10	Type of OHE	
3.11	Return Conductors	
3.12	Pegging plans	
3.13	Traction Sub-stations Feeders	
3.14	Track circuits	
3.15	Labour and materials	
3.16	Contractor's office	
3.17	Contractor's depot and work trains	
3.18	Duration of traffic blocks	
3.19	Remote Control Centre	
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3.21	Quantities	
3.22	Technical Data for Design of Protection	Scheme

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PART - III
PARTICULAR SPECIFICATIONS

INTRODUCTION: 3.1

- (a) This part of the specification is complementary to Part-II of tender papers.
- (b) The work include for Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway.. The work shall be carried out as per RDSO instruction No. TI/IN/0042 with latest amendment, if any to suit 2x25 kV Electric Traction System.

LOCATION: 3.2

This section is located in between UTR-MWP section of Lucknow Jn. Division of Northern Railway(184 RKM/368 TKM).

- All the section is in BG Section.

TRACKS TO BE WIRED: 3.3

- (a) The route and track length of the section to be equipped with 2x25 KV Electric Traction System on existing 1x25 KV OHE are as under :

Section	Railway / Division	RKM	TKM
UTR-MWP section	Northern Railway/ Lucknow division	184	368

- (b) The schematic electrical sectioning of the tracks is wired as indicated in the sectioning diagram, which will be given to successful Tenderer by CEE/PROJECT/NER/LJN or his authorized representative of CEE/PROJECT/NER /LJN OFFICE.
- (c) General Supply Diagram which will be given to successful Tenderer by CEE/PROJECT/NER /LJN or his authorized representative CEE/PROJECT/NER /LJN OFFICE.

GENERAL PARTICULARS: 3.4

- (a) The Railway line transverses through plain area throughout open country in cultivable land except on the approach on the bridge across canals drains and materials stream. The entire section is generally consolidated and normal type of soil. The bearing capacity of the soil is likely to vary from 5500 to 11000 Kgf/sqm. The actual bearing capacity shall however, be determined in accordance with Part-II.
- (b) **ACCESS TO ROAD:**
Most of the section LKO division is approachable by metalled Road. (c)
- (c) **FOOT OVER BRIDGES AND ROAD OVER BRIDGES:**
In most of the station/block section have FOBs/ROBs etc and new FOB/ROB/RUB's are being constructed track route passing in Parallel to existing LKO division Electrified Track.

(d) **STATIONS:**

There are approx 20 stations and various passenger halt station in the section.

(e) **BRIDGES:**

All the bridges are wired with 25 KV system and to be modified with 2x25 kV system as per RDSO Instruction No.TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction System.

CLIMATIC CONDITIONS: 3.5

(a) **TEMPERATURE:**

For the Over head & feeder Equipment, which will be in open space, a minimum temperature of 4°C and a maximum temperature of 48°C are to be considered. The mean temperature will be taken as 25°C.-30°C.

(b) **RAINFALL:**

Rains occur generally from 1st June to September and casual rains in April to 31st May. The average rainfall during the monsoon season is approximately 274 cm annually.

(c) **HUMIDITY:**

The maximum relative humidity is nearly 70 to 95 %.

(d) **THUNDER STORMS:**

The region is subject to thunder storms during monsoon season from 1st June to 30th September.

(e) **WIND PRESSURE:**

The section falls in the green wind pressure zone (Wind speed 47m/s)., Accordingly the wind pressure of 155 kgf/m² in terms of IS: 875 (Part-III) -1987 (Reaffirmed during 1997), wind pressure has been adopted. All the foundations shall be carried out as per employment schedule given in RDSO instruction TI/IN/0042 with latest amendment, if any for 2x25 kV Electric Traction System.

ROLLING STOCK: 3.6

Electric locomotives with height not exceeding 4.255 m with their pantograph in the locked down position and diesel locomotives 4.386 mm high are running in the section.

OVER DIMENSIONAL CONSIGNMENTS: 3.7

The maximum height of over dimensional consignment, which will pass on this section, is 4.875 m with movement restricted to specified lines.

POWER SUPPLY: 3.8 Deleted

L.T.SUPPLY TRANSFORMER STATIONS: 3.9

Auxiliary Transformers are installed at various stations/ block section and gates for giving power supply to colour light signaling stations.

TYPE OF OHE: 3.10

The existing Over head & feeder Equipment will be modified to 2x25 kV OHE & Feeder and normally be of regulated conventional type as per RDSO Instruction TI/IN/0042 with latest amendment if any. The Over head & feeder Equipment used will normally be of regulated conventional type and the parameters shall be governed by the latest Employment Schedule (as circulated by RDSO TI/IN/0042 with latest amendment if any for 2x25 kV Electric Traction System) with the final approval of the purchaser's engineer.

RETURN CONDUCTORS: 3.11

RDSO TI/IN/0042 with latest amendment, if any will be followed.

PEGGING PLANS: 3.12

The pegging plan shall be supplied by the contractor to the purchaser, Railway will supply the soft copy of LOP and SED, if available in the office of CEE/PROJECT/NER OR Sr.DEE/TRD/LJN or his authorized representative.

TRACTION SUB-STATION FEEDERS: 3.13

At various locations 25 kV Feeders from Traction Sub-stations are feeding Posts as well from SP/SSP.

TRACK CIRCUITS: 3.14

Double/Trippl rail track circuits are present in the section.

LABOUR & MATERIALS: 3.15

Unskilled labour is available almost all over the section while skilled labour would be available generally at the main towns in the section.

CONTRACTOR'S OFFICE: 3.16

Lucknow Jn. Division has several OHE Depots in between UTR-MWP section Viz.

Contractor has to setup at least 02 major office at Sultanpur & Lucknow or at convenient location decided by Railway along with 3 Field Offices at Utratia, Nihargarh & Haidargarh as indicated in part-III for fast execution of work to cover all depots under TRD department of Lucknow Division of Northern Railway.

Railway/Divisions to provide lands necessary for the execution of the works and for development of Store to the Contractor.

It is obligatory on the part of the contractor shall establish an office at the one major depot i.e. Lucknow for planning, design and for expeditious

finalization of particular designs and working drawings and execution of 2x25 kV Electric Traction System from existing 1x25 kV Electric Traction System in between Utaratia-Maharani Paschim UP & DN line in Lucknow Division.

Contractor will depute Project Manager at each major depots headed by a qualified and experienced Graduate Engineer who had worked in RE Projects/OHE with 02 year work experience, whose credentials shall be approved by the Purchaser's Engineer. Apart from this, Assistance Project Manager experienced with RE Projects/OHE for 2 years work experience and preferably Degree holder will be deputed along with experienced skilled workers and labour at all OHE depots to execute the 2x25 kV modification work in the existing 25 kV OHE system and planning will be made in advance with the concerned depot in-charges or his authorised representative. The Project manager & APM at each depots will coordinate with all concerning Field officers & depot in-charges duly consultations with Divisional Officers and prepare all plan for execution of work within stipulated DOC, i.e 24 months well in advance.

CONTRACTOR'S DEPOT & WORK TRAINS: 3.17

As given in the special conditions in the tender document.

DURATION OF TRAFFIC BLOCKS: 3.18

(a) As mentioned in special tender conditions, Power Block and Traffic Block may be granted at any time during day or night to suit convenience of traffic operations and will ordinarily be granted on one track at a time over a distance covered by one or two consecutive block sections in each depots. Work trains/Tower wagon etc will normally be allowed to take advantage of block shadows on chargeable basis. Normally the total durations of block on any section will be max of 3 to 4 hours in a day for all the tracks in the section taken together, the total of blocks on any track being limited to 2 or 3 or more hours in a day. Block provided may be utilized for one or more work trains or track Lorries or Ladder Trolleys to suit convenience of work in one depot.

(b) Material train and blocks will not ordinarily be given for laying out the Feeders except where crossing of track is involved which will have to be laid out manually generally. However, material train can be used to drop the feeder drums alongside the track on chargeable basis. The contractor shall however arrange to get the drums dropped to the maximum possible extent by road.

(c) For purpose of para 1.2.27(d), the work train block hours shall be taken as 6 per track km. For purpose of para 1.2.28(c), the total block hours for completion of works shall also be taken as 5 per track km.

REMOTE CONTOL CENTRE: 3.19

Deleted.

ADDRESSES: 3.20

The list of addresses, to which correspondence and documents relating to the contract, should be sent is as under:-

(i) For all policy, Contractual and Commercial matters:-

**Chief Electrical Engineer/Project
North Eastern Railway, Lucknow**

or his successor/nominee (whose address will be intimated in due course).

(a) For any query related with Tender

Document:

**Chief Electrical Engineer/Project
North Eastern Railway, Lucknow**

(b) After award of contract:

**Chief Electrical Engineer/Project
North Eastern Railway, Lucknow.**

(c) For Security Deposit:

PFA/NER/Gorakhpur.

or his successor/nominee (whose address will be intimated in due course).

(ii) For matters relating to particular design working drawing:-

Chief Electrical Engineer/Project

North Eastern Railway, Lucknow.

or his successor/nominee (whose address will be intimated in due course)

and

(iii) For matters relating to basic design and drawings for fittings, components equipments and prototype tests:-

The Director General (TI)

**Research Designs & Standard Organisation,
Manak Nagar, Lucknow 226011.**

(iv) Matters relating to progressing of field work, scheduling of quantities and submission of bills.

QUANTITIES APPROXIMATE: 3.21

Schedule-1, Part-V (Form-5) gives the approximate quantities of various items of OHE work.

TECHNICAL DATA FOR DESIGN OF PROTECTION SCHEME: 3.22 (Deleted NOT Applicable).

PART IV

ANNEXURES

Part –IV Annexures

ANNEXURE No.	SUBJECT	PAGE No.	
		From	To
1	(a) List of Standard Drawings for OHE./FEEDER (TSS & SCADA-DELETED).	282	301
	(b) List of Standard Specifications for OHE./ F E E D E R (TSS & SCADA-DELETED).	301	304
	(c) List of IS Specifications for OHE. /FEEDER (TSS & SCADA-DELETED).	304	306
2	Schedule of Quantities.		
3	Requirement of spares. (Deleted).	-	-
4	List of materials to be supplied by the purchaser to the Contractor.	-	-
5A	List of tools and plant for Maintenance, For OHE (Deleted).	-	-
5B	Technical Data for Equipment, Components & Materials to besupplied by the Tenderer for TSS. (DELETED).	-	-
5C	List of Tools and Plants required for Maintenance of SCADA.(DELETED)	-	-
6	Unit quantities of finished wires and conductors for various items ofwork if the said items Under Railway Scope of Supply.	-	-
7	List of bridges on which Traction structures will be located.	-	-
8	List of TSS, SP, SSP & RTUs. (DELETED).	-	-

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ANNEXURE - 1

LIST OF STANDARD DRAWINGS AND SPECIFICATIONS

As per RDSO INSTRUCTION No. TI/IN/0042 with latest amendment, if any must be followed. In case any deviation in the Design, Drawings & Specifications, RDSO Instruction TI/IN/0042 with latest amendment, if any shall be followed.

This Annexure contains reference to drawing numbers, charts, Schedules, Specifications and other data referred to in various paragraphs of this Tender Paper.

All references to drawings, charts, schedules, specifications, IS etc. given in this Annexure or elsewhere in the tender document shall be taken to be the latest versions including all amendments. All other items not covered under the Drawing/Specification shall be referred to as per relevant IS and Railway practice in force.

The Drawing and RDSO specification can be purchased from the office of CAO/CORE, Prayagraj (U.P.) or TI Directorate of RDSO, Lucknow on payment basis.

For drawings of fittings/equipments see Form-7: Part V.

(A) LIST OF STANDARD DRAWINGS FOR “FEEDER”

SN	DESCRIPTION	DRAWING NO	ANNEXURE
1	Employment Schedule for OHE mast (9.5m) wind pressure 112.5kgf/m ² Copper OHE with 1200 kgf tension (OHE+EW)	ETI/C/0730 - Sheet-2	ANNEXED along with tender document separately
2	Instruction for checking Suitability of Mast and Foundation	-	
3	25kV Feeder Arrangement on Separate mast	TI/DRG/OHE/FEEDER/RDSO /00001/19/0	
4	Employment Schedule for 25kV Feeder Arrangement on Separate mast for 155kgf Wind Pressure		
5	Employment Schedule for 25kV Feeder Arrangement on Separate mast for 178 kgf Wind Pressure	TI/DRG/CIV/FEEDER-ES/RDSO/00001/20/0 (Sheet-II)	
6	Feeder Termination Drawing	RE/33/G/05145-1, Rev. A	
7	Employment Schedule for OHE Mast (9.5m) wind pressure 155kgf/m ² & 2.8 m/3.8 m/4.85 m implantation (OHE + Feeder wire + Earth wire)for 1200 kgf tension in 65 mm ² catenary wire & 1200kfg tension in 107 mm ² contact wire.	TI/DRG/CIV/ES/RDSO/00004/19/0 (Sheet-I to III)	
8	Employment Schedule for OHE	TI/DRG/CIV/ES/RDSO/	

	Mast (9.5m) wind pressure 178 kgf/m ² & 2.8 m/3.8 m/4.85 m implantation (OHE + Feeder wire + Earth wire) for 1200 kgf tension in 65 mm ² catenary wire & 1200 kfg tension in 107 mm ² contact wire.	0000 4/19 /0 (Sheet-IV to VI)	
9	General Arrangement of OHE with Feeder, Earth wire & BEC (1200+1200)	TI/DRG/OHE/FEEDER/RDSO /00002/19/0.	
10	Employment Schedule for OHE Mast (9.5m) wind pressure 155kgf/m ² & 2.8 m/3.8 m/4.85 m implantation (OHE + Feeder wire + Earth wire) for 1500 kgf tension in 125 mm ² catenary wire & 1500 kfg tension in 150 mm ² contact wire.	TI/DRG/CIV/ES/RDSO/ 0000 4/20/0 (Sheet-I to III)	
11	Employment Schedule for OHE Mast (9.5m) wind pressure 178 kgf/m ² & 2.8 m/3.8 m/4.85 m implantation (OHE + Feeder wire + Earth wire) for 1500 kgf tension in 125 mm ² catenary wire & 1500kfg tension in 150 mm ² contact wire.	TI/DRG/CIV/ES/RDSO/ 0000 4/20/0 (Sheet-IV to VI)	
12	General Arrangement of OHE with Feeder, Earth wire & BEC	TI/DRG/OHE/FEEDER/RDSO /00002/20/0.	
13	Territorial limits of revised wind zones	-	
14	Counter Weight Eye Rod	ETI/OHE /SK/588 Rev. B.	
15	Counter Weight Assembly	ETI/OHE/SK/587 Rev. B	
16	X-Y adjustment Chart	TI/DRG/OHE/ATD/RDSO /00 003/99/0	
17	Dropper Schedule	TI/DRG/OHE/DROP/00 001- 00007/18/0 & TI/DRG/OHE/DROP/RDS O/0 0001/20/0	
18	CEDE/NCR letter no. EL/TRD/NCR /Gatimaan dated 19.11.2018	-	
19	25mm drop Bracket Assembly	ETI/OHE/P/2360- Rev. N	
20	BFB Steady Arm Assembly	ETI/OHE/P/2390-Rev. C	
21	Current Carrying Dropper Assembly	TI/DRG/OHE/CCD/RDS O/00001/20/0	
22	Catenary wire Clamp for Current Carrying Dropper	TI/DRG/OHE/CCD/RDS O/00002/20/0	
23	Contact wire clamp for Current Carrying Dropper	TI/DRG/OHE/CCD/RDS O/00003/20/0	

24	Compression sleeve, thimble & cable lug for Current Carrying Dropper	TI/DRG/OHE/CCD/RDS O/00004/20/0	
25	Mounting details of Double Pole Isolator on Mast (For 2X25kV)	ETI/OHE/G/06005- Sheet 2	
26	Mounting Details of Double Pole Isolator on Portals (For 2X25kV)	ETI/OHE/G/06008	
27	Railway Board letter No. 2001/Elect (G)/170/1 Pt dated 07.05.2012	-	
28	Railway Board letter No. 2001/Elect (G)/170/1 Pt dated 18.10.2012	-	
29	Tee Connector suitable for 20mm diaGS wire to 20mm dia GS wire	TI/DRG/OHE/TC/RDSO /000 01/20/0	
30	Straight Connector suitable 20mm dia GS wire to 20mm dia GS wire	TI/DRG/OHE/SC/RDSO/ 000 01/20/0	
31	Cross Bonding Arrangement	TI/DRG/OHE/EARTHIN G/RD SO/00001/20/0.	
32	BEC Arrangement on Bridges and Platform Coping	-	
33	Railway Board letter No.2001/Elect(G) 170/1 Pt-III dated 07.08.2020	-	
34	Railway Board letter No.2001/Elect(G)170/1 Pt-II dated 16.10.2020	-	

(B) LIST OF STANDARD DRAWINGS FOR “OHE”

SI. No	Brief Description	Drawing		Mod. No.
		Series	Number	
1	2	3	4	5
1.	Extra allowance for setting of structures on curves (1676 mm Broad gauge).	ETI/OHE/G	00111 Sh-1	C
2.	Standard setting of structures in the vicinity of signals (broad gauge).	-do-	00112	D
3.	Typical design of side bearing foundation.	-do-	00131	-
4.	Typical design of cantilever mast.	RE/33/G	00141 Sh.3	-
5.	Standard drilling schedule of OHE masts 9.5 m long RSJ and BFB.	ETI/OHE/G	00144 Sh.3	C
6.	Span and stagger chart for (conventional OHE, Cad. Cu catenary & Cu cont. wire) wind pressure 75,112.5 & 150kgf/m ² .	ETI/OHE/G	00202	-

7.	Employment schedule for Cantilever mast Regulated OHE without Return Conductor and without Earth wire (WP- 112.5 kgf/m ² (Cd-65/Cu, Cont. 107/Cu).	ETI/OHE/G	00153 Sh.1	F
8.	Employment schedule for Cantilever mast Regulated OHE without Return Conductor and with Earth wire (WP- 112.5 kgf/m ² (Cd- 65/Cu, Cont. 107/Cu).	ETI/OHE/G	00153 Sh.2	F
9.	Employment schedule for Cantilever masts Regulated OHE with Return Conductor and without Earth wire (WP-112.5 kgf/m ² (Cd- 65/Cu Cont. 107/Cu).	-do-	00153 Sh.3	F
10.	Employment schedule for Cantilever masts Regulated OHE with Return Conductor and with Earth wire (WP- 112.5 kgf/m ² (Cd- 65/Cu, Cont. 107/Cu).	-do-	00153 Sh.4	E
11.	Employment schedule for Cantilever masts unregulated OHE without Return Conductor and without Earth wire (WP- 112.5 kgf/m ² at 35°C and 28kgf/m ² at 4°C (Cat- 65/Cu, Cont. 107/Cu).	-do-	00154	D
12.	Employment schedule of bracket tubes Conventional OHE (Cad Cu Caty & Cu contact wire 1000 kgf tension each) WP-75 Kgf/ m ² .	ETI/OHE/G	00158 sh.1 of 3	-
13.	Employment schedule of bracket tubes Regulated Conventional OHE (Cad. Cu Cat & Cu contact wire 1000 kgf tension in each) WP-112.5 Kgf/ m ² .	ETI/OHE/G	00158 sh.2 of 3	-
14.	Employment schedule of bracket tubes Regulated Conventional OHE (Cad Cu Caty & Cu contact wire 1000 kgf tension in each) WP- 150 Kgf/ m ² .	ETI/OHE/G	00158 sh.3 of 3	-
15.	Dropper schedule for un-insulated Overlap spans	-do	00169	A
16.	Dropper schedule for insulated Overlap spans	-do	00170	A
17.	Dropper schedule for conventionalregulated OHE with Zero pre-sag (1400/1400)	-do	00177	A
18.	Adjustment chart of Regulating equipment 3 Pulley Type (3:1 ratio)	-do	00195	A
19.	Schematic arrangement of regulated OHE	-do	02101	A
20.	Schematic arrangement of un-insulated overlap (3 & 4 span overlaps)	-do	02121 Sh.4	A
21.	Schematic arrangement of insulated overlap	ETI/OHE/G	02131 Sh.3	A

22.	Standard termination of tramway type OHE (Regulated) with Pulley type regulating equipments (3:1 ratio).	ETI/OHE/G	04212	B
23.	General distribution of droppers	ETI/OHE/G	00161	-
24.	Outline of Pantograph (Broad gauge and meter gauge).	RE/33/G	00181	A
25.	General formation of single track in Embankments and cutting (Broad gauge.)	RE/33/G	01101 Sh.1	A
26.	General formation of double track in embankments and cutting (Broad gauge).	-do-	01102 Sh.1	A
27.	General formation of multiple tracks (1676 mm gauge).	-do-	01103 Sh.1	A
28.	Standard anchor arrangement	-do-	01401	E
29.	Anchor arrangement with dwarf mast.	ETI/OHE/G	01402	B
30.	Schedule of anchor block for B.G. track.	-do-	01403 Sh.1	E
31.	Schedule of anchor block for B.G. track.	-do-	01403 Sh.2	D
32.	Schedule of anchor block for B.G. track (Black cotton soil)	-do-	01403 Sh.3	D
33.	Standard guide tube arrangement on a mast and structures.	ETI/OHE/G	01505	-
34.	Trapezoidal counter weight arrangement on OHE structures.	ETI/OHE/G	01502	-
35.	Arrangement of 3 kV & 25 kV Pedestal Insulator supports on OHE masts and portals.	-do-	01601	-
36.	Standard arrangements for mounting of number plate on OHE Structures.	ETI/OHE/G	01701	A
37.	Schematic arrangement of regulated Overhead & feeder Equipment.	-do-	02101	A
38.	Typical arrangements of OHE on cantilever masts for double track section.	-do-	02102	-
39.	Typical arrangement for fixing of bracket assembly on 9.5 m mast and Structure to suit raising of tracks (in future).	-do-	02102 Sh.3	-
40.	Mast on platforms (Meter Gauge)	RE/33/G	02104 Sh.2	A
41.	Details of bracket arrangement on tangent and curved tracks	ETI/OHE/G	02106 Sh.1	A
42.	Details of bracket arrangement for OHE	-do-	02106 Sh.3	C
43.	Single bracket assembly on Structures and dropped arms.	RE/33/G	02107	D
44.	Box type cantilever Arrangement.	ETI/OHE/G	02108	A
45.	Arrangement at anticreep.	TI/DRG/OHE/ GENL/RDSO/	00001/12/ 0	0
46.	Standard cantilever arrangement for boom anchor anticreep location.	ETI/OHE/G	02113	-
47.	Schematic arrangement of un-insulated over Lap (type-I) (3 & 4 Span	RE/33/G	02121 Sh.1	F

	overlaps)			
48.	Schematic arrangement of insulated overlap.	ETI/OHE/G	02131 Sh.1	
49.	General arrangement of regulated OHE at turn-outs (overlap & crossed type).	ETI/OHE/G	02141	C
50.	General arrangement of regulated OHE at cross over(overlap & crossed type).	-do	02151	-
51.	Arrangement of neutral section	-do-	02161 Sh.1	C
52.	Arrangement of neutral section assembly (PTFE Type) at SWS.	-do	02162	-
53.	Arrangement of Short Neutral Section.	-do	02161 Sh.2	-
54.	Schematic arrangement of unregulated Over head & feeder Equipment.	-do	03101	-
55.	Standard termination of OHE (Regulated & un-regulated).	ETI/OHE/G	03121 Pt 1 of 3	E
56.	-do-	-do	03121 Pt 2 of 3	E
57.	-do-	-do	03121 Pt 3 of 3	E
58.	General arrangement of Unregulated OHE at turnouts (crossed & overlap type).	-do	03151	-
59.	General arrangement of unregulated OHEat crossovers and diamond crossings (overlap and crossed type).	-do	03152 Sh.1	-
60.	General arrangement of unregulated OHE at diamond crossing.	-do	03152 Sh.2	-
61.	General arrangement of pull off	-do-	03301	A
62.	General arrangement of Head span	-do	03201	-
63.	In span jumper connection between catenary & contact wire.	-do-	05101	-
64.	Continuity jumper connection at un-insulated overlap turnouts and cross overs	-do	05102	C
65.	Anti- theft jumper	-do	05107	A
66.	Connections at turnouts	-do	05103	B
67.	Potential equalizer connection at insulated overlap and neutral section	-do-	05104	-
68.	Connections at diamond crossing.	-do-	05106	A
69.	General arrangement of connections to OHE by copper cross feeder (150).	-do	05121 Sh.1	C
70.	General arrangement of connections at switching station on double track section by copper cross feeder.	ETI/OHE/G	05122 Sh.1	C
71.	General arrangement of connections at switching station on multiple track sectionby copper cross feeder.	-do-	05123 Sh.1	C
72.	Suspension of 25kV feeder(Spider)on 25KV OHE Masts.	ETI/OHE/G	05143	B

73.	Termination of feeder, Return Conductor & return Feeder (Copper & Aluminum).	ETI/OHE/G	05145-1	A
74.	Arrangement of suspension of double spider 25 KV feeder and return feeder between Sub-station and feeding station.	RE/33/G	05152	C
75.	Assembly of Section Insulators.	RE/33/G	05181	C
76.	General arrangement of earth wire on OHE mast.	ETI/OHE/G	05201	A
77.	General arrangement of earth wire on OHE mast.	ETI/OHE/G	05201-1	-
78.	Arrangement of transverse bonds.	ETI/OHE/G	05251	A
79.	Connection of Return Conductor to track.	-do-	05306	F
80.	Suspension arrangement of aluminum return conductor (spider) on Traction Structures.	-do-	05307	B
81.	Suspension of Return Conductor (spider) from boom of Structures (with clevis type disc insulators).	-do-	05312	A
82.	Connections between OHE and aluminum return conductor at booster stations.	ETI/OHE/G	05413	B
83.	Mounting of 25kv Isolators on OHE Structures (General arrangement).	ETI/OHE/G	05513 Sh.1	A
84.	Details of small part steel work for supporting 25kv Isolator on new T.T.C. boom.	-do-	05513 Sh.2	A
85.	Connection from Isolator to OHE.	-do-	05516	A
86.	Characteristics of conductors/ bus-bar for 25kv AC Traction.	-do-	05600	A
87.	Mounting arrangement of Auxiliary Transformer on OHE masts.	ETI/OHE/G	05522	-
88.	Employment Schedule for Cantilever Mast regulated OHE without Return Conductor & without earth wire (WP- 75 kgf/ m ² .) (Cat.65/Cu & Cont. 107/Cu).	ETI/C	0702 (Sh.1)	B
89.	Employment Schedule for Cantilever Mast regulated OHE with earth wire but without Return Conductor (WP- 75 kgf/ m ²) (Caty.65/Cu & Cont. 107/Cu).	-do-	0702 (Sh.2)	B
90.	Employment Schedule for Cantilever Mast regulated OHE with Return Conductor but without earth wire (WP- 75 kgf/ m ²) (Caty.65/Cu & Cont. 107/Cu).	-do-	0702 (Sh.3)	B
91.	Employment Schedule for Cantilever Mast regulated OHE with Return Conductor with earth wire (WP- 75 kgf/ m ²) (Caty. 65/Cu & Cont.107/Cu).	-do-	0702 (Sh.4)	B

92	Employment Schedule for Tramway type regulated OHE RC & EW (WP- 75 kgf/m ²)	-do-	0704	B
93	Employment Schedule for 8"x 8"x35 lbs BFB (9.5 M. long)(WP-112.5 kgf/m ² Caty.65/Cu & Cont. 107/Cu.	-do-	0708	B
94	Employment Schedule for OHE mast (9.5m) overlap central location with 3.0 m implantation WP-75 kgf/m ² Caty. 65/Cu & Cont. 107/Cu.	-do-	0709	A
95	Employment schedule for OHE mast (9.5M) overlap central with 3.0 M implantation WP-112.5 kgf/m ² (Caty 65/cu and Cont.107/Cu).	ETI/C	0710	A
96	Employment Schedule for OHE mast (9.5m) overlap inter with 3.0 m implantation. WP-75 kgf/ m ² Caty. 65/Cu & Cont. 107/Cu.	-do-	0711	A
97	Employment schedule for OHE mast (9.5M) overlap inter with 3.0 M implantations. WP- 112.5kgf/m ² Caty.65/Cu and cont.107/Cu	-do-	0712	A
98	Employment Schedule for 9.5m 200x200x49.9 kg mast WP-75 kgf/m ² (Caty. 65/Cu & Cont.107/Cu.)	-do-	0713	B
99.	Employment schedule for 9.5 m long 200x200x49.9 kg mast WP-112.5 Kgf/ m ² (Caty. 65/Cu and Cont.107/Cu)	-do-	0714	B
100	Employment Schedule for OHE mast(9.5m)WP-75 kgf/ m ² overlap Anchor location with 3.0 m implantation (Copper OHE)	-do-	0715	A
101	Employment schedule for OHE mast (9.5M) WP 112.5 kgf/ m ² overlap anchor location with 3.0 M implantations. (Copper OHE)	-do-	0716	A
102	Employment Schedule for pre-stressed span concrete mast (PC 42) - 9.5 M long conventional OHE, normal location (WP-150),112.5 &75kgf/m ²)	ETI/C	0725	A
103	STD portals (N,O,P,R,G & Double BFB types)	-do-	0064	-
104	Volume chart and equivalent chart of foundations (Side bearing, Side gravity and W.B.C.)..	TI/DRG/CIV/ FND/RDSO	00001/04/ 0 SH-1	B
105	Volume chart and equivalent chart of foundations (Side bearing, Side gravity and W.B.C.)	TI/CIV/FND/ RDSO	00001/12/ 0 SH-1	A
106	Volume chart and equivalent chart of foundations (NG type)	TI/DRG/CIV/ FND/RDSO/	00001/0/0 SH-2	B
107	Volume chart and equivalent chart of foundations (NG type)	TI/CIV/FND/ RDSO	00001/12/0 SH-2	A

