पूर्वोत्तर सीमान्त रेलवे

कटिहार मंडल

NORTHEAST FRONTIER RAILWAY

KATIHAR DIVISION

विद्युत विभाग (सामान्य सेवा)

ELECTRICAL DEPARTMENT (GENERAL SERVICE)

TENDER FOR

E-Tender Notice No. - EL/29/26_2026/K/ Dated: .05.2026

Name of Work: - Electrical General work in connection with Commercial work "Comprehensive Improvement of dilapidated TTE Rest Rooms at NJP, MLDT, SGUJ, DJ, RDP, BLGT, HDB & KNE".

Approx Cost of Work: - **Rs. 58,57,224.00**

Earnest Money: - **Rs. 1,17,200.00**

Tender Cost: - **Nil**

Completion Period: - **06 Months**

Sr. Divisional Electrical Engineer / G & chg
N. F. Railway, KIR

NORTHEAST FRONTIER RAILWAY

E - Tender notice No: EL/29/26_2026/K/ **Dated: 05 .2026**

Open tender for works through E-Tendering system are invited from licensed electrical contractor for the works as detailed below: -

SN	Description	Details
1	Name of work	**Electrical General work in connection with Commercial work "Comprehensive Improvement of dilapidated TTE Rest Rooms at NJP, MLDT, SGUJ, DJ, RDP, BLGT, HDB & KNE".**
2	Tender value	Rs. 58,57,224.00
3	Tender document cost	Nil
4	Earnest Money	Rs. 1,17,200.00
5	Work completion period	6 Months.
6	Validity Offer	60 days
7	Date & Time of Closing Tender	16.06.2026 at 15.00 Hrs.
8	Date & Time of Opening Tender	16.06.2026 at 15.30 Hrs.
9	Name of Tender Inviting Officer	Sr. DEE/G & Chg/KIR
10	Website details for downloading tender form and detailed tender notice can be seen.	http://www.ireps.gov.in

Sr. Divisional Electrical Engineer / G & Chg
N. F. Railway, KIR
For & on behalf of President of India

Copy to:-
CPRO/MLG:- for kind information. It is requested for wide publication in the National leading newspapers and the amount incurred in connection with the said advertisement may be debited to GR-3A-733-21.

The clipping of the advertisement may please be sent to this office for placing the same before tender committee and for record.

Sr. Divisional Electrical Engineer / G & Chg
N. F. Railway, KIR
For & on behalf of President of India

NORTHEAST FRONTIER RAILWAY

E - Tender notice No: EL/29/26_2026/K/ Dated: 05.2026

Open tender for works through e-tendering system are invited from licensed electrical contractor for the works - **Electrical General work in connection with Commercial work "Comprehensive Improvement of dilapidated TTE Rest Rooms at NJP, MLDT, SGUJ, DJ, RDP, BLGT, HDB & KNE".**

Approx. value of work (in Rs.)	Earnest Money (in Rs.)	Cost of Tender Form	Period of Completion	Date & Time of Closing Tender	Date & Time of Opening Tender
Rs. 58,57,224.00	Rs. 1,17,200.00	Nil	06 Months.	16.06.2026 at 15.00 Hrs..	16.06.2026 at 15.30 Hrs.

1. The complete information with the tender document of above e-tender will be available in website http://www.ireps.gov.in. The tenderers require submitting their e-tender on this website only.
2. Tenderers other than in the form of e-tendering shall not be accepted against above e-tenders. For this purpose, contractors are required to get themselves registered with IREPS website along with class III digital signature certificates.
3. Rates entered into rate page and dully signed digitally shall only be considered. Rates in any other financial entity on any other form/letter if attached by tenderers shall not be considered.
4. Documents being attached should be signed digitally by the tenderer.
5. All the tenderers/ Contractors are allowed to make payments against this tender towards tender documents cost and earnest money through ONLINE payment modes available on IREPS portal like net banking, debit card credit card etc. MANUAL payment through demand draft, Banker cheque, deposit receipt, FDR etc are not allowed.
6. Payment of Earnest Money deposit (EMD) & Tender document Cost (TDC) in respect of e-tendering, should accepted through net banking or payment gateway. 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 Annexure-VIA and shall be valid for a period of 90 days beyond the bid validity period.
7. Tender will be opened at the specified time & date. In case the specified date is declared a holiday, the tender would be opened at the same time on the next working day.
8. In case of any difficulty help desk available on the website of IREPS may be approached.
9. (i) Eligibility Criteria :-

(a) Special Technical Criteria: -

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:

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

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

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

Similar nature of work is - **Any work of supply, installation, testing, commissioning and/or repairs and maintenance of Split/Window/Cassette type room air-conditioners.**

OR

Any work of supply, installation, erection, testing commissioning and/or repairs and maintenance of centralized conventional/packaged/HVAC/VRF/VRV type air conditioning plant/plants with/without ducts.

(As per PCEE/MLG/NFR's L/No.- EL/W/29/SNW(Vol-II)/2215, dated- 16.10.2025)

(b) Special Financial 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 Annexure-VIB**,** along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet**.**

(ii) Firm should have valid electrical contractor's license issued by the Central Government/State Government.

(iii) Contractor shall have to submit the documentary proof of electrical supervisor being employed by the contractor holding the valid Electrical Supervisor License prior to commencement of the work.

10. Eligibility Criteria for tenderer in respect of partnership firms:

i) In case the tenderer is a partnership firm(s), the experience, solvency and turn over shall be in the name and style of the firm only.

ii) If the tenderer is a partnership firm, all the partners shall be jointly and severally liable for successful completion of the work and no request for change on the certification of the firm shall be entertained.

iii. During the currency of the contract, no partner of the firm shall be permitted to withdraw from partnership business and in such an event it shall be treated as breach of trust and abandonment of the contract.

Sr. Divisional Electrical Engineer / G & Chg
N. F. Railway, KIR

PART I

Instructions to Tenderers (ITT)

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

1.01 Order of Precedence of Documents: In a contract agreement, in case of any difference, contradiction, discrepancy, with regard to conditions of tender/contract, specifications, drawings, Bill(s) of Quantities etc., forming part of the tender/contract, the following shall be the order of precedence:

i. Letter of Award/Acceptance(LOA)
ii. Bill(s) 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. 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.
viii. 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.
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/Guidelines 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.

1.1 Interpretation: These Instructions to Tenderers 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.

1.2 Definition: In these Instructions to Tenderers, 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 assigns.

(g) "Limited Tenders" shall mean tenders invited from all or some contractors on the approved or select list of contractors with the Railway.

(h) "Open Tenders" shall mean the tenders invited in open and public manner and with adequate notice.

(i) "Works" shall mean the works contemplated in the drawings and Bill(s) of Quantities set forth in 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 Chief Engineer or as amplified, added to or superseded by special specifications if any, appended to the Tender Forms.

(k) Standard Schedule of Rates (SSOR) shall mean the schedule of Rates adopted by the Railway, which includes-

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

(l) "Drawings" shall mean the maps, drawings, plans and tracings, or prints thereof 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.

(o)“Bill of Quantities” shall mean Schedule of Item(s) included in the tender document along with respective quantities.

1.3 Words importing the singular number shall also include the plural and vice versa where the context requires.

CREDENTIALS OF CONTRACTORS

2. Application for Registration and Approved list of contractors:

2.1 Works of construction and of supply of material shall be entrusted for execution to contractors whose capabilities and financial status have been investigated and approved to the satisfaction of the Railway. A list of approved contractors may also be maintained by the Railway. The said list be revised periodically once in a year or so by giving wide publicity through advertisements etc. For registration, the contractor including a contractor who is already on the approved list shall apply to the concerned General Manager (Construction) / Chief Administrative Officer (Construction) / Principal Chief Engineer / Principal Chief Signal & Telecommunication Engineer / Principal Chief Mechanical Engineer / Principal Chief Electrical Engineer/ Divisional Railway Manager, furnishing particulars regarding:

(a) his position as an independent contractor specifying engineering organization available with details of partners / staff / engineers employed with qualifications and experience;

(b) his capacity to undertake and carry out works satisfactorily as vouched for by a responsible official or firm; details about the transport equipment’s, construction tools and plants etc. required for the work, maintained by him;

(c) his previous experience of works similar to that to be contracted for, in proof of which original certificates or testimonials may be called for and their genuineness verified, if needs be, by reference to the signatories thereof;

(d) his knowledge from actual personal investigation of the resources of the area/zone or zones in which he offers to work;

(e) his ability to supervise the work personally or by competent and duly authorized agent;

(f) his financial position;

2.2 An applicant shall clearly state the categories of works and the area/zone/division(s)/district(s) in which he desires registration in the list of approved contractors.

2.3 The selection of contractors for enlistment in the approved list would be done by a committee for different value of slabs as notified by Railway.

2.4 An annual fee as prescribed by the Railway from time to time would be charged from such approved contractors to cover the cost of sending notices to them and clerkage for tenders etc. Notices shall be sent to them on registered *e*-mail address and registered postal address.

TENDERS FOR WORKS

3. Tender Form: Tender Forms shall embody the contents of the contract documents either directly or by reference and shall be as per specimen form, Annexure-I. e-Tender Forms shall be issued free of cost to all tenderers.

4. Omissions & Discrepancies: Should a tenderer 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. The tender inviting authority may, if deemed necessary, clarify the same to all tenderers. It shall be understood that every endeavour has been made to avoid any error which can materially affect the basis of tender and 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.

5. 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 all works	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. 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 **Annexure-VIA** 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 within 5 working days before closing date for 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 Bank Guarantee shall be placed in an envelope, which shall be sealed. The envelope shall clearly bear the identification "**Bid for the ***** Project**" 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 in the tender document.

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.

6. 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.

(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.

6.1 The tenderers shall submit a copy of certificate stating that all their statements/documents submitted along with bid are true and factual. Standard format of certificate to be submitted by the bidder is enclosed as **Annexure-V.** In addition to Annexure-V, in case of other than Company/Proprietary firm, Annexure-V(A) 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.

CONSIDERATION OF TENDERS

7. 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.

7A. 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.

7B. 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.

7C. Make in India Policy: 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.

7D. **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.

7E. 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.

8. Execution of Contract Document: The Tenderer whose tender is accepted shall be required to appear in person at the office of General Manager/General Manager (Construction), Chief Administrative Officer (Construction), Divisional Railway Manager or concerned Engineer, as the case may be, 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.

9. 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).

(a) For Zone Contracts, awarded on the basis of the percentage above or below the applicable chapter(s) of Standard Schedule of Rates (SSOR) for the whole or part of financial year, the contract agreement required to be executed by the tenderer whose tender is accepted shall be as per specimen form, Annexure-II. During the currency of the Zone Contract, work orders as per specimen form Annexures-III, for works not exceeding ₹ 5,00,000 each, shall be issued by the Divisional Railway Manager / Executive Engineer under the agreement for Zone Contract.

(b) 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 Annexure- IV.

ANNEXURE – I

N.F. RAILWAY

TENDER FORMS (FIRST SHEET)

Tender No – _____

Name of work - _____

To

The President of India,

Acting through the Sr. DEE/G & Chg/KIR, N.F. Railway.

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 offer open for acceptance for a period of **60 (Sixty)** days from the date fixed for closing of the tender and in default thereof, I/We will be liable for forfeiture of my/our "Bid Security". I/We offer to do the work for **Electrical General work in connection with Commercial work "Comprehensive Improvement of dilapidated TTE Rest Rooms at NJP, MLDT, SGUJ, DJ, RDP, BLGT, HDB & KNE"** at the rates quoted in the attached bill(s) of quantities 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, Standard Schedule of Rates (SSOR) with all correction slips up-to-date for the present contract.

3. A Bid Security of ₹ _____ has already been deposited online/ submitted as Bank Guarantee bond. Full value of the Bid Security 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 by _____ Department of Industrial Policy and Promotion (DIPP) and my registration number is _____ valid upto _____ (Copy enclosed) and hence exempted from submission of Bid Security.

5. We are a Labour Cooperative Society and our Registration No. is _____ with _____ and hence required to deposit only 50% of Bid Security.

6. 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.

_____

Signature of Tenderer(s)

Date _____

Address of the Tenderer(s)

_____

TENDER FORMS (Second Sheet)

A. 1. On behalf of the President of India, DRM (Electrical), Northeast Frontier Railway, Katihar, (herein after referred to as "Railways") invites on line tenders from licensed electrical contractor(s)/ tenderer for **Electrical General work in connection with Commercial work "Comprehensive Improvement of dilapidated TTE Rest Rooms at NJP, MLDT, SGUJ, DJ, RDP, BLGT, HDB & KNE"** as set forth in the "Schedule/ scope of works / special terms and conditions.

2. INSTRUCTIONS FOR QUOTING OF TENDER

1 The complete information with the tender documents of the above e- tender will be available in website http://www.ireps.gov.in. The tenderers require to submit their e-tender on this website only.

2. The tenderers other than in the form of e-tendering shall not be accepted against above e-tenders. For this purpose, contractors are required to get themselves registered with IREPS website along with class III digital signature certificates.

3. Documents being attached should be signed digitally by the tenderer.

4 All tenderers/ contractors are allowed to make payments against this tender towards tender documents cost and earnest money through ONLINE payment modes available on IREPS portal like net banking, debit card, credit card etc. MANUAL payment through demand draft, Banker cheque, deposit receipt, FDR etc are NOT allowed. 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 Annexure-VIA and shall be valid for a period of 90 days beyond the bid validity period.

5 Tender will be opened at the specified time & date. In case the specified date is declared a holiday, the tender would be opened at the same time on the next working day.

6 In case any difficulty help desk available on the website IREPS may be approached.

7. Eligibility Criteria :-

(a) Special Technical Criteria:-

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:

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

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

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

Similar nature of work is - **Any work of supply, installation, testing, commissioning and/or repairs and maintenance of Split/Window/Cassette type room air-conditioners.**

OR

Any work of supply, installation, erection, testing commissioning and/or repairs and maintenance of centralized conventional/packaged/HVAC/VRF/VRV type air conditioning plant/plants with/without ducts.

(As per PCEE/MLG/NFR's L/No.- EL/W/29/SNW(Vol-II)/2215, dated- 16.10.2025)

(b) Special Financial 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 Annexure-VIB**,** along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet**.**

(ii) Firm should have valid electrical contractor's license issued by the Central Government/State Government.

(iii) Contractor shall have to submit the documentary proof of electrical supervisor being employed by the contractor holding the valid Electrical Supervisor License prior to commencement of the work.

8. Eligibility Criteria for tenderer in respect of partnership firms:
   - i) In case the tenderer is a partnership firm(s), the experience, solvency and turn over shall be in the name and style of the firm only.
   - ii) If the tenderer is a partnership firm, all the partners shall be jointly and severally liable for successful completion of the work and no request for change on the certification of the firm shall be entertained.
   - iii) During the currency of the contract, no partner of the firm shall be permitted to withdraw from partnership business and in such an event it shall be treated as breach of trust and abandonment of the contract.
   - iv) JOINT VENTURE will not be permitted for this tender.

9. Any conditional offer will be summarily rejected. Other terms & condition may be seen in tender documents.

10. The onus of establishing credentials lies with the tenderer and hence Railway shall evaluate the offer only from the certificates/documents submitted along with the tender offer.

11. Any certificate, documents submitted after tender opening shall not be given any credit and shall not be considered.

12. The offer of tenderer(s) who do not enclose Experience Certificate along with their tender to establish their credentials are liable to be **rejected** even though they may be working contractors or Contractors of Approved list. Insufficient details submitted by tenderer for items mentioned will make their tenders incomplete and the tender shall be treated as invalid.

13. Tenderer(s) are requested to read all the tender documents including the conditions of agreement and schedules carefully and note the changes before submitting tenders.

14. **Warning**: It is hereby brought to the notice of all prospective tenderers that if any change/additions/deletions/ alterations are found to be made by them and the same is subsequently detected / noticed at any stage even after award of the contract, all necessary action including banning of business would be taken. In addition, the tenderers are liable to be prosecuted under law.

B. 1. Instructions to Tenderers and Conditions of Tender: The following documents form part of Tender / Contract:

(a) Tender Forms – First Sheet and Second Sheet

(b) Special Conditions/Specifications (enclosed)

(c) Bill(s) of quantities (enclosed)

(d) Standard General Conditions of Contract and Standard Specifications (Works and Materials) of Indian Railways as amended/corrected upto latest correction slips, copies of which can be seen in the office of DRM/Electrical/G/KIR or obtained from the office of the Chief Engineer, N. F. Railway on payment of prescribed charges.

(e) Standard Schedule of Rates (SSOR) as amended / corrected upto latest correction slips, copies of which can be seen in the office of _____ or obtained from the office of the Chief Engineer, _____ Railway on payment of prescribed charges.

(f) All general and detailed drawings pertaining to this work which will be issued by the Engineer or his representatives (from time to time) with all changes and modifications.

2. Drawings for the Work: The Drawing for the work can be seen in the office of the DRM/Electrical/G/KIR and / or Chief Engineer, N. F. Railway at any time during the office hours. The drawings are only for the guidance of Tenderer(s). Detailed working drawings (if required) based generally on the drawing mentioned above, will be given by the Engineer or his representative from time to time.

3. The Tenderer(s) shall quote his / their rates as a percentage above or below the Standard Schedule of Rates (SSOR) of _____ Railway as applicable to _____ Division except where he/they are required to quote item rates and must tender for all the items shown in the Bill(s) of Quantities attached. The quantities shown in the attached Bill(s) of Quantities are given as a guide and are approximate only and are subject to variation according to the needs of the Railway. The Railway does not guarantee work under each item of the Bill(s) of Quantities. The tenderer(s) shall quote rates / rebates only at specified place in Tender Form supplied by Railway. Any revision of rates / rebates submitted (quoted) through a separate letter whether enclosed with the bid (Tender Form) or submitted separately or mentioned elsewhere in the document other than specified place shall be summarily ignored and will not be considered.

4. Tenders containing erasures and / or alterations of tender documents are liable to be rejected. Any correction made by tender(s) in his/their entries must be attested by him / them.

5. The works are required to be completed within a period of **06 (Six)** months from the date of issue of acceptance letter.

6. Bid Security:

(a) (i) Subject to exemptions provided under para 5(1) (a) of Part-1 (ITT) of this document, the tender must be accompanied by a Bid Security as mentioned in tender documents, failing which the tender shall be summarily rejected.

(ii) The Bid must be accompanied by tender paper cost and earnest money (as per approval of DRM/KIR for imposition of EMD in electrical e-tender vide L/No.- EL/Tender/K dated- 19.10.2021) and without this cost, offer will be summarily rejected.

(b) The Tenderer(s) shall keep the offer open for a minimum period of 60 days (in case of two packet system of tendering 90days) from the date of closing of the Tender. It is understood that the tender documents have been issued to the Tenderer(s) and the Tenderer(s), is / are permitted to tender in consideration of the stipulation on his / their part that after submitting his / their tender subject to the period being extended further, if required by mutual agreement from time to time, he will not resile from his offer or modify the terms and conditions thereof in a manner not acceptable to Chief Engineer, N. F. Railway. Should the tenderer fail to observe or comply with the foregoing stipulation, the amount deposited or Bank guarantee bond submitted as Bid Security for the due performance of the above stipulation, shall be forfeited to the Railway.