108	Volume and equivalent chart of foundations for Dry black cotton soil (NBC type) (For 16500 & 11000kgf/ m ²)	TI/DRG/CIV/ FND/RDSO/	00001/04/0 SH-3	B
109	Volume and equivalent chart of foundations for Dry black cotton soil (NBC type) (For 16500 & 11000kgf/ m ²)	TI/CIV/FND/ RDSO	00001/12/0 SH-3	A
110	Volume chart and equivalent chart of New pure gravity foundations (500 mm exposed)	TI/DRG/CIV/ FND/RDSO/	00001/04/0 SH-4	B
111	Volume chart and equivalent chart of New pure gravity foundations (500 mm exposed)	TI/CIV/FND/ RDSO	00001/12/0 SH-4	A
112	Volume and equivalent chart of New foundations for Dry black cotton soil only (8000 kg/m ²) (NBC type) 2.5 M depth	TI/DRG/CIV/ FND/RDSO/	00001/04/0 SH-5	B
113	Volume and equivalent chart of foundations for Dry black cotton soil only (8000 kg/m ²) NBC type 2.5 m depth	TI/CIV/FND/ RDSO	00001/12/0 SH-5	A
114	Volume and equivalent chart of foundations (For 8000 kg/m ² Direct load)	ETI/C	0058 Sh.6	B
115	Special BFB portal for 5 tracks (General arrangement)	-do-	0026 Sh.1	C
116	Protective screen of foot-over bridge and road Over-Bridge.	-do-	0068	H
117	Chart for portal foundation	-do-	0005/68	
118	Muff for OHE structures	-do-	0007/68	E
119	Structures muff for sand cored foundations	-do-	0012/69	E
120	9.5 m Standard Traction mast (fabricated 'K' series)	-do-	0018-2	D
121	Remote Control Cubicle at Stn, Foundation, RCC slab, Building plant & Steel door	-do-	0067	B
122	9.5 m long standard Traction mast (fabricated with bottom plates 'B' series)	ETI/C	0071	E
123 (a)	Details of OHE foundation in soft rock (Bearing capacity 45,000 Kg/m ²).	ETI/C	0059	C
123 (b)	Details of OHE foundation in Hard rock (Bearing capacity 90,000 Kg/m ²).	ETI/C	0060	D
124	Details of foundation for fencing upright	-do-	0032	B
125	Employment schedule for switching and booster station main masts	ETI/C	0185	B
126	Drilling schedule for S-1 mast	ETI/C	0030	F
127	Drilling schedule for S-2 mast	-do-	0031	D
128	Drilling schedule for S-3 mast (length 11. 4m)	-do-	0180	C
129	Drilling schedule for 8" x 6" x 35 lbs. RSJ mast 8.0 m long for booster transformer station Type S-4	-do-	0036	E
130	Drilling schedule for S-5 mast (11.4m)	-do-	0042	E

	long)			
131	Drilling schedule for S-6 mast (length 12.4m)	-do-	0181	C
132	Drilling schedule for S-7 mast (length 12.4m)	-do-	0182	C
133	Drilling schedule for S-8 mast (length 12.4m)	-do-	0183	C
134	Drilling schedule for S-9 mast (length 12.4m)	-do-	0184	C
135	General arrangement & details of fencing panels & gate for switching station	-do-	0186 Sh.1	E
136	Details of fencing uprights and anti-climbing device for switching station	-do-	0186 Sh.2	E
137	S-100 fabricated mast for mounting LTsupply transformer and drop out fuse switch at switching station	-do-	0043	B
138	S-101 details of mast for supporting Isolator inside switching station	ETI/C	0044	A
139	Details of anchor beam or SP, SSP, & FP	-do-	0033	D
140	Details of small part steel for switchingstation	ETI/C	0034 Sh.1	K
141	Details of bracing for switching & B.T.masts	ETI/C	0034 Sh.2	B
142	Details of small parts steel of out rigger for switching stations and booster transformerstations	ETI/C	0037	C
143	Details of small parts steel for booster transformer stations	ETI/C	0040	E
144	Details of pre-cast cable trench for switching station	-do-	0038	E
145	Standard 'R' type portal rod laced general arrangement	-do-	0011/69 Sh.1	C
146	'G' type portal special upright and end piece	-do-	0056	C
147	Short bored pile foundation for Traction mast (permissible BM & volume)	-do-	0062	B
148	Chart for portal foundations in dry black cotton soil safe bearing capacity 16500Kg/ M ²	-do-	0063	B
149	Dwarf mast foundation on wet & dry black cotton soil	CORE/ALD/OHE/SK/C	02	-
150	Typical design of new pure gravity foundation.	ETI/SK/C	131	A
151	Typical design of side gravity foundation(Soil pressure=8,000 Kg/ M ²)	-do-	142	A
152	Rock Anchor for B.G. Track. –	ETI/SK/C	208	-

153	Bracket fitting for PSC Mast (cap 4200 Kgm) general arrangement and SPS details	ETI/SK/C	214 Sh.1 of 2	E
154	SPS details for Earth wire clamp on PSC mast	ETI/SK/C	214 Sh. 2 of 2	A
155	Special arrangement of OHE under over line structure	ETI/OHE/SK	529	--
156	Earthing and bonding of PSC mast.	ETI/OHE/SK	537 Sh.1 of 2	D
157	Typical Earthing arrangement in SPUN PSC Mast with 18mm dia rod.	-do-	537 Sh.2 of 2	B
158	Arrangement of overlap	ETI/OHE/SK	566	-
159	Catenary dropper assembly	ETI/OHE/P	1190	B
160	Parallel clamp (20/20)	ETI/OHE/P	1550	E
161	Standard guide tube assembly.	ETI/OHE/P	5060-2	C
161A	Counter weight assembly for Regulating Equipment (3:1 Ratio)	ETI/OHE/P	5090-5	E
161B	Trapezoidal weight assembly for Regulating Equipment (3:1 Ratio)	TI/DRG/OHE/ATD/RDSO/	00004/00/2	-
161C	Trapezoidal weight assembly	ETI/OHE/P/	5090-1	G
161 D	Counter weight assembly	ETI/OHE/P/	5090	F
162	Standard anti-wind clamp	-do-	2550-1/2	L
163	Multiple cantilever cross arm assembly.	RE/33/P	3120	H
164	Anchor fitting assembly on rolled sections	ETI/OHE/P	3230	C
165	Anchor fitting assembly on 'K' series, TCC masts and 'P' type portal upright.	-do-	3240	D
166	Anchor assembly on 'N' and 'O' type portal upright	-do-	3250	D
167	Structure bonds	-do-	7000	F
168	Earthing station	-do-	7020	B
169	Longitudinal rail bond	-do-	7030	F
170	Short super mast assembly	ETI/C/P	8010	G
171	Long super mast assembly	-do-	8020	C
172	Bracket attachment assembly on portal upright (N,O,R,P,G & BFB Type)	-do-	8030	B
173	Super mast assembly on portals	-do-	8050	C
174	Medium super mast assembly	ETI/OHE/P	8060	C
175	Compensating plate	-do-	5191-1/2	D
176	Suspension clamp	RE/33/P	1160	J
177	Double suspension clamp	-do-	1170	K
178	Double suspension lock plate.	-do-	1172	C
179	Catenary splice (65)	ETI/OHE/P	1090	-
180	Typical location & schematic connection diagram for a three interrupter switching station	ETI/PSI	003	C
181	Typical general arrangement of a three interrupter switching station	-do-	004	F

182	Typical location plan & general arrangement for sectioning & paralleling station	-do-	005	F
183	Typical location plan and general arrangement for a feeding station	-do	006	E
184	Typical general arrangement at a Booster transformer station (with 4 cross feeder) Type III.	-do-	013	B
185	General arrangement of 280 KVA Booster Transformer station Type III (with 4 crossfeeder).	-do-	018	A
186	Typical general arrangement at a booster transformer station (without cross feeder) Type-I.	ETI/PSI	011	C
187	Typical number plate for Auxiliary Transformer.	ETI/PSI/P	7525	-
188	Typical fencing and anti-climbing arrangement at switching stations.	ETI/PSI	104	E
189	Typical earthing layout of sub-sectioning and paralleling station.	-do-	201	B
190	Typical earthing layout of a sectioning and paralleling station.	-do-	202	B
191	Typical earthing layout of a feeding station	-do-	203	B
192	Earthing details for interrupter L.T. supply transformer 25 kV Lightning Arrestors P.T. Type-I (S-100 masts, S-101 mast, fencing upright and main mast).	-do-	204	C
193	Typical earthing layout at a booster transformer stations	-do-	211-1	A
194	Typical cable run layout of a sub-sectioning & paralleling station	-do-	301	C
195	Typical cable run layout of a sectioning and paralleling station	-do-	302	C
196	Typical cable run layout of a feeding station	-do-	303	B
197	Typical earthing layout at a booster transformer station (with 4 cross feeder for Type III, IV and V).	ETI/PSI	212	B
198	Typical drawing for a terminal board	-do-	501	C
199	36 mm Aluminum Bus terminal for 25kv Isolator (Rigid type)	ETI/PSI/P	6480	C
200	36 mm Aluminum Bus splices	-do-	6490	B
201	36 mm Aluminum Bus Tee connector	-do-	6500	C
202	36 mm Aluminum Bus Tee terminal	-do-	6510	D
203	36/15 mm Top connector	-do-	6520	B
204	36mm Aluminum flexible bus splice	-do-	6550	B
205	36 mm Aluminum bus splice cum tee connector	-do-	6560	B

206	Typical number plate for interrupter and double pole isolator	-do-	7520	B
207	Typical number plate for potential transformer Type	-do-	7521	B
208	Typical number plate for booster transformer	-do-	7522	B
209	Caution plate 25 kV AC	ETI/OHE/P	7531	C
210	General Caution notice at entrance to railway Station (Hindi & English)	RE/33/P	7551	C
211	Typical details of pressed steel door, window and ventilator	RE/Civil/S	129/2001	R2
212	Bolted base connection for portals located in drains	ETI/C	0010	C
213	Details of base plate for mast on drains in station yards	-do-	0002/68	A
214	Height gauge for level crossings (for clear span upto 7.3 mtr) details of structure and foundation	TI/DRG/CIV/HGAUGE/RDSO	00001/05/0	--
215	Height gauge for level crossings (for clear span above 7.3 mtr up to 12.2 mtr) details of structure and foundation	TI/DRG/CIV/HGAUGE/RDSO	00002/05/0	--
216	Standard plan details of Height gauge for span 7.3 M to 10.0 M with rail Type	RE/CIVIL/S	146/2008	R3
217	Arrangement for false catenary under over line structure	ETI/OHE/SK	446	--
218	Typical arrangement of OHE with insulated copper catenary under over line structure	ETI/OHE/SK	570	--
218A	Anti Climbing Arrangement	TI/SK/OHE/AN TIMON/RDSO	00001/08/0	--
218B	Anti Climbing Arrangement	TI/SK/OHE/AN TIMON/RDSO	00001/09/0	--
218C	GSSW Assembly	TI/DRG/OHE/G SSW	0002/09/0	--
218D	18 mm Lug (Forged) (Compression type)	TI/DRG/OHE/G TBLUG/RDSO	00001/04/0	- -

(C) LIST OF STANDARD DRAWINGS FOR TRAMWAY TYPE OHE (REGULATED)

1	2	3	4	5
219	Span and stagger chart for Tramway type OHE (Regulated)	ETI/OHE/G	04201	-
220	Drilling schedule of OHE mast 8.5m & 9m ling RSJ and BFB for Tramway OHE(Regulated) respectively.	ETI/OHE/G	04202 Sh.1 Sh.2	C C
221	Schematic arrangement of tramway type OHE(regulated).	-do-	04203	C
222	Arrangement of bracket assembly for Tramway Type OHE (regulated)	-do-	04204	B

223	Arrangement of anti-creep for Tramway Type OHE (Regulated)	ETI/OHE/G	04205	B
224	Arrangement of anticreep (alternative arrangement) for Tramway OHE (Regulated)	-do-	04206	B
225	Arrangement of Section Insulator for Tramway Type OHE (Regulated)	-do-	04207 Sh.1	B
226	Small parts steel for supporting Section Insulator assembly for (regulated Tramway Type OHE)	-do-	04207 Sh.2	B
227	General arrangement of turnouts for Tramway type OHE (Regulated)	ETI/OHE/G	04208	-
228	Adjustment chart for Tramway type OHE (Regulated)	ETI/OHE/G	04209	-
229	Bridle wire clamp (6 mm) with two bolts	ETI/OHE/P	1070-1	B
230	Large suspension clamp 20mm (with Armor rod)	ETI/OHE/P	1580 Sh-2	-
231	Hook Bracket	ETI/OHE/P	2380	C
232	BFB Steady arm assembly for Tramway OHE (Regulated)	ETI/OHE/P	2540-1	-
233	Anti wind clamp for tramway OHE (Regulated)	-do-	2550-3	E
234	Counter weight assembly (light)	ETI/OHE/P	5090-3	I
235	Counter weight assembly	-do-	5090-6	D
236	Employment schedule for tramway type regulated OHE without R.C.m and E.W. (W.P.112.5 kgf/sq.m)	ETI/C	0705	B
237	Protective screen at FOB/ROBs	ETI/C	0068	H

(D) STANDARD TYPICAL AND PARTICULAR DRAWINGS FOR TSS AND SHUNT CAPACITOR BANKS. DELETED (NA).

(E) STANDARD TYPICAL AND PARTICULAR DRAWINGS FOR SCADA WORKS –DELETED (NA)

The annexure contains reference to standard, typical and particular drawings & specification referred to in various paragraph of tender specification (Pt.II) and particular specification.

(F) (a) LIST OF STANDARD DRAWING FOR HIGH RISE OHE:

S.N.	Brief Description	Drawing		Mod No.
		Series	Number	
238	Design handout for Over head & feeder Equipment for running double stack containers under electrified routes (High Rise OHE) with speed potential of 140 Kmph based on revised wind zone.	TI/DESIGNS/OHE/2013/00001 (July'13)	-	-

239	Terms of reference for consultancy contract for high speed OHE and highrise OHE.	RDSO Letter No. TI/Traction policy/2013 dated 25.04.2013	-	-
240	OHE span in view of changes in windzones in country.	RDSO Letter No. TI/OHE/GA/2013 dated 25/30.04.2013	-	-
241	SPECIAL BFB PORTAL FOR 5 TRACKS (GENERAL ARRANGEMENT)	TI/DRG/CIV/BFB-PORTAL	00001/13/0	Sh No. 1
242	SPECIAL BFB PORTAL DETAILS OF UPRIGHT	TI/DRG/CIV/BFB-PORTAL	00001/13/0	Sh No. 2
243	G-TYPE PORTAL DETAILS SPECIAL UPRIGHT AND END PIECE	TI/DRG/CIV/G-PORTAL	00001/13/0	-
244	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 178 kgf/m ²) (Basic Wind Speed 50 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET - 1
245	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 155 kgf/m ²) (Basic Wind Speed 47 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET - 2
246	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 136 kgf/m ²) (Basic Wind Speed 44 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET - 3
247	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 105 kgf/m ²) (Basic Wind Speed 39 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET - 4
248	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 73 kgf/m ²) (Basic Wind Speed 33 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET - 5
249	TWO TRACK CANTILEVER STRUCTURE (TTC) GENERAL ARRANGEMENT	TI/DRG/CIV/TTC/	00001/13/0	SHEET - 1
250	TWO TRACK CANTILEVER STRUCTURE (TTC) DETAILS OF UPRIGHT	TI/DRG/CIV/TTC/	00001/13/0	SHEET - 2
251	11.4 M Long Standard Traction Mast "B" Series (B-150, B-175, B-200, B-225 & B-250 type Fabricated with Batten Plates)	TI/DRG/CIV/B-Mast/	00001/13/0	-

252	Volume Charts & Equivalent Charts of Foundations (Side Bearing, Side Gravity & WBC)	TI/DRG/CIV/FND/	00001/13/0	Sheet-1
253	Volume Charts & Equivalent Charts of Foundations (NG Type)	TI/DRG/CIV/FND/	00001/13/0	Sheet-2
254	Volume Charts & Equivalent Charts of Foundations for Dry Black Cotton Soil (NBC Type, 3.0 meter Depth)	TI/DRG/CIV/FND/	00001/13/0	Sheet-3
255	Volume Charts & Equivalent Charts of New Pure Gravity Foundations (500 mm exposed)	TI/DRG/CIV/FND/	00001/13/0	Sheet-4
256	Volume Charts & Equivalent Charts of Foundations for Dry Black Cotton Soil (NBC Type, 2.5 meter Depth)	TI/DRG/CIV/FND/	00001/13/0	Sheet-5
257	Employment Schedule OHE Mast (11.4 meter) Wind Pressure 155 kgf/m ²	TI/DRG/CIV/ES/	00001/13/0	Sheet-1
258	Employment Schedule OHE Mast (11.4 meter) Wind Pressure 136 kgf/m ²	TI/DRG/CIV/ES/	00001/13/0	Sheet-2
259	Employment Schedule OHE Mast (11.4 meter) Wind Pressure 105 kgf/m ²	TI/DRG/CIV/ES/	00001/13/0	Sheet-3
260	Schedule Anchor Blocks for BG Tracks	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet-1
261	Double Guy Rod Arrangement with Anchor Block for BG Tracks	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet-2
262	Schedule Anchor Blocks for BG Track Black Cotton Soil	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet-3
263	Guy Rod Ø 25 mm	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet-4
264	Dropper Schedule Encumbrance 1.4m/1.4m (For 25 kV AC Regulated OHE) (65 and 107 SQ. MM)	TI/DRG/OHE/DROP/	00001/10/1	Rev-1
265	Dropper Schedule Encumbrance 1.4m/0.9m (For 25 kV AC Regulated OHE) (65 and 107 SQ. MM)	TI/DRG/OHE/DROP/	00002/10/1	Rev-1
266	Dropper Schedule Encumbrance 1.4m/0.75m (For 25 kV AC Regulated OHE) (65 and 107 SQ. MM)	TI/DRG/OHE/DROP/	00003/10/1	Rev-1
267	Arrangement of mounting of 25kV/240V, 50kVA LT Supply Transformer for High Rise OHE (On separate mast)	ETI/OHE/HR/AT/G/	05522 Sheet-2	-
268	Mounting Arrangement of Auxiliary Transformer on High Rise OHE mast	ETI/OHE/HR/AT/G/	05522 Sheet-1	-
269	Anchor Arrangement with Dwarf Mast for conventional and High Rise OHE	ETI/OHE/HR/ G/	01402	-

270	Standard Arrangement of Drop Arm for supporting Cantilevers on the Booms of Portals and TTC (For Normal as well as High Rise OHE)	ETI/C/HR/	0076	-
271	Drilling schedule for S-6H mast (length 13.0 m) (for High Rise OHE)	ETI/C/HR/	0181	-
272	Drilling schedule for S-7H mast (length 13.0 m) (for High Rise OHE)	ETI/C/HR/	0182	-
273	Drilling schedule for S-8H mast (length 13.0 m) (for High Rise OHE)	ETI/C/HR/	0183	-
274	'P' Type Portal General Arrangement and details of upright & End Pieces(High Rise OHE)	TI/DRG/CIV/P-Portal/	00001/13 /0	-

(E) (b) LIST OF STANDARD DRAWING AS PER NEW WIND ZONES

275	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 178 kgf/m ²) (Basic Wind Speed 50 m/s) (Without Return Conductor and Without Earth Wire).	ETI/C/	0758 Sheet-1	A
276	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 155 kgf/m ²) (Basic Wind Speed 47 m/s) (Without Return Conductor and Without Earth Wire).	ETI/C/	0758 Sheet-2	A
277	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 136 kgf/m ²) (Basic Wind Speed 44 m/s) (Without Return Conductor and Without Earth Wire).	ETI/C/	0758 Sheet-3	A
278	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 105 kgf/m ²) (Basic Wind Speed 39 m/s) (Without Return Conductor and Without Earth Wire).	ETI/C/	0758 Sheet-4	B
278	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 73 kgf/m ²) (Basic Wind Speed 33 m/s) (Without Return Conductor and Without Earth Wire).	ETI/C/	0758 Sheet-5	A
279	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 178 kgf/m ²) (Basic Wind Speed 50 m/s) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm ² , CONT-107 mm ² .	ETI/C/	0759 Sheet-1	-

280	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 155 kgf/m ²) (Basic Wind Speed 47 m/s) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm ² , CONT-107 mm ² .	ETI/C/	0759 Sheet-2	-
281	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 136 kgf/m ²) (Basic Wind Speed 44 m/s) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm ² , CONT-107 mm ² .	ETI/C/	0759 Sheet-3	-
282	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 105 kgf/m ²) (Basic Wind Speed 39 m/s) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm ² , CONT-107 mm ² .	ETI/C/	0759 Sheet-4	-
283	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m ²) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm ² , CONT-107 mm ² .	ETI/C/	0759 Sheet-5	-
284	Normal OHE Employment Schedule Mast (9.5 m) Basic Wind Speed 50 m/s Wind Pressure 178 kgf/m ² (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² .	TI/DRG/CIV/ES/RDSO/000 01/18/0 Sheet-1/5		-
285	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 47 m/s) (Wind Pressure 155 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107 mm ² .	TI/DRG/CIV/ES/RDSO/000 01/18/0 Sheet-2/5		-
286	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 44 m/s) (Wind Pressure 136 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² .	TI/DRG/CIV/ES/RDSO/000 01/18/0 Sheet-3/5		-
287	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 39 m/s) (Wind Pressure 105 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension CAT-65 mm ² , 1000 kgf tension in CONT-107 mm ² .	TI/DRG/CIV/ES/RDSO/000 01/18/0 Sheet-4/5		-

288	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² .	TI/DRG/CIV/ES/RDSO/00001/18/0 Sheet-5/5	-
289	Normal OHE Employment Schedule Mast (9.5 m) Basic Wind Speed 50 m/s Wind Pressure 178 kgf/m ² (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 2.8 m & upto 3.8 m).	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-5/5	-
290	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 47 m/s) (Wind Pressure 155 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 2.8 m & upto 3.8 m).	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-4/5	-
291	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 44 m/s) (Wind Pressure 136 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 2.8 m & upto 3.8 m).	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-3/5	-
292	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 39 m/s) (Wind Pressure 105 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension CAT-65 mm ² , 1000 kgf tension in CONT-107 mm ² . (with implantation more than 2.8 m & upto 3.8 m).	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-2/5	-
293	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 2.8 m & upto 3.8 m).	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-1/5	-
294	Normal OHE Employment Schedule Mast (9.5 m) Basic Wind Speed 50 m/s Wind Pressure 178 kgf/m ² (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT.	TI/DRG/CIV/ES/RDSO/00003/18/0 Sheet-5/5	

	65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 3.8 m & upto 4.85 m).		
295	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 47 m/s) (Wind Pressure 155 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 3.8 m & upto 4.85 m).	TI/DRG/CIV/ES/RDSO/00003 /18/ 0 Sheet-4/5	
296	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 44 m/s) (Wind Pressure 136 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 3.8 m & upto 4.85 m).	TI/DRG/CIV/ES/RDSO/00003 /18/ 0 Sheet-3/5	
297	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 39 m/s) (Wind Pressure 105 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension CAT-65 mm ² , 1000 kgf tension in CONT-107 mm ² . (with implantation more than 3.8 m & upto 4.85 m).	TI/DRG/CIV/ES/RDSO/00003 /18/ 0 Sheet-2/5	
298	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m ²) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm ² 1000 kgf tension in CONT. 107mm ² (with implantation more than 3.8 m & upto 4.85 m).	TI/DRG/CIV/ES/RDSO/00003 /18/ 0 Sheet-1/5	

Note: New wind pressures/speeds as per RDSO letter No TI/CIV/MS/14 dated 14.07.2014 & IS: 875Part-III, 1987, Reaffirmed during 1997 are:

S.No.	Design Wind Pressure (Kg/m ²)	Basic Wind Speed	
		meter / second	Km / hour
i	178	50	180.0
ii	155	47	169.2
iii	136	44	158.4
iv	105	39	140.4
v	73	33	118.8

**(F) LIST OF STANDARD RDSO's SPECIFICATIONS FOR OHE, TSS AND SCADA:
(TO BE FOLOWED OF RDSO INSTRUCTION TI/IN/0042 with latest
amendment, if any):**

SI.No	TITLE OF SPECIFICATION	SPECIFICATION NO.
1	2	3
1.	Annealed stranded copper conductor for jumper wire.	ETI/OHE/3(2/94) with A&C slip No.1 of (4/95)
2.	Copper busbar	RE/30/OHE/5 (11/60)
3.	Structural Steel tubes.	ETI/OHE/11 (5/89)
4.	Hot dip zinc galvanisation of steelmasts (Rolled and Fabricated) tube and fittings used on 25 KV AC OHE.	ETI/OHE/13(4/84) with A&C slip No.1 of (5/86), 2 of (4/90) & 3 of (4/90)
5.	Stainless steel wire ropes	TI/SPC/OHE/WR/1060 with A&C slip No 1 of (11/06) & 2 of (05/07)
6.	Solid core porcelain insulators for 25KV 50 Hz single phase over head & feeder lines	TI/SPC/OHE/INS/0070 (04/2007)
7.	25 KV single and double pole isolators.	ETI/OHE/16(1/94) with A&C slip No.1 of (06/2000) & 2 of (3/2004)
8.	Steel fasteners & Stainless Steel fasteners	TI/SPC/OHE/Fasteners/0120
9.	Aluminum alloy section and tubes	ETI/OHE/21(9/74)
10.	Standard for drawings for Traction Over head & feeder Equipment	ETI/OHE/25(3/66)
11.	Light Weight Section Insulators assembly. OR Section Insulator assembly without sectioning insulator.	TI/SPC/OHE/LWTSI/0060 (8/2006) OR ETI/OHE/27(8/84) with A&C slip No.1 of (10/92)
12.	Enameled steel plates	ETI/OHE/33(8/85)
	Retro-reflective Structure Number Plates & Caution/Warning Boards	ETI/OHE/33A(12/97) Rev-8 (11/12)
13.	Galvanised steel wire	ETI/OHE/36(12/73) with A&C Slip No.1 of (5/98)
14.	3 pulley Type Regulating Equipment	TI/SPC/OHE/ATD/0060 (8/2006) with A&C Slip No1 of (10/2006), 2 of (5/2007) & 3 of (01/13) and latest
15.	Fitting for 25 kV 50 Hz AC Overhead equipment.	TI/SPC/OHE/Fitting/0130(10/13) {Old ETI/OHE/49 (9/95) with A&C}
16.	Cadmium copper conductor for overhead Railway Traction	ETI/OHE/50 (6/97) with A&C slip No.1 to 3 (04/09).
17.	Principles of OHE layout plans and sectioning diagrams for 25 KV AC Traction.	ETI/OHE/53(6/88) with A&C slip no.1 of (12/88), 2 of (8/89), 3 of (6/90), 4 of (8/92) & 5 of (11/2006)

18.	19/2.79mm All Aluminum alloy stranded catenary wire.	ETI/OHE/54(2/85) with A&C slip No. 1 of (11/89) & 2 of (10/92)
19.	Bimetallic (Al-cu) strip	ETI/OHE/55(4/90)
20.	Short Neutral Section Assembly (Phase Break)	TI/SPC/OHE/SNS/0000 of (2/2000) with A&C slip No. 1
21.	Code for bonding and earthing for 25KV, AC single phase, 50 Hz Traction system.	ETI/OHE/71(11/90) with A&C slip no. 1 of (8/91) & 2 of (3/93)
22.	Insulated Cadmium copper catenary 19/2.10 mm dia for provision under Over Line structures in the 25 KV AC Electric Traction.	TI/SPC/OHE/INSCAT/0000 of (4/2000)
23.	Battery charger for 110 V battery, 40 AH.	ETI/PSI/1(6/81)
24.	Lightning arrestor- 7.5 KV	ETI/PSI/3(8/75) with A&C slip No.1 of (2/91)
25	Technical specification for current transformers. I. 220kV. 200-100/5A, II. 132 kV. 400-200/5A, III. 110 kV. 400-200/5A, IV. 66kV. 800-400/5A for Railway A.C Traction substations.	ETI/PSI/117 (7/88) with A&C Slip No.1(11/88), 2 (3/89), 3 (12/89), 4 (4/90), 5 (6/90), 6(9/92), 7 (8/05), 8 (08/2007) & 9 (July 2008).
26	Specification for 21.6 MVA singlephase, 50 Hz. i) 220/27kV ii) 132/27kV iii) 110/27kV, iv), 66/27kV Tractionpower transformer for Railway A.C Traction sub-station.	ETI/PSI/118 (10/93) with A&C Slip No.1 to 9 & A&C slip No.10 (08/12) or latest
27	Code of practice for earthing of power supply installations for 25 kV A.C., 50Hz,single phase Traction system.	ETI/PSI/120 (2/91) with A&C Slip No1(10/93)
28	Technical specification for i) 245 kV, (ii) 145 kV, (iii) 123 kV, (iv) 72.5 kV double pole & triple pole Isolator for Railway Traction sub stations.	ETI/PSI/122(3/89) with A&C Slip No.1(4/90)
29	Specification for Metal Oxide gapless type lightning arrestors (combined) for use on 220/132/110/66 kV side of Railway A.C.Traction sub-station.	ETI/PSI/137 (8/89) with A&C Slip No.1,2,3 (Embodying) A&C slip No. 4(8/94) 5(04/01), 6 (9/05) & 7(07/2007)
30	Technical specification for 220 kV or 132 kV or 110 kV or 66 kV or 25 kVpotential transformer.	TI/SPC/PSI/PT _s /0990 with A&C Slip No.1,2,3,4,& 5 (April 09)
31	Delta I type High resistive fault selectiveRelay for 25 kV AC Single phase 50 Hz Traction system.	TI/SPC/PSI/PROTCT/1982 (12/2003) with A&C slip No.1 (10/13)
32	Panto flashover protection relay for 25kV A.C. single phase 50 Hz Tractionsystem.	TI/SPC/PSI/PROTCT/2983 (09/2001)

33	Technical Specification of SCADA system for 25 kV, AC Single phase Traction supply on Indian Railway.	TI/SPC/RCC/SCADA/0130(04/2014)
34	Technical Specification for Galvanised Steel Stranded Wire for Traction Masts	TI/SPC/OHE/GSSW/0090 (10/2009)
35	Technical specification for galvanized steel stranded wire for Traction bonds	TI/SPC/OHE/GALSTB/0040(09/04) Rev. 1(08/05)
36	Setting up Earthing Station at switching posts (SSP & SP) with conventional Earthing.	Special Maintenance Instruction No. TI/SMI/0032 Rev-1
37	Design handout for Over head & feeder Equipment for running double stack containers under electrified routes (High Rise OHE) with speed potential of 140 Kmph based on revised wind zone.	TI/DESIGN/OHE/2013/00001 (July'13)
38	OHE span in view of changes in wind zones in country	TI/OHE/GA/2013 DATED 25/30.04.2013
39	Technical guidelines and Standard Instruction for Railway Electrification Works including OHE, TSS, Transmission Line, SCADA , Electrical General Works, signaling Works, Telecom works & Civil Engineering Works.	CORE/RE TENDER/EPC/2014/ STANDARD INSTRUCTIONS AND GUIDELINES
40	Three Pulley Higher Tension ATD	TI/SPC/OHE/3PHTA TD/0150 with ACS 1