(c) If his tender is accepted,

(i) the Bid Security mentioned in sub para(a) above deposited in cash through e-payment gateway 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;

(ii) the Bid Security mentioned in sub para(a) above submitted as Bank guarantee bond, will be encashed 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 to the Bid Security that may happen thereto while in their possession, nor be liable to pay interest thereon.

(d) In case Contractor submits the Term Deposit Receipt/Bank Guarantee Bond towards either the Full Security Depositor the Part Security Deposit equal to or more than Bid Security, the Railway shall return the Bid Security so retained as per sub para(c) above, to the Contractor.

7. **Rights of the Railway to deal with Tender**:- The authority for the acceptance of the tender will rest with the Railway. It shall not be obligatory on the said authority to accept the lowest tender or any other tender, and tenderer(s) shall neither demand any explanation for the cause of rejection of his/ their tender nor the Railway to assign reasons for declining to consider or reject any particular tender or tenders.

8. 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.

9. 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.

10. Eligibility Criteria :-

10.1 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:

(i) Three similar works each costing not less than the amount equal to 30% of advertised value of the tender, or
(ii) Two similar works each costing not less than the amount equal to 40% of advertised value of the tender, or
(iii) One similar work costing not less than the amount equal to 60% of advertised value of the tender.

Similar nature of work is - **Any work of supply, installation, testing, commissioning and/or repairs and maintenance of Split/Window/Cassette type room air-conditioners.**

OR

Any work of supply, installation, erection, testing commissioning and/or repairs and maintenance of centralized conventional/packaged/HVAC/VRF/VRV type air conditioning plant/plants with/without ducts.

(As per PCEE/MLG/NFR's L/No.- EL/W/29/SNW(Vol-II)/2215, dated- 16.10.2025)

(b) (1) In case of tenders for composite works (e.g. works involving more than one distinct component, such as Civil Engineering works, S&T works, Electrical works, OHE works etc. and in the case of major bridges – substructure, superstructure etc.), 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:

(i) Three similar works each costing not less than the amount equal to 30% of advertised value of each component of tender, or
(ii) Two similar works each costing not less than the amount equal to 40% of advertised value of each component of tender, or
(iii) One similar work each costing not less than the amount equal to 60% of advertised value of each component of tender.

Note for b(1): Separate completed works of minimum required values shall also be considered for fulfillment of technical eligibility criteria for different components.

(b)(2)In such cases, what constitutes a component in a composite work shall be clearly pre-defined with estimated tender cost of it, as part of the tender documents without any ambiguity.

(b) (3) To evaluate the technical eligibility of tenderer, only components of work as stipulated in tender documents for evaluation of technical eligibility, shall be considered. The scope of work covered in other remaining components shall be either executed by tenderer himself if he has work experience as mentioned in clause 7 of the Standard General Conditions of Contractor through subcontractor fulfilling the requirements as per clause 7 of the Standard General Conditions of Contract or jointly i.e., partly himself and remaining through subcontractor, with prior approval of Chief Engineer in writing.

However, if required in tender documents by way of Special Conditions, a formal agreement duly notarised, legally enforceable in the court of law, shall be executed by the main contractor with the subcontractor for the component(s) of work proposed to be executed by the subcontractor(s), and shall be submitted along with the offer for considering subletting of that scope of work towards fulfilment of technical eligibility. Such subcontractor must fulfill technical eligibility criteria as follows:

The subcontractor shall have successfully completed at least one work similar to work proposed for subcontract, costing not less than 35% value of work to be subletted, in last 5 years, ending last day of month previous to the one in which tender is invited through a works contract.

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

In case after award of contract or during execution of work it becomes necessary for contractor to change subcontractor, the same shall be done with subcontractor(s) fulfilling the requirements as per clause 7 of the Standard General Conditions of Contract, with prior approval of Chief Engineer in writing.

Note for Item 10.1:

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.

10.2. 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 Annexure-VIB**,** along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet**.**

10.3 Bid Capacity: The tender/technical bid will be evaluated based on bid capacity formula detailed as Annexure-VI.

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

10.5 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 10 of the Tender Form (Second Sheet) including Para 10.1 to 10.5 - 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 Item 10.1 Para 10 of the Tender Form (Second Sheet), 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*0.2*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.*]

11. Tenderer Credentials:

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 the certificate to be submitted by the bidder is enclosed as Annexure-V. In addition to Annexure-V, in case of other than Company/Proprietary firm, Annexure-V(A) 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 a copy of certificate by the bidder shall result in summarily rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested / digitally signed by which they/he are/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 besides banning of business for a period of upto five 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 agency shall be banned for doing business for a period of upto five years.

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

13. Execution of Contract Documents: The successful Tenderer(s) shall be required to execute an agreement with the President of India acting through the **Sr. DEE/G & Chg/KIR, N. F. Railway** for carrying out the work according to the Standard General Conditions of Contract, Special Conditions / Specifications annexed to the tender and Standard Specifications (Works and Materials) of Railway as amended/corrected upto latest correction slips, mentioned in tender form (First Sheet).

14. 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 10 of the Tender Form (Second Sheet) 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 10 of the Tender Form (Second Sheet) above.

(c) **Partnership Firm:**

(i) All documents as mentioned in para 17 of the Tender Form (Second Sheet).

(d) **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 10 of the Tender Form (Second Sheet) above.

(e) **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 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 10 of the Tender Form (Second Sheet).

(f) **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 10 of the Tender Form (Second Sheet) 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.

15. 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 Appostille certificate.

16. Employment/Partnership etc. of Retired Railway Employees:

(a) 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.

(b) 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.

(c) 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 16.a), b), c) above has not been furnished, contract is liable to be dealt in accordance with provision of clause 62 of the Standard General Condition of contract.

17. Participation of Partnership Firms in works tenders:

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

17.2 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.

17.3 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.

17.4 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.

17.5 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.

17.6 The tender form shall be submitted only in the name of partnership firm. The Bid Security shall be submitted by partnership firm. The Bid Security submitted in the name of any individual partner or in the name of authorized partner (s) shall not be considered.

17.7 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.

17.8 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.

17.9 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.

17.10 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 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 10 of the Tender Form (Second Sheet) above

17.11 **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 Para 10 of the Tender Form (Second Sheet) above.

Sr. Divisional Electrical Engineer/ G & Chg
N. F. Railway, Katihar

Signature of Bidder(s)
Date……

TENDER FORM (Third Sheet)

Name of Work: _____

BILL OF QUANTITIES

1. Standard Schedule of Rates (SSOR) Items:

SL	Item No. of SSOR	Description of Item of Work	Approximate Quantity	Unit	Rates in Figures and Words to be filled by tenderer (₹)	Amount (₹)
1	2	3	4	5	6	7

2. Non Standard Schedule of Rates (SSOR) Items:

SL	Item No.	Description of Item of Work	Approximate Quantity	Unit	Rates in Figures and Words to be filled by tenderer (₹)	Amount (₹)
1	2	3	4	5	6	7

The quantities shown in above Bill of Quantities are approximate and are as a guide to give the tenderer(s) an idea of quantum of work involved. The Railway reserves the right to increase/ decrease and/or delete or include any of the quantities given above and no extra rate will be allowed on this account.

I/We undertake to do the work at _____ % above/below the Standard Schedule of Rates (SSOR) of the _____ Railway as applicable to _____ Division or at the rates quoted above for each item.

Dated _____

Signature of the Tenderer(s)

Note: Columns 1 to 5 shall be filled by the office of the Authority inviting tender. Columns 6 & 7 shall be filled by the Tenderer(s) only when percentage tenders are not invited.

ANNEXURE – II

AGREEMENT FOR ZONE CONTRACT

CONTRACT AGREEMENT No._____ DATED _____. ARTICLES OF AGREEMENT made this _____ day of _____ between the President of India acting through the _____, _____ Railway hereinafter called the "Railway" of the one part and _____ hereinafter called the "Contractor" of the other part.

WHEREAS the Contractor has agreed with the Railway during the period of _____ months from _____ to _____ for the performance of:

(a) New Works, additions and alterations to existing structures, special repair works and supply of building materials subject to the contract value for such works not exceeding ₹ _____.

(b) All ordinary repair and maintenance works at any site between kilometer _____ and kilometre _____ as will be set forth in the work orders (which work orders shall be deemed and taken to be part of this contract) that will be issued during the said period at _____% above/below the Standard Schedule of Rates (SSOR) of the _____ Railway, corrected up to the latest correction slips and Standard Specifications of the _____ Railway corrected upto latest correction slips and the Special Conditions and Special Specifications, if any in conformity with the drawings (if any) that will be issued with the work order, aforesaid AND WHEREAS the performance of the said work is an act in which the public are interested.

NOW THIS INDENTURE PRESENTS WITNESSETH That in consideration of the payment to be made by the Railway, the Contractor will duly perform the works set forth in the said Work Order and shall execute the same with great promptness, care and accuracy, in a workman like manner to the satisfaction of the Railway and will complete the same on or before the respective dates specified therein in accordance with the said specifications and said drawings (if any) and said conditions of contract and will observe, fulfill and keep all the conditions therein mentioned, (which shall be deemed and taken to be part of this contract as if the same had been duly set forth herein), AND the Railway both here-by agree that if the Contractor shall duly perform the said work in the manner aforesaid and observe and keep the said terms and conditions, the Railway will pay or cause to be paid to the Contractor for the said works on the completion thereof the amount due in respect thereof at the rates specified above.

Contractor _____ Designation

Address _____ Railway _____

(For President of India)

Witnesses (to signature of Contractor):

Signature of witnesses with address _____

Date _____ _____

Signature of witnesses with address _____

Date _____ _____

_____

ANNEXURE - III

WORK ORDER UNDER ZONE CONTRACT

WORK ORDER NO._____, DATED _____ UNDER CONTRACT AGREEMENT

NO._____ DATED _____.

Name of Work _____ (SITE) _____

Schedule of Drawings _____

Authority_____ Allocation _____

The Contractor(s) _____ is / are hereby ordered to carry out the following works at _____% above/below the Standard Schedule of Rates (SSOR) of _____, updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents under Zone Contract Agreement here-in-before referred to:

SL	Item No.	Description of Item of Work	Approximate Quantity	Unit	Rates in Figures and Words (₹)	Amount (₹)
1	*2*	*3*	*4*	*5*	*6*	*7*
					Total Approximate Value of Work = ₹ _____	

The works herein mentioned are required to be completed on or before _____ (Date). The quantities provided herein are approximate and subject to variation under Clause 42 of the Standard General Conditions of Contract updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents.

Divisional Railway Manager/Divisional _____ Engineer

_____ Division

_____ Railway

Date _____ for President of India

I agree to complete the works herein set forth on or before the date specified under the Zone Contract Agreement herein before referred to in conformity with the drawings hereto annexed and in accordance with the General and Special (if any) Conditions of Contract updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents and the Standard

Specifications of _____ Railway updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents .

I also agree to maintain such works for the period specified below from the date of completion:

(a) Repair and maintenance work including white/color washing: three calendar months from date of completion.

(b) All new works except earth work: Six calendar months from date of completion.

Contractor _____ (Signature) Railway: Designation _____

Address _____

For President of India)

Date _____ Date _____

Signature of Witnesses (to Signature of Contractor) with address

1. _____ _____

_____ _____

_____ _____

2. _____ _____

_____ _____

_____ _____

N. F. RAILWAY

CONTRACT AGREEMENT OF WORKS

CONTRACT AGREEMENT NO. _____ DATED _____

ARTICLES OF AGREEMENT made this _____ day of _____ 20_____ between President of India acting through the Railway Administration hereafter called the "Railway" of the one part and _____herein after called the "Contractor" of other part.

WHEREAS the Contractor has agreed with the Railway for performance of the works **Electrical General work in connection with Commercial work "Comprehensive Improvement of dilapidated TTE Rest Rooms at NJP, MLDT, SGUJ, DJ, RDP, BLGT, HDB & KNE"** set forth in the Bill(s) of Quantities hereto annexed upon the Standard General Conditions of Contract, updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents and the Specifications of _____ updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents and the applicable Standard Schedule of Rates (SSOR) of _____ updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents and the Special Conditions and Special Specifications, if any and in conformity with the drawings here-into annexed AND WHEREAS the performance of the said works is an act in which the public are interested.

NOW THIS INDENTURE WITNESSETH that in consideration to the payments to be made by the Railways, the Contractors will duly perform the said works in the said Bill(s) of Quantities set forth and shall execute the same with great promptness, care and accuracy in a workman like manner to the satisfaction of the Railway and will complete the same in accordance with the said specifications and said drawings and said conditions of contract on or before the _____ day of _____ 20___ and will maintain the said works for a period of _____Calendar months from the certified date of their completion and will observe, fulfill and keep all the conditions therein mentioned (which shall be deemed and taken to be part of this contract, as if the same have been fully set forth herein), AND the Railway, both hereby agree that if the Contractor shall duly perform the said works in the manner aforesaid and observe and keep the said terms and conditions, the Railway will pay or cause to be paid to the Contractor for the said works on the final completion thereof the amount due in respect thereof at the rates specified in the Bill(s) of Quantities hereto annexed.

Contractor _____ (Signature) Railway: Designation _____

Address _____ (For President of India)

Date _____ Date _____

Signature of **Witnesses** (to Signature of Contractor) with address:

Witnesses:

_____ _____

_____ _____

D. Annexure-V Part I of GCC shall be read as under: **ANNEXURE-V**

Reference -Para 6.1 of ITT

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 _____ (Railway)**, 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 are only for guidance purpose. Details as appropriate are to be filled in suitably by tenderer.

E. New Annexure-V(A), Part I of GCC Shall be read as Under.

ANNEXURE-V(A)

Reference-Para 6.1 of ITT

(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 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 fulfil all the requirement 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/CONSTITENT PARTNER

Place:
Dated:

ANNEXURE – VI

Reference -Para 10.3 of Tender Form (Second Sheet) of Annexure I of ITT

TENDERER'S CREDENTIALS (BID CAPACITY)

_____ RAILWAY

For tenders having advertised value more than **Rs 10 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 x N x 2] – 0.33xNxB

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 commitments 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 works which are awarded to tenderer but yet not started up to 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 of Railway 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 of Railway 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 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.

Annexure –VIA

Para 5 of the Instructions to Tenderers

(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 ……,

…….. Railway,

Beneficiary: …….. Railway

Date:.....

Bank Guarantee Bond No.: **Date:---------**

In consideration of the President of India acting through----- ***(Designation & address of Contract Signing Authority***), …….. Railway, ……., …. (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**]*…….. (**hereinafter called "the Bidder"**) intends to submit its bid (hereinafter 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 authorised persons of the Bank]***, have, at the request of the Bidder, agreed to give guarantee for Bid Security as hereinafter contained, in favour 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 up to 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 any time.

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	MAHARASHTRA
BG ENABLED	YES

11. The Guarantee shall be valid in addition to and without prejudice to any other security Guarantee(s) of Bidder in favour 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: All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.

Annexure –VIB

Reference -Para 10.2 of Tender Form (Second Sheet) of Annexure I of ITT

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 AND 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)

Part II

STANDARD GENERAL CONDITIONS OF CONTRACT

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

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

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

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

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

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

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

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

(h) "Contract" shall mean and include the Agreement, the Work Order, the accepted Bill(s) of Quantities or Chapter(s) of Standard Schedule of Rates (SSOR) of the Railway modified by the tender percentage for items of works quantified, or not quantified, the Standard General Conditions of

Contract, the Special Conditions of Contracts, if any; the Drawing, the Specifications, the Special Specifications, if any and Tender Forms, if any.

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

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

(k) Standard Schedule of Rates (SSOR) shall mean the schedule of Rates adopted by the Railway, which includes-

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

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

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

(n)"Temporary Works" shall mean all temporary works of every kind required for the execution completion and/or maintenance of the works.

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

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

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

(r) Date of inviting tender shall be the date of publishing tender notice on IREPS website if tender is published on website or the date of publication in newspaper in case tender is not published on website.

(s)"Bill of Quantities" shall mean Schedule of Item(s) included in the tender document along with respective quantities and rates, accepted by the Railway.

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

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

GENERAL OBLIGATIONS

2. (1) Execution Co-Relation and Intent of Contract Documents: The contract documents shall be signed in triplicate by the Railway and the Contractor. The contract documents are complementary and what is called for by anyone shall be as binding as if called for by all, the intention of the documents is to include all labour and materials, equipments and transportation necessary for proper execution of work. Materials or works not covered by or properly inferable from any heading or class of the specifications shall not be supplied by the Railway to the Contractors unless distinctly specified in the contract documents. Materials or works described in words which so applied have a well-known technical or trade meaning, shall be held to refer to such recognized standards.

2.(2) If a work is transferred from the jurisdiction of one Railway to another Railway or to a Project authority or vice versa while contract is in subsistence, the contract shall be binding on the Contractor and the Successor Railway/Project in the same manner & take effect in all respects as if the Contractor and the Successor Railway/Project were parties thereto from the inception and the corresponding officer 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.

2. (3) If for administrative or other reasons the contract is transferred to the Successor Railway, the contract shall, notwithstanding any things contained herein contrary there to, be binding on the Contractor and the Successor Railway in the same manner and take effect in all respects as if the Contractor and the Successor Railway had been parties thereto from the date of this contract.

3. (1) Law Governing the Contract: The contract shall be governed by the law for the time being in force in the Republic of India.

3.(2) Compliance to Regulations and Bye-Laws: The Contractor shall conform to the provision of any statute relating to the works and regulations and bye-laws of any local authority and of any water and lighting companies or undertakings, with whose system the work is proposed to be connected and shall before making any variation from the drawings or the specifications that may be necessitated by so confirming give to the Engineer notice specifying the variation proposed to be made and the reason for making the variation and shall not carry out such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by statute, regulations or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

3.(3) Environmental and Forest clearances:

The Railway represents and warrants that the environmental and forest clearances pertaining to the work commensurate with the progress of work/agreed programme, will be obtained by Engineer. In the event of any delay in securing respective clearances leading to delay in execution of work, the Contractor shall be entitled to Extension of Time for the period of such delay in accordance with the provisions of Clause-17A(ii).

4. Communications to be in Writing: All notices, communications, reference and complaints made by the Railway or the Engineer or the Engineer's Representative or the Contractor inter-se concerning the works shall be in writing or *e*-mail on registered *e*-mail IDs i.e. the e mail id provided for correspondence in the contract agreement, otherwise *e*mail id registered with IREPS and no notice, communication, reference or complaint not in writing or through e-mail, shall be recognized.

5. Service of Notices on Contractors: The Contractor shall furnish to the Engineer the name, designation and address of his authorized agent and all complaints, notices, communications and references shall be deemed to have been duly given to the Contractor, if delivered to the Contractor or his authorized agent or left at or posted to the address so given and shall be deemed to have been so given in the case of posting on day on which they would have reached such address in the ordinary course of post/ *e*-mail or on the day on which they were so delivered or left. In the case of contract by partners, any change in the constitution of the firm shall be forthwith notified by the Contractor to the Engineer.

6. Occupation and Use of Land: No land belonging to or in the possession of the Railway shall be occupied by the Contractor without the permission of the Railway. The Contractor shall not use, or allow to be used the site for any purposes other than that of executing the works. Whenever non-railway bodies/persons are permitted to use railway premises with competent authority's approval, conservancy charges as applicable from time to time may be levied.

7. Assignment or Subletting of Contract: 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 Engineer, 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 Engineer for the same. While submitting the proposal to railway, Contractor shall ensure the following:

(a) (i) The Contractor shall not sub-contract the works comprising more than 40 % (Forty per cent) of the contract price and shall carry out Works for at least 60 % (Sixty per cent) of the total Contract Price directly under its own supervision and through its own personnel. The Parties expressly agree that for the purpose of computing the value of sub-contracts under this clause 3.2.1, the contract price shall exclude any sub-contract for the procurement of goods and equipment like [rails, sleepers and track fittings, signalling and telecommunication & Power supply equipment]. The Parties agree that all obligations and liabilities under this agreement for the entire Railway

Project shall at all timeremain with the Contractor. {The Parties agree that works equal to at least 30% (thirty per cent) of the Contract Price shall be discharged solely by the Lead Member.} $

Procurement of material, hire of equipment or engagement of labour by prime contractor or procuring entity will not mean sub-contracting.

$ May be delated if the contractor is not a Consortium / Joint Venture.

(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, through a works contract. For fulfilment of above, Work Experience Certificate issued by a Govt. Department/Organisation shall be considered. Further, Work Experience Certificate issued by a Public listed company shall be considered provided the company is 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 authorised 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 Engineer, 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 Engineer.

(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 issues amicably and speedily with the Sub-contractor(s), 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 subcontractor also for 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.

8. Assistance by Railway for the Stores to be obtained by the Contractor: Owing to difficulty in obtaining certain materials (including Tools & Plant) in the market, the Railway may have agreed without any liability therefore to endeavour to obtain or assist the Contractor in obtaining the required quantities of such materials as may be specified in the Tender. In the event of delay or failure in obtaining the required quantities of the aforesaid material, the Contractor shall not be deemed absolved of his own responsibility and shall keep in touch with the day to day position regarding their availability and accordingly adjust progress of works including employment of labour and the Railway shall not in any way be liable for the supply of materials or for the non-supply thereof for any reasons whatsoever nor for any loss or damage arising in consequence of such delay or non-supply.

9. Railway Passes: No free railway passes shall be issued by the Railway to the Contractor or any of his employee/worker.

10. Carriage of Materials: No forwarding orders shall be issued by the Railway for the conveyance of Contractor's materials, tools and plant by train which may be required for use in the works and the Contractor shall pay full freight charges at public tariff rates therefor.

11. Use of Ballast Trains: The Railway may agree to allow the Contractor use of the ballast or material trains under such conditions as shall be specially prescribed, provided that the Contractor shall pay for the use thereof charges calculated at public tariff rates on the marked carrying capacity of each vehicle subject to specified minimum charge per day or part of day and provided further that the Contractor shall indemnify the Railway against any claims or damages arising out of the use or misuse thereof and against any liabilities under the Workmen's Compensation Act, 1923 or any statutory amendments thereto.

12. Representation on Works: The Contractor shall, when he is not personally present on the site of the works place, keep a responsible agent at the works during working hours who shall on receiving reasonable notice, present himself to the Engineer and orders given by the Engineer or the Engineer's representative to the agent shall be deemed to have the same force as if they had been given to the Contractor. Before absenting himself, the Contractor shall furnish the name and address of his agent for the purpose of this clause and failure on the part of the Contractor to comply with this provision at any time will entitle the Railway to rescind the contract under Clause 62 of these Conditions.

13. Relics and Treasures: All gold, silver, oil, other minerals of any description, all precious stones, coins, treasures relics antiquities and other similar things which shall be found in or upon the site shall be the property of the Railway and the Contractor shall duly preserve the same to the satisfaction of the Railway and shall from time to time deliver the same to such person or persons as the Railway may appoint to receive the same.

14. Excavated Material: The Contractor shall not sell or otherwise dispose of or remove except for the purpose of this contract, the sand, stone, clay ballast, earth, trees, rock or other substances or materials which may be obtained from any excavation made for the purpose of the works or any building or produced upon the site at the time of delivery of the possession thereof but all the substances, materials, buildings and produce shall be the property of the Railway provided that the Contractor may, with the permission of the Engineer, use the same for the purpose of the works either free of cost or pay the cost of the same at such rates as may be determined by the Engineer.

15. Indemnity by Contractors: The Contractor shall indemnify and save harmless the Railway from and against all actions, suit, proceedings, losses, costs, damages, charges, claims and demands of every nature and description brought or recovered against the Railways by reason of any act or omission of the Contractor, his agents or employees, in the execution of the works or in his guarding of the same. All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the actual loss or damage sustained, and whether or not any damage shall have been sustained.

16.(1) Security Deposit: 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.

16.(2) (i) Refund of Security Deposit: Security Deposit mentioned in sub clause (1) above shall be returned to the Contractor along with or after, the following:

(a) Final Payment of the Contract as per clause 51.(1) **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), in case applicable.

16. (2) (ii) Forfeiture of Security Deposit: Whenever the contract is rescinded as a whole under clause 62 (1) of these conditions, 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 these conditions, the Security Deposit shall not be forfeited.

16.(3) 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 this clause will be payable with interest accrued thereon.

16.(4) 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 22ndday after the date of issue of LOA. Further, if the 60thday 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) amounting to 5% of the original contract value and Additional Performance Guarantee as per clause 16(4)(h) in any of the following forms

i) A deposit of Cash;

(ii) Irrevocable Bank Guarantee;

(iii) Insurance Surety Bond as per Annexure-XVII

Note:-

In case of extension of Date of Completion, selected bidder needs to submit extended Insurance Surety Bond/Fresh Insurance Surety Bond/fresh Performance Security, in any form as given above, before expiry of existing Insurance Surety Bond.

iv) Government Securities including State Loan Bonds at 5% below the market value;

(v) Pay Orders and Demand Drafts tendered by any Scheduled Commercial Bank of India;

(vi) Guarantee Bonds executed or Deposits Receipts tendered by any Scheduled Commercial Bank of India;

(vii) Deposit in the Post Office Saving Bank;

(viii) Deposit in the National Savings Certificates;

(ix) Twelve years National Defence Certificates;

(x) Ten years Defence Deposits;

(xi) National Defence Bonds and

(xii) Unit Trust Certificates at 5% below market value or at the face value whichever is less. Also, FDR in favour of FA & CAO (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.

(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 these conditions.

(h) If a tender is accepted on the quoted rates of bidder which is below the advertised tender value, an additional performance security shall be submitted by the bidder as below:

Bid quoted in % of advertised cost	Additional Performance Guarantee (%)
Below 0- 5% (inclusive)	Nil
Below 5%	5 %

17. Force Majeure Clause: 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.

17A Extension of Time in Contracts: 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 these Conditions 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 neighbouring 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 therefor, 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.

17B Extension of Time with Liquidated Damages (LD) for delay due to Contractor: 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 17A, 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 Annexure-VII) 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 Engineer, between 0.05% to 0.30% of contract value of the works for each week or part of the week..

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.

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, 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.

17C 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.

18.(1) Illegal Gratification:

Procuring authorities as well as bidders, contractors and consultants should observe the highest standard of ethics and should not indulge in the following prohibited practices, either directly or indirectly, at any stage during the procurement process or during execution of resultant contracts:

i) "Corrupt practice": making offers, solicitation or acceptance of bribe, rewards or gifts or any material benefit, in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process or contract execution;

ii) "Fraudulent practice": any omission or misrepresentation that may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. This includes making false declaration or providing false information for participation in a tender process or to secure a contract or in execution of the contract.

iii) "Anti-competitive practice": any collusion, bid rigging or anti-competitive arrangement, or any other practice coming under the purview of The Competition Act, 2002, between two or more bidders, with or without the knowledge of the procuring entity, that may impair the transparency, fairness and the progress of the procurement process or to establish bid prices at artificial, non-competitive levels;

iv) "Coercive practice"; any coercion or any threat to impair or harm, directly or indirectly, any party or its property to influence the procurement process or affect theexecution of a contract:

v) "Conflict of interest" (COI): any personal, financial, or business relationship between the bidder and any personnel of the procuring entity who are directly or indirectly related to the procurement or execution process of the contract, which can affect the decision of the procuring entity directly or indirectly;

vi) "Undue Advantage": improper use of information obtained by the bidder from the procuring entity with an intent to gain an unfair advantage in the procurement process or for personal gain. This also includes if the bidder (or his allied firm) provided services for the need assessment procurement planning of the tender process in which he is is participating:

vii) "Obstructive practice": materially impede the procuring entity's investigation of a procurement process either by deliberately destroying, falsifying, altering: or by concealing of evidence material to the investigation; or by making false statements or by threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to such investigation or from pursuing the investigation; or by impeding the procuring entity's rights of audit or access to information;

18.(2) Punitive Provisions:

Without prejudice to and in addition to the rights of the procuring entity to other penal provisions as per the bid documents or contract, if the procuring entity comes to a conclusion that a (prospective) bidder contractor directly or through an agent, has violated this code of integrity in competing for the contract or in executing a contract, the procuring entity may take appropriate measures including one or more of the following:

i) If his bids are under consideration in any procurement

a) Forfeiture or encashment of bid security;

b) calling off of any pre-contract negotiations; and

c) rejection and exclusion of the bidder from the procurement process

ii) If a contract has already been awarded

a) Cancellation of the relevant contract and recovery of compensation for loss incurred by the procuring entity;

b) Forfeiture or encashment of any other security or bond relating to the procurement;

c) Recovery of payments including advance payments, if any, made by the procuring entity along with interest thereon at the prevailing rate;

iii) Provisions in addition to above:

a) Removal from the list of enlisted contractors and banning/debarment of the bidder from participation in future procurements of the procuring entity for a period not less than one year;

b) In case of anti-competitive practices, information for further processing may be filed under a signature of the Joint Secretary level officer, with the Competition Commission of India;

c) Initiation of suitable disciplinary or criminal proceedings against individual or staff found responsible.

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.

EXECUTION OF WORKS

19.(1) Contractor's understanding: It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the progress of the works, the general and local conditions, the labour conditions prevailing therein and all other matters which can in any way affect the works under the contract.

19.(2) Commencement of Works: The Contractor shall commence the works within 15 days after the receipt by him of an order in writing to this effect from the Engineer and shall proceed with the same with due expedition and without delay

19.(3) 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.

19.(4) Setting out of Works: The Contractor shall be responsible for the correct setting out of all works in relation to original points, lines and levels of reference at his cost. The Contractor shall execute the work true to alignment, grade, levels and dimensions as shown in the drawing and as directed by the Engineer's representative and check these at frequent intervals. The Contractor shall provide all facilities like labour and instruments and shall co-operate with the Engineer's representative for checking of all alignment, grades, levels and dimensions. If, at any time, during the progress of the works any error appear or arise in any part of the work, the Contractor, on being required so to do by the Engineer's representative shall, at his own cost rectify such errors, to the satisfaction of the Engineer's representative.

Such checking shall not absolve the Contractor of his own responsibility of maintaining accuracy in the work. The Contractor shall carefully protect and preserve all bench marks, sight rails, pegs and other things used in setting out the work.

20.(1) Compliance to Engineer's Instructions: The Engineer shall direct the sequence in which the several parts of the works shall be executed and the Contractor shall execute without delay all orders given by the Engineer from time to time; but the Contractor shall not be relieved thereby from responsibility for the due performance of the works in all respects.

20.(2) Alterations to be Authorized: No alterations in or additions to or omissions or abandonment of any part of the works shall be deemed authorised, except under written instructions from the Engineer.

20.(3) Extra Works: Should works over and above those included in the contract require to be executed at the site, the Contractor shall have no right to be entrusted with the execution of such works which may be carried out by another Contractor or Contractors or by other means at the option of the Railway.

20.(4) Separate Contracts in Connection with Works: The Railway shall have the right to let other contracts in connection with the works. The Contractor shall afford other Contractors reasonable opportunity for the storage of their materials and the execution of their works and shall properly connect and coordinate his work with theirs. If any part of the Contractor's work depends upon proper execution or result upon the work of another Contractor(s), the Contractor shall inspect and promptly report to the Engineer any defects in such works that render it unsuitable for such proper execution and results. The Contractor's failure so-to inspect and report shall constitute an acceptance of the other Contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other Contractor's work after the execution of his work.

21. Instruction of Engineer's Representative: Any instructions or approval given by the Engineer's representative to Contractor in connection with the works shall bind the Contractor as though it had been given by the Engineer provided always as follows:

(a) Failure of the Engineer's representative to disapprove any work or materials shall not prejudice the power of the Engineer thereafter to disapprove such work or material and to order the removal or breaking up thereof.

(b) If the Contractor shall be dissatisfied by reason of any decision of the Engineer's representative, he shall be entitled to refer the matter to the Engineer who shall there upon confirm or vary such decision.

22.(1) Adherence to Specifications and Drawings: The site and the detailed drawings shall be made available to the contractor commensurate with the accepted programme of work submitted under clause 19(3). 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.

22.(2) Drawings and Specifications of the Works: The Contractor shall keep one copy of Drawings and Specifications at the site, in good order, and such contract documents as may be necessary, available to the Engineer or the Engineer's Representative.

22.(3) Ownership of Drawings and Specifications: All Drawings and Specifications and copies thereof furnished by the Railway to the Contractor are deemed to be the property of the Railway. They shall not be used on other works and with the exception of the signed contract set, shall be returned by the Contractor to the Railway on completion of the work or termination of the Contract.

22.(4) Compliance with Contractor's Request for Details: The Engineer shall furnish with reasonable promptness, after receipt by him of the Contractor's request, additional instructions by means of drawings or otherwise, necessary for the proper execution of the works or any part thereof. All such drawings and instructions shall be consistent with the Contract Documents and reasonably inferable there from.

22.(5) Meaning and Intent of Specification and Drawings: If any ambiguity arises as to the meaning and intent of any portion of the Specifications and Drawings or as to execution or quality of any work or material, or as to the measurements of the works the decision of the Engineer thereon shall be final subject to the appeal (within 7 days of such decision being intimated to the Contractor) to the Chief Engineer who shall have the power to correct any errors, omissions, or discrepancies in aforementioned items and whose decision in the matter in dispute or doubt shall be final and conclusive.

23. Working during Night: 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.

24. Damage to Railway Property or Private Life and Property: 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.

25. Sheds, Storehouses and Yards: 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.

26. Provision of Efficient and Competent Staff at Work Sites by the Contractor:

26.1 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 & labourers in or about the execution of any of these works as are careful and skilled in the various trades.

26.2 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.

26.3 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 workmen 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 Clause 62 of these conditions.

26A. Deployment of Qualified Engineers at Work Sites by the Contractor:

26A.1 The Contractor shall also employ qualified Graduate Engineer(s) or equivalent, or qualified Diploma Engineer(s), as prescribed in the tender documents.

26A.2 In case the Contractor fails to employ the Engineer, as aforesaid in Para 26A.1, he shall be liable to pay liquidated damages at the rates, as prescribed in the tender documents.

26A.3 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'.

27.(1) Workmanship and Testing: The whole of the works and/or supply of materials specified and provided in the contract or that may be necessary to be done in order to form and complete any part thereof shall be executed in the best and most substantial workman like manner with materials of the best and most approved quality of their respective kinds, agreeable to the particulars contained in or implied by the specifications and as referred to in and represented by the drawings or in such other additional particulars, instructions and drawings given during the carrying on of the works and to the entire satisfaction of the Engineer according to the instructions and directions which the Contractors may from time to time receive from the Engineer. The materials may be subjected to tests by means of such machines, instruments and appliances as the Engineer may direct and wholly at the expense of the Contractor.

27.(2) 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 therefor, 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.

28. Facilities for Inspection: The Contractor shall afford the Engineer and the Engineer's Representative every facility for entering in and upon every portion of the work at all hours for the purpose of inspection or otherwise and shall provide all labour, materials, planks, ladders, pumps, appliances and things of every kind required for the purpose and the Engineer and the Engineer's Representative shall at all times have free access to every part of the works and to all places at which materials for the works are stored or being prepared.

29. Examination of Work before Covering Up: The Contractor shall give 7 days' notice to the Engineer or the Engineer's Representative whenever any work or materials are intended to be covered up in the earth, in bodies or walls or otherwise to be placed beyond the reach of measurements in order that the work may be inspected or that correct dimensions may be taken before being so covered, placed beyond the reach of measurement in default whereof, the same shall at the option of the Engineer or the Engineer's Representative be uncovered and measured at the Contractor's expense or no allowance shall be made for such work or materials.

30. Temporary Works: 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.

31.(1) Contractor to Supply Water for Works: Unless otherwise provided in the Contract, the Contractor shall be responsible for the arrangements to obtain supply of water necessary for the works.

31.(2) 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 of failure of the water supply.

31.(3) 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.

31.(4)(a) Contractor to Arrange Supply of Electric Power for Works: 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.

32. Property in Materials and Plant: 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.

33.(1) Tools, Plant and Materials Supplied by Railway: 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.

33.(2) 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.

34.(1) Precaution During Progress of Works: 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.

34.(2) 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.

34.(3) Provision of Access to Premises: During progress of work in any street or thoroughfare, the Contractor shall make adequate provision for the passage of traffic, for securing safe access to all premises approached from such street or thoroughfare and for any drainage, water supply or means of lighting which may be interrupted by reasons of the execution of the works and shall react and maintain at his own cost barriers, lights and other safeguards as prescribed by the Engineer, for the regulation of the traffic, and provide watchmen necessary to prevent accidents. The works shall in such cases be executed night and day, if so ordered by the Engineer and with such vigour so that the traffic way be impeded for as short a time as possible.

34.(4) Safety of Public: 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.

34.(5) Display Board: The Contractor shall be responsible for displaying the details of works i.e. name of work, approximate cost, expected date of completion, name and address of the Contractor and address of Engineer on a proper steel Board of size not less than 1m x 1m.

35. Use of Explosives: 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.

36.(1) Suspension of Works: 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

(d) 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

(e) Necessary to avoid disruption of traffic and utilities, as also to permit fast repair and restoration of any damaged utilities, or

(f) Due to instruction of The National Green Tribunal or any other statutory authority due to high level of pollution in the city of worksite.

36.(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.

36.(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.