(G) LIST OF IS SPECIFICATION

S No.	IS Code No.	Descriptions
1	IS:210-1993	Grey iron castings
2	IS:269-1989	Specification for 33 grade ordinary Portland cement (4 th Rev)
3	IS:282-1982	Dropper Wire
4	IS:306-1983	Tin bronze castings
5	IS:335-1993	New Insulating oil (4 th Rev) Reaffirmed 2000
6	IS:371-1999	Ceiling rose spec.(3 rd Rev)
7	IS: 383-1970	Specification for coarse & fine aggregates from natural sources for concrete
8	IS:398(Pt.I)-1996	All Aluminum conductor
9	IS:398 Pt.II-1996	Al. conductor for overhead transmission purposes
10	IS:398(Part-III) 1976.	Aluminum conductors galvanized steel reinforced
11	IS: 432 Pt.1-1982	Specification for mild steel & medium tensile steel bars and hard drawn steel wires for concrete reinforcement
12	IS: 456-2000	Plain & Reinforced concrete Code of practice (3 rd Rev)
13	IS: 516-1959	Method of tests for strength of concrete
14	IS:617-1994	Aluminum castings

15	IS:694:1990	Al. Jumper wire
16	IS:702-1988	Specification for industrial bitumen (2 nd Rev) reaffirmed 1999
17	IS:731-1971	Porcelain Insulator for overhead power lines with a nominal voltage greater than 1000V
18	IS:732-1989	Code of practice for electrical wiring installation (3 rd Rev)
19	IS:800-1984	Code of practice for general construction in steel (2 nd Rev)
20	IS:808-1989	Dimensions for hot rolled steel beam, column, channel & angle sections
21	IS:816-1969	Welding
22	IS:875 (Part-3) 1987 (Reaffirmed)	Code of practice for design loads (other than earthquakes) for building and structures — Part 3: Wind loads second revision.
23	IS:1293-2005	Plugs & socket outlets of rated voltage upto and including 250V and rated current up to 16 Amp (3 rd Rev)
24	IS:1387-1993	General requirements for the supply of metals and metal products
25	IS: 1489 Pt. I 1991	Specification for Portland-Pozzalana cement Pt .I Fly ash based (3 rd Rev)
26	IS:1554(Part-I)1988	PVC insulated cables
27	IS:1608-1995	Mechanical testing of metal- tensile testing
28	IS:1731-1971	Dimensions for steel flats for structural & general engineering Purpose
29	IS:1777-1978	Industrial Luminaries with metal reflectors (1 st Rev)
30	IS:1786-1985	Specification for high strength deformed steel bars and wires for concrete reinforcement
31	IS:1897-1983	Copper strip for formed fittings
32	IS:2004-1991	Carbon steel forgings for general engineering purpose
33	IS:2062-2011	Steel for general structural purpose
34	IS: 2074-1992	Ready mix Paint, air drying, Red oxide, Zinc chrome
35	IS:2121-1981	Aluminum and steel cored Aluminum conductors for (Part I & II) overhead power lines.
36	IS:2141-2000	Galvanised stay strand
37	IS:2312-1967	Propeller type AC ventilating fans (1 st Rev)
38	IS: 2386 Pt.III- 1963	Method of tests for aggregates for concrete Pt. III Specific gravity, density voids, absorption & buckling
39	IS:2673-2002	Dimensions for Aluminum Tubular Bus-bar.
40	IS:2675-1983	Enclosed distribution fuse boards and cut-outs for voltage not exceeding 1000V AC & 1200V DC (2 nd Rev)
41	IS:3043-1987	Code of practice for earthing (1 st Rev)
42	IS:3091-1999	Aluminum bronze castings
43	IS:3188-1980	Characteristics of string insulator units
44	IS:3837-1976	Accessories for Rigid steel conduit for electrical wiring
45	IS:3854-1997	Switches for domestic & similar purposes (2 nd Rev)
46	IS:4826-1979	Specification for hot dipped for galvalised coatings on round steel wires (1 st Rev)
47	IS:5082-1998	Material for Aluminum tubular bus-bar.
48	IS: 6403-1981	Code of practice for determination bearing capacity of shallow foundations (1 st Rev)

49	IS:7098 (Part I) 1988	LT XLPE cables
50	IS:7098 (Part II) 1985	HT XLPE cables
51	IS: 8130-1984	Conductor for Insulated electric cables & flexible cords (1 st Rev)
52	IS:9537 Pt-I- 1980	Conduits for electrical installations
53	IS:9968(Pt.2)-2002	Annealed Copper Jumper Wire
54	IS:13947 Pt. III 1993	Specification for low voltage switchgear & control gear Pt.-3, disconnectors & fuse combination unit
55	IS:14329-1995	Malleable iron castings

ANNEXURE-2

SCHEDULE OF QUANTITY

Quantities of all items mentioned in FORM-5 under Column Qty. FOR OHE

ANNEXURE-3

REQUIREMENT OF SPARES

Quantities FOR OHE & TSS

‘ NIL’

□□□□□

ANNEXURE 4 (NIL)

LIST OF ITEMS TO BE SUPPLIED BY PURCHASER TO THE CONTRACTOR
EQUIPMENTS, FITTINGS AND FINISHED MATERIAL.

For OHE Works:

S. No.	Description	Rly. ID No.	Qty.	Remarks
1	107 sq.mm HDGC Contact Wire	-	-	-

NOTES:-

1. The prices against various items of Schedule-1 shall be exclusive of the cost of supply of the above.
2. Any long lead items/Equipments if unjustified on any reason can be supplied by Railways under Annexure-4.
3. All the fasteners whether stainless steel or otherwise required for fittings and components shall be supplied by the contractor.

ANNEXURE 4A

-DELETED-

ANNEXURE-5A

**LIST OF TOOLS AND PLANTS FOR
MAINTENANCE FOR OHE**

-DELETED-

Annexure-5B

**TECHNICAL DATA FOR EQUIPMENTS, COMPONENTS &
MATERIALS TO BE SUPPLIED BY THE TENDERER FOR TSS**

-DELETED-

ANNEXURE-5C

**LIST OF TOOLS AND PLANTS REQUIRED FOR
MAINTENANCE FOR SCADA**

-DELETED-

ANNEXURE-6

**UNIT QUANTITIES OF FINISHED WIRES AND CONDUCTORS
FOR VARIOUS ITEMS OF WORK IF THE SAID ITEMS UNDER
RAILWAY SCOPE OF SUPPLY**

-DELETED -

ANNEXURE-7

LIST OF BRIDGES ON WHICH TRACTION STRUCTURES WILL BE LOCATED IN SECTION

To be advised Later date to successful of the Tenderer

ANNEXURE-8

A tentative list of TSS, SP, SSP, RTUs is given below. Same is liable to change as per field requirements.

- DELETED -

□□□□□□

PART - V

FORMS OF TENDERS ETC

PART – V

FORMS OF TENDERS ETC

It is essentially required to be uploaded by the Tenderer that their offer, Packet-A, & Packet-B, are in the order of para 1.1.7(a), 1.1.7(b)(i) and 1.1.7(b)(ii), of Part-I, Chapter-I. All tender documents to be uploaded should be essentially serial numbered (printed/machine numbered).

FORM NO	SCHEDULES	DESCRIPTIONS
1A		Offer letter (To be uploaded with prequalification Bid with Packet “A”)
1B		Summary of Prices for feeder OHE TSS & SCADA (To be uploaded with Packet “B”)
2		Memorandum of the Tenderer (Deleted)
3		Deviation from the Tender Paper (Deleted)
4		Alternative Proposal of the Tenderer
5	Schedule-1	Schedule of prices & Total Prices for OHE& Feeder (General)
	Schedule-2	Schedule of prices & Total Prices for OHE & Feeder (Concrete)
	Schedule-3	Schedule of prices & Total Prices for OHE & Feeder (Ferrous)
	Schedule-4	Schedule of prices & Total Prices for OHE & Feeder (Non Ferrous)
	Schedule-5	Schedule of prices & Total Prices for OHE & Feeder (Insulators)
	Schedule-6	Non Schedule items for supply & erection
6	Schedule-2	List of Imported Special Tools, Plant, Equipment and Materials for Const. (Deleted)
7	Schedule -3A	Unit Prices of “On Account Rates” for OHE & Feeder (General)
	Schedule -3A	Unit Prices of “On Account Rates” for OHE & Feeder (Concrete)
	Schedule -3A	Unit Prices of “On Account Rates” for OHE (Ferrous)
	Schedule -3A	Unit Prices of “On Account Rates” for OHE (Non Ferrous)
	Schedule -3A	Unit Prices of “On Account Rates” for OHE (Insulator)
8		Schedule of Prices of Equipments, Components & Materials, for OHE & TSS Works (Deleted)
9A		Schedule of Prices of Special Tools, Plants for Maintenance for OHE & TSS Works (Deleted)
9B		Schedule of Prices of Special Tools, Plants for Maintenance for SCADA Works (See Annexure- 5 “C”) –Deleted-
10 (Sh.1 to4)	-	Tenderer's scheme of work and time schedule for OHE
11A	-	Names of manufacturer/s, places of manufacture and inspection of supplies (CORE/RDSO approved sources).
11B	-	Names of manufacturer/s, places of manufacture and inspection of supplies (other than CORE/RDSO approved sources).
11C	-	Complete technical data and particulars of the equipments offered, as specified in the Tender papers together with descriptive literature, leaflets etc.
12A (Sh.1 to5)	-	TENDERER's CREDENTIALS (To be Uploaded with Packet “A” with the details for OHE Works.
12B		TENDERER's CREDENTIALS (To be Uploaded with Packet “A” with the details for TSS Works. (Deleted)
12C		TENDERER's CREDENTIALS (To be Uploaded with Packet “A” with the details for SCADA Works. (Deleted)
12D	-	POSITION OF WORKS AWARDED

13	-	Guarantee Bond for Earnest Money (Deleted)
14	-	Agreement
14-A		NOVATION AGREEMENT
15	-	Guarantee Bond for security Deposit
16	-	Standing Indemnity Bond for "ON ACCOUNT" payments
17	-	Extension of period of completion of work on contractor's account
18	-	Extension of period of completion of work on purchaser's account
19	-	Guarantee bond against "On Account" payments
20	-	Guarantee bond against Mobilisation Advance
21	-	Guarantee bond against Provisional Acceptance Payments (Deleted)
22	-	Bank Guarantee Proforma for Performance Guarantee
23	-	Memorandum of Understanding for Joint Venture Agreement
24	-	Proforma for Bank details for e-payment
25	-	Proforma for 7 Days Notice for WORKS AS A WHOLE /IN PARTS
26	-	Proforma for 48 Hours Notice for WHOLE WORK
26 A		Proforma for 48 Hours Notice for PART OF THE WORK
27	-	Proforma for Termination Notice for WHOLE WORK
27 A		Proforma for Termination Notice for WHOLE WORK for PART OF THE WORK
28	-	Proforma for affidavit to be uploaded by Tenderer along with the tender offer <u>(For two Packet System of Tendering Only)</u>
28A	-	Proforma for certificate to be submitted/uploaded by Tenderer along with the tender documents
29	-	Proforma for Final Supplementary Agreement
30		Proforma of 14 days notice for offloading of part of contract work
31	-	Model Certificate to be submitted by Tenderers for Works involving possibility of sub-contracting Restriction under Rule 144(xi) of General Financial Rules (GFRs), 2017)
32		Notice for part of contract work offloaded
32 A		Proforma for certificate to be submitted/uploaded by Tenderer along with the tender documents

FORM-1A

To be Uploaded with Packet-A

From :*
....- Tender No. CEEPROJECT-NER-UTR-MWP-26

Name of Work: Design, supply, erection, testing and commissioning of OHE modification and feeder wire work of 2x25 kv traction system for capacity upgradation of UTR-MWP section (184 RKM/368 TKM) in Lucknow division of Northern railway..

To
The President of India,
Acting through the General
Manager, or his successor, Office
of the Principal Chief Electrical
Engineer, New Delhi

I/We_____have read the various conditions to tender attached hereto and agree to abide by the said conditions. I/We also agree to keep this tender open for acceptance for a period of _____days from the date fixed for opening the same and in default thereof, I/We will be liable for forfeiture of my/our "Earnest Money". I/We offer to do the work for_____Railway, at the rates quoted in the attached schedule and hereby bind myself/ourselves to complete the work in all respects within _____months from the date of issue of letter of acceptance of the tender.

2. I/We also hereby agree to abide by the Indian Railways Standard General Conditions of Contract, with all correction slips up-to-date and to carry out the work according to the Special Conditions of Contract and Specifications of materials and works as laid down by Railway in the annexed Special Conditions/Specifications, Schedule of Rates with all correction slips up-to-date for the present contract.

3. A sum of ₹_____has already been deposited online as Earnest Money. Full value of the Earnest Money shall stand forfeited without prejudice to any other right or remedies in case my/our Tender is accepted and if:

- (a) I/We do not submit the Performance Guarantee within the time specified in the Tender document;
- (b) I/We do not execute the contract documents within seven days after receipt of notice issued by the Railway that such documents are ready; and
- (c) I/We do not commence the work within fifteen days after receipt of orders to that effect.

4. (a) I/We am/are a Startup firm registered byDepartment of Industrial Policy and Promotion (DIPP) and my registration number is valid upto.....(Copy enclosed) and hence exempted from submission of Earnest Money.

5. We are a 100% Govt. owned PSUs and hence exempted from payment of Earnest Money.

6. We are a Labour Cooperative Society and our Registration No. is Withand hence required to deposit only 50% of Earnest Money.

7. Until a formal agreement is prepared and executed, acceptance of this tender shall constitute a binding contract between us subject to modifications, as may be mutually agreed to between us and indicated in the letter of acceptance of my/our offer for this work.

I/we have no retired engineer or retired gazetted officer of the Engineering Department of any of the Railways owned and administered by the President of India.

OR

The list of retired engineers or retired gazetted officers who are associated with me/us, is included as an enclosure to this offer letter. **

The Mobilization Advance as per para 1.3.18 (Pt. I, Chapter IIIA) will be required / not required. (Please delete which is not applicable)

I/We hereby opt/do not opt for taking payment through LC arrangement as per terms and conditions at Para 1.2.63 (Part-I, Chapter-II) (please delete which is not applicable). The option of taking payment through LC arrangement, once exercised by the Tenderer at the time of bidding, shall be final and no change shall be permitted, thereafter, during the execution of contract.

Signature of Witnesses:

(1) _____

(2) _____

Signature of Tenderer(s)

Date _____

Address of the
Tenderer(s)

* Tenderer's full name and address

** See para 1.1.19(c).

FORM-1B, Sheet-1

SUMMARY OF PRICES

FOR OHE WORKS

---- DELETED ----

FORM-1B, Sheet-3

**SUMMARY OF PRICES FOR
Schedule-1 TRACTION SUB-STATION**

---- DELETED ----

FORM-1B, Sheet-4

**SUMMARY OF PRICES FOR
Schedule SCADA WORKS**

--DELETED--

FORM - 2

**MEMORANDUM OF THE
TENDERER FOR OHE & TSS
WORKS
- DELETED -**

FORM - 3

**DEVIATIONS FROM THE TENDER
PAPER FOR OHE & TSS WORKS

- DELETED -**

To be uploaded with Packet-A

FORM - 4

ALTERNATIVE PROPOSALS OF THE TENDERERS

SCHEDULE 1									
SCHEDULE OF PRICES & TOTAL PRICES									
SECTION 1 (GENERAL)									
FORM 5, Sheet-1									
This schedule shall be read in conjunction with its explanatory notes in Part-I Chapter-IV "A" for detailed description for various items included therein. The rates at which payments are to be made shall be arrived at by loading these rates uniformly for each item with escalation of estimate (% above SOR) and loading of percentage quoted by the tenderer over advertised value of the section.									
Item Code of IREPS	Item No.	Description	UOM	(All prices are in ₹)					
				SOR Rate		Qty.	Total Prices		
				Materials	Erection		Materials	Erection	Total (M+E)
1	2	3	4	5	6	7	8	9	10
01010100 / 01010101/ 01010102/	1(a)	Preparation of designs and drawings for overhead equipment FEEDER /AEC/BEC.	Track km.	0	9344	400.00	0.00	3,737,600.00	3,737,600.00
01010200 / 01010201 / 01010202/	1(b)	Preparation of designs and drawings for switching stations (FP/SP/SSP)	Each	0	16051		0.00	0.00	0.00
01010300 / 01010301 / 01010302/	5(a)(i)	Supply without insulator and erection of mounting arrangements for span wire.	Each	3199	434		0.00	0.00	0.00
01010400 / 01010401 / 01010402/	8(a) (xii)	Marking/paintig of temperature & 'Y'- Measurement of OHE mast at BWA locations	Each	0	62		0.00	0.00	0.00
01010500 / 01010501 / 01010502/	8(b)(i)	Supply without insulator and erection of material for termination of Single conductor of Over head equipment or terminating wire.	Each	2411	408		0.00	0.00	0.00
01010600 / 01010601 / 01010602/	8(b) (iii)	Supply without Insulator and erection of material for termination of all aluminium 25KV	Each	3043	408	500.00	1,521,500.00	204,000.00	1,725,500.00

		Feeder / return conductor (Single SPIDER)							
01010700 / 01010701 / 01010702/	8(b) (vi)	Supply without insulator and erection of materials for termination of tramway type OHE (Regulated)	Each	1816	408		0.00	0.00	0.00
01010800 / 01010801 / 01010802/	8(b) (ix)	Supply without insulator and erection of materials for termination of copper cross feeder with gantries.	Set	2895	408	150.00	434,250.00	61,200.00	495,450.00
01010900 / 01010901 / 01010902/	9(dz)	Supply without insulator and erection of anti-creep with Cadmium copper catenary wire in polluted area	Each	2,792	1317		0.00	0.00	0.00
01011000 / 01011001 / 01011002/	9(ez)	Supply without insulator and erection of anti-creep with Cadmium copper catenary wire suitable for tramway type OHE (Regulated) in polluted area	Each	2,719	1317		0.00	0.00	0.00
01011100 / 01011101 / 01011102/	11(a)(i)	Supply without Insulator and erection of cut-in (9Tonne) Insulator	Each	688	283	350.00	240,800.00	99,050.00	339,850.00
01011200 / 01011201 / 01011202/	11(a)(ii)	Supply without Insulator and erection of suspension (9Tonne) Insulator	Each	713	168	6700.00	4,777,100.00	1,125,600.00	5,902,700.00
FORM 5, Sheet-2									
01011300 / 01011301 / 01011302/	11(b)	Supply without Insulator and erection of 25 kV Post Insulator	Each	515	112	200.00	103,000.00	22,400.00	125,400.00

01011400 / 01011401 / 01011402/	11(c)	Supply without Insulator and erection of 3 kV Disc Insulator	Each	922	132		0.00	0.00	0.00
01011500 / 01011501 / 01011502/	11(d)	Supply without Insulator and erection of 11 kV Post Insulator	Each	133	108		0.00	0.00	0.00
01011600 / 01011601 / 01011602/	17(b)	Extra for special embedment of earth electrode.	Each	0	679	170.00	0.00	115,430.00	115,430.00
01011800 / 01011801 / 01011802/	18(b)	Supply & Erection of 25kV Vacuum type Interrupter	Each	173,491	1,913		0.00	0.00	0.00
01011900 / 01011901 / 01011902/	19	Supply and Erection of 25kV Potential Transformers Type-I	Each	44,466	429		0.00	0.00	0.00
01012000 / 01012001 / 01012002/	20(a)	Supply and Erection of 42KV Lightning Arrestors (station class)	Each	15,119	278		0.00	0.00	0.00
01012100 / 01012101 / 01012102/	20(b)	Supply and Erection of 7.5 KV Lightning Arrestors	Each	705	145		0.00	0.00	0.00
01012200 / 01012201 / 01012202/	21	Supply and Erection of Terminal Boards in control cubicles.	Each	5,061	204		0.00	0.00	0.00
01012300 / 01012301 / 01012302/	22(a)	Supply and Erection of an Iron clad 110 V.D.C Fuse Box.	Each	1,593	47		0.00	0.00	0.00
01012400 / 01012401 / 01012402/	22 (b)	Supply and erection of an Iron clad 230 V.A.C Fuse Box.	Each	1,762	47		0.00	0.00	0.00
01012500 / 01012501 / 01012502/	23	Supply and Erection of Lead Acid Batteries.	Each	42,715	3,065		0.00	0.00	0.00
01012600 / 01012601 / 01012602/	24	Supply and Erection of Battery chargers.	Each	41,587	418		0.00	0.00	0.00

FORM 5, Sheet-3									
01012700 / 01012701 / 01012702/	25(a)	Supply and Installation of cables for Control and indication circuit	Metre	201	7		0.00	0.00	0.00
01012800 / 01012801 / 01012802/	25(b)	Supply and Installation of cables for Heater supply	Metre	95	7		0.00	0.00	0.00
01012900 / 01012901 / 01012902/	25(c)	Supply and Installation of cables for Catenary indication	Metre	137	7		0.00	0.00	0.00
01013000 / 01013001 / 01013002/	25(d)	Supply and Installation of cables for L.T. Power supply	Metre	217	10		0.00	0.00	0.00
01013100 / 01013101 / 01013102/	25(e)	Supply and Installation of cables for 110V D.C. supply	Metre	137	10		0.00	0.00	0.00
01013200 / 01013201/ 01013202/	27(a)	Supply, Erection, oil- filtration, testing and commissioning of L.T. supply transformers (10 kVA).	Each	27,426	4,572		0.00	0.00	0.00
01013300 / 01013301/ 01013302/	27(b)	Supply, Erection, oil- filtration, testing and commissioning of L.T. supply transformers (5 kVA).	Each	22,971	4,572		0.00	0.00	0.00
01013400 / 01013401/ 01013402/	27(c)	Supply, Erection, oil- filtration, testing and commissioning of L.T. supply transformers (25 kVA).	Each	93,611	4,572		0.00	0.00	0.00
01013500 / 01013501/ 01013502/	27(d)	Supply, Erection, oil- filtration, testing and commissioning of L.T. supply transformers (50 kVA).	Each	121,643	4,572		0.00	0.00	0.00
01013600 / 01013601/ 01013602/	28	Supply without Insulator & erection of 25 kV D.O. fuse switch.	Each	4,934	239		0.00	0.00	0.00

01013700 / 01013701/ 01013702/	29(a)	Erection, oil filtration, testing & commissioning of Booster transformer.	Each	59	8,466		0.00	0.00	0.00
	31	Modification to erected equipments :							
01013900 / 01013901/ 01013902/	31(a)	Transfer of equipment from one mast or support to another.	Each	804	1,179	2200.00	1,768,800.00	2,593,800.00	4,362,600.00
01014000 / 01014001 / 01014002/	31(b)	Provision of an additional bracket assembly/ assemblies on a mast or support.	Each	0	1,047	20.00	0.00	20,940.00	20,940.00
01014100 / 01014101 / 01014102/	31(c)	Re-adjustment of head-span	Each	0	1,156	10.00	0.00	11,560.00	11,560.00
FORM 5, Sheet-4									
01014200 / 01014201 / 01014202/	31(d)	Dismantling of overhead equipment.	Km	0	6,222		0.00	0.00	0.00
01014300 / 01014301 / 01014302/	31(e)	Dismantling of Feeder/ Return Conductor	Km	0	2,697	35.00	0.00	94,395.00	94,395.00
01014400 / 01014401 / 01014402/	31(f)	Splicing & extension of an anchored overhead equipment.	Each	0	1,156	30.00	0.00	34,680.00	34,680.00
01014500 / 01014501 / 01014502/	31(gz)	Dismantling of a Section Insulator Assembly	Each	670	1,156		0.00	0.00	0.00
01014600 / 01014601 / 01014602/	31(h)	Slewing and putting back of OHE in original shape	Span	0	937		0.00	0.00	0.00
01014700 / 01014701 / 01014702/	31(i)	Dismantling of an Isolator	Each	0	627	60.00	0.00	37,620.00	37,620.00
01014800 / 01014801 / 01014802/	31(j)	Dismantling of a Post/ Pedestal Insulator.	Each	0	204		0.00	0.00	0.00

01014900 / 01014901 / 01014902/	31(m)(i)	Manning of Switching stations (SP/SSP)	Each per month	0	19,148		0.00	0.00	0.00
01015000 / 01015001 / 01015002/	31(m) (ii)	Manning of Traction Sub-stations	Each per month	0	30,878		0.00	0.00	0.00
01015100 / 01015101 / 01015102/	35	Supply and Erection of materials for internal and external lighting of Switching Station Building (SP/SSP).	Each	0	16,416		0.00	0.00	0.00
01015200 / 01015201 / 01015202/	36 (a)	Unloading of all type of Steel Structures.	MT	0	61	3000.00	0.00	183,000.00	183,000.00
01015300 / 01015301 / 01015302/	36 (b)	Loading of all type of Steel Structures.	MT	0	113	3000.00	0.00	339,000.00	339,000.00
01015400 / 01015401 / 01015402/	37 (a)	Unloading of all type of Copper & Aluminium conductors.	MT	0	55		0.00	0.00	0.00
01015500 / 01015501/ 01015502/	37 (b)	Loading of all type of Copper & Aluminium conductors.	MT	0	55		0.00	0.00	0.00
01015600 / 01015601/ 01015602/	17(h)	Supply and erection of earthing station at Switching Posts (SP & SSP) with conventional earthing system	Each	8,449	444		0.00	0.00	0.00
	32	Extra on erection rate for 8(b)(iii) for work under power block	Each	0	408	500.00	0.00	204,000.00	204,000.00
	32	Extra on erection rate for 8(b)(ix) for work under power block	set	0	408	150.00	0.00	61,200.00	61,200.00
	32	Extra on erection rate for 11(a)(i) for work under power block	Each	0	283	350.00	0.00	99,050.00	99,050.00
	32	Extra on erection rate for 11(b) for work under power block	Each	0	112	200.00	0.00	22,400.00	22,400.00

	32	Extra on erection rate for 31(a) for work under power block	Each	0	1,179	2200.00	0.00	2,593,800.00	2,593,800.00
	32	Extra on erection rate for 31(e) for work under power block	km	0	2,697	35.00	0.00	94,395.00	94,395.00
		Total for Section-1					8,845,450.00	11,755,120.00	20,600,570.00
NOTE for 31(m)(i) & 31(m) (ii): In case Feeding post is situated in adjacent to TSS, same will also be included for manning alongwith TSS.									
SCHEDULE 1									
SCHEDULE OF PRICES & TOTAL PRICES									
SECTION 2 (a) (CONCRETE)									
FORM-5, Sheet-5									
This schedule shall be read in conjunction with its explanatory notes in Part-I Chapter IV "A" for detailed description for various items included therein. The rates at which payments are to be made shall be arrived at by loading these rates uniformly for each item with escalation of estimate (% above SOR) and loading of percentage quoted by the tenderer over advertised value of the section.									
Item Code of IREPS	Item No.	Description	UOM	(All prices are in ₹)					
				SOR Rate		Qty.	Total Prices		
				Materials	Erection		Materials	Erection	Total (M+E)
1	2	3	4	5	6	7	8	9	10
	2(a)	Concrete for foundation and plinth							
02010100 / 02010101/ 02010102/		(i) In hard soil:	Cum	2,056	749	200.00	411,200.00	149,800.00	561,000.00
02010200 / 02010201/ 02010202/		(ii) In rocky soil	Cum	2,120	977		0.00	0.00	0.00
	2(az)	Concrete for foundation and plinth							
02010300 / 02010301/ 02010302/		(i) In hard soil:	Cum	2,359	749		0.00	0.00	0.00
02010400 / 02010401/ 02010402/		(ii) In rocky soil	Cum	2,423	977		0.00	0.00	0.00
02010500 / 02010501/ 02010502/	2(b)	In other than hard soil and rock	Cum.	2,140	566	32006.00	68,492,840.00	18,115,396.00	86,608,236.00

02010600 / 02010601/ 02010602/	2(bz)	In other than hard soil and rock	Cum.	2,331	566		0.00	0.00	0.00
02010800 / 02010801/ 02010802/	2(e)	Extra for supply & sinking of concrete shells	Cum.	2,225	314		0.00	0.00	0.00
02011000 / 02011001/ 02011002/	34(a)	Supply of materials and costruction of Super Structure of SP/SSP building (Control cubicles)	Each	0	81,393		0.00	0.00	0.00
02011100 / 02011101/ 02011102/	34(b)	Cement concrete for foundation with stone ballast 40mm nominal size	Cum.	0	1,360		0.00	0.00	0.00
FORM 5, Sheet-6									
02011200 / 02011201/ 02011202/	34(c)	RCC work for foundation and plinth in ratio 1:1½:3.	Cum.	0	2,211		0.00	0.00	0.00
02011300 / 02011301/ 02011302/	34(d)	Brick work in foundation plinth, retaining walls and drainage.	Cum.	0	1,203		0.00	0.00	0.00
02011400 / 02011401/ 02011402/	34(e)(i)	Construction of retaining wall with random rubble masonry in cement & sand..	Cum.	0	931		0.00	0.00	0.00
	34(f)	Earth work in excavation and filling including compaction							
02011500 / 02011501/ 02011502/		(i) In normal soil	Cum.	0	26		0.00	0.00	0.00
02011600 / 02011601/ 02011602/		(ii) In hard soil	Cum.	0	33		0.00	0.00	0.00
	34(g)	Earth work, excavation for foundation							

02011700 / 02011701/ 02011702/		(i) In normal soil	Cum.	0	25		0.00	0.00	0.00
02011800 / 02011801/ 02011802/		(ii) In hard soil	Cum.	0	32		0.00	0.00	0.00
02011900 / 02011901/ 02011902/	34(h)	Excavation of pile of 100 mm to 200 mm dia upto 3.5M deep.	Metre	0	43		0.00	0.00	0.00
02012000 / 02012001/ 02012002/	34(i)	Plastering of retaining wall with 1:4 cement & sand mortar.	Sqm	0	36		0.00	0.00	0.00
02012100 / 02012101/ 02012102/	2(c)	Reinforced concrete	Cum.	2,296	566		0.00	0.00	0.00
02012200 / 02012201/ 02012202/	2(cz)	Reinforced concrete for foundation and plinth in other than hard soil & rock (Grade M-20)	Cum.	2,569	566		0.00	0.00	0.00
02012300/ 02012301/ 02012302/	34(e)(ii)	Construction of retaining / Baffle wall with RCC M-20	Cum.	2,569	479		0.00	0.00	0.00
02012400 / 02012401/ 02012402/	2(c)(zz)	RCC grade M-25 for foundation and plinth in other than hard soil and rock.	Cum.	2,988	760		0.00	0.00	0.00
10010100/ 10010101/ 10010102	2(j)	Concrete for Cylindrical type side bearing foundations (M-15 and M-20) (SBC - 11000 kgf/sqm)	CuM	2,476	389		0.00	0.00	0.00
		Total for Section-2(a)					68,904,040.00	18,265,196.00	87,169,236

SCHEDULE 1

SCHEDULE OF PRICES & TOTAL PRICES

SECTION 3 (FERROUS)

FORM-5, Sheet-7

This schedule shall be read in conjunction with its explanatory notes in Part-I Chapter IV "A" for detailed description for various items included therein. The rates at which payments are to be made shall be arrived at by loading these rates uniformly for each item with escalation of estimate (% above SOR) and loading of percentage quoted by the tenderer over advertised value of the section.