37. Rates for Items of Works:

(i) The rates, entered in the accepted Bill(s) of Quantities of the Contract are intended to provide for works duly and properly completed in accordance with the General and Special (if any) Conditions of the Contract and the Specifications and drawings together with such enlargements, extensions, diminutions, reductions, alterations or additions as may be ordered in terms of Clause 42 of these conditions and without prejudice to the generality thereof and shall be deemed to include and cover superintendence and labour, supply, including full freight of materials, stores, patterns, profiles, moulds, fittings, centerings, scaffolding, shoring props, timber, machinery, barracks, tackle, roads, pegs, posts, tools and all apparatus and plant required on the works, except such tools, plant or materials as may be specified in the contract to be supplied to the Contractor by the Railway, the erection, maintenance and removal of all temporary works and buildings, all watching, lighting, bailing, pumping and draining, all prevention of or compensation for trespass, all barriers and arrangements for the safety of the public or of employees during the execution of works, all sanitary and medical arrangements for labour camps as

may be prescribed by the Railway, the setting of all work and of the construction, repair and upkeep of all center lines, bench marks and level pegs thereon, site clearance, all fees duties, royalties, rent and compensation to owners for surface damage or taxes and impositions payable to local authorities in respect of land, structures and all material supplied for the work or other duties or expenses for which the Contractor may become liable or may be put to under any provision of law for the purpose of or in connection with the execution of the contract and all such other incidental charges or contingencies as may have been specially provided for in the Specifications.

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 and the Contractor thereupon properly pays such taxes/cess, the Contractor shall be reimbursed the amount so paid.

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.

38. Demurrage and Wharfage Dues: 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 contracts.

39.(1) Rates for Extra Item(s) of Works:

(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).

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).

(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

.**39.(2)** Provided that if the Contractor commences work or incurs any expenditure in regard thereto before the rates as determined and agreed upon as lastly hereuntofore-mentioned, then and in such a case the Contractor shall only be 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 fixed by the Engineer. However, if the Contractor is not satisfied with the decision of the Engineer in this respect, he may appeal to the Chief Engineer within 30 days of getting the decision of the Engineer, 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.

40.(1) Handing over of Works: The Contractor shall be bound to hand over the works executed under the contract to the Railway complete in all respects to the satisfaction of the Engineer. The Engineer shall determine the date on which the work is considered to have been completed, in support of which his certificate shall be regarded as sufficient evidence for all purposes. The Engineer shall determine from time to time, the date on which any particular section of the work shall have been completed, and the Contractor shall be bound to observe any such determination of the Engineer.

40.(2) Clearance of Site on Completion: On completion of the works, the Contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and works clean and in a workman like condition to the satisfaction of the Engineer. No final payment in settlement of the accounts for the works shall be paid, held to be due or shall be made to the, Contractor till, in addition to any other condition necessary for final payment, site clearance shall have been affected by him, and such clearance may be made by the Engineer at the expense of the Contractor in the event of his failure to comply with this provision within 7 days after receiving notice to that effect. Should it become necessary for the Engineer to have the site cleared at the expenses of the Contractor, the Railway shall not be held liable for any loss or damage to such of the Contractor's property as may be on the site and due to such removal there from which removal may be affected by means of public sales of such materials and property or in such a way as deemed fit and convenient to the Engineer.

40A Offloading of Part(s) of Work: 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 annexure- VIIA), 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 annexure- VIIB). 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.

VARIATIONS IN EXTENT OF CONTRACT

41. Modification to Contract to be in Writing: In the event of any of the provisions of the contract required to be modified after the contract documents have been signed, the modifications shall be made in writing and signed by the Railway and the Contractor and no work shall proceed under such modifications until this has been done. Any verbal or written arrangement abandoning, modifying, extending, reducing or supplementing the contract or any of the terms thereof shall be deemed conditional and shall not be binding on the Railway unless and until the same is incorporated in a formal instrument and signed by the Railway and the Contractor, and till then the Railway shall have the right to repudiate such arrangements.

42.(1) Powers of Modification to Contract: The Engineer on behalf of the Railway shall be entitled by order in writing to enlarge or extend, diminish or reduce the works or make any alterations in their design, character position, site, quantities, dimensions or in the method of their execution or in the combination and use of materials for the execution thereof or to order any additional work to be done or any works not to be done and the Contractor will not be entitled, to any compensation for any increase/reduction in the quantities of work but will be paid only for the actual amount of work done and for approved materials supplied against a specific order.

42.(2) (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 contract 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) As far as Standard Schedule of Rates (SSOR) items are concerned, the variation limit of 25% would apply to the value of SSOR schedule(s) as a whole and not on individual SSOR items. However, in case of Non Standard Schedule of Rates (SSOR) 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).

42.(3) Valuation of Variations: The enlargements, extensions, diminution, reduction, alterations or additions referred to in Sub-Clause (2) of this Clause shall in no degree affect the validity of the contract; but shall be performed by the Contractor as provided therein and be subject to the same conditions, stipulations and obligations as if they had been originally and expressively included and provided for in the Specifications and Drawings and the amounts to be paid therefor shall be calculated in accordance with the accepted Bill(s) of Quantities. Any extra item(s)/quantities of work falling outside the purview of the provisions of Sub-Clause (2) above shall be paid for at the rates determined under Clause-39 of these Conditions.

CLAIMS

43.(1) 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 expenses to which the Contractor may consider himself entitled to 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 such work will be considered which has not been included in such particulars.

43.(2) Signing of "No Claim" Certificate : The Contractor shall not be entitled to make any claim whatsoever against the Railway under or by virtue of or 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 form as shall be required by the Railway after the works are finally measured up. The Contactor shall be debarred from disputing the correctness of the items covered by "No Claim" Certificate or demanding a clearance to arbitration in respect thereof.

MEASUREMENTS, CERTIFICATES AND PAYMENTS

44. Quantities in Bill(s) of Quantities Annexed to Contract: The quantities set out in the accepted Bill(s) of Quantities with items of works quantified are the estimated quantities of the works and they shall not be taken as the actual and correct quantities of the work to be executed by the Contractor in fulfillment of his obligations under the contract.

45(i). Measurement of Works by Railway: The Contractor shall be paid for the works at the rates in the accepted Bill(s) of Quantities and for extra works at rates determined under Clause 39 of these Conditions on the measurements taken by the Engineer or the Engineer's representative in accordance with the rules prescribed for the purpose by the Railway. The quantities for items the unit of which in the accepted Bill(s) of Quantities is 100 or 1000 shall be calculated to the nearest whole number, any fraction below half being dropped and half and above being taken as one; for items the unit of which in the accepted Bill(s) of Quantities is single, the quantities shall be calculated to two places of decimals. Such measurements will be taken of the work in progress from time to time and at such intervals as in the opinion of the Engineer shall be proper having regard to the progress of works. The date and time on which 'on account' or 'final' measurements are to be made shall be communicated to the Contractor who shall be present at the site and shall sign the results of the measurements (which shall also be signed by the Engineer or the Engineer's representative) recorded in the official measurements book as an acknowledgement of his acceptance of the accuracy of the measurements. Failing the Contractor's attendance, the work may be measured up in his absence and such measurements shall, notwithstanding such absence, be binding upon the Contractor whether or not he shall have signed the measurement books provided always that any objection made by him to measurement shall be duly investigated and considered in the manner set out below:

(a) It shall be open to the Contractor to take specific objection to any recorded measurements or Classification on any ground within seven days of the date of such measurements. Any re-measurement 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.

(b) 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.

45(ii). **Measurement of Works by Contractor's Authorized Representative (in case the contract provides for the same):**

(a) The Contractor shall be paid for the works at the rates in the accepted Bill(s) of Quantities and for extra works at rates determined under Clause 39 of these Conditions on the measurements taken by the Contractor's authorized Engineer in accordance with the rules prescribed for the purpose by the

Railway. The quantities for items the unit of which in the accepted Bill(s) of Quantities is 100 or 1000 shall be calculated to the nearest whole number, any fraction below half being dropped and half and above being taken as one; for items the unit of which in the accepted Bill(s) of Quantities is single, the quantities shall be calculated to two places of decimals. Such measurements will be taken of the work in progress from time to time. The date and time on which 'on account' or 'final' measurements are to be made shall be communicated to the Engineer.

The date and time of test checks shall be communicated to the Contractor who shall be present at the site and shall witness the test checks, failing the Contractor's attendance the test checks may be conducted in his absence and such test checks shall not withstanding such absence be binding upon Contractor provided always that any objection made by Contractor to test check shall be duly investigated and considered in the manner set out below:

(i) It shall be open to the Contractor to take specific objection to test checks of any recorded measurement within 7 days of date of such test checks. Any re-test check done by the concerned Railway's authority in the presence of the Contractor or in his absence after due notice given to him in consequent 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.

(ii) 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.

(b) Incorrect measurement, actions to be taken: If in case during test check or otherwise, it is detected by the Engineer that agency has claimed any exaggerated measurement or has claimed any false measurement for the works which have not been executed; amounting to variation of 5% or more of claimed gross bill amount, action shall be taken as following:

(i) On first occasion of noticing exaggerated/ false measurement, Engineer shall recover liquidated damages equal to10% of claimed gross bill value.

(ii) On any next occasion of noticing any exaggerated/false measurement, railway shall recover liquidated damages equal to 15% of claimed gross bill value. In addition, the facility of recording of measurements by Contractor as well as release of provisional payment shall be withdrawn. Once withdrawn, measurements shall be done by railway as per clause 45(i) above.

46.(1) "On-Account " Payments: The Contractor shall be entitled to be paid from time to time by way of "On-Account" payment only for such works as in the opinion of the Engineer he has executed in terms of the contract. All payments due on the Engineer's/Engineer's Representative's certificates of measurements or Engineer's certified "Contractor's authorized Engineer's measurements" shall be subject to any deductions which may be made under these presents and shall further be subject to, unless otherwise required by Clause 16 of these Conditions, a retention of six percent by way of Security Deposits, until the amount of Security Deposit by way of such retentions shall amount to 5% of the total value of the contract provided always that the Engineer may by any certificate make any correction or modification in any previous certificate which shall have been issued by him and that the Engineer may withhold any certificate, if the works or any part thereof are not being carried out to his satisfaction.

46.(2) Rounding off Amounts: The total amount due on each certificate shall be rounded off to the nearest rupee, i.e. sum less than 50 paise shall be omitted and sums of 50 paise and more upto₹1 will be reckoned as ₹ 1.

46.(3) On Account Payments not Prejudicial to Final Settlement: "On-Account" payments made to the Contractor shall be without prejudice to the final making up of the accounts (except where measurements are specifically noted in the Measurement Book as "Final Measurements" and as such have been signed by the Contractor and Engineer/Engineer's Representative) and shall in no respect be considered or used as evidence of any facts stated in or to be inferred from such accounts nor of any particular quantity of work having been executed nor of the manner of its execution being satisfactory.

46.(4) If payment(s) of Advances are applicable in the contract, as mentioned in the Tender Documents, 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 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).

(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 -

(i) 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 (through which recovery of principal is effected) and adjusted fully against on-account bill 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 and shall attract interest.

(ii) 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.

(iii) 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.

(iv) In cases, where the Contract is rescinded as per clause 62 of the contract 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.

46.(5) Manner of Payment: Unless otherwise specified payments to the Contractor will be transferred electronically to his bank account.

46A. Price Variation Clause (PVC):

46A.1 Applicability: Price Variation Clause (PVC) shall be applicable only in tender having advertised value above **Rs. 2 Crores.** 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 these Standard General Conditions, unless applicability of PVC and 'Base Month' has been specially agreed, while fixing the rates of such extra item(s).

46A.2 Base Month: The Base Month for 'Price Variation Clause' shall be taken as the one month prior to closing of tender, unless otherwise stated elsewhere. The quarter for applicability of PVC shall commence from the month following the Base month. The Price Variation shall be based on the average Price Index of the quarter under consideration.

46A.3 Validity:

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 37,

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

46A.4 Components of various items in a contract on which variation in prices be admissible, shall be steel, cement, ferrous material, non-ferrous material, insulators, zinc and other materials, labour, plant & machinery, fuel, explosives, detonators etc. Adjustment for variation in prices of these items shall be determined in the manner prescribed.

46A.5 No price variation shall be admissible for fixed components.

46A.6 The percentages of various components in various type of works shall be as specified for all item (s)/ Bill(s) of Quantities in tender document and the same shall be fixed as per table & classifications given below:

(I). <u>For Civil Engineering Works</u>

SN	Classification / Components		1A, 2 & 3A	4A	5A	6A	7	8A	9A	1B, 3B, 4B, 5B, 6B 8B & 9B	1C, 3C, 4C, 5C, 6C, 8C & 9C	3D, 4D, 5D, 6D, 8D & 9D	3E, 4E, 5E, 6E, 8E & 9E
1	*Fixed*	*	*15*	*15*	*15*	*15*	*15*	*15*	*15*	*15*	*15*	*15*	*15*
2	Labour	L_c	20	25	30	20	50	20	20	0	0	10	25
3	Steel	S_c	0	0	0	0	0	0	0	85	0	50	0
4	Cement	C_c	0	0	15	0	0	0	0	0	85	0	0
5	Plant Machinery & Spares	PM_c	30	15	5	20	15	20	30	0	0	10	30
6	Fuel & Lubricants	F_c	25	15	5	15	15	20	15	0	0	10	20
7	Other materials	M_c	10	15	30	30	5	25	20	0	0	5	10
8	Detonators & Explosive	E_c	0	15	0	0	0	0	0	0	0	0	0
Total			100	100	100	100	100	100	100	100	100	100	100

* It shall not be considered for any price variation.

The classification mentioned in the table above represents following type of item(s) in the work(s) –

1 Earthwork in Formation

1A All Item(s) excluding 1B or/and 1C

1B Item(s) for supply of Steel

1C Item(s) for supply of Cement

2 Ballast Supply Works

3 Tunnelling Works (Without Explosives)

3A All Item(s) excluding 3B or/and 3C or/and 3D or/and 3E

3B Item(s) for supply of Steel

3C Item(s) for supply of Cement or/and Grout

3D Item(s) for Fabrication & Erection of Structures including supply of Steel

3E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

4 Tunnelling Works (With explosives)

4A All Item(s) excluding 4B or/and 4C or/and 4D or/and 4E

4B Item(s) for supply of Steel

4C Item(s) for supply of Cement or/and Grout

4D Item(s) for Fabrication & Erection of Structures including supply of Steel

4E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

5 Building Works

5A All Item(s) excluding 5B or/and 5C or/and 5D or/and 5E

5B Item(s) for supply of Steel

5C Item(s) for supply of Cement

5D Item(s) for Fabrication & Erection of Structures including supply of Steel

5E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

6 Bridges & Protection work

6A All Item(s) excluding 6B or/and 6C or/and 6D or/and 6E

6B Item(s) for supply of Steel

6C Item(s) for supply of Cement

6D Item(s) for Fabrication, Assembly, Erection& Launching of Girders including supply of Steel

6E Item(s) for Fabrication, Assembly, Erection &Launching of Girders excluding supply of Steel

7 Permanent Way linking

8 Platform, Passenger Amenities

8A All Item(s) excluding 8B or/and 8C or/and 8D or/and 8E

8B Item(s) for supply of Steel item/fittings

8C Item(s) for supply of Cement Item

8D Item(s) for Fabrication & Erection of Structures including supply of Steel

8E Item(s) for Fabrication & Erection of Structures excluding supply of Steel

9 Any Other Works not covered in Classification 1 to 8

9A All Item(s) excluding 9B or/and 9C or/and 9D or/and 9E

9B Item(s) for supply of Steel

9C Item(s) for supply of Cement or/and Grout

9D Item(s) for Fabrication & Erection of Structures including supply of Steel

9E Item(s) for Fabrication & Erection of Structures excluding supply of Steel

46A.7 Formulae: The Amount of variation in prices in various components (labour, material etc.) shall be worked out by the following formulae:

(i) $L = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (L_Q - L_B) \times L_C}{L_B \times 100}$

(ii) $M = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (M_Q - M_B) \times M_C}{M_B \times 100}$

(iii) $F = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (F_Q - F_B) \times F_C}{F_B \times 100}$

(iv) $E = \frac{(W) \times (E_Q - E_B) \times E_C}{E_B \times 100}$

(v) $PM = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (PM_Q - PM_B) \times PM_C}{PM_B \times 100}$

(vi) $S = \frac{(W \text{ or } W_S \text{ or } W_{SF}) \times (S_Q - S_B) \times S_C}{S_B \times 100}$

(vii) $C = \frac{(W \text{ or } W_C) \times (C_Q - C_B) \times C_C}{C_B \times 100}$

(II) <u>For Railway Electrification Works</u>:

(viii) $T = [0.4136 \times (C_Q - C_B) / C_B] \times 85$

(ix) $R = [0.94 \times (R_T - R_O) / R_O + 0.06 \times (Z_T - Z_O) / Z_O] \times 85$

(x) $N = [(P_T - P_O) / P_O] \times 85$

(xi) $I = [(I_T - I_O) / I_O] \times 85$

(xii) $G = [(M_Q - M_B) / M_B] \times 85$

(xiii) $Er = [(L_Q - L_B) / L_B] \times 85$

Where,

L	Amount of price variation in Labour
M	Amount of price variation in Materials
F	Amount of price variation in Fuel
E	Amount of price variation in Explosives
PM	Amount of price variation in Plant, Machinery and Spares
S	Amount of price variation in Steel Supply Item
C	Amount of price variation in Cement Supply Item
T	Percentage variation payable on the gross value of bill of Concreting (Bill(s) of Quantities for concrete items)
R	Percentage variation payable on the gross value of bill of Ferrous Items (Bill(s) of

Quantities for ferrous items)

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

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

G Percentage variation payable on the gross value of bill of General Works (Bill(s) of Quantities for General items)

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

L_C % of Labour Component in the item(s)

M_C % of Material Component in the item(s)

F_C % of Fuel Component in the item(s)

E_C % of Explosive Component in the item(s)

PM_C % of Plant, Machinery and Spares Component in the item(s)

S_C % of Steel Supply item Component in the item(s)

C_C % of Cement Supply item Component in the item(s)

W Gross value of work done by Contractor as per on-account bill(s) excluding the Gross value of work under W_S or/and W_C or/and W_{SF} or/and W_F or/and W_{SFL} or/and W_{FL} and cost of materials supplied by Railway either free or at fixed rate,

W_S Gross value of work done by Contractor for item(s) of supply of steel.

W_C Gross value of work done by Contractor for item(s) of supply of cement and /or supply of grout material.

W_{SF} Gross value of work done by Contractor for item(s) of Fabrication & Erection of Structures including supply of Steel.

W_F Gross value of work done by Contractor for Fabrication & Erection of Structures excluding supply of Steel.

W_{SFL} Gross value of work done by Contractor for item(s) of Fabrication, Assembly, Erection / Launching of Girders including supply of Steel.

W_{FL} Gross value of work done by Contractor for item(s) of Fabrication, Assembly, Erection / Launching of Girders excluding supply of Steel.