Item Code of IREPS	Item No.	Description	UOM	(All prices are in ₹)					
				SOR Rate		Qty.	Total Prices		
				Materials	Erection		Materials	Erection	Total (M+E)
1	2	3	4	5	6	7	8	9	10
03010100 / 03010101/ 03010102/	3(a)(i)	Supply & Erection of traction masts fabricated from Rolled mild steel beam (BFB) of size 152mm x152mm x 37.1 Kg/m and galvanised in length 9.5 m or 8.5 m long.	MT	45,259	1,037		0.00	0.00	0.00
03010200 / 03010201/ 03010202/	3(a)(ii)	Supply & Erection of traction masts, main masts of switching stations, Booster transformer station, fabricated from Rolled mild steel joist (RSJ) of size 203mm x 152 mm x 52.0 Kg/m and galvanised in lengths 9.5 m or 8.5 m long.	MT	42,491	1,037	100.00	4,249,100.00	103,700.00	4,352,800.00
03010300 / 03010301/ 03010302/	3(b)(i)	Supply & Erection of fabricated and galvanised structures (O,N & R type portals) with all necessary components other than masts.	MT	53,854	3,546	370.00	19,925,980.00	1,312,020.00	21,238,000.00
03010400 / 03010401/ 03010402/	3(b)(ii)	Supply & erection of Structure steel (traction masts) fabricated and galvanised of all Type : B-Series Mast.	MT	45,423	1,037	2906.84	13,20,37393.32	30,14393.08	13,50,51786.4

03010500 / 03010501/ 03010502/	3(b)(iii)	Supply & Erection of special fabricated and galvanised steel structures other than Portals & traction-Masts not covered under items 3(b)(i) & 3(b)(ii).	MT	47,703	3,546	150.00	7,155,450.00	531,900.00	7,687,350.00
03010600 / 03010601/ 03010602/	3(c)	Supply only of fabricated steel other than masts	MT	66,257	0	500.00	3,31,28500	0.00	3,312,8500
03010700 / 03010701/ 03010702/	3(e)(i)	Supply and erection of a Guy Rod Assembly	Each	4,086	473	2000.00	8,172,000.00	946,000.00	9,118,000.00
03010800 / 03010801/ 03010802/	3(e)(ii)	Supply and erection of Anchoring Arrangement of traction mast with Galvanised steel stranded wire	Each	6,472	473		0.00	0.00	0.00
03010900 / 03010901/ 03010902/	3(i)	Supply and erection of 25KV Caution Boards/Plates.	Each	131	42	300.00	39,300.00	12,600.00	51,900.00
03011000 / 03011001/ 03011002/	4(a)(i)	Supply without insulator and erection of Single bracket assembly.	Each	5,734	429	1200.00	6,880,800.00	514,800.00	7,395,600.00
03011100 / 03011101/ 03011102/	4(a)(ii)	Extra on 4 (a)(i) for supporting two OHEs.	Each	1,268	129		0.00	0.00	0.00
FORM 5, Sheet-8									
03011200 / 03011201/ 03011202/	4(a) (iii)	Supply without Insulator and erection of Single bracket assembly suitable for tramway type OHE (Regulated)	Each	4,705	429		0.00	0.00	0.00
03011300 / 03011301/ 03011302/	4(a) (iv)	Extra on item 4(a)(iii) for supporting two tramway type OHE (Regulated)	Each	1,424	129		0.00	0.00	0.00

03011400 / 03011401/ 03011402/	4(a)(v)	Supply without insulator and erection of Single bracket assembly for composite OHE	Each	5,741	429		0.00	0.00	0.00
03011500 / 03011501/ 03011502/	4(b)(i)	Supply without Insulator and erection of a pull off arrangement for one OHE	Each	4,848	267		0.00	0.00	0.00
03011600 / 03011601/ 03011602/	4(b)(ii)	Extra for each additional equipment pulled.	Each	2,664	267		0.00	0.00	0.00
03011700 / 03011701/ 03011702/	4(b) (iii)	Supply without Insulator and erection of a pull off arrangement for regulated tramway type OHE.	Each	2,744	212		0.00	0.00	0.00
03011800 / 03011801/ 03011802/	4(b) (iv)	Supply without Insulator and erection of a pull off arrangement for one composite OHE.	Each	4,848	267		0.00	0.00	0.00
03011900 / 03011901/ 03011902/	5(b)	Supply without insulator and erection of suspension of conventional/ composite OHE from Head Span.	Each	3,852	461		0.00	0.00	0.00
03012000 / 03012001/ 03012002/	8(a)(v)	Supply and erection of Regulating Equipment (3-Pulley type) with counter weight assembly for conventional/ composite OHE.	Each	32,186	1,764	10.00	321,860.00	17,640.00	339,500.00
03012100 / 03012101/ 03012102/	8(a) (vi)	Supply and erection of Regulating Equipment (3-Pulley type) with counter weight assembly for tramway	Each	24,282	1,485		0.00	0.00	0.00

		type OHE (Regulated)							
03012200 / 03012201/ 03012202/	8(a)(x)	Same as 8(a)(v) but excluding stainless steel wire rope.	Each	29,189	1,764		0.00	0.00	0.00
03012300 / 03012301/ 03012202/	8(a) (xi)	Same as 8(a)(vi) but excluding stainless steel wire rope.	Each	21,611	1,485		0.00	0.00	0.00
03012400 / 03012401/ 03012402/	8(b)(ii)	Supply without Insulator and erection of materials for termination of Double conductor.	Each	4,185	469	500.00	2,092,500.00	234,500.00	2,327,000.00
03012500 / 03012501/ 03012502/	8(b)(v)	Supply without Insulator and erection of materials for termination of Earth wire	Each	2,244	195	400.00	897,600.00	78,000.00	975,600.00
FORM 5, Sheet-9									
03012600 / 03012601/ 03012602/	8(b) (vii)	Supply without Insulator and erection of materials for termination of double conductors for composite OHE.	Each	4,081	469		0.00	0.00	0.00
03012700 / 03012701/ 03012702/	9(a)	Supply without Insulator and erection of anticreep with galvanized steel wire.	Each	10,740	1,317	350.00	3,759,000.00	460,950.00	4,219,950.00
03012800 / 03012801/ 03012802/	9(b)	Supply without Insulator and erection of anticreep with galvanized steel wire suitable for tramway type Overhead equipment (Regulated)	Each	9,204	1,317		0.00	0.00	0.00
03012900 / 03012901/ 03012902/	9(c)	Supply without Insulator and erection of anticreep for composite OHE with	Each	11,345	1,317		0.00	0.00	0.00

		galvanized Steel wire.							
03013000 / 03013001/ 03013002/	13(e)	Extra on item 13(a), (b) or (c) for an inter-locking device	Each	916	108		0.00	0.00	0.00
03013100 / 03013101/ 03013102/	14	Supply & erection of a connection between return conductor and rail.	Each	5,031	1,645		0.00	0.00	0.00
03013200 / 03013201/ 03013202/	16(a) (i)	Supply and erection of a structure bond.	Each	528	131	1000.00	528,000.00	131,000.00	659,000.00
03013300 / 03013301/ 03013302/	16(a)(ii)	Supply and erection of a Galvanised steel stranded wire structure bond	each	1,511	131		0.00	0.00	0.00
03013400 / 03013401/ 03013402/	16(b)	Supply and erection of a longitudinal bond	Each	298	117		0.00	0.00	0.00
03013500 / 03013501/ 03013402/	16(c)	Supply & erection of a transverse and special bond.	Each	679	140	500.00	339,500.00	70,000.00	409,500.00
03013600 / 03013601/ 03013602/	17(a)	Supply & erection of a single earth electrode.	Each	1,191	498	700.00	833,700.00	348,600.00	1,182,300.00
03013700 / 03013701/ 03013702/	17(c)	Supply and erection of earth bus	Metre	126	35		0.00	0.00	0.00
03013800 / 03013801/ 03013802/	17(e)	Supply and erection of 8 SWG G.I. wire for earthing	Metre	11	9		0.00	0.00	0.00
FORM 5, Sheet-10									
03013900 / 03013901/ 03013902/	30(a) (i)	Supply and erection of fencing panels at switching stations.	Metre	2,298	39		0.00	0.00	0.00

03014000 / 03014001/ 03014002/	30(a) (ii)	Supply and erection of fencing uprights	MT	63,551	1,869		0.00	0.00	0.00
03014100 / 03014101/ 03014102/	30(b) (i)	Supply and erection of anticlimbing device for Switching stations	Metre	153	4		0.00	0.00	0.00
03014200 / 03014201/ 03014202/	30(b) (ii)	Supply and erection of anticlimbing device for B.T. stations.	Each	1,448	250		0.00	0.00	0.00
03014300 / 03014301/ 03014302/	30(b) (iii)	Supply and erection of anticlimbing device for L.T. Supply Transformer Stations.	Each	635	148		0.00	0.00	0.00
03014400 / 03014401/ 03014402/	30(b) (iv)	Supply and erection of anti monkey menace.	Each	2,534	148		0.00	0.00	0.00
03014500 / 03014501/	3(g)	Supply of steel reinforcement for RCC	MT	42,171	0.0		0.00	0.00	0.00
03014600/ 03014601/ 03014602	3(b)(iv)	Design, Supply, Fabrication, Painting and Erection of Height Gauge at Level Crossings (for clear span up to 7.3 m and/or above 7.3 m upto 12.2 m)	MT	43,043	5,319		0.00	0.00	0.00
03014700/ 03014701/ 03014703	3(k)	Supply and erection of Dnager Plate on a Height Gauge Structure	Each	673	42		0.00	0.00	0.00
03014800/ 03014801/ 03014802	3(j)	Supply & Erection of protective screens on ROB/ FOB	Set (2 Nos.)	0	13,789		0.00	0.00	0.00
04014900/ 04014901/ 04014902/	3(b)(v)	Supply and erection of special type portal structures including uprights, booms and all components for span more than 36 meter	MT	55,912	3,546		0.00	0.00	0.00

04015000/ 04015001/ 04015002/	3(m)	Supply of 36 mm dia MS bolts, Nuts, Lock Nuts and washers	Each	383	0		0.00	0.00	0.00
	32	Extra on erection rate for 3 (a)(ii) for work under power block	MT	0	1,037	100.00	0.00	103,700.00	103,700.00
	32	Extra on erection rate for 3 (b)(i) for work under power block	MT	0	3,546	370.00	0.00	1,312,020.00	1,312,020.00
	32	Extra on erection rate for 3 (b)(ii) for work under power block	MT	0	1,037	2906.84	0.00	30,14,393.08	30,14,393.08
	32	Extra on erection rate for 3 (b)(iii) for work under power block	MT	0	3,546	150.00	0.00	531,900.00	531,900.00
	32	Extra on erection rate for 3 (e)(i) for work under power block	Each	0	473	2000.00	0.00	946,000.00	946,000.00
	32	Extra on erection rate for 8 (b)(v) for work under power block	Each	0	195	400.00	0.00	78,000.00	78,000.00
	33(b)	Extra on erection rate for 3 (a)(ii) for manual work	MT	0	518.5	100.00	0.00	51,850.00	51,850.00
	33(b)	Extra on erection rate for 3 (b)(i) for manual work	MT	0	1,773	370.00	0.00	656,010.00	656,010.00
	33(b)	Extra on erection rate for 3 (b)(ii) for manual work	MT	0	519	2906.84	0.00	15,07,196.54	15,07,196.54
	33(b)	Extra on erection rate for 3 (b)(iii) for manual work	MT	0	1,773	150.00	0.00	265,950.00	265,950.00
		Total for Section-3					22,0360683.32	16,243122.7	23,6603806.02

SCHEDULE 1

SCHEDULE OF PRICES & TOTAL PRICES

SECTION 4 (a) (NON-FERROUS)

FORM-5, Sheet-11

This schedule shall be read in conjunction with its explanatory notes in Part-I Chapter IV "A" for detailed description for various items included therein. The rates at which payments are to be made shall be arrived at by loading these rates uniformly for each item with escalation of estimate (% above SOR) and loading of percentage quoted by the tenderer over advertised value of the section.

Item Code of IREPS	Item No.	Description	UOM	(All prices are in ₹)					
				SOR Rate		Qty.	Total Prices		
				Materials	Erection		Materials	Erection	Total (M+E)
1	2	3	4	5	6	7	8	9	10
04010100/ 04010101/ 04010102/	5(az)(ii)	Supply and erection of span wire.	Metre	498	23		0.00	0.00	0.00
04010200/ 04010201/ 04010202/	5(c)	Supply of without insulator and erection of Suspension/ registration of contact wire only.	Each	1,196	183		0.00	0.00	0.00
04010300/ 04010301/ 04010302/	6(az)	Supply and erection of Over Head equipment only	Km	46,757	13,521	10.00	467,570.00	135,210.00	602,780.00
04010400/ 04010401/ 04010402/	6(bz)	Supply & Erection of contact wire only	Km	2,828	6,048		0.00	0.00	0.00
04010500/ 04010501/ 04010502/	6(cz)	Supply and Erection of contact wire only (Regulated with bridle wire)	Km	27,230	7,944		0.00	0.00	0.00
04010600/ 04010601/ 04010602/	7(a)	Supply and Erection of all aluminium 25KV Feeder/ Return conductor (Single Spider)	Km	87,846	1,584		0.00	0.00	0.00
04010700/ 04010701/ 04010702/	7(c)	Supply and erection of earth wire.	Km.	43,213	1,208		0.00	0.00	0.00
04010800/ 04010801/ 04010802/	7(d)	Supply and Manual Erection of all aluminium 25KV Feeder/ Return conductor (Single Spider)	Km	87,846	2,476	400.00	35,138,400.00	990,400.00	36,128,800.00
04010800/ 04010801/ 04010802/	7(e)	Supply and Erection of copper cross feeder wires (37/2.25 mm HDBC) across the	Km	577,320	1,584	5.00	2,886,600.00	7,920.00	2,894,520.00

		track at SP/SSP/FP/BT locations							
04010900/ 04010901/ 04010902/	10(az)	Extra on item 6(a) for supply and erection of additional fittings at a turn-out, diamond crossing or overlap	Each	3,096	541	10.00	30,960.00	5,410.00	36,370.00
04011000/ 04011101/ 04011102/	10(bz)	Extra on item 6(b) for supply and erection of additional fittings required at a turnout, diamond crossing or overlap.	Each	2,603	431		0.00	0.00	0.00
FORM 5, Sheet-12									
04011200/ 04011201/ 04011202/	10(cz)	Extra on item 6(c) & (d) for supply and erection of additional fittings required at a turnout, diamond crossing or overlap.	Each	5,552	541		0.00	0.00	0.00
04011300/ 04011301/ 04011302/	12(az)	Supply without Insulator & erection of a section insulator assembly	Each	16,405	1,406	20.00	328,100.00	28,120.00	356,220.00
04011400/ 04011401/ 04011402/	12(b)	Supply without insulators.& erection of a double wire section insulator assembly	Each	16,612	1,412		0.00	0.00	0.00
04011500/ 04011501/ 04011502/	12(cz)	Supply without Insulator & erection of a section insulator assembly suitable for tramway type OHE (Regulated)	Each	16,295	1,249		0.00	0.00	0.00
04011600/ 04011601/ 04011602/	12(d)	Supply and Erection of a Ceramic/beaded Glass Fibre type (PTFE) Short Neutral section assembly	Each	263,409	2,174	14.00	3,687,726.00	30,436.00	3,718,162.00

04011700/ 04011701/ 04011702/	13(a)	Supply without Insulator and erection of a 25 KV single pole isolator without earth contact assembly.	Each	18,104	1,302		0.00	0.00	0.00
04011800/ 04011801/ 04011802/	13(b)	Supply without Insulators & erection of two 25 kV Single Pole Isolator gang operated without earth contact assembly.	Each	36,148	1,377		0.00	0.00	0.00
04011900/ 04011901/ 04011902/	13(c)	Supply without Insulators & erection of 25kV Double Pole Isolator.	Each	29,523	1,438		0.00	0.00	0.00
04012000/ 04012001/ 04012002/	13(d)	Extra for supply & erection of an earth contact assembly in an Isolator.	Each	6,025	150		0.00	0.00	0.00
04012100/ 04012101/ 04012102/	15(a)(i)	Supply & erection of large copper jumpers 105sqmm	Each	2,508	236	10.00	25,080.00	2,360.00	27,440.00
04012200/ 04012201/ 04012202/	15(a)(ii)	Supply & erection of small copper jumpers 50sqmm	Each	294	236	6200.00	1,822,800.00	1,463,200.00	3,286,000.00
04012300/ 04012301/ 04012302/	15(az) (iii)	Supply & erection of copper jumpers	Each	92	236		0.00	0.00	0.00
04012400/ 04012401/ 04012402/	15(a) (iv)	Supply & erection of a copper jumper (5mm dia droper wire).	Each	804	236		0.00	0.00	0.00
04012500/ 04012501/ 04012502/	15(b)	Supply and erection of an aluminum jumper.	Each	1,286	109	500.00	643,000.00	54,500.00	697,500.00
FORM 5, Sheet-13									
04012600/ 04012601/ 04012602/	15(c)	Supply and erection of insulated catenary cable in the span under over-line structures.	Each	2,621	217		0.00	0.00	0.00

04012700/ 04012701/ 04012702/	15(d)	Supply of materials and erection of Large copper jumper 160 Sq. mm between Aluminium bus and cross feeders	Each	3,154	236	550.00	1,734,700.00	129,800.00	1,864,500.00
04012800/ 04012801/ 04012802/	15(e)	Supply of materials and erection of Large copper jumper 160 Sq. mm between cross feeder and OHE	Each	4,801	236	250.00	1,200,250.00	59,000.00	1,259,250.00
04012900/ 04012901/ 04012902/	17(d)	Supply and erection of copper strips for equipment earthing.	Metre	271	32		0.00	0.00	0.00
04013000/ 04013001/ 04013002/	26(a) (i)	Supply & erection of : Aluminum bus-bars 36mm x 28mm.	Metre	195	31		0.00	0.00	0.00
04013100/ 04013101/ 04013102/	26(a) (ii)	Supply & erection of Solid copper bus-bars 18mm.:	Metre	879	44		0.00	0.00	0.00
04013200/ 04013201/ 04013202/	26(b) (i)	Supply and erection of Aluminum bus-bar connectors:- Bus terminal (6480)	Each	1,341	19		0.00	0.00	0.00
04013300/ 04013301/ 04013302/	26(b) (ii)	Supply and erection of Aluminum bus-bar connectors:- Bus splice (6490)	Each	1,482	19		0.00	0.00	0.00
04013400/ 04013401/ 04013302/	26(b) (iii)	Supply and erection of Aluminum bus-bar connectors:- Bus tee connector (6500)	Each	1,495	17		0.00	0.00	0.00
04013500/ 04013501/ 04013502/	26(b) (iv)	Supply and erection of Aluminum bus-bar connectors:- Terminal connector 36/20 (6530)	Each	1,349	17		0.00	0.00	0.00
04013600/ 04013601/ 04013602/	26(b) (v)	Supply and erection of Aluminum bus-bar connectors:- Tap connector (6520)	Each	1,349	19		0.00	0.00	0.00

04013700/ 04013701/ 04013702/	26(b) (vi)	Supply and erection of Aluminum bus-bar connectors:- Flexible bus splice (6550)	Each	3,924	19		0.00	0.00	0.00
FORM 5, Sheet-14									
04013800/ 04013801/ 04013802/	26(b) (vii)	Supply and erection of Aluminum bus-bar connectors:- Terminal connector Bolted Type (6830-1)	Each	1,067	17		0.00	0.00	0.00
04013900/ 04013901/ 04013902/	26(c) (i)	Supply & erection of solid copper bus-bar connectors: Bus terminal (6310)	Each	888	19		0.00	0.00	0.00
04014000/ 04014001/ 04014002/	26(c) (ii)	Supply & erection of solid copper bus-bar connectors: Bus splice (6320)	Each	980	19		0.00	0.00	0.00
04014100/ 04014101/ 04014102/	26(c) (iii)	Supply & erection of solid copper bus-bar connectors: Bus tee joint (6330)	Each	2,664	19		0.00	0.00	0.00
04014200/ 04014201/ 04014202/	26(c) (iv)	Supply & erection of solid copper bus-bar connectors: Bus terminating tee (6351)	Each	1,804	19		0.00	0.00	0.00
	32	Extra on erection rate for 7(d) for work under power block	km	0	2,476	400.00	0.00	990,400.00	990,400.00
	32	Extra on erection rate for 7(e) for work under power block	km	0	1,584	5.00	0.00	7,920.00	7,920.00
	32	Extra on erection rate for 12(d) for work under power block	Each	0	2,174	14.00	0.00	30,436.00	30,436.00
	32	Extra on erection rate for 15(b) for work under power block	Each	0	109	500.00	0.00	54,500.00	54,500.00
	32	Extra on erection rate for 15(d) for work under power block	Each	0	236	550.00	0.00	129,800.00	129,800.00

	32	Extra on erection rate for 15(e) for work under power block	Each	0	236	250.00	0.00	59,000.00	59,000.00
		Total for Section-4(a)					47,965,186.00	4,178,412.00	52,143,598.00
SCHEDULE 1									
SCHEDULE OF PRICES & TOTAL PRICES									
SECTION 5 (INSULATORS)									
FORM-5, Sheet-15									
This schedule shall be read in conjunction with its explanatory notes in Part-I Chapter IV "A" for detailed description for various items included therein. The rates at which payments are to be made shall be arrived at by loading these rates uniformly for each item with escalation of estimate (% above SOR) and loading of percentage quoted by the tenderer over advertised value of the section.									
Item Code of IREPS	Item No.	Description	UOM	(All prices are in ₹)					
				SOR Rate		Qty.	Total Prices		
				Materials	Erection		Materials	Erection	Total (M+E)
1	2	3	4	5	6	7	8	9	10
	4(ax)	Supply of Insulators for item 4(a)(i) & 4(a)(iii)							
06010100/ 06010101/ 06010102/	4(ax)(i)	Stay Arm Porcelain (CD-1050 mm)	Each	1554.72	0.00	1200	1865664.00	0.00	1865664.00
06010200/ 06010201/ 06010202/	4(ax)(ii)	Stay Arm Composite (CD-1050 mm)	Each	1498.75	0.00		0.00	0.00	0.00
06010300/ 06010301/ 06010302/	4(ax)(iii)	Stay Arm Composite (CD-1600 mm)	Each	2293.56	0.00		0.00	0.00	0.00
06010400/ 06010401/ 06010402/	4(ax)(iv)	Bracket Porcelain (CD-1050 mm)	Each	1338.07	0.00	1200	1605684.00	0.00	1605684.00
06010500/ 06010501/ 06010502/	4(ax)(v)	Bracket Composite (CD-1050 mm)	Each	890.29	0.00		0.00	0.00	0.00
06010600/ 06010601/ 06010602/	4(ax)(vi)	Bracket Composite (CD-1600 mm)	Each	2293.56	0.00		0.00	0.00	0.00
	4(bx)	Supply of 9-Tonne Insulators for items 4(b)(i) & 4(b)(iii)							

06010700/ 06010701/ 06010702/	4(bx)(i)	Porcelain (CD-1050 mm)	Each	1962.33	0.00		0.00	0.00	0.00
06010800/ 06010801/ 06010802/	4(bx)(ii)	Composite (CD-1050 mm)	Each	1240.61	0.00		0.00	0.00	0.00
06010900/ 06010901/ 06010902/	4(bx)(iii)	Composite (CD-1600 mm)	Each	2293.56	0.00		0.00	0.00	0.00
	5(ax)	Supply of 9-Tonne insulators for item 5(a)(i), 5(b) & 5(c)							
06011000/ 06011001/ 06011002/	5(ax)(i)	Porcelain (CD-1050 mm)	Set	3924.66	0.00		0.00	0.00	0.00
06011100/ 06011101/ 06011102/	5(ax)(ii)	Composite (CD-1050 mm)	Set	2481.22	0.00		0.00	0.00	0.00
06011200/ 06011201/ 06011202/	5(ax)(iii)	Composite (CD-1600 mm)	Set	4587.12	0.00		0.00	0.00	0.00
FORM 5, Sheet-16									
	8(bx)	Supply of 9-Tonne insulators for item 8(b)(i), (ii), (iii), (vi), (vii), (viii) & (ix)							
06011300/ 06011301/ 06011302/	8(bx)(i)	Porcelain (CD-1050 mm)	Each	1962.33	0.00	500.00	981,165.00	0.00	981,165.00
06011400/ 06011401/ 06011402/	8(bx)(ii)	Composite (CD-1050 mm)	Each	1240.61	0.00		0.00	0.00	0.00
06011500/ 06011501/ 06011502/	8(bx)(iii)	Composite (CD-1600 mm)	Each	2293.56	0.00		0.00	0.00	0.00
	9(ax)	Supply of 9-Tonne insulators for item 9(a), (b), (c), (d) & (e)							
06011600/ 06011601/ 06011602/	9(ax)(i)	Porcelain (CD-1050 mm)	Set	3924.66	0.00		0.00	0.00	0.00

06011700/ 06011701/ 06011702/	9(ax)(ii)	Composite (CD-1050 mm)	Set	2481.22	0.00		0.00	0.00	0.00
06011800/ 06011801/ 06011802/	9(ax)(iii)	Composite (CD-1600 mm)	Set	4587.12	0.00		0.00	0.00	0.00
	11(ax)	Supply of 9-Tonne Insulator for item 11(a)(i) & 11(a)(ii)							
06011900/ 06011901/ 06011902/	11(ax)(i)	Porcelain (CD-1050 mm)	Each	1962.33	0.00	6700.00	13,147,611.00	0.00	13,147,611.00
06012000/ 06012001/ 06012002/	11(ax)(ii)	Composite (CD-1050 mm)	Each	1240.61	0.00		0.00	0.00	0.00
06012100/ 06012101/ 06012102/	11(ax)(iii)	Composite (CD-1600 mm)	Each	2293.56	0.00		0.00	0.00	0.00
06012200/ 06012201/ 06012202/	11(bx)	Supply of 25 kV Post Insulator for Item 11 (b)	Each	3947.24	0.00	200.00	789,448.00	0.00	789,448.00
06012300/ 06012301/ 06012302/	11(cx)	Supply of 3 kV Disc Insulator for Item 11 (c)	Each	422.92	0.00		0.00	0.00	0.00
06012400/ 06012401/ 06012402/	11(dx)	Supply of 11 kV Post Insulator for Item 11 (d)	Each	422.92	0.00		0.00	0.00	0.00
	12(ax)	Supply of 9 Tonne and Sectioning Insulators for item No.12(a)							
06012500/ 06012501/ 06012502/	12(ax)(i)	Porcelain 9-Tonne (CD-1050 mm) & Sectioning Insulator	Set	6614.43	0.00		0.00	0.00	0.00
FORM 5, Sheet-17									
06012600/ 06012601/ 06012602/	12(ax)(ii)	Composite 9-Tonne (CD-1050 mm) & Sectioning Insulator	Set	5892.71	0.00		0.00	0.00	0.00
06012700/ 06012701/ 06012702/	12(ax)(iii)	Composite 9-Tonne (CD-1600 mm) & Sectioning Insulator	Set	6945.66	0.00		0.00	0.00	0.00
	12(bx)	Supply of 9 Tonne and Sectioning Insulators for item							

		No.12(b)							
06012800/ 06012801/ 06012802/	12(bx) (i)	Porcelain 9-Tonne (CD-1050 mm) & Sectioning Insulator	Set	11266.53	0.00		0.00	0.00	0.00
06012900/ 06012901/ 06012902/	12(bx) (ii)	Composite 9-Tonne (CD-1050 mm) & Sectioning Insulator	Set	10544.81	0.00		0.00	0.00	0.00
06013000/ 06013001/ 06013002/	12(bx) (iii)	Composite 9-Tonne (CD-1600 mm) & Sectioning Insulator	Set	11597.76	0.00		0.00	0.00	0.00
06013100/ 06013101/ 06013102/	12(cx)	Supply of Sectioning Insulators for 12(c) and 12(cz)	Each	4652.00	0.00		0.00	0.00	0.00
06013200/ 06013201/ 06013202/	13(ax)	Supply of Post & Operating rod insulators for item 13(a)	Set	10291.00	0.00		0.00	0.00	0.00
06013300/ 06013301/ 06013302/	13(bx)	Supply of Post & Operating rod insulators for item 13(b)	Set	20582.00	0.00		0.00	0.00	0.00
06013400/ 06013401/ 06013402/	13(cx)	Supply of Post & Operating rod insulators for item 13(c)	Set	20582.00	0.00		0.00	0.00	0.00
06013500/ 06013501/ 06013502/	28(x)	Supply of Post insulators for item 28	Set	7894.00	0.00		0.00	0.00	0.00
	Total for section-5						18389572.00	0.00	18389572.00
Summary									
Value of Section-1							8,845,450.00	11,755,120.00	20,600,570.00
Value of Section-2(a)							68,904,040.00	18,265,196.00	87,169,236.00
Value of Section-3							220360683.32	16243122.7	236603806.02
Value of Section-4(a)							47,965,186.00	4,178,412.00	52,143,598.00
Value of Section-5							18389572.00	0.00	18389572.00
Total value of Schedule-1 (SOR Cost)							364464931.32	50441850.7	414906782.02
Notes:- The above prices are inclusive of all applicable taxes (Octroi etc., if any.)									