L_B Consumer Price Index for Industrial Workers - All India: Published in R.B.I. Bulletin for the base period

L_Q Consumer Price Index 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

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

M_Q 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

F_B The average of official prices of Diesel available on the official website of 'Petroleum

Planning and Analysis cell' under Ministry of Petroleum and Natural Gas for Delhi, Kolkata, Mumbai &Chennai, for the base period

F_Q The average of official prices of Diesel available on the official website of 'Petroleum Planning and Analysis cell' under Ministry of Petroleum and Natural Gas for Delhi, Kolkata, Mumbai &Chennai, for the 3 months of the quarter under consideration

E_B Index number of Monthly Whole Sale Price Index for the category 'Explosive' of (g). Manufacture of other chemical products under (J) MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS, published by Office of Economic Adviser, Govt. of India, Ministry of Commerce & Industry, Department of Industrial Policy & Promotion (DIPP), for the base period.

E_Q Index number of Monthly Whole Sale Price Index for the category 'Explosive' of (g). Manufacture of other chemical products under (J) MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS, published by Office of Economic Adviser, Govt. of India, Govt. of India, Ministry of Commerce & Industry, Department of Industrial Policy & Promotion (DIPP), for the average price index of 3 months of the quarter under consideration.

PM_B Index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for 'Manufacture of machinery for mining, quarrying and construction'– published in RBI (Reserve Bank of India) Bulletin, for the base period.

PM_Q Index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for 'Manufacture of machinery for mining, quarrying and construction'– published in RBI (Reserve Bank of India) Bulletin, for the average price index of 3 months of the quarter under consideration.

S_B The average rate provided by the Joint Plant Committee for the relevant category of steel item as mentioned in Clause 46A.9; for the base period.

S_Q The average rate provided by the Joint Plant Committee for the relevant category of steel item as mentioned in Clause 46A.9; for the 3 months of the quarter under consideration.

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

C_Q 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

R_T IEEMA price index for Steel Blooms (size 150mmx150mm) for the month which is two months prior to date of inspection of material.

R_O IEEMA price index for Steel Blooms (size 150mmx150mm)for the month which is one month prior to date of opening of tender.

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

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

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

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

I_T RBI wholesale price index for the sub-group "Insulators" for the month which is two

months prior to date of inspection of material

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

(III) SIGNALING & TELECOMMUNICATION WORKS:

(a) The following expressions and meanings are assigned to the value of the work done for signalling and telecommunication works:

SIGWK = Value of signalling works for a stage payment of the item signalling works;

INVSIG = Value of inventory for signalling works for a stage payment of the item inventory for signalling works;

INTGTESTSIG = Value of integrated testing and commission for signalling works of the Railway Project;

COMWK= Value of telecommunication works for a stage payment of the item telecommunication works;

INVCOM = Value of inventory for telecommunication works for a stage payment of the item inventory for telecommunication works; and

INTGTESTCOM = Value of integrated testing and commission for telecommunication works of the Railway Project.

(b) Price adjustment for changes in cost of signalling works and telecommunication works shall be paid in accordance with the following formula:

(i) $VSIGWK = 0.85\ SIGWK \times [PELEX \times (ELEXi - ELEXo)/ ELEXo + POFC \times (OFCi - OFCo)/OFCo + PLB \times (LBi - LBo)/LBo + POTH \times (OTHi - OTHo)/OTHo + S30C \times (P30C_i - P30C_o)/ P30C_o + S24C \times (P24C_i - P24C_o)/ P24C_o + S19C \times (P19C_i - P19C_o)/ P19C_o + S12C \times (P12C_i - P12C_o)/ P120C_o + S9C \times (P9C_i - P9C_o)/ P9C_o + S6C \times (P6C_i - P6C_o)/ P6C_o + S4C \times (P4C_i - P4C_o)/ P4C_o + S2C \times (P2C_i - P2C_o)/ P2C_o + S12C2.5 \times (P12C2.5_i - P12C2.5_o)/ P12C2.5_o + S2C2.5 \times (P2C2.5_i - P2C2.5_o)/ P2C2.5_o + S2C25 \times (P2C25_i - P2C25_o)/ P2C25_o + QC \times (PQC_i - PQC_o)/ PQC_o;$

(ii) $VINVSIG = 0.85\ SIGWK \times [PELEX \times (ELEXi - ELEXo)/ ELEXo + POTH \times (OTHi - OTHo)/OTHo];$

(iii) $VINTGTESTSIG = 0.85\ INTGTESTSIG \times [PLB \times (LBi - LBo)/LBo + POTH \times (OTHi- OTHo)/OTHo];$

(iv) $VCOMWK = 0.85\ COMWK \times [PELEX \times (ELEXi - ELEXo)/ ELEXo + POFC \times (OFCi - OFCo)/OFCo + PLB \times (LBi - LBo)/LBo + POTH \times (OTHi - OTHo)/OTHo + S30C \times (P30C_i - P30C_o)/ P30C_o + S24C \times (P24C_i - P24C_o)/ P24C_o + S19C \times (P19C_i - P19C_o)/ P19C_o + S12C \times (P12C_i - P12C_o)/ P120C_o + S9C \times (P9C_i - P9C_o)/ P9C_o + S6C \times (P6C_i - P6C_o)/ P6C_o + S4C \times (P4C_i - P4C_o)/ P4C_o + S2C \times (P2C_i - P2C_o)/ P2C_o + S12C2.5 \times (P12C2.5_i - P12C2.5_o)/ P12C2.5_o + S2C2.5 \times (P2C2.5_i - P2C2.5_o)/ P2C2.5_o + S2C25 \times (P2C25_i - P2C25_o)/ P2C25_o + QC \times (PQC_i - PQC_o)/ PQC_o + PCEQP \times (CEQPi - CEQPo)/CEQPo];$

(v) $VINVCOM = 0.85\ SIGWK \times [PELEX \times (ELEXi - ELEXo)/ ELEXo + PCEQP \times (CEQPi - CEQPo)/CEQPo + POTH \times (OTHi - OTHo)/OTHo];$ and

(vi) $VINTGTESTCOM = 0.85\ INTGTESTCOM \times [PLB \times (LBi - LBo)/LBo + POTH \times (OTHi - OTHo)/OTHo].$

Where

VSIGWK = Increase or decrease in the cost of signalling works during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINVSIG = Increase or decrease in the cost of inventory for signalling during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINTGTESTSIG = Increase or decrease in the cost of integrated testing and commissioning of signalling works of the Railway Project during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VCOMWK = Increase or decrease in the cost of communication works during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINVCOM = Increase or decrease in the cost of inventory for telecommunications works during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINTGTESTCOM = Increase or decrease in the cost of integrated testing and commissioning of telecommunication works of the Railway Project during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

PCEQP, PELEX, PIC, PLB, POFC, and POTH are the percentages of communication equipment, electronics, PVC insulated cables, labour, optical fibre cables, and other materials respectively;

CEQPo = The wholesale price index as published by the Ministry of Commerce and Industry, Government of India (hereinafter called "**WPI**") for communication equipment for the month of the Base Month;

CEQPi = The WPI for communication equipment for the average price index of the 3 months of the quarter under consideration;

ELEXo = The WPI for electronics for the month of the Base Month;

ELEXi = The WPI for electronics for the average price index of the 3 months of the quarter under consideration;

$P30C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 30C x 1.5 sq mm signalling cable

$P30C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S30C = Percentage of size 30C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P24C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 24C x 1.5 sq mm signalling cable

$P24C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S24C = Percentage of size 24C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P19C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 19C x 1.5 sq mm signalling cable

$P19C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S19C = Percentage of size 19C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P12C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 12C x 1.5 sq mm signalling cable

$P12C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S12C = Percentage of size 12C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P9C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 9C x 1.5 sq mm signalling cable

$P9C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S9C = Percentage of size 9C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P6C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 6C x 1.5 sq mm signalling cable

$P6C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S6C = Percentage of size 6C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P4C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 4C x 1.5 sq mm signalling cable

$P4C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S4C = Percentage of size 4C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P2C_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 2C x 1.5 sq mm signalling cable

$P2C_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S2C = Percentage of size 2C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P12C2.5_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 12C x 2.5 sq mm signalling cable

$P12C2.5_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S12C2.5 = Percentage of size 12C x 2.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P2C2.5_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 2C x 2.5 sq mm signalling cable

$P2C2.5_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S2C2.5 = Percentage of size 2C x 2.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P2C25_i$ = Price payable per Km as adjusted in accordance with price variation Clause for size 2C x 25 sq mm signalling cable

$P2C25_o$ = Price per Km of cable as per purchase order/ Contract agreement.

S2C25 = Percentage of size 2C x 25 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

PQC_i = Price payable per Km as adjusted in accordance with price variation Clause for size 0.9mm dia, 6 Quad cable.

PQC_o= Price per Km of cable as per purchase order/ Contract agreement.

QC = Percentage of size 0.9mm dia, 6 Quad cable shall govern the price.

LBo = The consumer price index for industrial workers – All India, published by Labour Bureau, Ministry of Labour, Government of India, (hereinafter called "**CPI**") for the month of the Base Month;

LBi = The CPI for industrial workers – All India for the average price index of the 3 months of the quarter under consideration;

OFCo = The WPI for fibre cables for the month of the Base Month;

OFCi = The WPI for fibre cables for the average price index of the 3 months of the quarter under consideration;

OTHo = The WPI for all commodities for the month of the Base Month; and

OTHi = The WPI for all commodities for the average price index of the 3 months of the quarter under consideration.

(c) The following percentages shall govern the price adjustment of the Contract Price for signalling and telecommunication works:

Works	Signalling	Telecommunication

Component	Signalling Works	Signalling inventory	Integrated testing and Commissioning	Telecommunication Works	Telecomm inventory	Integrated testing and Commissioning
Electronics (PELEX)	***%	***%	_	***%	***%	_
Communication Equipment (PCEQP)	_	_	_	***%	***%	_
Optical Fibre Cable (POFC)	***%	_	_	***%	_	_
30C x 1.5 sq mm signalling cable(S30C)	***%	_	_	***%	_	_
24C x 1.5 sq mm signalling cable (S24C)	***%	_	_	***%	_	_
19Cx 1.5 sq mm signalling cable (S19C)	***%	_	_	***%	_	_
12C x 1.5 sq mm signalling cable (S12C)	***%	_	_	***%	_	_
9C x 1.5 sq mm signalling cable (S9C)	***%	_	_	***%	_	_
6C x 1.5 sq mm signalling cable (S6C)	***%	_	_	***%	_	_
4C x 1.5 sq mm signalling cable (S4C)	***%	_	_	***%	_	_
2C x 1.5 sq mm signalling cable (S2C)	***%	_	_	***%	_	_
12C x 2.5 sq mm signalling cable (S12C2.5)	***%	_	_	***%	_	_
2C x 2.5 sq mm signalling cable (S2C2.5)	***%	_	_	***%	_	_
2C x 25 sq mm signalling cable (S2C25)	***%	_	_	***%	_	_
0.9 mm dia, 6Quad cable (QC)	***%	_	_	***%	_	_
Labour (PLB)	***%	_	***%	***%	***%	***%
Other materials	***%	***%	***%	***%	***%	***%
Total	100%	100%	100%	100%	100%	100%

(Note- the percentages may be finalized by tendering authority depending on BOQ)

FORMULAE FOR SIGNALING & TELECOM CABLE

The price payable for signalling cables is variable as per Price Variation Formula given below:

For Signalling Copper Cables:

P_i= Po+CuF (Cu-Cuo) + CCFcu(CC-CCo) + FeF (Fe-Feo)

For Telecom Copper Cables For Jelly Filled, 0.9 mm dia, 6 quad cable

P_i= Po+CuF (Cu-Cuo) + AlFcu(Al-Alo) + CCFcu (CC-Cco) + FeF (Fe-Feo)

For Aluminium Power Cables:

P_i= Po+AlF (Al-Alo) + CCFAl(CC-CCo) + FeF (Fe-Feo)

Where,

P_i= Price payable per KM as adjusted in accordance with Price variation clause.

Po= Price per KM of cable as per Purchase order.

CuF= Variation factor for Copper

Cuo= Price of copper Rod in Rs. Per MT

CCFCu= Variation factor for PVC Compound for Copper Signalling & Telecom cable

CCo= Price of PVC Compound in Rs. Per MT

AlF= Variation factor for Aluminium

Alo= Price of EC grade LME Aluminium rods (Properzi rods) in Rs. Per MT.

CCFAl = Variation factor for PVC Compound for Aluminium power cable

FeF= Variation factor for Steel

Feo= Price of Steel for Armour (Flat strip 4 mm. x 0.8mm/ Round 1.4mm dia) in Rs. Per MT

(Prices per MT for Cuo, CCo, Feo, Alo as applicable on the 1st working day of the month, one month prior to the deadline for submission of bids. The above prices and indices are as published by IEEMA vide circular reference no. IEEMA (PVC) /CABLE --/--/-- one month prior to the deadline for submission of bids.)

Cu= Price of Copper Rod in Rs. Per MT.

C_C= Price of PVC Compound in Rs. Per MT.

Fe= Price of Steel for Armouring (Flat strip 4mm x 0.8 mm/ Round 1.4mm dia) in Rs. Per MT.

Al = Price of EC grade LME Aluminium rods (Properzi rods) in Rs. Per MT.

(Prices per MT for Cu, CC, Fe, Al as prevailing on 1st working day of the calendar month covering the date One month prior to the date of inspection call letter will be applicable for the calculation of updated price. The above prices and indices are as published by IEEMA vide circular reference no. IEEMA (PVC) /CABLE --/--/-- one month prior to the date of inspection.)

The value of variation factors for copper, steel and PVC Compound are different for different sizes of signalling cables. Accordingly, the PVC formula for some of the types of signalling cable is as given under:-

Underground Railway Signalling Cable unscreened and armoured copper conductor

(i) Size 30 C x 1.5 sq.mm.

$P30C_i$=P30Co+0.391(Cu-Cuo) +0.557(CC-CCo) +0.425(Fe-Feo)

For armouring, price of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

(ii) Size 24C x 1.5 sq.mm

$P24C_i$= P24Co+0.313(Cu-Cuo) + 0.481 (CC-CCo) +0.398(Fe-Feo)

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

(iii) Size 19C x 1.5 sq.mm

$P19C_i$= P19Co+0.248(Cu-Cuo) + 0.395(CC-CCo) +0.343(Fe-Feo)

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

(iv) Size 12C x 1.5 sq.mm

$P12C_i$=P12Co+0.157(Cu-Cuo) + 0.277(CC-CCu) +0.289(Fe-Feo)

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

(v) Size 9C x 1.5 sq.mm

$P9C_i$= P9Co+0.117(Cu-Cuo) +0.241(CC-CCu) +0.383(Fe-Feo)

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

(vi) Size 6Cx 1.5 sq.mm

$P6C_i$= P6Co+0.078(Cu-Cuo) +0.199(CC-CCu) +0.329(Fe-Feo)

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

(vii) Size 4Cx1.5 sq.mm

$P4C_i$=P4Co+0.052(Cu-Cuo) +0.152(CC-CCo) +0.277(Fe-Feo)

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

(viii) Size 2C x 4 sq.mm(multistrand)

$P2C_i$= P2Co+0.073(Cu-Cuo) +0.156(CC-CCo) +0.3(Fe-Feo)

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

(ix) Size 12C x 2.5 sq.mm

$P12C2.5_i$= P12C2.5o+0.282 (Cu-Cuo) +0.371 (CC-CCo) +0.342 (Fe-Feo)

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

(x) Size 2C x 2.5 sq.mm

$P2C2.5_i$= P2C2.5o+0.047 (Cu-Cuo) +0.139 (CC-CCo) +0.277 (Fe-Feo)

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

(xi) Size 2C x 25 sq.mm PVC insulated, armoured, Aluminium power cable

$P2C25_i$= P2C25o+0.146 (Al-Alo) +0.303 (CC-CCo) +0.306 (Fe-Feo)

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

(xii) For Jelly filled, 0.9mm dia, 6 quad cable

PQC_i = PQCo + 0.135 (Al-Alo) + 0.139 (Cu-Cuo) + 0.515 (CC-Cco) + 0.693 (Fe-Feo).

For PVC Compound Grade CW-22, is to be taken into consideration.

46A.8 The demands for escalation of cost shall be allowed on the basis of provisional indices as mentioned above in Clause 46A.7. Any adjustment needed to be done based on the finally published indices shall be made as and when they become available.

46A.9: (1) Relevant categories of steel for the purpose of operating Price Variation formula as mentioned in this Clause shall be as under:

SL	Classification	Rates to be used for calculating S_Q or S_B
1.	Reinforcement bars and other rounds	Average of per tonne rates of 10mm dia TMT & 25mm dia TMT; confirming IS1786; Fe 500
2.	All types and sizes of angles, channels and joists	Average of per tonne rates of 'Angle 75x75x6mm, Mild Steel Plate 10mm thickness and Channel 150x75mm; confirming IS2062, E250 Gr "A"
3.	All types and sizes of plates	Average of per tonne rates of 'MS Plates 10mm thickness and 25mm thickness; confirming IS2062, E250 Gr "A"
4.	Any other section of steel not covered in the above categories	Average of price for the 3 categories covered under SL 1, 2 & 3 in this table.

(2). Relevant city for referring "JPC (Joint Plant Committee)"rates of steel items (SQ /SB) in different Zonal Railways shall be as under :

SL	City	Railway
1.	Delhi	Northern , North Central, North Eastern, North Western
2.	Kolkata	Eastern, East Central, East Coast, Northeast Frontier, South Eastern, Southeast Central
3.	Mumbai	Central, Western, West Central
4.	Chennai	Southern, South Central&South Western

46A.10 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 17A of the Standard General Conditions of Contract. However, where

extension of time has been granted due to Contractor's failure under Clause 17B of the Standard 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 17A, the price adjustment for the period of extension granted under Clause 17B shall be limited to the amount payable as per the Indices applicable to the last month of the original completion period or the extended period under Clause 17A of the Standard 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 17A, as the case may be; then the lower indices shall be adopted for the price adjustment for the period of extension under Clause 17B of the Standard General Conditions of Contract.

47. Maintenance of Works: The Contractor shall at all times during the progress and continuance of the works and also for the period of maintenance specified in the Tender Form after the date of issue of the certificate of completion by the Engineer or any other earlier date subsequent to the completion of the works that may be fixed by the Engineer, be responsible for and effectively maintain and uphold in good substantial, sound and perfect condition all and every part of the works and shall make good from time to time and at all times as often as the Engineer shall require, any damage or defect that may during the above period arise in or be discovered or be in any way connected with the works, provided that such damage or defect is not directly caused by errors in the contract documents, act of providence or insurrection or civil riot, and the Contractor shall be liable for and shall pay and make good to the Railway or other persons legally entitled thereto whenever required by the Engineer so to do, all losses, damages, costs and expenses they or any of them may incur or be put or be liable to by reasons or in consequence of the operations of the Contractor or of his failure in any respect.

48.(1) Certificate of Completion of Works: As soon as in the opinion of the Engineer, the work has been completed and has satisfactorily passed any final test or tests that may be prescribed, the Engineer shall issue a certificate of completion duly indicating the date of completion in respect of the work and the period of maintenance of the work shall commence from the date of completion mentioned in such certificate. The certificate, inter alia, should mention that the work has been completed in all respects and that all the contractual obligations have been fulfilled by the Contractor and that there is no due from the Contractor to Railways against the contract concerned.

The Engineer may also issue such a certificate indicating date of completion with respect to any part of the work (before the completion of the whole of work), which has been both completed to the satisfaction of the Engineer and occupied or used by the Railway. When any such certificate is given in respect of part of a work, such part shall be considered as completed and the period of maintenance of such part shall commence from the date of completion mentioned in the completion certificate issued for that part of the work.

48.(2) Contractor not Absolved by Completion Certificate: The Certificate of Completion in respect of the works referred to in Sub-Clause (1) of this Clause shall not absolve the Contractor from his liability to make good any defects imperfections, shrinkages or faults which may appear during the period of maintenance specified in the tender arising in the opinion of the Engineer from materials or workmanship not in accordance with the drawings or specifications or instruction of the Engineer, which

defects, imperfections, shrinkages or faults shall upon the direction in writing of the Engineer be amended and made good by the Contractor at his own cost; and in case of default on the part of Contractor, the Engineer may employ labour and materials or appoint another Contractor to amend and make good such defects, imperfections, shrinkages and faults and all expenses consequent thereon and incidental thereto shall be borne by the Contractor and shall be recoverable from any moneys due to him under the contract.

48(3) 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 Annexure XIV.

49. Approval only by Maintenance Certificate: No certificate other than Maintenance Certificate, if applicable, referred to in Clause 50 of the Conditions shall be deemed to constitute approval of any work or other matter in respect of which it is issued or shall be taken as an admission of the due performance of the contract or any part thereof.

50.(1) Maintenance Certificate: The Contract shall not be considered as completed until a Maintenance Certificate, if applicable, shall have been signed by the Engineer stating that the works have been completed and maintained to his satisfaction. The Maintenance Certificate shall be given by the Engineer upon the expiration of the period of maintenance or as soon thereafter as any works ordered during such period pursuant to Sub Clause (2) to Clause 48 of these Conditions shall have been completed to the satisfaction of the Engineer, and full effect shall be given to this Clause notwithstanding the taking possession of or using the works or any part thereof by the Railway.

The Competent Authority to issue above Maintenance Certificate shall normally be the authority who is competent to sign the contract. If this Competent Authority is of the rank lower than JA Grade, then a JA Grade Officer (concerned with the work) should issue the Certificate. The Certificate, inter alia, should mention that the work has been completed in all respects and that all the contractual obligations have been fulfilled by the Contractor and that there is no due from the Contractor to Railways against the contract concerned

50.(2) Cessation of Railway's Liability: The Railway shall not be liable to the Contractor for any matter arising out of or in connection with the contract for execution of the works unless the Contractor has made a claim in writing in respect thereof before the issue of the Maintenance Certificate under this clause.

50.(3) Unfulfilled Obligations: Notwithstanding the issue of the Maintenance Certificate the Contractor and (subject to Sub-Clause (2) of this Clause) the Railway shall remain liable for the fulfillment of any obligation incurred under the provision of the contract prior to the issue of the Maintenance Certificate which remains unperformed at the time such Certificate is issued and for the purposes of determining the nature and extent of any such obligations, the contract shall be deemed to remain in force between the parties thereto.

51.(1)Final Payment: On the Engineer's certificate of completion in respect of the works, adjustment shall be made and the balance of account based on the Engineer or the Engineer's representative's certified measurements or Engineer's certified "contractor's authorized engineer's measurements" of the total quantity of work executed by the Contractor upto the date of completion and on the rates accepted in Bill(s) of Quantities and for extra works on rates determined under Clause 39 of these Conditions shall be paid to the Contractor subject always to any deduction which may be made under these presents and further subject to the Contractor having signed delivered to the Engineer enclosing either a full account in detail of all claims he may have on the Railway in respect of the works or having delivered No Claim Certificate and the Engineer having after the receipt of such account given a certificate in writing that such claims are not covered under excepted matter i.e. Clauses 7(j), 8, 18, 22(5), 39.1, 39.2, 40A, 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 the Standard General Conditions of Contract or in any Clause (stated as excepted matter) of the Special Conditions of the Contract, that the whole of the works to be done under the provisions of the Contracts have been completed, that they have been inspected by him since their completion and found to be in good and substantial order, that all properties, works and things, removed, disturbed or injured in consequence of the works have been properly replaced and made good and all expenses and demands incurred by or made upon the Railway for or in the respect of damage or loss by from or in consequence of the works, have been satisfied agreeably and in conformity with the contract.

51.(2) Post Payment Audit: It is an agreed term of contract that the Railway reserves to itself the right to carry out a 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 till the release of security deposit or settlement of claims, whichever is later, if as a result of such examination any over-payment to him is discovered to have been made in respect of any works done or alleged to have been done by him under the contract.

51-A. Production of Vouchers etc. by the Contractor:

(i) For a contract of more than one crore of rupees, the Contractor shall, whenever required, produce or cause to be produced for examination by the Engineer any quotation, invoice, cost or other account, book of accounts, voucher, receipt, letter, memorandum, paper of 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 way relating to the execution of this contract or relevant for verifying or ascertaining cost of execution of this contract (the decision of the Engineer on the question of relevancy of any documents, information or return being final and binding in the parties). The Contractor shall similarly produce vouchers etc., if required to prove to the Engineer, that materials supplied by him, are in accordance with the specifications laid down in the contract.

(ii) If any portion of the work in a contract of value more than one crore of rupees be carried out by a sub-contractor or any subsidiary or allied firm or company (as per Clause 7 of the Standard General Conditions of Contract), the Engineer shall have power to secure the books of such sub-contract or any subsidiary or allied firm or company, through the Contractor, and such books shall be open to his inspection.

(iii) The obligations imposed by Sub Clause (i) & (ii) above is without prejudice to the obligations of the Contractor under any statute rules or orders binding on the Contractor.

52. 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 Railway shall be entitled to withhold and also have a 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 Railway shall be entitled to withhold the said cash Security Deposit or the Security if any, furnished as the case may be and also have a lien over the same pending finalization 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 Railway shall be entitled to withhold and have a lien to the extent of the such claimed 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 contract with this or any other Railway or any Department of the Central Government pending finalization 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 above, by the Railway will be kept withheld or retained as such by the Railways till the claim arising out of or under the contract is determined by the arbitrator (if the contract 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 on any account in respect of such withholding or retention under the lien referred to supra and duly notified as such to the Contractor. For the purpose of this clause, where the Contractor is a partnership firm or a company, the Railway shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner / company, as the case may be whether in his individual capacity or otherwise.

52-A Lien in Respect of Claims in other Contracts:

(i) Any sum 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 Railway, 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 Department of the Central Government.

(ii) However, recovery of claims of Railway in regard to terminated contracts may be made from the Final Bill, Security Deposits and Performance Guarantees of other contract or contracts, executed by the Contractor. The Performance Guarantees submitted by the Contractor against other contracts, if required, may be withheld and encashed. In addition, 10% of each subsequent 'on-account bill' may be withheld, if required, for recovery of Railway's dues against the terminated contract.

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

53. Signature on Receipts for Amounts: Every receipt for money which may become payable or for any security which may become transferable to the Contractors under these presents, shall, if signed in the partnership name by anyone of the partners of a Contractor's firm be a good and sufficient discharge to the Railway in respect of the moneys or security purported to be acknowledged thereby and in the event of death of any of the Contractor, partners during the pendency of the contract, it is hereby expressly agreed that every receipt by anyone of the surviving Contractor partners shall if so signed as aforesaid be good and sufficient discharge as aforesaid provided that nothing in this Clause contained shall be deemed to prejudice or effect any claim which the Railway may hereafter have against the legal representative of any Contractor partner so dying for or in respect to any breach of any of the conditions of the contract, provided also that nothing in this clause contained shall be deemed to prejudice or effect the respective rights or obligations of the Contractor partners and of the legal representatives of any deceased Contractor partners interse.

LABOUR

54. Wages to Labour: The Contractor shall be responsible to ensure compliance with the provision of the Minimum Wages Act, 1948 (hereinafter referred to as the "said Act") and the Rules made thereunder in respect of any employees directly or through petty Contractors or sub-contractors employed by him for the purpose of carrying out this contract.

If, in compliance with the terms of the contract, the Contractor supplied any labour to be used wholly or partly under the direct orders and control of the Railways whether in connection with any work being executed by the Contractor or otherwise for the purpose of the Railway such labour shall, for the purpose of this Clause, still be deemed to be persons employed by the Contractor.

If any moneys shall, as a result of any claim or application made under the said Act be directed to be paid by the Railway, such money shall be deemed to be moneys payable to the Railway by the Contractor and on failure by the Contractor to repay the Railway any moneys paid by it as aforesaid within seven days after the same shall have been demanded, the Railways shall be entitled to recover the same from Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India.

54-A. Apprentices Act: The Contractor shall be responsible to ensure compliance with the provisions of the Apprentices Act, 1961 and the Rules and Orders issued thereunder from time to time in respect of apprentices directly or through petty Contractors or sub-contractors employed by him for the purpose of carrying out the Contract.

If the Contractor directly or through petty Contractors or sub-contractors fails to do so, his failure 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.

55. Provisions of Payments of Wages Act: The Contractor shall comply with the provisions of the Payment of Wages Act, 1936 and the rules made thereunder in respect of all employees employed by him either directly or through petty Contractors or sub-contractors 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 orders 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 money to the Railways deduct the same from any moneys due to the Contractor in terms of the contract. The Railway shall be entitled to recover the same from Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India 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.

55-A. Provisions of Contract Labour (Regulation and Abolition) Act, 1970:

55-A.(1) The Contractor shall comply with the provision 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 Railway from and against any claims under the aforesaid Act and the Rules.

55-A.(2) 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 the requirement shall attract the penal provision of the Act.

55-A.(3) The Contractor shall pay to the labour employed by him directly or through sub-contractors the wages as per provision of the aforesaid Act and the Rules wherever applicable. The Contractor shall notwithstanding the provisions of the contract to the contrary, cause to be paid the wages to labour, indirectly engaged on the works including any engaged by sub-contractors in connection with the said work, as if the labour had been immediately employed by him.

55-A.(4) 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 Rules wherever applicable.

55-A.(5) In every case in which, by virtue of the provisions of the aforesaid Act or the rules, the Railway 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 on account of the contingent, liability of the Railway due to the Contractor's failure to fulfill his statutory obligations under the aforesaid Act or the rules, the Railway 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 Railway under the Section 20, Sub-Section (2) and Section 2, Sub-Section (4) of the aforesaid Act, the Railway shall be at liberty to recover such amount or part thereof from Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India. The Railway 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 to the Railway full security for all costs for which the Railway might become liable in contesting such claim. The decision of the Chief Engineer regarding

the amount actually recoverable from the Contractor as stated above shall be final and binding on the Contractor.

55-B.Provisions of Employees Provident Fund and Miscellaneous Provisions Act, 1952: The Contractor shall comply with the provisions of Para 30 & 36-B of the Employees Provident Fund Scheme, 1952; Para 3 & 4 of Employees' Pension Scheme, 1995; and Para 7 & 8 of Employees Deposit Linked Insurance Scheme, 1976; as modified from time to time through enactment of "Employees Provident Fund & Miscellaneous Provisions Act, 1952", wherever applicable and shall also indemnify the Railway from and against any claims under the aforesaid Act and the Rules.

55-C (i) Contractor is to abide by the provisions of various labour laws in terms of above clause 54, 55, 55-A and 55-B of the Standard General Conditions of Contract. In order to ensure the same, an application has been developed and hosted on website 'www.shramikkalyan.indianrailways.gov.in'. Contractor shall register his firm/company etc. and upload requisite details of labour and their payment in this portal. These details shall be available in public domain. The registration/ updationin Portal shall be done as under:

(a) Contractor shall apply for onetime registration of his company/firm etc. in the Shramikkalyan portal with requisite details subsequent to issue of Letter of Acceptance. Engineer shall approve the contractor's registration in the portal within 7 days of receipt of such request.
(b) Contractor once approved by any Engineer, can create password with login ID (PAN No.) for subsequent use of portal for all Letter of Acceptances (LoAs) issued in his favour.
(c) The contractor once registered on the portal, shall provide details of his Letter of Acceptances (LoAs) / Contract Agreements on shramikkalyan portal within 15 days of issue of any LoA for approval of concerned Engineer. Engineer shall update (if required) and approve the details of LoA filled by contractor within 7 days of receipt of such request.
(d) After approval of LoA by Engineer, contractor shall fill the salient details of contract labours engaged in the contract and ensure updating of each wage payment to them on shramikkalyan portal on monthly basis.
(e) It shall be mandatory upon the contractor to ensure correct and prompt uploading of all salient details of engaged contractual labour & payments made thereof after each wage period.

(ii) While processing payment of any 'On Account Bill' or 'Final Bill' or release of 'Advances' or 'Performance Guarantee / Security Deposit', contractor shall submit a certificate to the Engineer or Engineer's representatives that "I have uploaded the correct details of contract labours engaged in connection with this contract and payments made to them during the wage period in Railway's Shramikkalyan portal at 'www.shramikkalyan.indianrailways.gov.in' till ____Month, ____Year."

55-D. Provisions 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, shall get themselves registered with 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 by Registering Officer of the concerned State Govt. (Labour Dept.). The Cess shall be deducted from contractor's bills as per provisions of the Act.

56. Reporting of Accidents: The Contractor shall be responsible for the safety of all employees directly or through petty Contractors or sub-contractor employed by him on the works and shall report serious accidents to any of them however and wherever occurring on the works to the Engineer or the Engineers Representative and shall make every arrangement to render all possible assistance.

57. Provision of Workmen's Compensation Act: In every case in which by virtue of the provisions 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 Contractor or sub-contractor 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 the 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 from Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India. Railway shall not be bound to contest any claim made against it under Section 12 Sub-Section (1) 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.

57-A. Provision of Mines Act: The Contractor shall observe and perform all the provisions of the Mines Act, 1952 or any statutory modifications or re-enactment thereof for the time being in force and any rules and regulations made thereunder in respect of all the persons directly or through the petty Contractors or sub-contractors employed by him under this contract and shall indemnify the Railway from and against any claims under the Mines Act, or the rules and regulations framed thereunder, by or on behalf of any persons employed by him or otherwise.

58. Railway not to Provide Quarters for Contractors: No quarters shall normally be provided by the Railway for the accommodation of the Contractor or any of his staff employed on the work. In exceptional cases where accommodation is provided to the Contractor at the Railway's discretion, recoveries shall be made at such rates as may be fixed by the Railway for the full rent of the buildings and equipments therein as well as charges for electric current, water supply and conservancy.

59.(1) Labour Camps: The Contractor shall at his own expense make adequate arrangements for the housing, supply of drinking water and provision of latrines and urinals for his staff and workmen, directly or through the petty Contractors or sub-contractors and for temporary creche (Bal-Mandir) where 50 or more women are employed at a time. Suitable sites on Railway land, if available, may be allotted to the Contractor for the erection of labour camps, either free of charge or on such terms and conditions that may be prescribed by the Railway. All camp sites shall be maintained in clean and sanitary conditions by the Contractor at his own cost.

59.(2) Compliance to Rules for Employment of Labour: The Contractor(s) shall conform to all laws, bye-laws rules and regulations for the time being in force pertaining to the employment of local or

imported labour and shall take all necessary precautions to ensure and preserve the health and safety of all staff employed directly or through petty contractors or sub-contractors on the works.

59.(3) Preservation of Peace: The Contractor shall take requisite precautions and use his best endeavours to

(i) Prevent any riotous or unlawful behaviour by or amongst his workmen and other employed directly or through the petty Contractors or sub-contractors on the works and for the preservation of peace and protection of the inhabitants and

(ii) Security of property in the neighbourhood of the works. In the event of the Railway requiring the maintenance of a Special Police Force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the Contractor and if paid by the Railway shall be recoverable from the Contractor.

59.(4) Sanitary Arrangements: The Contractor shall obey all sanitary rules and carry out all sanitary measures that may from time to time be prescribed by the Railway Medical Authority and permit inspection of all sanitary arrangements at all times by the Engineer, the Engineer's Representative or the Medical Staff of the Railway. Should the Contractor fail to make the adequate sanitary arrangements, these will be provided by the Railway and the cost thereof recovered from the Contractor.

59.(5) Outbreak of Infectious Disease: The Contractor shall remove from his camp such labour and their families as refuse protective inoculation and vaccination when called upon to do so by the Engineer or the Engineer's Representative on the advice of the Railway Medical Authority. Should cholera, plague, or other infectious disease break out, the Contractor shall burn the huts, beddings, clothes and other belongings of or used by the infected parties and promptly erect new huts on healthy sites as required by the Engineer, failing which within the time specified in the Engineer's requisition, the work may be done by the Railway and the cost thereof recovered from the Contractor.

59.(6) Treatment of Contractor's Staff in Railway Hospitals: The Contractor and his staff, other than labourers and their families requiring medical aid from the railway hospital and dispensaries will be treated as private patients and charged accordingly. The Contractors' labourers and their Families will be granted free treatment in railway hospitals and dispensaries where no other hospitals or dispensaries are available provided the Contractor pays the cost of medicines, dressing and diet money according to the normal scale and additional charges for special examinations such as pathological and bacteriological examination, X-Ray, etc. and for surgical operation.

59. (7) Medical Facilities at Site: The Contractor shall provide medical facilities at the site as may be prescribed by the Engineer on the advice of the Railway Medical Authority in relation to the strength of the Contractor's resident staff and workmen.

59. (8) Use of Intoxicants: The sale of ardent spirits or other intoxicating beverages upon the work or in any of the buildings, encampments or tenements owned, occupied by or within the control of the Contractor or any of his employees shall be forbidden and the Contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

59.(9) 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.

60.(1) Non-Employment of Labourers below the age of 15: The Contractor shall not employ children below the age of 15 as labourers directly or through petty Contractors or sub-contractors for the execution of work.

60.(2) Medical Certificate of Fitness for Labour: It is agreed that the Contractor shall not employ a person above 15 and below 19 years of age for the purpose of execution of work under the contract unless a medical certificate of fitness in the prescribed form (Proforma at Annexure-VIII) granted to him by a certifying surgeon certifying that he is fit to work as an adult, is obtained and kept in the custody of the Contractor or a person nominated by him in this behalf and the person carries with him, while at work; a token giving a reference to such certificate. It is further agreed that the responsibility for having the adolescent examined medically at the time of appointment or periodically till he attains the age of 19 years shall devolve entirely on the Contractor and all the expenses to be incurred on this account shall be borne by him and no fee shall be charged from the adolescent or his parent for such medical examination.

60.(3) Period of Validity of Medical Fitness Certificate: A certificate of fitness granted or renewed for the above said purposes shall be valid only for a period of one year at a time. The certifying surgeon shall revoke a certificate granted or renewed if in his opinion the holder of it, is no longer fit for work in the capacity stated therein. Where a certifying surgeon refuses to grant or renew a certificate or revoke a certificate, he shall, if so required by the person concerned, state his reasons in writing for doing so.