Schedule -2 (NS)						
NS-1: (Non-Schedule Items)						
Sr No	Item No	Description of item	UOM	Qty	Average rate	Total Amount
1	NS-1	Dismantling of released cantilever.	Each	200	1447.80	289560.00
2	NS-2	Cutting and removal of released OHE masts/portals	Nos	980	1536.81	1506073.80
3	NS-3	Dismantling of small parts steel.	MT	50	9942.24	497112.00
4	NS-4	Removal of Foundation From bottom level and cleaning the site	Nos	980	7682.05	7528409.00
5	NS-5	Supply of 12.24 mm dia ACSR Raccoon aerial earth conductor with required fittings as on mast/potal/TTC as per RDSO drg., specification and perexplanatory note	Per TKM	400	84091.18	33636472.00
6	NS-6	Erection and laying of of 12.24 mm dia ACSR Raccoon aerial earth conductor with required fittings as on mast/potal/TTC as per RDSO drg., specification and perexplanatory note	Per TKM	400	11900.28	4760112.00
7	NS-7	Supply of 20 mm dia galvanized steel conductor (BEC) with necessary accessories, fittings & fasteners fittings & fasteners TEE, Lug OR any other items as per RDSO drg., specification and explanatory note	Per TKM	400	98376.03	39350412.00
8	NS-8	Erection & laying of BEC of 20 mm dia galvanized steel conductor (BEC) with necessary accessories, fittings & fasteners TEE, Lug OR any other items as per RDSO drg. specification and explanatory note	Per TKM	400	39949.90	15979960.00
9	NS-9	Provision of Digging of trench 300mm deep and refilling in all soil and repair of PF area as per explanatory notes	Kilometre	400	55830.51	22332204.00
10	NS-10	Transportation of Railway supply materials from Railway depots to work site or Released material from Work site to Railway depot	MT	100	7365.18	736518.00
11	NS-11	Supply and erection feeder cable termination kit	Each	5	106148.36	530741.80
12	NS-12	Supply and erection of straight through jointing kit	Each	5	122939.08	614695.40
13	NS-13	Supply of feeder cable (25kV feeder cable of suitable size of voltage grade 26kV/45kV (52kV) as per IEC 60840 for 600 amp current carrying capacity as used in Metros may be provided)	Mtr	1000	9506.39	9506390.00
14	NS-14	Laying of feeder cable	Mtr	1000	8330.31	8330310.00
15	NS-15	Provision of retro-reflective number plate for feeder mast with SPS as per specifications & explanatory note	Numbers	6700	1035.22	6935974.00
16	NS-16	Erection of retro-reflective number plate for feeder mast with SPS	Numbers	6700	169.83	1137861.00
17	NS-17	Tree trimming/Pruning/cutting of branches of Various types of trees dangerous to FEEDER/OHE line .	Number	4000	114.74	458960.00
18	NS-18	Marking and Painting of Elementary section/rail level and implantation on OHE structure as per explanatory notes and technical specification	Number	5000	281.57	1407850.00
19	NS-19	Digging and filling of trench size 0.4 x 0.8 mtr as per spec. (trench work may be on kuchha/pucca land and all type of soil as per site requirement and without protective layer of brick)	Metre	10000	60.71	607100.00
20	NS-20	Dismantling OF PTFE neutral section	Nos	14	8209.89	114938.46
21	NS-21	Supply of 2x25 Kv (55/66KV) DP isolator complete with SPS for 2x25 kv OHE system as per RDSO drawing, Spec. & explanatory notes.	Nos	60	125200.87	7512052.20
22	NS-22	Erection of 2x25 Kv (55/66Kv) DP isolator complete with SPS for 2x25 kv OHE system as per RDSO drawing, Spec. & explanatory notes.	Nos	60	5587.08	335224.80
23	NS-23	Extra on erection rate for work under power block for item NS-1	Each	200	1345.77	269154.00
24	NS-24	Extra on erection rate for work under power block for item NS-2	Nos	980	1458.41	1429241.80
25	NS-25	Extra on erection rate for work under power block for item NS-3	MT	50	9083.90	454195.00
26	NS-26	Supply Erection of Pulley Block (set of 3 pulley) for 3:1 , 3 pulley type Regulating Equipment(2400 kgf)	Set	800	35100.00	28080000.00
27	NS-27	Supply erection of Central eye rod to incorporate additional Counter weight of 135 kg for 3:1 , 3 pulleytype Regulating Equipment(2400 kgf).	Set	800	986.70	789360.00
28	NS-28	Dismantling and erection of counter weight assembly	Set	800	1418.30	1134640.00
29	NS-29	Dismantling of guy rod with termination	Set	50	1056.19	52809.50
30	NS-30	Erection of new dropper and re-adjustment of dropper (5mm dropper wire and contact & catenary clips with bolt, nut, washer nut and split pin etc.	Each span	7000	528.09	3696630.00
31	NS-31	Adjustment of OHE and Tower Wagon checking	each spa	7000	2908.10	20356700.00
32	NS-32	NS-10 Supply of additional balance weight (03 Nos. 40Kg& 01 No. 20Kg) for ATD as per RDSO specification no. TI/SPC/OHE/3PHTATD/0150 with ACS-1.	Numbers	400	8558.22	3423288.00
33	NS-33	Supply and erection of 160sq mm copper jumper	Meter	800	883.06	706448
TOTAL						224501396.76

TO be Submitted with Packet -A

FORM - 6

SCHEDULE -2

LIST OF IMPORTED SPECIAL TOOLS, PLANT EQUIPMENT AND
MATERIALS FOR CONSTRUCTION

FOR OHE WORKS

FORM -7
Sheet -1

SCHEDULE - 3
UNIT PRICES
SECTION - 1 (General)

Deleted

FORM -7
Sheet -2

SCHEDULE - 3
UNIT PRICES
SECTION - 2 (CONCRETE)

Deleted

SCHEDULE - 3 UNIT PRICES**SECTION - 3 (FERROUS)**

The rates given below against different items of work in different sub-sections of this schedule are the standard schedule of rates. The rates at which payments are to be made shall be arrived at by loading these rate uniformly for each item with escalation of estimate (% above on SOR) and percentage quoted by the Tenderer over advertised value of the section.

Railway Drawing			Railway ID	Description of Equipments, Components & materials	Unit	Unit Price (Rs.)
Series						
1	2	3	4	5	6	7
ETI/OHE/P	1030-2 (Mod-D)	2 & 3	16/3, N	S.S.Bolt M 16 x 50 /38 with nut and spring washer.	Each	40
-do-	1040-2 (Mod-E)	2 & 3	16/3, N	S.S.Bolt M 16 x 50 /38 with nut and spring washer.	Each	40
-do-	1070-I (Mod-B)	3 to 5	12/17, N	S.S.Bolt M 10 x 35/30 with nutpunched washer and spring washer.	Set.	23
-do-	1080-1 (Mod.B)	2	12/14	S.S.Stud Bolt M 12 x 25/20	Set of 8 Nos	98
-do-	1110-2 (Mod.D)	1 & 2	1118 & 1119	Contact wire Ending Clamp(107)	Each	75
-do-	1110-2 (Mod.E)	1 & 2	1118 & 1119	Contact wire Ending Clamp(107)	Each	75
-do-	-do-	3, 4 & 5	263	G S.pin Φ 20 x 50 (Snap head) with punched washer A 22 & Annealed copper split pin 4 x 40	-do-	12
-do-	1120 (MOD B)	4 to 6	261	G S.pin m 20 x 55 (Snap head) with punched washer A 22 & Annealed copper split pin Φ 4 x 40.	-do-	12
ETI/OHE/P	1120-1 (Mod.A)	1 to 5	1122 & 1123	Catenary ending clamp	Set	167
-do-	1130	4 to 6	261	G.S.pin Φ 20 x 55 (snap head) with punched washer A 22 & Annealed copper split pin Φ 4 x 40	Each	12
-do-	1140 (Mod.B)	4 to 6	261	G.S.pin Φ 20 x 55 (snap head) with punched washer A 22 & Annealed copper split pin Φ 4 x 40	Each	12

RE/33/P	1160 (Mod J)	2 & 5	1162-S& 10 N	SS 10 'U' Bolt with nuts.	-do--	38
-do-	-do-	3, 6 & 7	161-S	S.S.Pin Φ 10 x 35 mm with punched washer A 12 & annealed copper split pin 2.5 x 20mm	-do-	15
-do-	1170 (Mod. K)	3 & 5	1173-S & 10 N	S.S. Φ 10'U' bolt with nuts.	-do-	44
-do-	-do-	7 to 9	161-S	S.S.pin Φ 10 x 35 mm with punched washer A 12 and coppersplit pin 2.5 x 20	-do-	15

PART-V

FORM -7
Sheet -4

1	2	3	4	5	6	7
ETI/OHE/P	1192 (Mod.C)	2, 3 & 4	10/16 N	S.S.bolt M 10 x 35/30 with nut, spring washer B 10 and annealed copper split pin 2.5 x 20	-do-	15
ETI/OHE/P	1194 (Mod.A)	2 to 4	10/16N	S.S.Bolt M 10 x 35/30 with Nut, spring washer B 10 & annealed copper split pin 2.5 x 20	-do-	12
ETI/OHE/P	1216 (Mod.D)	1 & 2	1214-2, 2492-2)	Knuckle tube clmp (MCI)	Each	57
ETI/OHE/P	1216 (Mod.D)	3	14/1 NL	G.S.Bolt M 14 x 75/34 with nut and lock nut.	Each .	13
ETI/OHE/P	1263	1	1263	Strain clamp link.	Each .	38
RE/33/P	1270-1 (Mod.F)	2, 3 & 5	261	G.S.Snap head pin Φ 20 x 55 with punched washer A 22 and annealed copper split pin 4 x 40	Each .	12
-do-	-do-	3	12/18	S.S.Stud M 12 x 50/50	Set of 8 Nos	115
ETI/OHE/P	1310	-	--	S.S.Bolt Φ 10 x 35/30 with nut, spring washer & annealed copper split pin Φ 2.5 x 25	Set of 2 Nos	30
ETI/OHE/P	1320 (Mod.B)	2 to 4	1322, 10N	S.S.'U' Bolt m 10mm with nut and spring washer.	Each .	26
ETI/OHE/P	1330 (Mod.B)	2 & 4 to 6	4032-S & 10 NL	S.S.'U' Bolt Φ 10mm with nut, lock nut & annealed copper splitpin 2.5 x 20	Each .	26
ETI/OHE/P	1360 (Mod.B)	4 to 6	261	G.S.pin 20 x 55 (snap head) punched washer A 22 and annealed copper split pin 4 x 40	Each .	12

ETI/OHE/P	1370-1 (Mod.F)	1	1371-1	Raised Register Arm clamp	1 Set.	54
ETI/OHE/P	-do-	2 & 3	16/6 NL	G.S.Bolt M 16 x 60/38 with Nut, Lock nut and spring washer B 16	Set of 2 Nos	18
ETI/OHE/P	1390-1 (Mod.D)	1	1391-1	Crossing clamp piece	Set of 4 Nos	76
ETI/OHE/P	-do-	2 to 4	14/1N	G.S.Bolt M 14 x 75/34 with nut, punched washer A 16 and annealed copper split pin 3.2x 25	Set	28
ETI/OHE/P	1400 (Mod.C)	1 & 4	1401, 117 4	Short Dropper assembly.	Each	20
ETI/OHE/P	-do-	5, 7 & 8	10/18 N	S.S.Bolt M 10 x 55 /30 with nut, spring washer B 10 and punched washer A 12	Each .	20
ETI/OHE/P	-do-	6 & 7	10/17 N	S.S.Bolt M 10 x 40/26 with nut & spring washer.	-do-	15
ETI/OHE/P	1540 (Mod.D)	2 to 4	12/19 N	S.S.Bolt M 12 x 60 /30 with nut, punched washer A 14 and spring washer B 12.	-do-	31

PART-V**FORM -7****Sheet 5**

1	2	3	4	5	6	7
ETI/OHE/P	1550 (Mod.E).	2 to 4	12/19 N	S.S.Bolt M 12x60/30 with nut punched washer A 14 and spring washer B 12	Set of 3 Nos	93
ETI/OHE/P	1560 (Mod.D)	2 to 4	12/19 N	S.S.Bolt M 12x60/30 with nut punched washer A 14 and spring washer B 12	Set of 3 Nos.	93
ETI/OHE/P	1580 (Mod.F)	3 to 9	1583 12 N	S.S.'U' bolt Φ 12 to with nut, spring washer B 12, punched washer A 14, 16 Φ pin 70 mm long, punched washer A 18 and annealed copper split pin 4x32.	Set	129
ETI/OHE/P	1600 (Mod.C)	1 & 2	1601 & 1602	20 mm Strain clamp.	Each	279
ETI/OHE/P	1600 (Mod.C)	3 to 8	1603 & 12N	S.S. "U" Bolt Φ 12, nut to punched washer A 14, snap head pin Φ 16x55, punched washer A 18 and annealed copper split pin 4x32	Set	181
RE/33/P	2086 (Mod.C)	1		Large bracket sleeve.	Each	20
ETI/OHE/P	2110 (Mod.B)	3 to 5	2113 & 14N	G.S. 'U' bolt Φ 14 mm to with nut and spring washer B14.	Set	37
ETI/OHE/P	2120 (Mod.B)	5 & 6	2113 & 14N	'U' bolt Φ 14mm with nuts and spring washer B 14.	Set	37
ETI/OHE/P	2120 (Mod.B)	4	2124-S 12NL	Direct catenary clamp stud with S.S. Nut and lock nut.	Set of 2 nos.	41
ETI/OHE/P	2130 (Mod.B)	3 to 5	2133 & 14N	G.S. 'U' bolt 14 mm to with nut and spring washer B14	Set	39
ETI/OHE/P	2140 (Mod.C)	4	2124-S 14 NL	Direct catenary clamp stud with S.S. nut and lock nut.	Set of 2 nos.	41
ETI/OHE/P	2140 (Mod.C)	5 & 6	2133 & 14N	G.S. 'U' Bolt Φ 14 mm with nuts and spring washer B-14	Set	39
TI/DRG/OH E/FTGFE/R DSO	00007/10/ 0	1 & 2	2151-2 & 2152-2	Standard register arm hook (Forged)	Each	78
-do-	-do-	3	16/3 NL	G.S. Bolt M 16x50/38 with nut and lock nut.	Set of 2	15
-do-	00010/10/0	1 & 2	2161-2 & 2162-2	Large register arm hook (Forged)	Each	84
-do-	-do-	3	16/3NL	G.S. Bolt M 16x50/38 with nut and lock nut.	Set of 2	15

PART-V

FORM 7
Sheet 6

TI/DRG/OH E/FTGFE/R DSO	2274-1 (Mod.D)	1	2274-1	Dropper clip (38) for standard bracket tube.	Each	21
ETI/OHE/P	2274-1 (Mod.D)	2 to 5	16/2, 16LN	G.S. Bolt M 16x40/32 with lock nut, spring washer B 16 & annealedcopper split pin 4x32.	Each	9
ETI/OHE/P	2277 (Mod.D)	1	2277	Dropper clip (49) for large bracket tube.	Each	21
ETI/OHE/P	2277 (Mod.D)	2 to 5	16/2 & 16LN	G.S. Bolt M 16x40/32 with lock nut, spring washer B 16 & annealedcopper split pin 4x32.	Each	9
ETI/OHE/P	2341 (Mod.B)	1	2341	Steady Rod piece of length 0.76 m	Each	103
ETI/OHE/P	2341 (Mod.B)	2	2342	Steady Rod piece of length 0.96 m	Each	119
ETI/OHE/P	2341 (Mod.B)	3	2343	Steady Rod piece of length 1.16 m	Each	142
ETI/OHE/P	2341 (Mod.B)	4	2344	Steady Rod piece of length 1.36 m	Each	167
ETI/OHE/P	2352 (Mod.A)	1	2352	Bend steady arm swivel.	Each	38
TI/DRG/OH E/FTGFE/R DSO	00016/ 10/0	1	2361-1	25 mm Drop bracket part. (Forged)	Each	84
-do-	-do-	2	10/14 LN	SS bolt M 10x25/20 with lock nut.	Each	10
ETI/OHE/P	2380 (Mod.C)	5 & 7	2113 & 14N	G.S. 'U' bolt m 14 with nuts and spring washer B 14	Set	37
ETI/OHE/P	2380 (Mod.C)	6 & 7	2133 & 14N	G.S. 'U' bolt m 14 with nuts and spring washer B 14	Set	39
TI/DRG/OH E/FTGFE/R DSO	00003/ 00/0	1	2391-1	Steady arm hook (BFB) (Forged)	Each	69
ETI/OHE/P	2392 (Mod.C)	6	2392	BFB Steady arm swivel	Each	21
ETI/OHE/P	2402 (Mod.A)	1	2402	Tubular stay adjuster.	Each	67
ETI/OHE/P	2402-1 (Mod.B)	1	2402-1	Tubular stay adjuster (large) (Steel Galv. to IS:226).	Each	78
TI/DRG/OHE/ FTGFE/RDSO	00004/ 03/0	1	2403-2	Tubular stay sleeve. (Forged)	Each	57
-do-	2404 (Mod.C)	2 & 4	2404- IS & 109-S	SS bolt with lock nut.	Each	11
-do-	00002/0 0/1	1	2422-2	Register arm eye piece (25 mm) (Forged)	Each	5
RE/33/P	2432 (Mod.E)	1	2432	Raised register arm adjuster (25 mm)	Each	60

ETI/OHE/P	2461-1 (Mod.F)	1	2461-1	Dropper clip (34 mm) for register arm tube.	Each	19
ETI/OHE/P	2461-1 (Mod.F)	2 to 4	16/2 LN	G.S. Bolt M 16x40/32 with lock nut, spring washer B 16 & annealedcopper split pin 4x32	Each	9
ETI/OHE/P	2471-1 (Mod.E)	1	2471-1	Dropper clip (25) for raised register arm.	Each	19

PART-V

**FORM 7
Sheet 7**

ETI/OHE/P	2471-1 (Mod.E)	2 to 4	16/2 LN	G.S. bolt M 16x40/32 with lock nut, spring washing B 16 and annealed copper split pin	Each	9
TI/DRG/OH E/FTGFE/R DSO	00015/ 10/0	1 & 2	2491-2 & 2492-2	25 mm steady arm clamp.(Forged)	Each	60
-do-	-do-	3	14/1 NL	G.S. bolt M 14x75/34 with nut and lock nut.	Each	13
ETI/OHE/P	2520 (Mod.B)	2	2522	Normal bent steady arm eye piece.	Each	48
ETI/OHE/P	2520 (Mod.B)	3	2523	Normal bent steady arm hook	Each	45
ETI/OHE/P	2520 (Mod.B)	4	2352	Bent steady arm swivel.	Each	38
ETI/OHE/P	2540 (Mod.B)	5	2541	BFB steady arm eye piece.	Each	33
ETI/OHE/P	2540 (Mod.B)	6	2542	BFB steady arm swivel.	Each	23
ETI/OHE/P	2541 (Mod.E)	1	2541	BFB steady arm eye piece.	Each	33
ETI/OHE/P	2542 (Mod.C)	3	2542-2	BFB steady arm swivel	Each	23
ETI/OHE/P	2550-1/2 (Mod.L)	1,2,6	2551-1 & 2502	Standard anti-wind clamp and AL alloy snap head rivet 4x35	Set	63
ETI/OHE/P	2550-1/2 (Mod.L)	1,2,6	2551-1 & 2503	Standard anti-wind clamp and AL alloy snap head rivet 4x35	Set	64
ETI/OHE/P	2550-1/2 (MOD.L)	4 to 5	10/20 N	S.S. Bolt M 10x70/26 with nut and spring washer B10	Each	17
ETI/OHE/P	2550-3 (Mod.E)	1, 2 & 5	2551-1 & 2504	Anti wind clamp for tram way OHE (REG) with snap head rivet m 4x35.	Set	63
ETI/OHE/P	2550-3 (Mod.E)	3 & 4	10/20N	S.S. Bolt M 10x70/26 with nut andspring washer B10	Each	17
ETI/OHE/P	2730 (MOD.A)	3 & 4	4032-S, 108/9-S	S.S. 'U' Bolt m 10 mm with nuts, locknut and annealed copper split pin 2.5x20.	Set	53
ETI/OHE/P	3010 (MOD.C)	1	3011	Double clevis (MCI)	Each	79
ETI/OHE/P	3010 (MOD.C)	2 to 4	262	G.S. Snap head pin m 20x60 punched washer A 22 and annealed copper split pin 4x40.	Set of 2 nos	24

TI/DRG/ OHE/ FTGFE/ RDSO	00005/ 04/0	-	3021-1	Mast fittings for hook insulator. (Forged)	Each	76
RE/33/P	3070-1 (MOD.H)	1 to 3	3070-1	Mast bracket fitting assembly (150)	Each	257
RE/33/P	3070-1 (MOD.H)	4 to 7	261	G.S. pin m 20x55 (snap head) punched washer A 22, annealed copper split pin 3.2x25 and annealed copper split pin 4x40.	Each	13

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RE/33/P	3070-2 (MOD.D)	1 to 3	3070-2	Mast Bracket fitting assembly (200)	Each	269
RE/33/P	3070-2 (MOD.D)	4 to 7	261	G.S. pin m 20x55 (snap head) punched washer A 22, annealed copper split pin 3.2x25 and annealed copper split pin 4x40.	Each	13
RE/33/P	3071 (MOD.F)	1	3071	Mast bracket clevis	Each	74
RE/33/P	3071-1 (MOD.B)	1	3071-1	Mast bracket clevis (Forged)	Each	94
ETI/OHE/P	3072 (MOD.A)	1	3072	Mast bracket clevis pin	Each	20
RE/33/P	3072-1 (MOD.A)	1	-	Mast bracket clevis pin	Each	18
RE/33/P	3073 (MOD.D)	1	3073	Mast bracket swivel (150)	Each	173
RE/33/P	3073 (MOD.E)	1	3073-3	Mast bracket swivel (150)	Each	173
RE/33/P	3074 (MOD.E)	1	3074	Mast bracket swivel (200)	Each	185
RE/33/P	3074 (MOD.F)	1	3074-3	Mast bracket swivel (200)	Each	185
ETI/OHE/P	3076 (MOD.C)	1 to 8	3076	Standard backing angle.	KG	27
ETI/OHE/P	3231 (MOD.C)	1	3231	Mast anchor fitting (welded)	Each	130
ETI/OHE/P	3231-2 (MOD.C)	1	-	Mast anchor fitting welded (to be used with cement counter weight assembly)	Each	174
ETI/OHE/P	3232 (MOD.C)	1	3232	Mast guy rod fitting (welded)	Each	143
ETI/OHE/P	3233 (MOD.B)	1	-	Mast anchor fitting (200)	Each	177
ETI/OHE/P	3234/5 (MOD.B)	1	-	Mast Guy Rod fitting (200/150)	Each	159
ETI/OHE/P	3234/5 (MOD.B)	2	-	Mast guy rod fitting (200/200)	Each	165
ETI/OHE/P	3240 (MOD.D)	X	-	Anchor fitting on 'K' series mast	Each	178

ETI/OHE/P	3240 (MOD.D)	Y	-	Guy rod fitting.	Each	186
ETI/OHE/P	3240 (MOD.D)	Z	-	Backing angles	Each	35
ETI/OHE/P	3241-2 (MOD.B)	X	-	Anchor fitting on 'K' series mast	Each	186
ETI/OHE/P	3241-2 (MOD.B)	Y	-	Guy rod fitting.	Each	193
-do-	4001 (Mod.A)	2 to 4	102-S & 108-S	SS Bolt M 10x35/30 with nut, Phosphor bronzespring washer & annealed split pin 2.5x25	Each	20
-do-	4002 (Mod.A)	2 to 4	102-S & 108-S	SS Bolt M 10x35/30 with nut, Phosphor bronzespring washer & annealed split pin 2.5x25	Each	20

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ETI/OHE/P	5000 (MOD.B)	1	5001	Anchor bolt (length 1.6m)	Each	293
ETI/OHE/P	5000 (MOD.B)	2	5001-1	Anchor bolt (length 2.1m)	Each	364
ETI/OHE/P	5000 (MOD.B)	3	5001	Anchor bolt (length 0.85m)	Each	96
ETI/OHE/P	5000 (MOD.B)	4	5002	Guy rod stirrup (steel galv. to IS-226)	Each	107
ETI/OHE/P	5000 (MOD.B)	5	5004	Guy rod m 25mm (steel galv. To IS-226)with nut, lock nut, plain washer and split pin. (length 9.3 m)	Each	896
			(OR)			
ETI/OHE/P	9070/1 (MOD.B)	1 & 3 to 6	9070	Guy rod m 20 mm	Set	896
ETI/OHE/P	5000 (MOD.B)	6	5005	Guy rod m 25mm (steel galv. To IS-226)with nut, lock nut, plain washer and split pin. (length 9.7 m).	Each	919
ETI/OHE/P	5000 (MOD.B)	7	5006-1 (OR)	Short Guy rod m 25mm (steel galv. To IS-226) with nut, lock nut, plain washerand split pin. (length 5.35 m).	Each	642
ETI/OHE/P	9070/1 (MOD.B)	2 & 3 to 6	9071	Guy rod dia 20 mm.	Set	642
ETI/OHE/P	5000 (MOD.B)	8	5007-1	Anchor 'V' bolt.	Each	90
ETI/OHE/P	5000 (MOD.B)	9	5008	B.C. Anchor loop.	Each	299
ETI/OHE/P	5020-1	1 to 4	5021, 5023 & 5024	9 Tonne adjuster complete (Eye and clevis type)	Each	287
ETI/OHE/P	5020-2	1 to 4	5021-5024 & 5025	9 Tonne adjuster complete (double clevis type).	Each	287

ETI/OHE/P	5030 (MOD.C)	1	5031	Anchor double strap.	Set	31
ETI/OHE/P	5030 (MOD.C)	2 to 4	261	G.S. pin m 20x55 (Snap head) with washer m 20 mm and copper split pin 4x36.	Set of 2 nos.	24
TI/DRG/OHE/FTGFE/RDSO	00001/00/1	1	5041-1	18mm single clevis (Forged)	Each	84
-do-	-do-	2 to 4	262	G.S. pin m 20x60 with annealed copper split pin 4x36 and G.S. flat washer m 20mm.	Each	12
ETI/OHE/P	5060-2 (MOD.C)	9 to 12 & 23	5063-1 & 5067	Standard guide tube assembly	Each	367
ETI/OHE/P	5090 (MOD.C)	1 to 3	5091, 5092 & 5093	Counter weight assembly (Excluding counter weight eye rod with nut and splitpin.)	Set	4776

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FORM 7
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ETI/OHE/P	5090 (MOD.C)	4 & 5	5094 & 238	Counter weight eye rod (Steel Galv. to IS:226), G.S. nut m 20, washer and annealed coppersplit pin 4x40.	Each	104
TI/DRG/OH E/ATD/ RDSO/000 4/00/0	5090-1 (MOD.D)	1 to 3	5091 - 1 5092- 1 5093- 1	Trapezoidal counter weight assembly (Excl eyerod).	Set	4716
-do-	5090-1 (MOD.D)	4, 7 & 8	5099- 1 & 20N & 238	Trapezoidal counter weight eye rod (Steel Galv. to IS:226) Φ 20 G.S. nut, punched washer A-22and annealed copper split pin 4x40.	Each	137
-do-	5090-1 (MOD.D)	5, 9 & 10	5097-3	G.S. BOLT m 16x189/100 both ends threaded, 2 nuts flat washer m 16 & spring washing m 16.	Set of 2 nos.	67
-do-	5090-1 (MOD.D)	6	5096	M.S. Galv. guide plate 100x10 thick 370 long with 2 hooks welded.	Each	100
ETI/OHE/P	5090-3 (MOD.F)	1	5094-1	Counter weight eye rod.	Each	78
ETI/OHE/P	5090-3 (MOD.F)	2	5098-1	Counter weight piece.	Each	119
ETI/OHE/P	5090-3 (MOD.F)	2A to 4	5098, 5092 & 5091	Counter weights.	Set	2985
ETI/OHE/P	5090-3 (MOD.F)	5, 5A & 6	-	G.S. nut and G.I. punched washer A-22 and annealed copper split pin 4x40.	Each	6
ETI/OHE/P	5090-4 (MOD.F)	4 & 5	-	Counter weight eye rod with nut, washer, split pin and bolt 12x850/49 with nut, flat washer and split pin 3.2x25.	Set	157
ETI/OHE/P	5090-4 (MOD.F)	4A, 5A & 6	-	Counter weight eye rod 650 mm long, nut, washer & split pin with bolt 12x450/49 with nut, flat washer and split pin 3.2x20 & counter weight piece.	Set	256
ETI/OHE/P	5090-5 (MOD.B)	1 to 4	5091, 5092, 5093 & 5098	Counter weight assembly for 3 pulley type regulating equipment.	Set	8101
ETI/OHE/P	5090-5 (MOD.B)	5 to 8	5099	Counter weight eye rod (1550 mm) long with nut, washer and split pin.	Each	167

ETI/OHE/P	5090-6 (MOD.B)	1 to 4	5091, 5092, 5098 5098- 1	Counter weight assembly for 3 pulley type regulating equipment (Tramway type)	Set	4955
ETI/OHE/P	5090-6 (MOD.B)	5 to 6	5094 & 20N	Counter weight eye rod with nut and split pin4x40.	Each	103