60.(4) Medical Re-Examination of Labourer: Where any official appointed in this behalf by the Ministry of Labour is of the opinion that any person employed in connection with the execution of any work under this contract in the age group 15 to 19 years is without a certificate of fitness or is having a certificate of fitness but no longer fit to work in the capacity stated in the certificate, he may serve on the Contractor, or on the person nominated by him in this regard, a notice requiring that such persons shall be examined by a certifying surgeon and such person shall not if the concerned official so directs, be employed or permitted to do any work under this contract unless he has been medically examined and certified that he is fit to work in the capacity stated in the certificate.

EXPLANATIONS:

(1) Only Qualified Medical Practitioners can be appointed as "Certifying Surgeons" and the term "Qualified Medical Practitioners" means a person holding a qualification granted by an authority specified in the Schedule to the Indian Medical Degrees Act, 1916 (VII to 1916) or in the Schedule to the Indian Medical Council Act, 1933 (XXVII) of 1933.

(2) The Certifying surgeon may be a medical officer in the service of State or Municipal Corporation.

DETERMINATION OF CONTRACT

61.(1) Right of Railway to Determine the Contract: The Railway shall be entitled to determine and terminate the contract at any time should, in the Railway's opinion, the cessation of work becomes necessary owing to paucity of funds or from any other cause whatever, in which case the value of approved materials at site and of work done to date by the Contractor will be paid for in full at the rate specified in the contract. Notice in writing from the Railway of such determination and the reasons therefor shall be conclusive evidence thereof.

61.(2) Payment on Determination of Contract: Should the contract be determined under sub clause (1) of this clause and the Contractor claims payment for expenditure incurred by him in the expectation of completing the whole of the work, the Railways shall admit and consider such claims as are deemed reasonable and are supported by vouchers to the satisfaction of the Engineer. The Railway's decision on the necessity and propriety of such expenditure shall be final and conclusive.

61.(3) The Contractor shall have no claim to any payment of compensation or otherwise, howsoever on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not derive in consequence of determination of contract.

62.(1) Determination of Contract owing to Default of Contractor:

If the Contractor should:

(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 purposes of amalgamation or reconstruction), or

(iv) Have an execution levied on his goods or property on the works, or

(v) Assign the contract or any part thereof otherwise than as provided in Clause 7 of these Conditions, or

(vi) Abandon the contract, or

(vii) Persistently disregard the instructions of the Engineer, or contravene any provision of the 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 Para 8 of the Instructions to Tenderers.

(x) Fail to submit the documents pertaining to identity of JV and PAN in terms of Para 17.11 of Tender Form (Second Sheet) of Annexure I available in the Instructions to Tenderers.

(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 Clause 25 and 27 of these Conditions, or

(xii) Fail to take steps to employ competent or additional staff and labour as required under Clause 26 of these Conditions, 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 these Conditions, 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 Para 16 of Tender Form (Second Sheet) of Annexure I of the Instructions to Tenderers, or provision Clause 59(9) of these Conditions.

(xvi)Submits copy of fake documents / certificates in support of credentials, submitted by the tenderer

Then and in any of the **said Clause**, the Engineer on behalf of the Railway may serve the Contractor with a notice (Proforma at Annexure-IX) 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 the Engineer, the Railway shall be entitled after giving 48 hours' notice (Proforma at Annexure-X or XII, 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 (Proforma at Annexure-XI or XIII, as the case may be) should be issued.

Note: Engineer at his discretion may resort to the part termination of contract with notices (Proforma at Annexure- IX, XII and XIII), only in cases where progress of work is more than or equal to 80% of the original scope of work.

62.(2) Right of Railway 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 thereto 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 available 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 these Conditions.

(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 and 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 or 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 or destruction thereof.

(e) The Engineer shall as soon as may be practicable after removal of the Contractor fix and determine 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.

SETTLEMENT OF DISPUTES – INDIAN RAILWAY ARBITRATION AND CONCILIATION RULES

63. Conciliation of Disputes:

(i) This clause is applicable in the tender having advertised value less than or equal to Rs 50 Crore.

(ii) 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 "Chief 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. Chief 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.

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

(iv) 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.

(v) 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.

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

63.1 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),39.1, 39.2, 40A,43(2), 45(i)(a), 55, 55-A(5), 57, 57A,61(1), 61(2),62(1), 63(iv) and 63.2.11of the Standard General Conditions of Contract or in any Clause (stated as excepted matter) 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 the Dispute Adjudication Board (DAB) and Arbitration.

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

63.2.1 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.

63.2.2 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.

63.2.3 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.

63.2.4 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.

63.2.5 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."

63.2.6 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.

63.2.7 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.

63.2.8 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.

63.2.9 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.

63.2.10 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.

63.2.11 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.

63.2.12 The obligation of the Railway and the Contactor shall not be altered by reasons of issue being or under reference to DAB.

63.2.13 The DAB shall conduct the proceedings at any convenient venue which shall be decided by DAB in consultations with parties.

63.2.14 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.

64.(1) : Demand for Arbitration:

64.(1)(i): 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 63.1 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.

64.(1)(i)(a): 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 63.1 of these Conditions, the Contractor, after 120 days but within 180 days of his presenting his final claim on disputed matters shalt demand in writing that the dispute or difference be referred to arbitration.

64.(1)(i)(b): Arbitration as a method of dispute resolution should not be routinely or automatically included in procurement contacts/tenders, especially in large contracts.

64.(1)(i)(c): As a norm, arbitration as a method of dispute resolution may be restricted to disputes with a value less than Rs. 10 crore. This figure is with reference to the value of the dispute (not the value of the contract, which may be much higher).

64.(1)(i)(d):: inclusion of arbitration clauses covering disputes with a value exceeding Rs. 10 crore, should be based on careful application of mind and recording of reasons and with the approval of an officer not below the rank of Senior Administrative Grade (SAG) or the Accepting Authority of the tender whichever is higher.

64.(1)(ii)(a): 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.

64.(1)(ii)(b): 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 XV of these conditions.

64.(1)(iii)(a): The Arbitration proceedings shall be assumed to have commenced from the day, a written and valid demand for arbitration is received by the Railway.

64.(1)(iii)(b): The claimant shall submit his claims 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.

64.(1)(iii)(c): The Railway shall submit its def ence statement and counter claim(s), if any, within a period of 60 days of receipt of copy of claims from Tribunal, unless otherwise extension has been granted by Tribunal.

64.(1)(iii)(d): Place of Arbitration: The place of arbitration would be within the geographical limits of the Division of the Railway where the cause of action arose or the Headquarters of the concerned Railway or any other place with the written consent of both the parties.

64.(1)(iv): 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.

64.(1)(v): 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 Railways 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.

64.(2): 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.

64.(3) : Appointment of Arbitrator:

64.(3)(a) : The Arbitral Tribunal shall consist of a panel of three arbitrators. General Manager/Additional General Manager will appoint two arbitrators, one railway nominee and other from among the contractor's nominee. Contractor can recommend his nominee either from approved panel of Railways or from approved panel of Indian Council of Arbitration (ICA) within 30 days from the date of dispatch of approval of written and valid acceptance of demand for arbitration by the General Manager/Additional General Manager.

64.(3)(a)(i): If contractor wants to choose his nominee from Railway panel, the Railway will send a panel of at least four (4) names of retired Railway Officers empanelled to work as Arbitrator within 30 days from the day when a written and valid demand for arbitration is received by the General Manager/Additional General Manager. Contractor will be asked to suggest to General Manager/Additional 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/Additional General Manager shall appoint at least one out of them as the Contractor's nominee

within 30 days from the receipt of the names of Contractor's nominees. The railway panel shall be provided free of cost to the contractor.

64.(3)(a)(ii): If contractor wants to choose his nominee from Indian Council of Arbitration panel, Contractor will send at least 2 names of Arbitrators from the ICA panel for appointment as Contactor's nominee within 30 days from the date of dispatch of the request by Railway. The General Manager/Additional General Manager shall appoint at least one out of them as the Contactor's nominee within 30 days from the receipt of the names of Contractor's nominees. Nomination and appointment of arbitrators from ICA panel shall be as per the ICA Rules for Domestic Commercial Arbitration and amended from time to time.

Some general guidelines of ICA Rules for Domestic Commercial Arbitration are as under: -

i. Contractor may access the ICA's panel of arbitration through ICA's official webpage: https ://icaindia.co. in/pdf/Engineers.pdf.
ii. A formal request for nomination shall be submitted to ICA, accompanied by: -
   a. A brief Statement of Claim outlining the nature and quantum of the disputes.
   b. A copy of the relevant contract and any supporting documents.
   c. A copy of the notice intimating the other party of the initiation of arbitration proceedings, with proof of delivery (if any).
iii. Ad-hoc appointment fees for the nomination and appointment of arbitrators shall be as per the ICA Rules for Domestic Commercial Arbitration and revised from time to time and shall be submitted along with the request.

64.3.(a).iii: The serving railway officer working in arbitral tribunal in the ongoing arbitration cases as per clause 64.(3)(a)(i) and clause 64.(3)(a)(ii) above, can continue as arbitrator in the tribunal even after his retirement.

64.(3)(b): Two selected arbitrators are free to select presiding arbitrator (3rd arbitrator) within thirty (30) days from the date of their appointment. The presiding arbitrator may be selected from approved panel of Railways or approved panel of Indian Council of Arbitration (as per mutual agreement), which will be approved by General Manager/Additional General Manager. General Manager/Additional General Manager shall complete this exercise of appointing the Arbitral Tribunal within 30 days from the receipt of the names of all the three arbitrators.

64.(3)(c)(i): If one or more of the arbitrators appointed as above refuses to act as arbitrator, withdraws from his office as arbitrator, or vacates 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/Additional General Manager fails to act without undue delay, the General Manager/Additional 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 re-constituted Tribunal may, at its discretion, proceed with the reference from the stage at which it was left by the previous arbitrator (s).

64.(3) (c) (ii): (a) 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 hereto 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.

(b) Before proceeding into the merits 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 arbitration, applicability of time 'limitation' to any dispute, any violation of agreed procedure regarding conduct of the arbitral proceedings or plea for interim measures of protection and record its orders 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.

64.3(c)(iii): (i) Qualification of Railway Empanelled Arbitrator (s):

(a) Retired Railway Officers not below SA Grade level, one year after his date of retirement.
(b) Age of arbitrator at the time of appointment shall be below 70 years.
(c) Persons not involved in any current vigilance/CBI cases or against whom disciplinary or prosecution proceedings are not in process.
(d) Persons who had not been imposed a major penalty or two or more minor penalties or against whom administrative action has not been taken three times or more or
(e) Persons who have not been imposed one minor Penalty and against whom two administrative actions have not been taken as a result of vigilance/CBI action while in service on Railways.

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

(iii) While appointing arbitrator(s) under Sub-Clause 64.(3)(a), 64.(3)(a)(i), 64.(3)(a)(ii) & 64.(3)(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- XVI 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.

64.(3)(d)(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 therefrom.

64.(3)(d)(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 a Tribunal and interpretation of a specific point of award to Tribunal within 60 days of receipt of the award.

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

64.(4): Any ruling on 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.

64.(5): 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.

64. (6): The cost of arbitration shall be borne by the respective parties. If all the three arbitrators are selected from the Railway Panel, the fee of the arbitrators shall be determined as per the rates fixed/revised by 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 XV to these conditions after/ while referring these disputes to Arbitration. However, if any of the three arbitrators is selected from the Panel of Indian Council of Arbitration (ICA), the fee of the arbitrators shall be determined as per the rates fixed/revised by the Indian Council of Arbitration 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 XV to these conditions after/ while referring these disputes to Arbitration.

64.(7) Subject to the provisions of the aforesaid Arbitration and Conciliation Act 1996 and the rules thereunder and relevant para of the Standard General Conditions of Contract and any statutory modifications thereof shall apply to the appointment of arbitrators and arbitration proceedings under this Clause.

64.(8) 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.

ANNEXURE – VII

Reference Para 17B

Registered Acknowledgement Due

PROFORMA FOR TIME EXTENSION

No. _____ Dated: _____

Sub: (i) _____*(name of work)*.

(ii) Acceptance letter no. _____

(iii) Understanding/Agreement no. _____

Ref: _____ *(Quote specific application of Contractor for extension to the date received)* _____

Dear Sir,

1. 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').

2. Expecting that you may be able to complete the work if some more time is given, the competent authority, although not bound to do so, hereby extends the time for completion from _____ to _____.

3. Please note that an amount equal to the liquidated damages for delay in the completion of the work after the expiry of _____ *(give here the stipulated date for completion with/without any liquidated damage fixed earlier)* will be recovered from you as mentioned in Clause 17B of the Standard General Conditions of Contract for the extended period, notwithstanding the grant of this extension. You may proceed with the work accordingly.

4. 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.

5. Please intimate within a week of the receipt of this letter your acceptance of the extension of the conditions stated above.

6. 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 Clause 62 of the Standard General Conditions of Contract.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – VIIA
(Reference Clause 40(A)
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

ANNEXURE – VIIB

(Reference Clause 40(A)

Registered Acknowledgement Due

NOTICE FOR PART OF CONTRACT WORK OFFLOADED

_____ 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:

Or,

1. 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 alongwith approximate cost thereof to be mentioned)

2. 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.

3. The Bill(s) of Quantities for Part(s) of work offloaded is enclosed herewith.

4. 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 this contract (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.

5. The Contract value gets reduced to Rs……..:

6. 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

ANNEXURE – VIII

Reference Para 60.(2)

CERTIFICATE OF FITNESS

1. (a) Serial Number_____
   (b) Date _____
2. Name of person examined _____
3. Father's Name: son/daughter of _____
   Residing at _____
4. Sex _____
5. Residence: _____
6. Physical fitness
7. Identification marks _____
8. Date of birth, if available, and/or certified age _____
   I certify that I have personally examined (name) _____who is desirous of being employed in a factory or on a work requiring manual labour and that his/her age as nearly as can be ascertained from my examination, is _____ years.

   I certify that he/she is fit for employment in a factory or on a work requiring manual labour as an adult/child.

9. Reasons for :
   (a) Refusal to grant certificate, or _____
   (b) Revoking the certificate _____

Signature or left hand

Thumb impression of the person examined.

Signature of Certifying Surgeon

Note: In case of physical disability, the exact details and cause of the physical disability should be clearly stated.

ANNEXURE – IX

(Reference Clause 62. (1)

Registered Acknowledgement Due

PROFORMA OF 7 DAYS NOTICE FOR WORKS AS A WHOLE/ IN PARTS

(DETAILS OF PART OF WORK TO BE MENTIONED)

_____ 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 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 the 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

ANNEXURE – X

Reference Para 62(1)

Registered Acknowledgement Due

PROFORMA OF 48 HRS. NOTICE FOR WHOLE WORK

_____ RAILWAY

(Without Prejudice)

To

M/s _____

_____

Dear Sir,

Contract Agreement No. _____

In connection with _____

Seven days' notice under Clause 62 of the 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 work.

2. You are hereby given 48 hours' notice in terms of Clause 62 of the 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 contract will be 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 any other consequences which may please be noted.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – XI

Reference Para 62.(1)

Registered Acknowledgement Due/Standard Correspondence through IR-WCMS/Email on registered IREPS Email

PROFORMA 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 the Standard 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.

The Final measurements of work executed by you against the said contract will be taken/started on _____ at _____ hrs. at site. The measurement will be continued till all the measurement are taken. You are advised to be present at site on the above mentioned date and time to witness the measurements, otherwise measurements will be taken ex-parte and thereafter, variation (addendum & corrigendum) & final bill of work executed till date of termination based on ex-parte final measurements shall also be processed ex-parte.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – XII

Reference Para 62.(1)

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 the 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 the 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

ANNEXURE – XIII

Reference Para 62.(1)

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 the 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

ANNEXURE – XIV

Reference Para 48.(3)

FINAL SUPPLEMENTARY AGREEMENT

1. 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.

2. 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'.

3. 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.

4. 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 _____ duly adjusted as per price variation clause, if applicable (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 sum of ₹ _____ through the Final Bill bearing voucher No._____ dated _____duly adjusted as per price variation clause (PVC), if applicable (the receipt of which is hereby acknowledged by the party thereto 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 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.

   (Applicable in case Final Supplementary Agreement is signed after release of Final Payment)

   Or

   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 ₹_____ through various On Account Bills (the receipt of which is hereby acknowledged by the party hereto of the second part).

   And whereas the party hereto of the second part have received sum of ₹ _____ through various On Account Bills (the receipt of which is hereby acknowledged by the party thereto of the second part) from the party hereto of the first part and party hereto of the second part have accepted final measurements recorded on Page No….. to Page No…. of Measurement Book No…….and corresponding Final Bill duly adjusted as per price variation clause (PVC), if applicable, for 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 through various On Account Bills and sums to be paid through Final Bill duly adjusted as per price variation clause (PVC), if applicable, based on accepted final measurements including the Security Deposit 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, 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.

(Applicable in case Final Supplementary Agreement is signed before release of Final Payment)

5. 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:_____

ANNEXURE-XV

Reference Para 64.3 & 64.6

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 the Standard General Conditions of Contract.

.

Signature of Claimant_____ Signature of Respondent_____

*Strike out whichever not applicable.

ANNEXURE-XVI

Reference Para 64.(3)

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:

ANNEXURE-XVII
Reference Para 16.(4)

Insurance Surety Bond for Performance Security

Name of the issuer of surety bond:

President of India,
Acting through.....,
…….
Railway.

Date …….
……..

Surety Bond No:…… Issue Date ……..
Amount ofBond: ……..:. Expiry Date ……..

WHEREAS, in consideration of the President of India acting through …….. (Designation & address of contract signing authority),..... Rai1way ..... (hereinafter called "The Railway") having accepted the bid of M/S XXXXX hereinafter called the contractor, for the work of XXX' under invitation for bids No XXXX Dated XXXXX, Vide Letter of Acceptance No…….

AND

WHEREAS, the contractor is required to furnish Performance Security for the sum of Rs. XXXX (Rupees .XXXX Only), in the form of Surety Bond, being a condition precedent to the signing of the contract agreement.

SB No: Date:

WHEREAS, we, ---------- (Name of insurance company) hereinafter called the Surety, acting through [Designation(s) of the authorised person of the Surety], have, at the request of the **M/s. XXXXX** contractor, agreed to give Bond for performance security/ additional performance security as hereinafter contained:

1. KNOW ALL MEN by these present that I/We, the undersigned [lnsert name(s) of authorized representatives of the Surety], being fully authorized to sign and incur obligations for and on behalf of the Surety, confirm that the Surety, hereby, unconditionally and irrevocably Bond to pay the Railway the full amount in the sum of XXXX (Rupees XXXX Only) as above stated.

2. The Surety undertakes to immediately pay on presentation of demand by the Railway any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Railway on the Surety shall be final, conclusive and binding, absolute and unequivocal notwithstanding any disputes raised/pending before any Court tribunal, arbitration or any authority or any threatened litigation by the Bidder or Bank.

3. On payment of any amount less than aforementioned full amount, as per demand of the Railway, the Bond shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Railway.