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FORM 7
Sheet 11

ETI/OHE/P	5183 (MOD.C)	1	5183	Double eye distance rod (20 mm) steelgalvanised to IS:226	Each	107
ETI/OHE/P	5190-1 (MOD.C)	1	5194	Compensating plate	Set	179
ETI/OHE/P	5190-1 (MOD.C)	2 to 4	261	G.S. snap head pin Φ 20x55, punched washer A-22 and annealed copper split pin 4x40.	Set of 3 nos.	37
ETI/OHE/P	5190-2 (MOD.C)	1	5195	Equalising plate 8mm.	Set	191
ETI/OHE/P	5190-2 (MOD.C)	2 to 4	261	G.S. snap head pin Φ 20x55, punched washer A-22 and annealed copper splitpin 4x40.	Set of 3 nos.	37
ETI/OHE/P	5191 (MOD.B)	1	5191	Compensating plate	Each	90
ETI/OHE/P	5191- 1/2 (MOD.D)	1	5191-1 or 5191- 2	Compensating plate	Each	97
ETI/OHE/P	5192 (MOD.B)	1	5192	Equalising plate.	Each	160
ETI/OHE/P	5192- 1/2 (MOD.C)	1	5191-1 or 5192- 2	Equalising plate.	Each	197
ETI/OHE/P	5193 (MOD.B)	1	5193	Short equalising plate	Each	72
ETI/OHE/P	5220 (MOD.F)	1	5221	Guy rod double strap (100) assembly (steel galvanised to IS:226)	Set	72
ETI/OHE/P	5220 (MOD.F)	2	5222	Guy rod double strap (150/250) assembly(steel galvanised to IS:226)	Set	117
ETI/OHE/P	5220 (MOD.F)	3&4	24/1 LN	Steel galvanised bolt M-24x70/54 withlock nut and annealed copper split pin 5x40.	Set of 2 nos.	52
ETI/OHE/P	6000 (MOD.C)	5&6	105-S, 108-S and 109-S	S.S. bolt Φ 10x65/30, with nut, lock nutand washer.	Each	20
ETI/OHE/P	6030 MOD.B)	4&5	6034S, 108S & 109S	S.S. bolt Φ 10 MM nut, lock nut and washer.	Set of 2 nos.	67
ETI/OHE/P	6070-1	4,6 & 8	-	11 kV post insulator cap clamp (jumper) G.S. HEX bolt M 12x40/30 with springwasher.	Set	104
ETI/OHE/P	6070-1	5,7 & 8	-	11 kV post insulator clamp (bus-bar) G.S.HEX bolt M 12x55/30 with spring washer.	Set	104
ETI/OHE/P	6075/ 6076 (MOD.C)	1	6075	3 kV pedestal insulator cap clamp (busbar).	Set of 2 nos.	45
ETI/OHE/P	6075/ 6076 (MOD.C)	2	6076	3 kV pedestal insulator cap clamp (JUMPER).	Set of 2 nos.	45

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**FORM 7
SHEET 12**

ETI/OHE/P	6094 (MOD.B)	1	6094	Post insulatorjumper clamp	Set of 2 nos	64
ETI/OHE/P	6095 (MOD.B)	1	6095	Post insulatorbusbar clamp	Set of 2 nos	64
ETI/OHE/P	6170 (MOD.C)	2 & 3	101-S & 108-S	S.S. bolt 10x35/30 with nut and phosphor bronze spring washer 10 mm	Each	14
ETI/OHE/P	6181 -1 (MOD.D)	1	6181-1	Section Insulator double strap only.	Set	24
ETI/OHE/P	6181 -1 (MOD.D)	2 to 4	-	S.S pivot pin with flat washing and annealed copper split pin 2.5x25	Set of 2 nos	31
ETI/PSI/P	6480 (MOD.C)	3 & 4	-	S.S. bolt m 12x60/40 withnut flat washer and spring washer.	Set	274
ETI/PSI/P	6490 (MOD.B)	3 & 4	-	S.S. bolt m 12x60/40 complete with nut flatwasher and spring washer.	Set	274
ETI/PSI/P	6500 (MOD.C)	3 & 4	-	S.S. bolt m 12x60/30 complete with nut flat washer and spring washer.	Set	274
ETI/PSI/P	6510 (MOD.D)	3 & 4	-	S.S. bolt m 12x60/40 complete with nut flat washer and spring washer	Set	137
ETI/PSI/P	6520 (MOD.B)	4 & 5	-	S.S. bolt m 2x60/40 complete with nut flat washer and spring washer.	Set	274
ETI/PSI/P	6530 (MOD.C)	4 & 5	-	S.S. bolt m 12x60/40 complete with nut flat washer and spring washer.	Set	274
ETI/PSI/P	6550 (MOD.B)	6 & 7	-	S.S. bolt m 12x70/40 complete with nut flat washer and spring washer.	Set	274
ETI/PSI/P	6550 (MOD.B)	8	-	G.S. stud bolt 16x30/20 with flat washing and spring washing.	Set	21
ETI/PSI/P	6560 (MOD.B)	3 & 4	-	S.S. bolt m 12x60/30 complete with nut flat washer and spring washer.	Set of 12 nos.	440
ETI/PSI/P	6830-1 (MOD.D)	3 & 4	12/20N	S.S. bolt M 12x50/30 withnut flat washer A-14 and spring washer B12.	Set	113
ETI/OHE/P	7021 (MOD.A)	1 & 2	7021	Earth electrode.	Each	478
RE/33/P	7040 (MOD.E)	1	7040	Earth wire mast clamp.	Each	158

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FORM 7
SHEET 13

RE/33/P	7040 (MOD.E)	2&3	-	G.S. wire mast clamp hook with Φ 16mm nut lock nut, washer and bolt 16x65/38 mm with nut, lock nut and washer.	Each	26
RE/33/P	7050 (MOD.D)	1&2	7050 or 7051-1	Earth wire strain clamp	Each	328
RE/33/P	7050 (MOD.D)	3to8	218, 262	G.S. 'U' bolt 16 mm, nut, spring washer, snap head pin Φ 20x60 mm, plain washer 20 dia and copper split pin Φ 4x36 mm.	Set	59
RE/33/P	7501 (MOD.F)	-	7501	Typical structural no. plate (100mm size)	Each	54
RE/33/P	7511 (MOD.B)	-	-	Typical isolator no. plate	Each	30
ETI/PSI/P	7520 (MOD.B)	-	-	Typical no. plate for interrupter and DP Isolator	Each	30
ETI/PSI/P	7521 (MOD.B)	-	-	Typical no. plate for potential transformer type-1.	Each	30
ETI/PSI/P	7522 (MOD.B)	-	-	Typical no. plate for booster transformer.	Each	30
ETI/PSI/P	7525	-	-	Typical no. plate for Auxilliary transformer.	Each	30
ETI/OHE/SK	123 (MOD.D)	2 to 4	-	S.S. bolt Φ 12x60/30 with nut washer and spring washer.	Set	64
ETI/OHE/SK	123 (MOD.D)	2 to 4	-	G.S. Bolt Φ 16x60/38 with nut washer and spring washer.	Set	16
ETI/OHE/SK	130 (MOD.D)	2 to 5	102-S & 108- S	S.S. bolt Φ 10x35/30 with nut G.S.spring washer and dropper split pin Φ 2.5x25 and plat washer.	Each	16
ETI/OHE/SK	176 (MOD.D)	1	1161-1	AL Alloy catenary suspension clamp body (MCI)	Each	150
ETI/OHE/SK	176 (MOD.D)	4	SK-205	M.S. sheet galvanised suspension clamp lock plate.	Each	7
ETI/OHE/SK	176 (MOD.D)	2,3 & 5to7	1162-S	S.S.'U' bolt m 10 mm G.S. pin Φ 16x50 mm SS nut dia 10 mm, copper split pin 2.5x25 mm and G.S. flat washer dia 16 mm.	Each	41
ETI/OHE/SK	205 (MOD.B)	1	-	Double suspension lock plat (galvanised MCI)	Each	4
ETI/OHE/SK	231 (MOD.D)	2to4	12/19N	S.S. bolt M 12x60/30 with set nut, flat washer and spring washer.	Each	64
ETI/OHE/SK	231 (MOD.D)	2to4	16/6N	G.S. Bolt M16x60/38 with nut Flat washer and spring washer.	Set	16
ETI/OHE/SK	333 (MOD.D)	2to6	-	S.S. bolt dia 10x35/30 with nut, spring washer, copper split pin dia 2.5x25 Al, Cu Bi metallic washer and flat washer.	Each	24

ETI/OHE/SK	436 (MOD.B)	3 to 8	AL- 436/ 2	S.S. 'U' bolt dia 12 spring washer, flat washer, nut, snap head pin dia 16 and split pin 2.5x25 mm	Set	192
ETI/OHE/SK	468 (MOD.A)	2 & 5	-	S.S. 'U' bolt dia 10mm with nut.	Set	31
ETI/OHE/SK	468 (MOD.A)	1 & 4	1161- 1	Al. Catenary suspension clampassembly and lock plate (MCI)	Set	158
ETI/OHE/SK	468 (MOD.A)	3, 6 & 7	-	Pin dia 16/50 mm, split pin 2.5x25 mm.	Each	10
ETI/OHE/SK	469 (MOD.A)	1 & 2	1171- 1 & AL- 205	Double suspension clampassembly body and lock plate MCI.	Each	105
ETI/OHE/SK	469 (MOD.A)	3 & 5	1173- S & 108- S	S.S. 'U' bolt dia 10mm with nut.	Set	44
ETI/OHE/SK	469 (MOD.A)	7 to 9	-	G.S. pin dia 16x50. Split pin dia 2.5x25 and flat washer.	Each	10
Wires and flats				Galvanised steel wire (19/2.5 mm)	Meter	27
				G.I. Wire 8SWG	Meter	5
				MS flat 40x6 mm	KG	13
Small part steel				Small part steel work of shape and sizes.	M.Tonne	2746 2
TUBES						
RE/33/P	2041 (MOD.D)	-	-	Standard bracket tube dia 30x38 mm	Meter	113
RE/33/P	2081 (MOD.E)	-	-	Large bracket tube dia 40x49 mm	Meter	125
RE/33/P	2401 (MOD.C.) 2431 (MOD.D)	-	-	25 mm nominal bore steel tube for stay and register arms.	Meter	67
EQUIPMENTS						
				S.S. wire ropes for winch type regulating equipment (10.5 Mt.long)	Each	1799
				S.S. wire ropes for 3 pulley type regulating equipment (7 Mt long)	Each	1254
GALVANISED STEEL BOLTS & NUTS ETC.						
ETI/C	0073 (MOD.A)	-	10/1	Bolt M 10x30/25 mm	Each	3
ETI/C	0073 (MOD.A)	-	10/2	Bolt M 10x35/30 mm	Each	3
ETI/C	0073 (MOD.A)	-	10/3	Bolt M 10x170/32 mm	Each	4
ETI/C	0073 (MOD.A)	-		Nut for M 10 bolt.	Each	1

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SHEET 15**

ETI/C	0073 MOD.A	-	-	Lock nut for M 10 bolt	Each	1
ETI/C	0073 MOD.A	-	12/1	Bolt M 12x40/30 mm	Each	3
ETI/C	0073 MOD.A	-	12/2	Bolt M 12x45/30 mm	Each	3
ETI/C	0073 MOD.A	-	12/3	Bolt M 12x55/30 mm	Each	3
ETI/C	0073 MOD.A	-	12/4	Bolt M 12x60/30 mm with hole for split pin.	Each	4
ETI/C	0073 MOD.A	-	12/5	Bolt M 12x120/36 mm	Each	5
ETI/C	0073 MOD.A	-	12/6	Bolt M 12x200/49 mm	Each	8
ETI/C	0073 MOD.A	-	12/7	Bolt M 12x240/49 mm	Each	10
ETI/C	0073 MOD.A	-	12/8	Bolt M 12x350/49 mm	Each	11
ETI/C	0073 MOD.A	-	12/9	Bolt M 12x450/49 mm	Each	13
ETI/C	0073 MOD.A	-	-	Nut for M 12 bolt	Each	1
ETI/C	0073 MOD.A	-	-	Lock nut for M 12 bolt	Each	1
ETI/C	0073 MOD.A	-	14/1	Bolt M 14x75/34 mm	Each	10
ETI/C	0073 MOD.A	-	14/2	Bolt M 14x100/34 mm	Each	10
ETI/C	0073 MOD.A	-	-	Nut for M 14 bolt	Each	2
ETI/C	0073 MOD.A	-	-	Lock nut for M 14 bolt	Each	2
ETI/C	0073 MOD.A	-	16/1	Bolt M 16x30/25 mm	Each	4
ETI/C	0073 MOD.A	-	16/2	Bolt M 16x40/32 mm	Each	4
ETI/C	0073 MOD.A	-	16/3	Bolt M 16x50/38 mm	Each	4
ETI/C	0073 MOD.A	-	16/4	Bolt M 16x50/40 mm	Each	4
ETI/C	0073 MOD.A	-	16/5 & 16/6	Bolt M 16x60/38 mm with/without hole for split pin.	Each	5
ETI/C	0073 MOD.A	-	16/7	Bolt M 16x65/38 mm	Each	5
ETI/C	0073 MOD.A	-	16/8	Bolt M 16x65/60 mm	Each	6
ETI/C	0073 MOD.A	-	16/9	Bolt M 16x75/38 mm	Each	6
ETI/C	0073 MOD.A	-	16/10	Bolt M 16x100/38 mm	Each	7
ETI/C	0073 MOD.A	-	16/11	Bolt M 16x175/44 mm	Each	11
ETI/C	0073 MOD.A	-	16/12	Bolt M 16x210/57 mm	Each	16
ETI/C	0073 MOD.A	-	16/13	Bolt M 16x220/57 mm	Each	16
ETI/C	0073 MOD.A	-	16/14	Bolt M 16x240/57 mm	Each	19
ETI/C	0073 MOD.A	-	16/15	Bolt M 16x260/57 mm	Each	19
ETI/C	0073 MOD.A	-	16/16	Bolt M 16x270/57 mm	Each	19

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SHEET 16**

ETI/C	0073 MOD.A	-	16/17	Bolt M 16x300/57 mm	Each	21
ETI/C	0073 MOD.A	-	16/18	Bolt M 16x320/57 mm	Each	21
ETI/C	0073 MOD.A	-	16/19	Bolt M 16x360/57 mm	Each	23
ETI/C	0073 MOD.A	-	16/20	Bolt M 16x370/57 mm	Each	23
ETI/C	0073 MOD.A	-	16/21	Bolt M 16x400/57 mm	Each	30
ETI/C	0073 MOD.A	-	16/22	Bolt M 16x460/57 mm	Each	36
ETI/C	0073 MOD.A	-	16/23	Bolt M 16x500/57 mm	Each	37
ETI/C	0073 MOD.A	-	16/24	Bolt M 16x600/57 mm	Each	38
ETI/C	0073 MOD.A	-	16/25	Bolt M 16x650/57 mm	Each	41
ETI/C	0073 MOD.A	-		Nut for M 16 bolt	Each	2
ETI/C	0073 MOD.A	-		Lock nut for M 16 bolt	Each	2
ETI/C	0073 MOD.A	-	18/1	Bolt M 18x75/42 mm with hole for split pin	Each	14
ETI/C	0073 MOD.A	-	18/2	Bolt M 18x80/42 mm with hole for split pin	Each	16
ETI/C	0073 MOD.A	-		Nut for M 18 bolt	Each	2
ETI/C	0073 MOD.A	-		Lock nut for M 18 bolt	Each	2
ETI/C	0073 MOD.A	-	20/1	Bolt M 20x50/37 mm	Each	7
ETI/C	0073 MOD.A	-	20/2	Bolt M 20x50/46 mm	Each	7
ETI/C	0073 MOD.A	-	20/3	Bolt M 20x65/46 mm	Each	8
ETI/C	0073 MOD.A	-	20/4	Bolt M 20x85/46 mm	Each	10
ETI/C	0073 MOD.A	-	20/5	Bolt M 20x100/46 mm	Each	11
ETI/C	0073 MOD.A	-	20/6	Bolt M 20x200/52 mm	Each	24
ETI/C	0073 MOD.A	-	20/7	Bolt M 20x230/65 mm	Each	24
ETI/C	0073 MOD.A	-	20/8	Bolt M 20x260/65 mm	Each	24
ETI/C	0073 MOD.A	-	20/9	Bolt M 20x280/65 mm	Each	30
ETI/C	0073 MOD.A	-	20/10	Bolt M 20x310/65 mm	Each	30
ETI/C	0073 MOD.A	-	20/11	Bolt M 20x330/65 mm	Each	30
ETI/C	0073 MOD.A	-	20/12	Bolt M 20x360/65 mm	Each	30
ETI/C	0073 MOD.A	-	20/13	Bolt M 20x380/65 mm	Each	30
ETI/C	0073 MOD.A	-	20/14	Bolt M 20x470/65 mm	Each	36
ETI/C	0073 MOD.A	-	20/15	Bolt M 20x550/65 mm	Each	60
ETI/C	0073 MOD.A	-	20/16	Bolt M 20x650/65 mm	Each	60
ETI/C	0073 MOD.A	-	20/17	Bolt M 20x700/65 mm	Each	60

PART-V**FORM 7
SHEET 17**

ETI/C	0073 MOD.A	-	-	Nut for M 20 bolt	Each	3
ETI/C	0073 MOD.A	-	-	Lock nut for M 20 bolt	Each	3
ETI/C	0073 MOD.A	-	24/1	Bolt M 24x70/54 mm with hole for split pin.	Each	18
ETI/C	0073 MOD.A	-	-	Nut for M 24 bolt	Each	5
ETI/C	0073 MOD.A	-	-	Lock nut for M 24 bolt	Each	5
RE/33/P	250 MOD.B	1	2113	U' bolt for M 14 mm	Each	14
RE/33/P	250 MOD.B	2	2133	U' bolt for M 14 mm	Each	15
RE/33/P	260 MOD.C	1	261	Pin dia 20x55 mm	Each	10
RE/33/P	260 MOD.C	2	262	Pin dia 20x60 mm	Each	10
RE/33/P	260 MOD.C	3	263	Pin dia 20x50 mm	Each	10
STAINLESS STEEL BOLTS AND NUTS ETC.						
ETI/C	0073 MOD.A	-	10/14	Bolt M 10x25/20 mm	Each	7
ETI/C	0073 MOD.A	-	10/15 10/16	Bolt M 10x35/30 mm with and without hole for split pin	Each	8
ETI/C	0073 MOD.A	-	10/17	Bolt M 10x40/26 mm	Each	9
ETI/C	0073 MOD.A	-	10/18	Bolt M 10x55/30 mm	Each	10
ETI/C	0073 MOD.A	-	10/19	Bolt M 10x65/30 mm	Each	11
ETI/C	0073 MOD.A	-	10/20	Bolt M 10x75/26 mm	Each	11
ETI/C	0073 MOD.A	-	-	S.S. nut for M 10 bolt	Each	3
ETI/C	0073 MOD.A	-	-	S.S. lock nut for M 10 bolt	Each	3
ETI/C	0073 MOD.A	-	12/14	Bolt M 12x25/20 mm	Each	12
ETI/C	0073 MOD.A	-	12/15	Bolt M 12x25/25mm	Each	12
ETI/C	0073 MOD.A	-	12/16	Bolt M 12x30/30mm	Each	12
ETI/C	0073 MOD.A	-	12/17	Bolt M 12x45/30mm	Each	14
ETI/C	0073 MOD.A	-	12/18	Bolt M 12x50/50mm	Each	14
ETI/C	0073 MOD.A	-	12/19	Bolt M 12x60/30mm	Each	16
ETI/C	0073 MOD.A	-	-	S.S. nut for M 12 bolt	Each	6
ETI/C	0073 MOD.A	-	-	S.S. lock nut for M 12 bolt	Each	6
ETI/C	0073 MOD.A	-	14/14	Bolt M 14x75/34 mm	Each	19
ETI/C	0073 MOD.A	-	-	S.S. nut for M 14 bolt	Each	7
ETI/C	0073 MOD.A	-	-	S.S. lock nut for M 14 bolt	Each	7

PART-V

**FORM 7
SHEET 18**

ETI/OHE/P	2124 MOD.B	1	2124 S	Direct catenary clamp stud	Each	8
ETI/OHE/P	1320 MOD.B	2	-	U' bolt dia 10 mm	Each	13
ETI/OHE/P	150	6	4032-S	U bolt dia 10 mm	Each	13
ETI/OHE/P	160 MOD.A	-	161 S	Pin dia 10x35 mm	Each	9
-do-	-do-	-do-	-do-	Pin dia 12x45 mm	Each	11
-do-	-do-	-do-	-do-	Pin dia 16x60 mm	Each	18
-do-	-do-	-do-	-do-	Pin dia 18x75 mm	Each	21
G.S. 'J' bolts						
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x120/60 mm	Each	9
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x175/60 mm	Each	11
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x200/60 mm	Each	12
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x220/60 mm	Each	13
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x240/60 mm	Each	14
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x250/60 mm	Each	16
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x300/60 mm	Each	17
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x340/60 mm	Each	20
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x345/60 mm	Each	20
ETI/C/0074 MOD.A	-	-	-	J' bolt dia 16x400/60 mm	Each	30
SPRING WASHERS						
				Galvanised steel spring washer dia 12 mm	Per 100 nos.	42
				Galvanised steel spring washer dia 14 mm	Per 100 nos.	60
				Galvanised steel spring washer dia 16mm	Per 100 nos.	78
				Galvanised steel spring washer dia 20 mm	Per 100 nos.	155
FLAT WASHERS						
				Rust less flat washer dia 10 mm	Per 100 nos.	143
				Rust less flat washer dia 12 mm	Per 100 nos.	203
				Rust less flat washer dia 16 mm	Per 100 nos.	334
				Galvanised steel flat washer dia 14 mm	Per 100 nos.	69
				Galvanised steel flat washer dia 16 mm	Per 100 nos.	72
				Galvanised steel flat washer dia 20 mm	Per 100 nos.	78
				Galvanised steel flat washer dia 24 mm	Per 100 nos.	148
				Galvanised steel tapered washer dia 16 mm	Per 100 nos.	269

PART-V
SUB-SECTION –
4NON
FERROUS.

FORM-
7SHEET-
19

The rates given below against different items of work in different sub-sections of this schedule are the standard schedule of rates. The rates at which payments are to be made shall be arrived at by loading these rate uniformly for each item with escalation of estimate (% above on SOR) and percentage quoted by the Tenderer over advertised value of the section.

1	2	3	4	5	6	7
ETI/OHE/P	1010 (Rev.A)	1	1010	Terminal Connector (15mm) multiple holes (Bolted type).	Each	251
ETI/OHE/P	1030-2 (Mod.D)	1	1031-2	Contact wire parallel clamp (Large)	Set.	45
ETI/OHE/ SK	534 (Mod.C)	1&2	SK- 534/1 SK- 534/2	Parallel Clamp (Large) Compression type.	Each .	85
			OR			
ETI/OHE/ SK	535 (Mod.B)	1&2	SK- 535/1 SK- 535/2	Jumper Clamp (large) compression type.	Each .	85
			OR			
ETI/OHE/P	1030-3 (Mod.A)	1 to 3	1031-3	Parallel clamp	Set	85
ETI/OHE/P	1040-2 (Mod.E)	1	1041-2	Contact wire parallel clamp (Small)	Set	45
ETI/OHE/ SK	575 (Mod.A)	1&2	SK- 534/1 SK- 534/2	Parallel clamp (Small) compression type	Each	85
			OR			
ETI/OHE/ SK	576 (Mod.B)	1 & 2	SK- 576/1 SK- 535/2	Jumper Clamp (Small) compression type	Each	85
			OR			
ETI/OHE/P	1040-3 (Mod.B)	1 to 3	1041-3	Parallel Clamp(90/50)	Set	85
ETI/OHE/P	1050-3 (Mod.A)	1	1051-3	Parallel Clamp part (150/ 160)	Set	85
ETI/OHE/P	1070-1 (Mod.B)	1 & 2		Bridle wire clamp (6mm) with lockplate	Each	79
ETI/OHE/P	1080-1 (Mod.B)	1	1081-1	Contact wire splice (toothed type)	Set	216
ETI/OHE/P	1090	1 to 4	1091 TO 1094	Catenary splice (65)	Set	149
ETI/OHE/P	1120 (Mod.B)	1 to 3	1121, 1094 & 1092	Catenary Ending Clamp (65)	Each	155
ETI/OHE/P	1140 (Mod.B)	1 to 3	1131, 1143 & 1102	Large span wire ending clamp(130)	Each	281

RE/33/P	1160 (Mod.J)	1, 3, 4, 6& 7	1161,1163 & 161-S	Suspension clamp.	Each.	172
-do-	-do-	1	1161	Suspension clamp body	Each	151
-do-	-do-	4	1163	Suspension clamp lock plate.	Set of 2 Nos.	7
RE/33/P	1170 (Mod.K)	1, 2, 4 & 6 to 9	1171,1172, 1174,1163 & 161-S	Double suspension clamp.	Each.	255
-do-	-do-	1	1171	Double suspension clamp body.	Each	195
-do-	-do-	2	1172	Double suspension lock plate	Each	8
-do-	-do-	4	1174	Packing saddle	Each	30
-do-	-do-	6	1163	Suspension clamp lock plate.	Set of2 Nos	7
-do-	1180 (Mod.F)	1	1181	Contact wire dropper clip part.	Set	20
-do-	-do-	2	1182	Locking wire.	Each.	2
			OR			
ETI/OHE/ S K	572 Sh-1 (Mod.B)	1 to 3	SK-572/1 SK-572/2	Contact wire dropper clip		Not in Use
ETI/OHE/ P	1192 (Mod.C)	1	1192	Catenary Dropper Clip	Each	13
-do-	1194 (Mod.A)	1	1194	Bridle wire dropper clip.	Each	13
RE/33/P	1220 (Mod.E)	1	1221	Contact wire swivel clip part.	Set	47
-do-	-do-	2	1222	Contact wire swivel clip pin	Each	3
RE/33/P	1270-1 (Mod.F)	1	1272	Suspension clevis (18mm)	Each	67
-do-	1280 (Mod.C)	1&2	1281 & 1282	Double contact wire splice.	Each	1075
ETI/OHE/ P	1310	1	1311	Pull off clamp	Each	30
-do-	-do-	2	1192	Catenary Dropper clip	Set of 2 Nos.	26
-do-	1320 (Mod.B)	1	1321	'U'clamp(50/5 0) body	Each.	90
-do-	1330 (Mod.B)	1	1321	Distance piece 'U' clamp saddle	Each.	19

PART-V**FORM-7
SHEET-21**

-do-	-do-	3	4036	'U' clamp saddle	Each	15
ETI/OHE/P	1350	1	1351	Thimble (10mm)	Each	30
ETI/OHE/P	1360 (Mod.B)	1 to 3	1131, 1362 & 1361	Steel wireEnding clamp(90)	Each	263
ETI/OHE/P	1400 (Mod.C)	1 & 4	1401, 1174	Short Dropper Assembly.	Each	20
ETI/OHE/P	-do-	2	1402	Variable shortdropper clip(cont.wire)	Each	20
ETI/OHE/P	1540 (Mod.D)	1	1541	Parallel clamp part (10/20)	Each	81
ETI/OHE/P	-do-	5	-	Bimetallic strip (90x35x1mm)	Each	23
ETI/OHE/P	1550 (Mod.E)	1	1551	Parallel clamp part (20/20)	Each	107
ETI/OHE/P	1560 (Mod.D)	1	1561	Parllel clamp (15/20)	Each	75
ETI/OHE/P	-do-	5	-	Bimetallic strip (160x50x1mm)	Each	63
ETI/OHE/P	1580 Sh-1 (Mod.F)	1 & 2	1581 & 1582	Large suspension clamp 20mm	Each	106
ETI/OHE/P	-do-	10	--	Flat Armour tape.	KG	143
ETI/OHE/P	-do-	11	--	Armour tape ferrule.	Setof 2 Nos.	18
ETI/OHE/P	1600 (Mod.C)	1 & 2	1602	20mm Strain clamp	Each	279
ETI/OHE/P	1610-1	1	1610-1	Compression joint.	Each	209
ETI/OHE/P	1640	1	1640	Repair sleeve (compressiontype)	Each.	191
ETI/OHE/P	2064-1 (Mod.A)	2	2064-1	Tube cap 30mm	Each	12
ETI/OHE/P	2104-1 (Mod.A)	2	2104-1	Tube cap 40mm	Each	13
ETI/OHE/P	2110 (Mod.B)	1 & 2	2111 & 2112	Standard Catenary suspension Bracket.	Each	210
ETI/OHE/P	2120 (Mod.B)	1 & 2	2121 & 2122	Standard catenary directclamp	Each	206
ETI/OHE/P	-do-	3	2123	Direct catenary clamp grip	Each	21
ETI/OHE/P	2125 (Mod.B)	1	2125	Bridle wire sleeve.	Each.	16
ETI/OHE/P	2130 (Mod.B)	1 & 2	2131 & 2132	Large Catenary suspension Bracket.	Each	222
ETI/OHE/P	2140 (Mod.C)	1 & 2	2141 & 2142	Catenary direct clamp (Large).	Each	208

PART-V

**FORM-7
SHEET-22**

ETI/OHE/P	2140 (Mod.C)	3	2123	Direct catenary clamp grip	Each	21
ETI/OHE/P	2345	1	2345	Steady Rod Eye piece	Each	35
ETI/OHE/P	2380 (Mod.C)	1 & 3	2112 & 2122	Standard catenary suspension bracket top and bottom	Set	215
ETI/OHE/P	2380 (Mod.C)	2 & 4	2131 & 2142	Large catenary suspension bracket top and bottom	Set	263
ETI/OHE/P	2390 (Mod.B)	1	2544-5	BFB steady arm only L – 0.69 m.	Each	41
ETI/OHE/P	2390 (Mod.B)	2	2544-6	BFB steady arm only L – 0.89 m.	Each	53
ETI/OHE/P	2390 (Mod.B)	3	2544-7	BFB steady arm only L – 1.09	Each	65
ETI/OHE/P	2390 (Mod.B)	4	2544-8	BFB steady arm only L – 1.29 m	Each	77
ETI/OHE/P	2390 (Mod.B)	7	--	Al. Alloy Rivet dia 6x35	Set of 4 nos.	6
ETI/OHE/P	2423-1 (Mod.A)	1	2423-1	Tube cap 25mm	Each	12
ETI/OHE/P	2520 (Mod.B)	1	2521	Normal Bent Steady arm.	Each	112
ETI/OHE/P	-do-	5	--	Al Alloy Rivet 6 x 50	Set of 4 Nos	10
ETI/OHE/P	2540 (Mod.B)	1	2544-1	BFB Steady arm only. L = 0.72m	Each	43
ETI/OHE/P	-do-	2	2544-2	-do- L = 0./92m	Each	55
ETI/OHE/P	-do-	3	2544-3	-do- L= 1.12 m	Each	67
ETI/OHE/P	-do-	4	2544-4	-do- L=1.32m	Each	79
ETI/OHE/P	2540 (Mod.B)	7	--	Al. Alloy Rivet 6 x 35	Set of 4 Nos.	6
ETI/OHE/P	2540-1	1	2544-9/1	BFB Steady arm only for tramway OHE (Regulated) L= 0.92m	Each	55
ETI/OHE/P	-do-	1	2544-9/2	-do- L=1.12	Each	67
ETI/OHE/P	-do-	1	2544-9/3	L = 1.32 m	Each	79
ETI/OHE/P	-do-	4	1221	Contact wire swivel clip.	Each	47
ETI/OHE/P	-do-	6	--	AL.Alloy Rivet 6 x 33	Set of 4 Nos.	6

PART-V

**FORM-7
SHEET-23**

ETI/OHE/P	-do-	5	1222	Contact wire swivel clip pin	Each	3
RE/33/P	2700 (Mod.E)	1 & 3	2701 & 4036	Vee suspension assembly (Excl. 'U' Bolt of 10mm with nut lock nut and split pine)	Set	389
ETI/OHE/P	2710	1 to 4	--	Unequal vee suspension assembly.	Each	392
RE/33/P	2721 (Mod.C)	1	2721	Double vee suspension top	Each	328
ETI/OHE/P	2730 (Mod.A)	1	2731	Section support clamp part.	Each.	358
ETI/OHE/P	-do-	2	4036	Al Bronze 'U' bolt saddle.	Set of 2 Nos	30
ETI/OHE/P	4001 (Mod.A)	1	4001	Span wire clip (65)	Each	14
ETI/OHE/P	4002 (Mod.A)	1	4002	Span wire clip (130)	Each	14
ETI/OHE/P	6170 (Mod.C)	1	6171	Double Contact wire parallel clamp piece.	Set	25
ETI/OHE/P	6310-1 (Rev.A)	1 to 4	6310-1	18mm Bus terminal (Multiple Bolt)	Each	537
ETI/OHE/P	6320 (Mod.A)	1 to 4	6320	18mm Bus splice	Each	567
RE/33/P	6330 (Mod.C)	1 to 4	6330	18 mm bus tee Joint.	Each.	657
-do-	6350 (Mod.B)	1 to 4	6350	18mm Bus terminating Tee	Each	913
ETI/PSI/P	6480 (Mod.C)	1, 2, 5 & 6	6481 & 6482	36mm Aluminum Bus Terminal for 25 KV isolator (Rigid Type)	Each	156
ETI/PSI/P	6490 (Mod.B)	1 & 2	6491 & 6482	36 mm Aluminum Bus splice.	Each	323
ETI/PSI/P	6500 (Mod.C)	1 & 2	6501 & 6482	36 mm Aluminum Bus Tee connector.	Each	335
ETI/PSI/P	6510 (Mod.D)	1 & 2	6511 & 6482	36 mm Aluminum Tee terminal.	Each	388
ETI/PSI/P	6520 (Mod.B)	1 to 3	6521, 6482 & 6523	36/15 mm Tap connector.	Each	287
ETI/PSI/P	6530 (Mod.C)	1 to 3	6531, 6482 & 6592	36/20 mm Terminal Connector	Each	287
ETI/PSI/P	6550 (Mod.B)	1 to 4	6551, 6482-1, 6552 & 6553	36mm Aluminium Flexible Bus splice	Each	982

PART-V

FORM-7
SHEET-24

ETI/PSI/P	-do-	5	-	Bimetallic Strip	Set	96
ETI/PSI/P	6560 (Mod.B)	1 & 2	6561 & 6582	36mm Al.Bus splice cum Tee connector	Each	360
ETI/PSI/P	6830-1 (Mod.D)	1 & 2	6831 & 6592	Terminal connector for Al. Conductors (Bolted type)	Each	347
EIT/OHE/P	1009	1 to 4	1009 & 1099-1	Terminal connector (19mm) multiple hole (Bolted type)	Set	460
-do-	-do-	4	-	Al.flat armour tape (1.27 x 7.62)	Kg.	143
ETI/OHE/SK	123 (Mod.D)	1 to 5	AL-123	Bimetallic PG clamp (14/19)	Set	143
ETI/OHE/SK	130 (Mod.D)	1	AL-130	Al.Alloy catenary dropper clip	Each	5
ETI/OHE/SK	134 (Mod.D)	1 to 4	AL-134	Catenary splice(cone type) Al Alloy catenary.	Each	113
ETI/OHE/SK	231 (Mod.D)	1	AL-231	Parallel grove clamp (18/14)	Each	98
ETI/OHE/SK	-do-	5	--	Bimetallic ALCU strip 1mm thick.	Each	24
ETI/OHE/SK	285 (Mod.C)	--	--	Crimp type Repairsleeve for AAA Stranded catenary wire.	Each	208
ETI/OHE/SK	333 (Mod.D)	1	--	Catenary Dropper clip	Each	5
ETI/OHE/SK	436 (Mod.B)	1 & 2	AL-436	Envelope type end fitting assembly size 19/2.79mm.	Each	173
ETI/OHE/SK	-do-	8	--	Soft annealed al.tape 1.25 x 7.7mm	Kg.	143
ETI/OHE/SK	469 (Mod.A)	4 & 6	--	Packing saddle and suspension clamp lock plate.	Set	36
ETI/OHE/SK	-do-	10	--	Soft Annealed Al.tape (1.25 x 7.7mm)	Kg.	143
BUSBAR				Tubular Aluminium bus bar 36 x 20mm	Meter	98
				Solid copper bus bar 18mm	Meter	249
WIRES & FLATS				19/7/1 4mm all aluminium jumper.	Meter	60
				Copper flats 25mm x 3mm	Meter	149

EQUIPMENTS			
	Section Insulator assembly	Each	7932
RIVETS	Copper rivets Φ6 x 50mm	Per 100 Nos.	566
	Copper rivets Φ6 x 55mm	Per 100 Nos.	603
	Al.Alloy snap Head rivets Φ 4 x 35mm	Per 100 Nos.	111
	Al.Alloy rivets Φ6 x 45mm	Per 100 Nos.	198
	Al.Alloy rivets Φ6 x 50mm	Per 100 Nos.	241
	Al.Alloy rivets Φ6 x 35mm	Per 100 Nos.	159
	Al.Alloy rivets Φ6 x 33mm	Per 100 Nos.	155
SPRING WASHERS	Phosphor bronze spring washer Φ 10mm	Per 100 Nos.	251
	Phosphor bronze spring washer Φ 16mm	Per 100 Nos.	478
	Phosphor bronze spring washer Φ 12mm	Per 100 Nos.	261

SCHEDULE – 3
SECTION – 1: UNIT PRICES

SUB-SECTION –5: INSULATORS.

The rates given below against different items of work in different sub-sections of this schedule are the standard schedule of rates. The rates at which payments are to be made shall be arrived at by loading these rate uniformly for each item with escalation of estimate (% above on SOR) and percentage quoted by the Tenderer over advertised value of the section.

RAILWAY DRAWINGS			RAILWAY IDENTIFICATION	DESCRIPTION OR EQUIPMENTS COMPONENTS & MATERIALS	UNIT OF MEASUREMENT	UNIT PRICES AT CONTRACTORS DEPOT IN (Rs).
SERIES	DRG.NO. & MOD	REF.No				
1	2	3	4	5	6	7
Stay arm insulator Assembly.				Porcelain (1050 mm CD)	Each	602
9 Tonne Insulator Assembly.						827
Bracket Insulator Assembly.						614
Solid Core 25 kV post Insulator Assembly						1200
Sectioning Insulator Assembly						1535
Operating Rod Insulator Assembly.						587
ETI/OHE /P	6061-3 (Mod.A)	1 to 3		Disc Insulator (255 mm) clevis type		167
-do-	6070-1	1 to 3		11 kV Post Insulator Assembly	Set	245

NOTES:

- (1) All prices in Schedule-3, Column-7 are inclusive of all taxes and duties.
- (2) Nuts and lock nuts should be procured from the approved firm and from the same manufacturer who manufactures corresponding bolts, screws etc. The prices for bolts shall include the cost of providing a hole for split pin, wherever required.
- (3) The prices are inclusive of bolts, nuts, locknut washer and split pins wherever included in the drawings unless otherwise specified.
- (4) All bolts and nuts below 14mm dia shall be stainless steel only which are to be used in live or current carrying parts even if bolts of other material are shown in the concerned drawings.
- (5) The reference can be taken from the actual dimensions of the fasteners as per RDSO drawing No.ETI/C/0073, ETI/C/0074 and ETI/C/0075 (Latest revision as per Annexure-I).
- (6) Wherever IS:226 is referred for material in schedule-3(OHE), it should conform to IS:2062.

FORM - 8

SCHEDULE-4

**SCHEDULE OF PRICES OF EQUIPMENTS, COMPONENTS &
MATERIALS FOR OHE WORKS & TSS WORKS**

-DELETED -

FORM - 9A

SCHEDULE-5

**SCHEDULE OF PRICES OF SPECIAL TOOLS, PLANTS FOR
MAINTENANCE FOR OHE & TSS WORKS**

- DELETED -

FORM - 9B

SCHEDULE-5

SCHEDULE OF PRICES OF SPECIAL TOOLS, PLANTS FOR MAINTENANCE

**OF SCADA WORKS
(See Annexure-5C)**

-DELETED-

TENDERER'S SCHEME OF WORK AND TIME SCHEDULE

I. FOR OVER HEAD & FEEDER EQUIPMENT

Issue of preliminary layouts and site allocations:
Submission of layout plans for walk-outs and approvals:
Approval of layout plans:
Preparation and submission of Drawings for approval:
Approval of Drawings:
Ordering of steel work on the Purchaser:
Bulk order for materials. Detailed ordering of materials.
Foundation installation:
Delivery of steel work. Steel work erection. Delivery of materials Wiring and testing Guarantee period.

MONTHS

Note: The above time schedule should be **uploaded** separately for each section of approximately 100 TKM and the different time schedules should be numbered as First Section, Second Section etc.

□□□□□

To be uploaded with Packet-A

FORM 10
SHEET-2

TENDERER'S SCHEME OF WORK AND TIME SCHEDULE FOR
BOOSTERAND AUXILIARY TRANSFORMERS AND SWS WORKS

DELETED

□□□□□

To be uploaded with Packet-A

FORM 10
SHEET-3

TENDERER'S SCHEME OF WORK AND TIME SCHEDULE for TSS

-DELETED-

To be uploaded with Packet-A

FORM 10
SHEET-4

TENDERER'S SCHEME OF WORK AND TIME SCHEDULE

FOR SCADA WORKS

-DELETED-

To be uploaded with Packet-A

FORM - 11(A)

**NAME OF MANUFACTURER/S, PLACES OF MANUFACTURE & INSPECTION OF SUPPLIES
(CORE/RDSO/Railway APPROVED SOURCES)**

Item No.	Description of item	Name & address of Manufacturer/s	Place of Manufacture	Place of Inspection
-------------	------------------------	-------------------------------------	-------------------------	------------------------

Declaration by the Tenderer

We hereby confirm that all the equipments, components and materials which will be supplied by us would conform to technical and other particulars as detailed in Part-II Chapter-IV. We further confirm that the equipments, components and materials except those listed below would be procured from the approved sources/suppliers approved by CORE/RDSO/Railway.

(i)

(ii)

(ii)

Technical details conforming the SOGP of the concerned specifications and the details of manufacturer for the above items are enclosed in FORM-11(B).

NOTE:- To be furnished on separate sheet for individual portion of FEEDER/OHE & (TSS-Deleted).

□□□□□

To be uploaded with Packet-A

FORM - 11(B)

**NAME OF MANUFACTURER/S, PLACES OF MANUFACTURE & INSPECTION OF
SUPPLIES(OTHER THAN CORE/RDSO/Railway APPROVED SOURCES):**

Following particulars should be furnished as under:-

1. Item No.
2. Description of item
3. Name and address of manufacturer
4. Place of manufacturer
5. Place of inspection
6. Whether permitted to use ISI Standard mark (Wherever applicable).
7. Approx. turnover of this item in last 3 years (Enclose list of orders executed).

Declaration by the Tenderer:

We hereby confirm that -

- (i) The design approval/prototype approval of the above items will be obtained from CORE/RDSO/Railway. All cost on this account will be borne by us.
- (ii) In case of delay in prototype approval, we shall arrange the procurement of above listed items from the CORE/RDSO/Railway approved sources.
- (iii) We also clearly understand that delay on account of prototype approval shall not be claimed by us as reasonable ground for extension of completion period.

NOTE:- To be furnished on separate sheet for individual portion of feeder OHE WORKS
(TSS Works-Deleted).

Signature of Tenderer

To be uploaded with Packet-A

FORM - 11(C)

**COMPLETE TECHNICAL DATA AND PARTICULARS OF THE EQUIPMENTS
OFFERED AS SPECIFIED IN THE TENDER PAPERS TOGETHER WITH
DESCRIPTIVE LITERATURE, LEAFLETS ETC.**

S. No.	Name of Equipments	System voltage	Manufacturer's name
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
--			
--			
--			
--			

Note: (i) The details of equipment/ item having unit cost more than Rs.10,000.00 shall only be detailed in above proforma.

(ii) Necessary literature/ leaflets shall also be enclosed.

To be uploaded with Packet-A

FORM - 12

(TO BE uploaded WITH PACKET-A)
TENDERER'S CREDENTIALS FOR OHE WORKS

Give details of your previous experience on installation of similar equipments and the details of present work load in the proforma given in **Form-12A, Sheet-1 & 12A, Sheet-2.**

Give the financial turnover for the past three years of your firm with audited balance sheet, names of your Bankers.

Details of Engineering organisation, Technical Capabilities, Design and Drawing Capabilities in **Form-12A, Sheet-3.**

Details of Technical Collaboration with any consultant for assistance, in any.

Details of construction machinery, Tools and plants, Vehicles etc in **Form-12A, Sheet-4.**

Contract amount received during the last three financial years and in the current financial year as per audited balance sheet duly certified by Chartered Accountant.

Constitution of firm alongwith certified copies of legal documents in support thereof and power of attorney.

Details of credential for **TSS & SCADA** works to be submitted in **Form-12B & Form-12C (DELETED).**

□□□□□

(TO BE uploaded WITH PACKET-A)

Form-12A Sheet-1

SN	Details	To be filled up
1	Name of Contractor	
2	Description of work	
3	Section of work	
4	Whether the work was executed by the firm as single entity or as a Joint Venture.	
5	Percentage share of the firm if the work was executed as Joint Venture	
6	Date of award of contract (LOA)	
7	Value of contract as per LOA	
8	Date. of Actual completion of work (with extension if any) (i.e. date of issue of last PAC)	
9	Final value of Physical completed contract	
10	Other information (Performance)	
11	Verifying Authority (Purchaser of the work)	Phone No.
		Cell No.
		Fax No.
		e-mail id

Note:

- 1) If the Tenderer has completed more than one work, the form shall be numbered as Form- 12A Sheet-1(i), Form-12A Sheet-1(ii), Form-12A Sheet-1(iii) and so on.
- 2) Information given in above form-12A, Sheeet-1 shall be verified /countersigned by the Purchaser of the work and if it is not possible then supported by the purchaser's documents.
- 3) In absence of above information the tender offer of the Tenderer are liable to be rejected.
- 4) If above work is on turnkey/composite basis, the value of each work performed to be mentioned separately.

Signature of the
Tenderer with Seal

(TO BE uploaded WITH PACKET-A)

FORM-12A, Sheet-2

WORK LOAD						
(Details of similar work in progress)						
S.N.	Description	Work No.1	Work No.2	Work No.3	Work No.4	Work No.5
I	Name of work					
ii	Purchaser					
iii	Section					
iv	Cost of work as per Award					
v	Date of award					
vi	Stipulated date of completion					
vii	Date of actual start					
viii	Actual date of Physical Completion of Work					
ix	Present Status of work					
x	Total payment made to Contractor					

NOTE: For details given in Form - 12A, Sheet-2, supportive documents / certificate from the organisation with whom they are working should be enclosed.

Signature of the
Tenderer with Seal

(TO BE UPLOADED WITH PACKET-A)

FORM-12A, Sheet-3

Engineering Organisation to be deployed in this work						
(Details of Engineering / Technical organisations in hand and proposed to be engaged)						
S.No.	Name	Designation	Qualification	Experience in Railway Electrification or similar work	On hand / Proposed to be engaged	Date since when working with the contractor

Note: 1) The purchaser reserves the right to accept or otherwise any personnel on the project.

- 2) Name indicated in above proforma shall be firm and work shall be executed by them only.
- 3) Changes in above team during execution of the work, if any, should be with the approval of the purchaser.
- 4) Apart from Electrical Engg. Organisation, Contractor should have at least one graduate Civil Engineer with minimum 10 years experience and a few Civil Engg. Diploma holder Inspectors to supervise the civil works.

Signature of the
Tenderer with Seal

(TO BE uploaded WITH PACKET-A)

FORM-12A, Sheet-4

Construction Machinery			
S.No.	Description	Qty in hand	Qty proposed to be hired
1	Tirfor 5 T		
2	Tirfor 3 T		
3	Tirfor 1.5 T		
4	Pull Lift 3 T		
5	Pull Lift 1.5 T		
6	Pull Lift 0.75 T		
7	Generator Set (kVA)		
8	Generator with Welding Set (kVA)		
9	5/2.5 kVA Megger		
10	500/1000V Megger		
11	AVO Meter		
12	Earth Tester		
13	Dynamo Meter 2 T		
14	Dynamo Meter 3 T		
15	Dynamo Meter 5 T		
16	Survey Instrument		
17	Compressor m/c (cap.)		
18	Wire Slings 1m, 2m, 3m		
19	Wire Slings 10m, 15m, 70m		
20	Come –a-long clamps		
21	Concrete Mixer		
22	Truck		
23	Jeep		
24	Tractor		
25	Centrifuging Plant		
26	Road Cane		
27	Drilling m/c		
28	Grinding m/c		
29	Screw Jack		
30	Chain pulley Block		
31	Winch M/c (Cap)		
32	Power Hacksaw		
33	Welding M/c		
34	Dropper Cutter		
35	Contact Wire Cuter		
36	Dropper Jig		
37	Al. Ladder Ext. Type 27 feet		
38	Al. Ladder Ext. Type 36 feet		
39	Pulley Block		
40	Ladder Trolley		

It may also be certified that the Tools & Plants listed above are sufficient to execute the work covered under tender and all the above Tools & Plants shall be readily available during execution of the contract.

Signature of the Tenderer with Seal

(TO BE UPLOADED WITH PACKET-A)

(On letter head of Auditor of Firm)

Form-12A, Sheet-5

Each Bidder or each member of a JV must fill in this form separately: NAME OF
BIDDER/JV PARTNER:

Annual Contractual Turnover Data for the Previous 3/4 Years (Contractual Payment only)			
Year	Amount Currency	Exchange Rate	Indian National Rupees Equivalent
Average Annual Contractual Turnover for last 3 years			

1. The average annual contractual turnover shall be calculated as an average of "total contractual payments" in the previous three financial years. However, in case balance sheet of the previous year is yet to be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover.
2. The information supplied shall be substantiated by data in the audited balance sheets and profit and loss accounts for the relevant years in respect of the bidder or all members constituting the bidder.
3. Contents of this form should be certified by a Chartered Accountant duly supported by Audited Balance Sheet duly certified by the Chartered Accountant.

Seal & Signature of the Bidder

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports.

(Signature of Chartered Accountant)
Name of CA: _____
Registration No: _____
(Seal)

(TO BE uploaded WITH PACKET-A)

Form-12B Sheet-1

TENDER'S CREDENTIALS FOR TSS WORKS PRE QUALIFICATION BID

- 1- Give Details of Tenderer's past experience as per eligibility criteria for completed similar nature of work in the Performa below:-

-DELETED-

(TO BE UPLOADED WITH PACKET-A)

FORM - 12C

**TENDERER'S CREDENTIALS FOR SCADA WORKS PRE
QUALIFICATION BID**

-DELETED-

(TO BE UPLOADED WITH PACKET-A)

FORM-12D

(A) DETAILS OF EXISTING COMMITMENTS & BALANCE AMOUNT OF ONGOING WORKS							
Sl. No.	Name of the Work	Work Awarded by (Name & Address of Agency/Organisation)	Date of Award of Work	Awarded Value/Latest Assessment value of the work	Date of Completion (as approved latest)	Gross Payment received (till opening date of tender) (Rs.)	Value of Existing Commitments and Balance Amount of ongoing works to be completed in next 'N' years(Rs.)
1							
2							
3							
4							
(B) DETAILS OF THE WORKS YET TO START							
1							
2							
3							

In case, the Tenderer/s failed to submit the above statement along with offer, their/his offer shall be considered as incomplete and will be rejected **summarily**.

NOTE:

1. In case of JV, the above statement should be submitted for each member of JV.
2. The above statement should be submitted duly verified by Chartered Accountant.
3. In case of no works in hand, a 'NIL' statement should be furnished.
4. In case, the tenderer/s fails to submit the Details of Existing Commitments and Balance Amount of Ongoing works as on the date of inviting of tender, verified by Chartered Accountant as per above format along with the offer, their/his offer shall be considered as incomplete and will be rejected summarily.
5. In case of any discrepancy in date upto which the above details are submitted, the tender shall be summarily rejected.

FORM-13

(Bid Security)

Bank Guarantee Bond from any scheduled commercial bank of India
(On non-judicial stamp paper, which should be in the name of the Executing Bank).

Name of the Bank:-----

**President of India,
Acting through.....**

Beneficiary:

Date:.....

Bank Guarantee Bond No.:

Date:-----

In consideration of the President of India acting through
(Designation & address of Contract signing authority),.....Railways,.....(hereinafter called "The Railway") having invited the bid for through Notice inviting tender (NIT)No., We have been informed that..... ***[Insert name of the Bidder]*** (**herein after called "the Bidder"**) intends to submit its bid(herein after called "the Bid").

WHEREAS, the Bidder is required to furnish Bid Security for the sum of ***[Insert required Value of Bid Security]***, in the form of Bank Guarantee, according to conditions of Bid.

AND

WHEREAS, ***[Insert Name of the Bank]***, with its Branch ***[Insert Address]*** having Its Headquarters office at..... ***[Insert Address]***, hereinafter called the **Bank**, acting through ***[Insert Name and Designation of the authorized persons of the Bank]***, have, at the request of the Bidder, agreed to give guarantee for Bid Security as hereinafter contained, in favor of the Railway:

1. KNOW ALL MEN that by these present that I/We the undersigned ***[Insert name(s) of authorized representatives of the Bank]***, being fully authorized to sign and incur obligations for and on behalf of the Bank, confirm that the Bank, hereby, unconditionally and irrevocably guarantee to pay to the Railway full amount in the sum of ***[Insert required Value of Bid Security]*** as above stated.
2. The Bank undertakes to immediately pay on presentation of demand by the Railway any amount upto and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Railway on the Bank shall be final, conclusive and binding, absolute and unequivocal on the Bank notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Bidder or Bank.
3. The Bank shall pay the amount as demanded immediately on presentation of the demand by Railway without any reference to the Bidder and without the Railway being required to show grounds or give reasons for its demand of the amount so demanded.
4. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Bidder.
5. The Bank agrees that no change, addition, modifications to the terms of the Bid document or to any documents, which have been or may be made between the Railway and the Bidder, will in any way absolve the Bank from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification made by Railway at anytime.
6. This guarantee will remain valid and effective from..... ***[insert date of issue]*** till ***[insert date, which should be minimum 90 days beyond the expiry of validity of Bid]***. Any demand in respect of this Guarantee should reach the Bank within the validity period of Bid Security.
7. The Bank Guarantee is unconditional and irrevocable.
8. The expressions Bank and Railway herein before used shall include their respective successors and assigns.
9. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the

previous consent in writing of the Railway. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No.758.

10. The Bank hereby confirms that it is on the SFMS (Structured Financial Messaging System) and shall invariably send the advice of this Bank Guarantee to the following bank details–

IFSC CODE	SBIN000RAIL
IFSC TYPE	BRANCH
BANK NAME	STATE BANK OF INDIA
BRANCH NAME	RAIL
CITY NAME	NAVI MUMBAI
ADDRESS	SECTOR 11, CBD, BELAPUR, NAVI MUMBAI
DISTRICT	NAVI MUMBAI
STATE	MAHARASTRA
BG ENABLED	YES

11. The Guarantee shall be valid in addition to and without prejudice to any other security Guarantee(s) of Bidder in favor of the Railway. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Railway.

Date.....

.....

Place.....

Bank's Seal and authorized signature(s)

[Name in Block letters].....

[Designation with Code No.].....

[P/ Attorney]No.

Witness:

1 Signature, Name & Address & Seal

2 Signature, Name & address & Seal

Bank's Seal

[P/ Attorney] No.

Note: (i) All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.

- (ii) **The Beneficiary name for submission of BG for EMD shall be in favour of PFA/NER/Gorakhpur. It should be supported with proper stamp duty with rate prescribed as per Section 13 & 24 of UP Stamp Act, 2008 with latest amendment, if any. Bid will be summarily rejected if EMD is not as per above.**

□□□□□

CONTRACT AGREEMENT OF WORK*

AN AGREEMENT made this -----day of----- between THE PRESIDENT OF INDIA, acting in the premises through the Sr. Divisional Electrical Engineer or his successor, NorthCentral Railway, OF THE MINISTRY OF RAILWAYS, RAILWAY BOARD (hereinafter referred to as "THE PURCHASER") of the one PART and M/s----- (hereinafter referred to as "THE CONTRACTOR") of the OTHER PART.

WHEREAS in response to a call for Tender for "Name of work....." as Electricaltender in -----(Name of section, Division, Railway & RKM/TKM)----- as per Tender paper with Addendum & Corrigendum Slip No-----to tender paper, at Annexure-'A' hereto the contractor has submitted a offer as per their original tender offer No. -----dated -----and Negotiation/Discount letter No. -----dated ----- and whereas thesaid tender of the Contractor has been accepted for "Name of work " as Electrical tender in -----(Name of section, Division, Railway & RKM/TKM)----- as per the copy of Letter of Acceptance of Tender No. -----Date as per Annexure-'B' complete with enclosures at the accepted rates and agreed deviations from Tender Notice No.dated...at an estimated contract value of Rs. ------(Rupees-----only).

Now this agreement witnesseth that in consideration of the premises and the payment to be made by the purchaser to the contractor provided for herein below the contractor shall supply all equipments and materials and execute and perform all works for which the said tender of the contractor has been accepted strictly according to the various provisions in Annexure 'A' & 'B' hereto and upon such supply, execution and performance to the satisfaction of the purchaser, the purchaser shall pay to the Contractor at the several rates accepted as per the Schedule-1 Section-1 to 11 as well as On Account Payment as per para 1.3.9, Part III-'A' of OHE and as per para 1.3.8, Part III-'B' of TSS in terms of previsions therein.

"All the annexure are part & parcel of agreement & the contract shall be governed by the terms & conditions given in the tender paper No -----".

IN WITNESS where of the parties have hereunto set and subscribed their respective hands and/or seals the day & year respectively mentioned against their respective signatures. Signed & delivered at -----by Sri the contractor within named in the presence of:

		For
		()
1.	Signature	
	Date:	
	Name in BLOCK Capitals	(-----)
	Address	
2.	Signature	
	Date:	
	Name in BLOCK Capitals	(-----)
	Address	

Signed & delivered at-----for and on behalf of the President of India by Sri
-----, (Authorised Signatory), Ministry of Railways (Railway Board) in the presence
of:

()
Authorised Signatory
– FOR & ON BEHALF
OF
THE PRESIDENT OF INDIA

1. Signature
Date: -----
Name in BLOCK capitals
Address:

(-----)

2. Signature
Date: -----
Name in BLOCK Capitals
Address

(-----)

Enclosures:-

1. Annexure-'A': Tender paper No.....-
with A&C slip No.-----

2. Annexure-'B': Letter of Acceptance No. -----
dated ----- along with Annexure-A & B.

3. Annexure-'C': Scheme of work & Time Schedule for OHE & TSS Works.

4. Annexure-'D': Rates Quoted by other qualified Tenderers.

5. Schedule-1 Section-1 to 11.

6. Schedule-3 Section 1 to 5.

* See para 1.2.16.

NOVATION AGREEMENT

Articles of agreement made on this ----- in the year Two Thousand and Twenty between the President of India, acting through the, < Zonal Railway> Administration having its office at -----

--- hereinafter called the 'Railway' of the first part and ----- < Name of the contractor > hereinafter called the 'Contractor' of the second part and Indian Railway Finance Corporation Limited hereinafter called the 'IRFC' of the third part having its office at -----

-----wit

h

GSTIN ----- < GSTIN of billing unit (IRFC)>.

First Part, second part and third part collectively hereinafter called 'parties'.

Whereas the party hereto of the second part executed an agreement with the party hereto of the first part being agreement no. ----- dated ----- with the contract cost of Rs. -----

----- for performance of -----
----- hereinafter called the 'Principal Agreement'.

Now it is hereby agreed by the between the parties that Indian Railway Finance Corporation shall be made an additional part to the Principal Agreement executed between Railway and Contractor with effect from date of this agreement.

It is agreed by and between the parties that Railway shall continue to be held responsible for all obligations, risk and liabilities, whatsoever, arising out of or in connection with the Principal Agreement and this Novation Agreement, whether during the process of the work or after its completion.

It is further agreed and understood by and between the parties that IRFC shall be the owner of assets, if any, arising out of execution of works as defined in the Principal Agreement, except the land whose ownership shall continue with Railway. Accordingly, the invoices shall be issued by capturing GSTIN of contractor (*as the supplier*) and GSTIN of IRFC (*as the bill-to party*). Also, the contractor shall submit the invoice, issued in the name of IRFC, to Railway for processing payment by Railway to Contractor subject to applicable TDS under the Income Tax and GST or any other applicable laws.

It is further agreed by and between the parties that IRFC shall be responsible to comply with Income Tax and GST laws in relation to filing of returns.

It is further agreed and understood by and between the parties that, except for the amended obligations as mentioned above, the terms of Principal Agreement for all kind of contractual/ performance and legal obligations shall remain in full force and effect.

All the communication in relation to Principal Agreement and said Novation Agreement, would only be between party hereto of first part and second part.

For and on behalf of
the President of India
Witness of the
Signature

1. -----

2. -----

Address:.....

For and on behalf of the
Indian Railway Finance Corporation
Witness of the Signature

1..... -

2..... -

Address:.....

For and on behalf of the
< Name of Authorised Signatory >
Witness of the Signature

1..... -

2..... -

Address:.....

(On Stamp Paper of Requisite Value)
GUARANTEE BOND FOR SECURITY DEPOSIT
(TO BE USED BY APPROVED SCHEDULE BANKS/NATIONALISED BANKS)

1. In consideration of the President of India "hereinafter called "the Government" having agreed to exempt.(hereinafter called "the said Contractor (s)" from the demand, under the terms and conditions of an Agreement dated.....made between.... and for (hereinafter called "the said Agreement") of security deposit for the due fulfillment by the said Contractor (s) of the terms and conditions contented in the said Agreement, on production of a Bank guarantee for Rs.....(Rupees.....only). We, (indicate the name of Bank) hereinafter referred to as "the Bank" at the request of (Contractor(s) do hereby undertake to pay to the Government an amount not exceeding Rs against any loss or damage caused to or suffered or would be caused to or suffered by the Government by reason of any breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement.
2. We (indicate the name of Bank) do hereby undertake to Pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Government by reason of breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement or by reason of the Contractor (s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding.
3. We undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Contractor (s)/ supplier (s) in any suit for proceeding pending before any court or Tribunal relating thereto our liability under this present contract being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor (s)/supplier (s) shall have no claim against us for making such payment.

4. We..... (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till..... office/Department Ministry of certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor (s) and accordingly discharges this guarantee. Unless a Demand or claim under this guarantee is made on us in writing on or before the (b) we shall be discharged from all liability under this guarantee thereafter.
5. We..... (indicate the name of Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said Contractor (s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor (s) or for any forbearance, act or omission on the part of the Government or any indulgence by the Government to the said Contractor (s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor (s)/ Supplier (s).

7. We (indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Government in writing.

Dated : the day of.....20
for.....
(indicate the name of Bank)

-
- (a) See para 1 2.17 and 1.2.56.
 - (b) The guarantee shall be valid for a period of two months after the expiry of the guarantee period of the equipment under para 1.2.49.
 - (c) The guarantee shall be submitted in the manner prescribed in Para -22 of preamble.

□□□□□

STANDING INDEMNITY BOND FOR 'ON ACCOUNT' PAYMENTS

(On paper of requisite stamp value)

We, M/s..... hereby undertake that we hold at our stores Depot/s at for and on behalf of the President of India acting in the premises through the General Manager or his successor..... Railway.....(hereinafter referred to as "The Purchaser") all materials for which 'On Account' payments have been made to us against the Contract for *.on the section/s.....Railway also referred to as Group/s vide letter of Acceptance of Tender No..... dated..... and materials handed over to us by the purchaser for the purpose of execution of the said Contract, until such time the materials are duly erected or otherwise handed over to him.

We shall be entirely responsible for the safe custody and protection of the said materials against all risk till they are duly delivered as erected equipment to the purchaser or as he may direct otherwise and shall indemnify the purchaser against any loss damage or deterioration whatsoever in respect of the said materials while in our possession and against disposal of surplus materials. The said materials shall at all times be open to inspection by any officer authorised by the General Manager incharge of Railway Electrification (whose address will be intimated in due course).

Should any loss, damage or deterioration of materials occur or surplus materials disposed off and refund becomes due, the Purchaser shall be entitled to recover from us the full cost as per prices included in Schedule 3, for OHE works to the Contract (as applicable) and in respect of other materials as indicated in part I, Chapter- IV, section 1 and also compensation for such loss or damage if any long with the amount to be refunded without prejudice to any other remedies available to him by deduction from any sum due or any sum which at any time hereafter becomes due to us under the said or any other Contract.

Dated this day..... day of20

for and on behalf of M/s
(Contractor)

Signature of witness

Name of witness in Block
LettersAddress.

* Strike out whichever is not applicable

EXTENSION OF PERIOD OF COMPLETION OF WORK ON CONTRACTOR'S ACCOUNT

To.

.....

.....

Sub: (i)(Name of work)
(ii) Acceptance Letter No. date....
(iii) Understanding/Agreement No.....

Ref.....(Quote specific application of the Contractor for extension to the date, if received).

Dear Sir,

The stipulated date for completion of the work mentioned above is From the progress made so far and the present rate of progress it is unlikely that the work will be completed by the above date (or however, the work was not completed on this date).

Expecting that you may be able to complete the work if some time is given the (insert there the contracting party on behalf of the President of India) although not bound to do so hereby extends the time for completion from.....to.....

Please note that an amount of Rs. -----per week (as per GCC item No. 17(B)) maximum to 5% of contact value plus 10% of 2 Lacs as recovery for delay in completion of the work after the expiry of

(give here the stipulated date for completion without any penalty fixed earlier) will be recovered from you as mentioned in Para 1.2.44 of the Conditions of Contract for the extended period notwithstanding the grant of this extension. You may proceed with the work accordingly.

The above extension of the completion date will also be subject to the further condition that no increase in rates on any account will be payable to you.

Please intimate within a week of the receipt of this letter your acceptance of the extension on the conditions stated above.

Please note that in the event of your declining to accept the extension on the above said conditions or in the event of your failure after accepting or acting upto this extension to complete the work by (here mention the extended date), further action will be taken in terms of paras 1.2.29 and 1.2.30 of the conditions of contract.

Yours faithfully,

for and on behalf of
the President of
India.

FORM- 18

EXTENSION OF PERIOD OF COMPLETION OF WORK ON PURCHASER'S ACCOUNT

No.....

Dated.....

To,

.....

.....

Dear Sirs,

- Sub:** (i).....(Name of work)
(ii) Acceptance Letter No.....
(iii) Understanding/Agreement No.....

Ref: (Quote specific application of the Contractor for extension to the date if received.)

-.....

The stipulated date for completion of the work in Group under the above contract was..... In consideration of the Contractor's Letter No..... of..... The General Manager or his successor on behalf of the President of India, is pleased to grant extension of the time for completion of works in accordance with Note 1 and/ or Notes 2 under Para 1.2.45 of the Contract, as mentioned below:-

It may be noted that unless repugnant to the context all the terms and conditions of the Contract will remain unaltered during the extended period from..... to..... also, and further, no increased/additional rates and claims or recoveries which have not been already envisaged in terms of the conditions of the Contract will be leviable either by you or by the Purchaser in respect of this extended period.

Yours faithfully,

For & on behalf of the President of India.

(On Stamp Paper of Requisite Value)

**GUARANTEE BOND AGAINST "ON ACCOUNT" PAYMENTS
(TO BE USED BY APPROVED SCHEDULE BANKS/NATIONALISED BANKS)**

In consideration of the President of India " hereinafter called "the Government") having agreed to exempt.....(hereinafter called "the said Contractor (s)") from the demand, under the terms and conditions of an Agreement dated.....made between.... and for (hereinafter called "the said Agreement") of "On- Account" Payments for the due fulfillment by the said Contractor (s) of the terms and conditions contented in the said Agreement, on production of a Bank guarantee for Rs (Rupees only).

1. We..... (indicate the name of Bank) hereinafter referred to as "the Bank" at the request of (Contractor(s) do hereby undertake to pay to the Government an amount not exceeding Rs against any loss or damage caused to or suffered or would be caused to or suffered by the Government by reason of any breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement.

2. We.....do hereby undertake to Pay (indicate the name of the Bank) the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Government by reason of breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement or by reason of the Contractor (s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding.....

3. We undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Contractor (s)/ supplier (s) in any suit for proceeding pending before any court or Tribunal relating thereto our liability under this present contract being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor (s)/supplier(s) shall have no claim against us for making such payment.

4. We..... (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till..... office/ Department Ministry of.....certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor (s) and accordingly discharges this guarantee. Unless a Demand or claim under this guarantee is made on us in writing on or before the (b) we shall be discharged from all liability under this guarantee thereafter.

5. We..... (indicate the name of Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to

extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said Contractor (s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor (s) or for any forbearance, act or omission on the part of the Government or any indulgence by the Government to the said Contractor (s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor (s)/ Supplier (s).

7. We..... (indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Government in writing.

Dated : the day of..... 20
for.....
(indicate the name of Bank)

-
- (a) See para 1.3.9. Part-I, Chapter-III "A" for OHE works and para 1.3.8. Part-1, Chapter-III "B" For TSS works.
 - (b) The guarantee shall be valid for a period of two months after the completion of installation and testing to the satisfaction of Engineer-in-Charge under para 1.3.9. Part-I, Chapter-III "A" for OHE works and para 1.3.8. Part-1 Chapter-III "B" For TSS works .
 - (c) The guarantee shall be submitted in the manner prescribed in Para -22 of preamble.

□□□□□

**(On Stamp Paper of Requisite Value) GUARANTEE
BOND AGAINST MOBILISATION ADVANCE
(TO BE USED BY A NATIONALISED BANK IN INDIA)**

1. In consideration of the President of India (hereinafter called "the Government") having agreed to exempt.....[hereinafter called "the said Contractor (s)"] from the demand, under the terms and conditions of an Agreement dated.....made between.... and for (hereinafter called "the said Agreement") of Mobilisation Advance Payments for the due fulfillment by the said Agreement, on production of a Bank guarantee for Rs.....(Rupees.....only). We, hereinafter

referred to as "the Bank" (indicate the name of Bank) at the request of (Contractor(s) do hereby undertake to pay to the Government an amount not exceeding Rs against any loss or damage caused to or suffered or would be caused to or suffered by the Government by reason of any breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement.

2. We (indicate the name of Bank) do hereby undertake to Pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Government by reason of breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement or by reason of the Contractor (s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding.....

3. We undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Contractor (s)/ supplier (s) in any suit for proceeding pending before any court or Tribunal relating thereto our liability under this present contract being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor (s)/supplier (s) shall have no claim against us for making such payment.

4. We..... (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till..... office/Department Ministry of.....certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor (s) and accordingly discharges this guarantee. Unless a Demand or claim under this guarantee is made on us in writing on or before the (b) we shall be discharged from all liability under this guarantee thereafter.

5. We..... (indicate the name of Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said Contractor (s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the

said Contractor (s) or for any forbearance, act or omission on the part of the Government or any indulgence by the Government to the said Contractor (s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor (s)/ Supplier (s).

7. We (indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Government in writing.

Dated: the day of 20

for.....

(indicate the name of Bank)

-
- (a) See para 1.3.18 of Part-I, Chapter III “A”
- (b) The guarantee shall be valid for a period of two months after the expiry of the completion period of the equipment.
- (c) Bank Guarantee against “MOBILISATION ADVANCE”, to be submitted by the contractor should be sent to the concerned authorities directly by the issuing Bank under

□□□□□

FORM-21

GUARANTEE BOND AGAINST PROVISIONAL ACCEPTANCE PAYMENTS

- DELETED -

(On Stamp Paper of Requisite Value)

**BANK GUARANTEE PROFORMA FOR PERFORMANCE
GUARANTEE (TO BE USED BY APPROVED SCHEDULE
BANKS/NATIONALISED BANKS)**

1. In consideration of the President of India " hereinafter called "the Government" having agreed to exempt.....(hereinafter called "the said Contractor (s)" from the demand, under the terms and conditions of Letter of Acceptance No.....Dated..... issued to M/sby.....(hereinafter called "the said Agreement") of Performance Guarantee for the due performance by the said Contractor (s) of the terms and conditions contented in the said Agreement, on production of a Bank guarantee for Rs.....(Rupees.....only). We,..... (indicate the name of Bank) hereinafter referred to as "the Bank" at the request of(Contractor(s) do hereby undertake to pay to the Government an amount not exceeding Rs against any loss or damage caused to or suffered or would be caused to or suffered by the Government by reason of any breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement.

2. We (indicate the name of Bank) do hereby undertake to Pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Government by reason of breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement or by reason of the Contractor (s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding.....

3. We undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Contractor (s)/ supplier (s) in any suit for proceeding pending before any court or Tribunal relating thereto our liability under this present contract being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor (s)/supplier (s) shall have no claim against us for making such payment.

4. We..... (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till..... office/Department Ministry of.....certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor (s)and accordingly discharges this guarantee. Unless a Demand or claim under this guarantee is made on us in writing on or before the (b) we shall be discharged from all liability under this guarantee thereafter.

5. We..... (indicate the name of Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to

time any of the powers exercisable by the Government against the said Contractor (s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said

Contractor (s) or for any forbearance, act or omission on the part of the Government or any indulgence by the Government to the said Contractor (s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor (s)/ Supplier (s).

7. We (indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Government in writing.

Dated : the day of 20
for
(indicate the name of Bank)

Note:- (a) See para 19 of preamble.

(b) 'The guarantee shall be valid for a period of 15 days after the expiry of the guarantee period of the equipments. However, initial validity of the Performance Guarantee BG shall be up to the stipulated contract completion period. The same shall be renewed from time to time till 15 days beyond guarantee period.'

(c) The guarantee shall be submitted in the manner prescribed in Para -22 of preamble which is reproduced as below —
“Bank Guarantees against Security Deposit, Performance Guarantee, Mobilisation Advance and On Account payment, to be submitted by the contractor should preferably be sent to the concerned authorities directly by the issuing Bank under Registered Post (AD)”.

□□□□□

(On Stamp Paper of Requisite Value)

MEMORANDUM OF
UNDERSTANDING FOR
JOINT VENTURE AGREEMENT

This Joint Venture Agreement is made and entered at on Day of, 20. to submitted to Principal Chief Electrical Engineer, North Eastern Railway Gorakhpur for "Name of the work....."

in section (Gr) against Tender Notice No for Rs Crs approximately due on

Between

....., Having its Registered Office at
 Represented by (.....).

And

....., Having its Registered Office at Represented by ().

Whereas:

1. The parties hereby agreed to form Joint Venture, under the name of
2. The parties have agreed to join hands for procuring the business and executing of the work of "*Name of the work* " together and worktogether until successful completion of this business on hand.
3. The parties shall carry on the part of and responsibility and all expenses of the partners will be paid by themselves.
4. M/s would have overall lead management responsibility for the work and will be called Lead Partner and is authorized to deal with the tender, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said tender/contract. All notices / correspondences with respect to the contract will be sent only to this authorized member of the JV firm and will be considered as notices / correspondences to joint venture entity.
5. The percentage participation in the Joint Venture shall be as under (Clause 65.7 of GCC under Para 12.2 of Preamble) :-
 - (a) Lead Partner Share%
 - Activities to be done (i)
 - (ii)
 - (b) Joint Venture Partner Share ...%

Activities to be done

- (i)
- (ii)

- 6. This Joint Venture agreement shall remain valid and in force for the entire period of the completion/ extended period of completion of the work including Maintenance/ Guarantee period and can be extended by mutual agreement among its members.
- 7. The parties shall be jointly and severally liable /responsible to the employer for the successful completion of the contract in accordance with General and Special conditions of the contract as per the terms and conditions of the contract agreement irrespective of their share and role specified in the Joint Venture. The JV' members shall also be liable jointly and severally for the loss, damages caused to the Railways during the course of execution of the contract or due to non-execution of the contract or part thereof.
- 8. It is agreed that no member of the Joint Venture firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the employer (Railways) in respect of the said tender/contract.
- 9. It is certified that none of the members of this Joint Venture has been black-listed or debarred by Railways or any other Ministry/Department of the Government of India/State Government from participation in tenders/contract in the past either in their individual company on the JV firm or partnership firm in which they were members/partners.
- 10. This JV shall be constructed under the Laws of India.

For and on behalf of

.....
M/s.....

For and on behalf of

.....
M/s.....

Witness:

- 1.
- 2.

FORM-24**(Para 23 of Preamble)**

SN	Particulars	Detail s
1.	Centre (City Code)	
2.	Vendor Code	
3.	Beneficiary Name	
4.	Account Type	
5.	Bank Account No.	
6.	Name & Address of Bank	
7.	Bank Telephone/Fax No. with STD Code	
8.	Bank Branch MICR Code	
9.	Bank Branch IFSC Code	
10.	Firm e-mail address	

I/We confirm that I/We will bear the charge , if any, levied by my/our bank for the credit of NEFT Accounts in my/our account.

Thanking you,

For _____

(Authorised Signatory)

We confirm that we are enabled for receiving NEFT/RTGS credits and further confirm that the A/c No. of (Firm's Name). The signature of authorized signatory and the MICR and IFSC Code of our branch mentioned above are correct.

Bank's Verification (Manager's/
Officer's Signature)
With Bank's Stamps

FORM -25

Registered Acknowledgement Due

PROFORMA OF 7 DAYS NOTICE FOR WORK AS A WHOLE/IN PARTS

DETAIL OF PART TO BE MENTIONED

RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In Connection with _____

1. _____ In spite of repeated instructions to you by the subordinate offices as well as by this office through various letters of even no , dated _____; you have failed to start work/show adequate progress and/or submit detailed programme for completing the work/ part of work (details of part of work to be mentioned).

2. Your attention is invited to this office/Chief Engineer's office letter no _____, dated _____ in reference to your representation, dated _____.

3. As you have failed to abide by the instructions issued to commence the work /to show adequate progress of work you are hereby given 7 days' notice in accordance with Clause 62 of Standard General Conditions of Contract to commence works / to make good the progress, failing which further action as provided in Clause 62 of the Standard General Conditions of Contract viz. to terminate your Contract and complete the balance work without your participation will be taken.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

Registered Acknowledgement Due

PROFORMA OF 48 HRS. NOTICE
RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In Connection with _____

1. Seven days' notice under Clause 62 of General Conditions of Contract was given to you under this office letter of even number, dated _but you have taken no action to commence the work / show adequate progress of the work.

2. You are hereby given 48 hours' notice in terms of Clause 62 of General Conditions of Contract to Commence works / to make good the progress of works, failing which and on expiry of this period your above contract will stand rescinded and the work under this contract will be carried out independently without your participation and your Security Deposit shall be forfeited and Performance Guarantee shall also be encashed and consequences which may please be noted.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

FORM-26 A

Registered Acknowledgement Due

PROFORMA OF 48 HRS. NOTICE FOR PART OF THE WORK.....

(DETAILS OF PART OF WORK TO BE MENTIONED)

_____ **RAILWAY**

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

1. Seven days' notice under Clause 62 of Standard General Conditions of Contract was given to you under this office letter of even no., dated__; but you have taken no action to commence the work/show adequate progress of the part of work(details of part to be mentioned).
2. You are hereby given 48 hours' notice in terms of Clause 62 of Standard General Conditions of Contract to commence works / to make good the progress of works, failing which and on expiry of this period your above part of work..... (Details of part to be mentioned) in contract will be rescinded and the work will be carried out independently without your participation.
3. Your full Performance Guarantee for the contract shall be forfeited and you shall not be issued any completion certificate for the contract. However, no additional Performance Guarantee shall be required for balance of work being executed through the part terminated contract.
4. The contract value of part terminated contract shall stands reduced to

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

Registered Acknowledgement Due

PERFORMA OF TERMINATION NOTICE

RAILWAY

(Without Prejudice)

No. _____

Dated _____

To

M/s _____

Dear Sir,

Contract Agreement No _____

In connection with _____

Forty eight hours (48 hrs.) notice was given to you under this office letter of even no., dated _____; but you have taken no action to commence the work/show adequate progress of the work.

Since the period of 48 hours' notice has already expired, the above contract stands rescinded in terms of Clause 62 of General Conditions of Contract and the balance work under this contract will be carried out independently without your participation. Your participation as well as participation of every member/partner in any manner as an individual or a partnership firm/JV is hereby debarred from participation in the tender for executing the balance work and your Security Deposit shall be forfeited and Performance Guarantee shall also be encashed.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

FORM – 27 A

Registered Acknowledgement Due

**PROFORMA OF TERMINATION NOTICE FOR PART OF THE
WORK (DETAILS OF PART OF WORK TO BE MENTIONED)**

_____ **RAILWAY**

(Without Prejudice)

No. _____

Dated _____

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

1. Forty eight hours (48 hrs.) notice was given to you under this office letter of even no., dated _____; but you have taken no action to commence the work/show adequate progress of the part of work (details of part to be mentioned).
2. Your above part of work in contract(details of part to be mentioned) stands rescinded in terms of Clause 62 of Standard General Conditions of Contract and the same will be carried out independently without your participation. Your participation as well as participation of every member/partner in any manner as an individual or a partnership firm/JV is hereby debarred from participation in the tender for executing the balance work
3. Your full Performance Guarantee for the contract shall be forfeited and you shall not be issued any completion certificate for the contract. However, no additional Performance Guarantee shall be required for balance of work being executed through the part terminated contract.
4. The contract value of part terminated contract stands reduced to

Kindly acknowledge receipt.

Yours faithfully
For and on behalf of the
President of India

FORMAT FOR CERTIFICATE TO BE SUBMITTED/UPLOADED BY TENDERER ALONGWITH THE TENDER DOCUMENTS

I..... (Name and designation)** appointed as the attorney/authorized signatory of the tenderer, M/s..... (hereinafter called the tenderer) for the purpose of the Tender documents for the work of..... as per the Tender No..... of Principal Chief Electrical Engineer, North Eastern Railway, Gorakhpur, do hereby solemnly affirm and state on the behalf of the tenderer including its constituents as under:

1. I/we the tenderer (s) am/are signing this document after carefully reading the contents.
2. I/We the tenderer(s) also accept all the conditions of the tender and have signed all the pages in confirmation thereof.
3. I/we hereby declare that I/we have downloaded the tender documents from Indian Railway website www.ireps.gov.in. I/we have verified the content of the document from the website and there is no addition, no deletion or no alteration to the content of the tender document. In case of any discrepancy noticed at any stage i.e. evaluation of tenders, execution of work or final payment of the contract, the master copy available with the railway Administration shall be final and binding upon me/us.
4. I/we declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.
5. **I/We also understand that my/our offer will be evaluated based on the documents/credentials submitted along with the offer and same shall be binding upon me/us.**
6. **I/We declare that the information and documents submitted along with the tender by me/us are correct and I/we are fully responsible for the correctness of the information and documents, submitted by us.**
7. I/we certify that I/we the tenderer(s) is/are not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of submission of bids, either in individual capacity or as a HUF/ member of the partnership firm/LLP/JV/Society/Trust.
8. I/we understand that if the contents of the **certificate** submitted by us are found to be forged/false at any time during process for evaluation of tenders, it shall lead to forfeiture of the Bid Security **and may also lead to any other action provided in the contract including** banning of business for a period of upto two year. Further, I/we (insert name of the tenderer) ** and all my/our constituents understand that my/our offer shall be summarily rejected.
9. I/we also understand that if the contents of the **certificate** submitted by us are found to be false/forged at any time after the award of the contract, it will lead to termination of the contract, along with forfeiture of Bid Security/Security Deposit and Performance guarantee **and may also lead to** any other action provided in the contract including banning of business for a period of upto two year.
10. I/We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India and certify that I am/We are not from such a country or, if from such a country, have been registered with the competent Authority. I/We hereby certify that I/we fulfil all the requirements in this regard and am/are eligible to be considered (evidence of valid registration by the competent authority is enclosed)

**SEAL AND SIGNATURE OF
THE TENDERER**

Place:

-

Dated:

-

** The contents in Italics (marked with **) are only for guidance purpose. Details as appropriate are to be filled in suitably by Tenderer.

This certificate is to be given by each member of JV or partner of partnership firm/LLP/etc.

FORM - 28 A

**FORMAT FOR CERTIFICATE TO BE SUBMITTED/UPLOADED BY TENDERER ALONG
WITH THE TENDER DOCUMENTS**

(i) If the tender is submitted on behalf of a Limited Liability Partnership/Partnership Firm, following undertaking is to be submitted by all partners of the LLP (Limited Liability Partnership)/Partnership Firm in terms of para 13(g)(f)(iv)/15.10(iii) of the Preamble that:

“They are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP or JV in which they were / are partners/members. Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the Standard General Conditions of Contract.”

**SEAL AND
SIGNATURE OF AUTHORIZED SIGNATORY
OF THE PARTNER**

SEAL AND SIGNATURE OF THE TENDERER

Place:-

Dated:

-

(ii) If the tender is submitted on behalf of a JV, following undertaking is to be submitted by all the members of the JV (para 14.14.6 of the Preamble), and in case one or more members of the JV is/are LLP/Partnership firm/s, following undertaking is to be submitted by all partners of the LLP (Limited Liability Partnership)/Partnership Firm in terms of para 14.14.4(v)/14.14.1(d) of the Preamble that:

“They are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP or JV in which they were / are partners/members. Any Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the Standard General Conditions of Contract.”

**SEAL AND
SIGNATURE OF AUTHORIZED SIGNATORY
OF THE MEMBER**

SEAL AND SIGNATURE OF THE TENDERER

Place:-

Dated:

FINAL SUPPLEMENTARY AGREEMENT

Articles of agreement made this day _____ in the year _____ between the President of India, acting through the _____ Railway Administration having his office at _____ herein after called the Railway of the one part and _____ of the second part.

Whereas the party hereto of the second part executed an agreement with the party hereto of the first part being agreement Number _____ dated _____ for the performance _____ herein after called the 'Principal Agreement'.

And whereas it was agreed by and between the parties hereto that the works would be completed by the party hereto of the second part on _____ date last extended' and whereas the party hereto of the second part has executed the work to the entire satisfaction of the party hereto of the first part.

And whereas the party hereto of the first part already made payment to the party hereto of the second part diverse sums from time to time aggregating to ₹ _____ including the final bill bearing voucher No. _____ dated _____ of value _____ (the receipt of which is hereby acknowledged by the party hereto of the second part in full and final settlement of all his /its claims under the principal agreement.

And whereas the party hereto of the second part have received further sum of ₹ _____ through the final bill bearing voucher No. _____ dated _____ (the receipt of which is hereby acknowledged by the party hereto of the second part) from the party hereto of the first part in full and final settlement of all his/its disputed claims under principal agreement.

Now, it is hereby agreed by and between the parties in the consideration of sums already paid by the party hereto of the first part to the party hereto of the second part against all outstanding dues and claims for all works done under the aforesaid principal agreement including /excluding the security deposit, the party hereto of the second part have no further dues of claims against the party hereto of the first part under the said Principal Agreement. It is further agreed by and between the parties that the party hereto of the second part has accepted the said sums mentioned above in full and final satisfaction of all its dues and claims under the said Principal Agreement.

It is further agreed and understood by and between the parties that the arbitration clause contained in the said principal agreement shall cease to have any effect and/or shall be deemed to be non-existent for all purposes.

Signature of the Contractor/s
for and on behalf of the President of India

Witnesses

ADDRESS: _____

(Reference Clause 1.2.64) Registered Acknowledgement Due

PROFORMA OF 14 DAYS NOTICE FOR OFFLOADING OF PART OF CONTRACT WORK

_____ RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

In spite of repeated instructions to you by the subordinate offices as well as by this office through various letters of even no. _____, dated; you have failed to show adequate progress of work so as to complete the contract within the original / extended date of completion of contract and part(s) of contract work are yet to be started/ still lagging behind the agreed program of work, listed as under:

(Details of part(s) of work which is delayed and can be executed independently, to be mentioned).

2. Your attention is invited to this office/Chief Engineer's office letter no. _____, dated _____ in reference to your representation, dated _____.

3. As you have failed to abide by the instructions issued to commence the work /to show adequate progress of work, you are hereby given 14 days' notice in accordance with Clause 40A of the Standard General Conditions of Contract to deploy adequate resources i.e. *(the details of resource requirement, to be mentioned)* and commence / to make good the progress for part(s) of works detailed above, failing which action as provided in Clause 40A of the Standard General Conditions of Contract shall be commenced after expiry of 14 days' notice period viz. to offload few/ all part(s) of work mentioned above to any of the existing or new contractor without your participation and at your Risk & Cost, not exceeding the value of Performance Guarantee of this contract, which may please be noted.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

Model Certificate to be submitted by Tenderers for Works involving possibility of sub-contracting (Restriction under Rule 144(xi) of General Financial Rules (GFRs), 2017)

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries, I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

SEAL AND SIGNATURE OF THE TENDERER

Place:-

Dated:

-

(Reference Clause 1.2.64)Registered Acknowledgement Due

NOTICE FOR PART OF CONTRACT WORK OFF LOADED
RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

1. Fourteen days' notice under Clause 40A of the Standard General Conditions of Contract was given to you under this office letter of even no., dated ; but you have taken no/inadequate action to deploy adequate resources to commence the part(s) of work/show adequate progress of the part(s) of work, mentioned therein.

As you have failed to abide by the instructions issued to commence the part(s) of work/show adequate progress of the part(s) of work even at the lapse of 14 days' notice period under Clause 40A of the Standard General Conditions of Contract, few part(s) of the work under the contract have been offloaded and being executed by other mode(s) at the cost detailed below:

2. Please refer your request letter no..... dated, wherein it was requested under clause 40 A of the Standard General Conditions of Contract to offload part(s) of works at your risk & cost. The details of part(s) of the work under the contract which have been offloaded and being executed by other mode(s) at the cost detailed below: (List of Part(s) of work offloaded, Details of mode of execution of such offloaded work along with approximate cost thereof *to be mentioned*).
3. The final measurement of work(s) already executed for above part(s) of work recorded as per clause 45 (A) or/and 45 (B) of the Standard General Conditions of Contract is enclosed herewith.
4. The Bill(s) of Quantities for Part(s) of work offloaded is enclosed herewith.
5. The additional cost in execution of offloaded work through mode(s) mentioned in para (1) above_ is determined as Rs. , over& above the cost of execution under thiscontract (including the PVC amount payable as per contract, as on the date of issue of this notice). This additional cost shall be recovered from your next on account bill(s) or any other dues payable to you under contract.
6. The Contract value gets reduced to Rs.....:
7. You are requested to continue with the balance work in the contract subsequent to offloading of above part(s) of work.

Kindly acknowledge receipt.

Yours faithfully
For and on behalf
of the President of
India

FORM 32 A
(Annexure-5A)

(This certificate is to be given by attorney/authorized signatory/each member of Partnership firm/Joint Venture (JV) / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc.)

I/We. .. .(Name), attorney/authorized signatory of the (constituent firm/constituent partner) and member/partner of the (tendering firm) hereby solemnly affirm and state as under:

1. I/We certify that (constituent firm/constituent Partner) is/are not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of submission of bids, either in individual capacity or as a HUF/ member of the partnership firm/LLP/JV/ Society/Trust.
2. I/We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India and certify that I am/we are not from such a country or, if from such a country, have been registered with the competent Authority. I/we hereby certify that I/we fulfill all the requirements in this regard and am/are eligible to be considered (evidence of valid registration by the competent authority is enclosed).

SEAL AND
SIGNATURE OF THE
CONSTITUENT
FIRM/CONSTITUENT PARTNER

Place:

Dated:

□□□□□□□□□□□□□□□□□□