4. The Surety shall pay the amount as demanded immediately on presentation of the demand by Railway without any reference to the contractor and without the Railway being required to show grounds or give reasons for its demand or the amount demanded.

5. The Surety Bond shall be unconditional and irrevocable.

6. The Bond hereinbefore shall not be affected by any change in the constitution of the Surety or in the constitution of the Contractor.

7. The Surety agrees that no change, addition, modifications to the terms of the Contract Agreement or to any documents, which have been or may be made between the Railway and the Contractor, will in any way release us from the liability under this Bond; and the Surety, hereby, waives any requirement for notice of any such change, addition or modification to the Surety.

8. This Bond is valid and effective from the date of its issue, which is [insert date of issue]. The Bond and our obligations under it will expire on XXXX (Expiry Date). All demands for payment under the Bond must be received by us on or before that date.

9. The Surety agrees that the Railways right to demand payment of aforementioned ful1 amount in one instance or demand payments in parts totaling up to the aforementioned full amount in several instances wilt be valid until either the aforementioned full amount is paid to the Railway or the Bond is released by Railway before the Expiry date.

10. The Surety agrees that its obligation to pay any amount demanded by the Railway before the expiry of this Bond will continue until the amount demanded has been paid in full.

11. The expressions Surety and Railway hereinbefore used shall include their respective successors, administrators and assigns.

12. The Surety hereby undertakes not to revoke the Bond during its currency, except with the previous consent in writing of the Railway. This Bond is subject to the Uniform Rules for Demand Bonds, ICC Publication No. 758.

13. We, the Surety Insurer, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, inter alia, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, tribunal, arbitrator or any other authority.

14. The Bond shall be in addition to and without prejudice to any other security Bond (s) of the contractor in favour of the Railway available with the Railway. The Surety, under this Bond, shall be deemed as Principal Debtor of the Railway.

Notwithstanding anything to the contrary contained in these presents,

a. Our liability under this Surety Bond shall not exceed XXXX (Rupees XXXXX Only).

b. This Surety Bond shall be valid up to XXXX (being the date of expiry);

c. Unless the bank is served a written claim or demand on or before XXXX [date of expiry] all rights under this Bond shall be forfeited and the Surety shalt be relieved and discharged from all liabilities under this Bond irrespective of whether or not the original Surety bond is returned to the Surety.

Dated the day of 2024

15. The Insurance Surety Bond shall be verified by sending mail to [customer.care@sbigeneral.in].

Place …….

Bank's Sea[and authorized signature(s)
[Name in Block letters] ……
[Designation with Code No.]……..
[P/Attorney] No……..

Witness

1.

2.

****

[Note: All italicized texts are for guidance on how to prepare this Insurance Surety Bond and shall be deleted from the final document.]

SECTION – 1

GENERAL

7.1.1. INTRODUCTION

This part of Tender papers is divided into seven Chapters and contains general, technical and other specifications for design and erection of complete 25 KV A.C. 50 Hz single phase traction overhead equipment including regulated tramway type, switching stations, L.T. supply transformer stations complete 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 overhead equipment including regulated tramway, switching stations and booster transformer stations. A list of the standard drawings is included in Annexure – I, Part – IV.

SCOPE OF WORK.

The sections of the Indian Railways to be equipped with traction overhead equipment in accordance with this specification is detailed in part – III where in the particular features of the sections to be electrified and their special requirements are indicated.

7.1.2. CLIMATIC DATA:

The data pertaining to section are given in part – III.

7.1.3. WIND PRESSURE:

For design of layout of overhead equipment maximum span etc. wind pressure shall be taken as specified in part – III. Structures and foundations of overhead equipment and L.T. supply transformer stations shall be designed for the wind presser indicated in part –III.

7.1.4. SYSTEM PARTICULARS:

The nominal voltage of the overhead equipment will be 25 KV A.C. 50 Hz, single phase. The supply voltage may, however, rise up to 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 overhead equipment through switchgear provided at the traction sub-station and at the feeding station.

7.1.5. ROLLING STOCK:

(a) LOCOMOTIVES:

The electric locomotives will generally be equipped with DC motors fed through rectifiers installed on the locomotives.

(b) OVERSIZE CONSIGNMENTS -

The specific requirements in regard to movement of steam locomotives and over size consignments for each section are indicated in part –III.

7.1.6. POWER SUPPLY

(a) SUB-STATIONS - Electric power will be supplied at 25 KV A.C. 50 Hz. single phase from traction substations to feeding stations spaced 50 to 80 km apart along the track.

(b) SWITCHING STATIONS - Power supply will be controlled to the different sections of traction overhead equipment by switching stations. At these stations the switching will be effected by

means of “Interrupters” which are single pole, non-automatic. All 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:
Supply will be affected to the overhead equipment through switchgear installed at feeding stations. All feeding station will be located normally near the track.

(d) SECTIONING STATIONS
The sub- stations cannot, as a rule is paralleled and consequently a neutral section of overhead equipment with insulated overlaps on either side will be provided approximately midway between the two consecutive feeding stations. Neutral section may also be provided at feeding stations. Facilities for bridging the neutral section between feeding stations will be provided at sectioning stations.

(e) SUB-SECTIONING STATIONS In order to facilitate maintenance of overhead equipment and to permit isolation of faulty sections and expeditious restoration of power supply in healthy sections, sub-sections with insulated overlaps will be provided between the feeding stations and the sectioning stations.

SECTION – 2

OVERHEAD EQUIPMENT

7.1.7. TRACK

(a) GAUGE AND TRACK CENTERS
The track gauge is 1676mm (5ft.6inch.). In multiple track zones, the normal distance between track centers varies between 4270mm (14ft.) and 4420mm (14ft.6inch.).

(b) SPEED
The overhead equipment which shall be of the simple poly-graphical type and pre-sag should be designed for a maximum speed of 160Km/h (Approx.100 miles/h) if regulated and for a maximum speed 80 Km/h (Apprx.50 miles/h) if unregulated, unless otherwise specified in Part-III for any particular section.

(c) CURVES
The minimum radius permissible is 175m (573 ft.) i.e. a 10 degree curve. Inside station limits, the curvature at a 1 in 8.5 turnout is 8 degree i.e. of radius 219m (716ft.).

(d) SUPER ELEVATION
The maximum super elevation is 165mm (6.5inch.). 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 overhead 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 (1inch.) 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 overhead equipment shall permit a displacement of +100mm. or –100mm. of tracks without difficulty and any adjustment of the overhead equipment on this account shall be of such a nature as could be done conveniently without changing any component of the overhead equipment.

7.1.8. SECTIONING

(a) INSULATED OVERLAPS

Insulated overlaps are provided for facility of isolation. Some of the overlaps may be provided with manually operated isolators switches.

(b) YARD SUPPLY

The sectioning diagram/s also indicate the tracks in stations, yards and siding whose equipments is electrically independent from those of the other tracks. The overhead equipment in yards and sidings is to 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 crossover between main tracks and to isolate sections of overhead 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) FEEDERS & RETURN FEEDERS 25 KV ALONG TRACK FEEDERS

25 KV along track feeders may connect sections of overhead 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.

(e) SCHEMATIC ARRANGEMENTS

The different arrangements of feeders, return feeders, 25 KV along track feeders and return conductors are shown in the drawing listed in Annexure –I, part-IV.

(f) SECTIONING DIAGRAM

The provisional sectioning diagram/s of the sections to be electrified is/are included in part – III.

7.1.9. PANTOGRAPHS

(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 EMU will be equipped with 3 pantographs. The working pressure of the pantograph on the contract wire may vary between 5 and 15 kg/m2.

(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 overhead equipment shall be based on the schedule of Dimensions 1676 mm. Gauge, 1939 printed in 1973 in metric units, issued by the Ministry of Railways (Railway Board), Government of India and any other orders that may be issued by the Railway Board from time to time.

7.1.10. OVERHEAD EQUIPMENT

(a) BRIEF DESCRIPTION -

Essentially the traction overhead 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 100mm for 72 m span and reduced suitably for other spans.

(i) Tramway type Overhead Equipment:

Regulated Equipment— in tramway type overhead equipment only a contact wire is provided without a continuous catenary or droppers and is auto-tensioned at the anchor by weight. Moreover the bridle wire is used for more supporting the contact wire, generally, the principles applicable to normal overhead equipment are also applicable to regulated tramway equipment except as specified below:

A. Span- The maximum span is restricted to 63 m.

B. Section Insulators- Where a section insulator assembly is to be provided, the provision of a structure to support the assembly is obligatory.

(ii) Unregulated equipment-

The principles applicable to normal OHE are applicable to this type of unregulated equipment except as specified below:

A. The maximum span is restricted to 30 m. In station areas, where this type runs side by side with conventional equipment with contact and catenary wires, the maximum span may be increase 31.5 m.

B. Where a section insulator is to be provided the provision of a structure becomes obligatory.

(b) CATENARY

The catenary wire shall be either of cadmium copper 19/2.10mm, 65mm2.

(c) CONTACT WIRE

The contact wire shall be grooved and made of hard drawn copper having 107 sq.mm. cross section (continuous cost)

(d) DROPPERS

Droppers shall be made of hard drawn round copper wire, approximately 5 mm dia.

Droppers shall be spaced not more than 9m. apart (see Annexure-I, Part-IV).

(e) ENCUMBRANCE

As a general rule, the nominal " encumbrance" i.e. the center distance between the catenary and the contact wire at the support shall be 1.4 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

All jumpers connected to OHE conductors shall be of copper only. The in-span jumpers potential equalizer jumpers at insulated overlaps and neutral section, shall be of 50 mm sq. nominal, 19/1.8 mm size. Flexible jumpers of nominal section 105sq mm. 19/7/1.06 mm size shall be used at overlaps, turnouts, crossings etc.

(g) BRIDDLE WIRE – As per RDSO specification.

(h) ANTI THEFT JUMPERAnti theft jumper of 50 sq mm. nominal, 19/1.8mm in size shall be used in out of run wire of conventional OHE and copper cadmium anti-creep wire as an anti-theft measure.

7.1.11. TYPE OF EQUIPMENT

The overhead equipment used shall normally be either of the regulated or unregulated type.

(a) REGULATED -

In the regulated type of overhead 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 overhead 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-I. The arrangement shall generally consist of the galvanized steel wire anchored on the masts adjacent to the anti-creep central mast in accordance with the relevant drawing listed in Annexure-I 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-I,

Part-IV. The Purchaser shall indicate the type of anti-creeps to be adopted in the pegging plans.

(b) UNREGULATED

The unregulated type of overhead equipment has no provision for automatic regulation of tension of either the catenary or the contact wire.

(c) 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.

(d) The section in which different types of equipment should be provided is indicated in part – III.

7.1.12. PLANE OF CONTACT

(a) REGULATED

The regulated overhead 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 35º 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 overhead

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.

7.1.13. TENSIONS:

(a) REGULATED

In regulated equipment, the tension in the catenary and in the contact wire shall be 1,000 kgf. in each conductor.

(b) UNREGUALATED

In unregulated equipment the tension in the catenary and in the contact wire at 35 degree C without wind shall be 1,000 kgf. in each conductor.

(c) Tramway Type

In regulated type Tramway equipment, the tension shall be 1250 Kgf.

7.1.14. CLEARANCE:

(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 values given in schedule of Dimensions, 1939. 1676 mm gauge 1939 printed in metric units, 1973 or its latest revision shall be observed along with any other supplementary rules that may be issued by the Railway Board and advised to the Contractor.

(b) OVER BRIDGES & TUNNELS

The clearance which are to be made available at over bridges, signal, gantries and other over line structures shall be based on the above rules.

(c) PLATFORM SHEDS AND OTHER STRUCTURES

In the course of checking the overhead 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-I, 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.

7.1.15. HEIGHT OF CONTACT WIRE:

(a) Normally, the minimum height of contact wire above rail level shall be 5.50m at mid span under the worst temperature and conditions. This height may be reduced under bridges and in tunnels to the extent permitted by the purchaser. The minimum height shall be 4.80m. In electric locomotive sheds and over electric locomotive inspection pits, the minimum height shall be 5.80m. At level-crossing, the minimum height shall be 5.50m. Any infringement restricting minimum height at level crossings will be removed by the Purchaser.

(b) GRADIENT OF CONTACT WIRE

Any change in the height of the contact wire shall be made gradually and the maximum slope shall not normally exceed 3mm per meter on main lines and 10mm per meter on sidings. The end span of any section with a gradient of contact wire shall have a slope not greater than half the main slope.

7.1.16. STAGGER:

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.

7.1.17. TERMINATION:

(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 acilities 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) SUPPLEMETARY 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.

7.1.18. TYPES OF STRUCTURES:

(a) The overhead 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-I for general arrangement drawings).

(b) HEADSPANS

Head span construction may be adopted with unregulated overhead equipment. A single head span shall not normally cover more than six tracks (See Annexure – I for general arrangement drawings of head span carrying complete overhead equipment).

(c) PORTALS

In cases where the tracks in a multiple track section do not permit location of independent masts and where automatic tensioning of overhead 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 anti-creep central locations and such portals will have necessary guy arrangement.

(d) FOUNDATIONS

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).

7.1.19. CANTILEVER ASSEMBLY

The bracket assembly carrying overhead equipment shall be of the swiveling type. The assembly shall be such that the process adopted will permit easy adjustment of the whole equipment under erection to cater for displacement of the track during maintenance up to the extent of 100mm on either side except as otherwise relaxed by the Purchaser (See Para 7.1.7(g)). In special instructions, Pull-off arrangements may be used with the approval of the Purchaser (See Annexure – I) for drawings of the bracket assembly and components.

7.1.20. OVERLAPS:

Overlaps shall be provided at suitable intervals such that neither the tension length exceeds 1,500M. nor the fixed anchor to balance weight anchor exceed 750 meters.

(a) GENERAL

The two contact wires at the overlapping zone should be parallel to each other in a

plane parallel to the track and run separated from each other (See Annexure – I 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 – I for general arrangement drawings).

7.1.21. POINTS & CROSSINGS:

Arrangements of overhead 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 – I.

7.1.22. SECTION INSULATORS (See also Para 7.1.8(c)):

(a) BRIEF DESCRIPTION

The section insulators shall provide effective electrical isolation of two elementary electrical section of overhead equipment and permit smooth passage of the pantograph in either direction at all speeds up to 70 KM/H. The outline of a section insulator is shown in a drawing listed in Annexure – I. 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 overhead 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.

7.1.23. ISOLATORS:

Manually operated isolator single or double pole type, with or without earth contact assembly may be required to bridge certain section insulators or insulated overlaps (See para-7.1.8). In certain large yards, isolators controlling different lines may be grouped together on a gantry (See Annexure – I).

7.1.24. RETURN CONDUCTORS – Deleted

7.1.25. BRIDGES AND TUNNELS:

(a) OVER BRIDGES

The complete overhead 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 overhead 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 – I.

7.1.26. BONDING AND EARTHING:

(a) Bonding and earthing should 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 in 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 if it is provided with continuous earth wire or it is individually earthed by means of an earthing station. For general arrangement drawings see Annexure – I.

(d) Double rail track circuit

When 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 1976). The earth wire shall be run on traction masts or structures. They shall be divided into different electrical sections not exceeding 1000 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 two 10 ohm, earths which will be provided by the Contractor. Sections on which earth wire is required to be provided are indicated in Part-III.

7.1.27. L.T. SUPPLY TRANSFORMER STATIONS - (See Para 9.1.30)

7.1.28. LIGHTNING ARRESTORS:

No Lightning Arrestors will be provided on the traction overhead equipment.

7.1.29. CERAMIC BEADED GLASS FIBER TYPE SHORT NEUTRAL SECTION ASSEMBLY:

Ceramic beaded glass fiber type 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 central 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 up to a max. of 320mm 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 adjustment of components can easily be made during erection of maintenance and also for ensuring smooth passage of pantograph.

In the catenary conductor, resin bonded fiberglass 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 & contact wire is available as also show in GA drawing under Annexure – I.

L.T. SUPPLY TRANSFORMER STATIONS

7.1.30. DESCRIPTION:

L.T. supply transformer stations

L.T. supply transformer stations shall essentially comprise of a mast mounted transformer connected to the traction overhead equipment through dropout fuse switches. The 240 V side shall be connected to a distribution board located at the remote control cubicle by means of 2 core 25 sq.mm. aluminium cable (see 2.4.23(a)). The general arrangement drawing for L.T. supply transformer stations for single double and multi-track section is in included in Annexure – I.

7.1.31. SCOPE OF WORK:

The work involved for supply and erection of the LT Transformer Station.

7.1.32. CLEARANCES:

No part of the installations, which is live at 25KV, shall be erected at a height less than 3m from the datum level. Clearance between any part live at 25 KV and any part at earth potential (or part likely to be earthed) shall not normally be less than 500 mm. This clearance may be reduced under special circumstances but in no case static clearance shall be less than 320mm and any dynamic vertical and horizontal clearances 270mm and 220mm respectively. The clearance between any part live at 3 KV and any part at earth potential (or part likely to be earthed) shall be not less than 150mm under static condition and 70mm under dynamic conditions.

7.1.33. SETTING OF GANTRIES:

The gantries are normally aligned parallel to the track. The minimum distance of the face of the gantry from the center line of the nearest track is referred to as the ‘setting’ of the gantry. The setting shall normally be 3.5m. Setting of the individual gantries of different stations will be furnished by the Purchaser.

7.1.34. DATUM LEVEL:

The datum level will be the finished level of the gantry mast foundation. All vertical dimensions shall be stated with respect to this datum level. Datum levels of individual stations will be indicated on the location and connection diagrams.

7.1.35. MOUNTING OF EQUIPMENT AND BUSBAR ARRANGEMENT:

(a) The interrupters and isolators shall be mounted in such a way that these can be manually operated conveniently by a person standing on the ground. The indicators showing the ‘OPEN’ or ‘CLOSED’ position of the equipment shall be so arranged as to be visible from out-side the fencing enclosure on the side of the main gantry.

(b) The bus-bar arrangement for typical switching stations is schematically indicated in a drawing included in Annexure – I.

7.1.36. FENCING & ANTICLIMBING DEVICES:

Every switching station together with its associated control cubicle shall be enclosed by fencing except at feeding stations that are located within the traction sub-station premises. The fencing shall have an anti-climbing device also at top.

At booster transformer and L.T. supply transformer stations, suitable anti-climbing

devices consisting of galvanized steel clamp fixtures shall be mounted on each mast. The device shall be fitted below the transformer supporting beam or steel work. The general arrangement drawings indicating the fencing and anti-climbing devices, are indicated in Annexure – 1.

7.1.37. NUMBERING:

Each booster transformer, interrupter, potential transformer, L.T. supply transformer and isolator shall carry an enameled number plate of approved design (see Annexure –1). The Purchaser will furnish the actual numbers to be allocated to the various equipments as per specification No. ETI/OHE/53 (6/88) with addendum and corrigendum slip No. 1 of (12/88), 2 of (8/89), 3 of (6/90) and 4 of (8/92).

7.1.38. INTERLOCKING ARRANGEMENTS:

Interlock shall be provided, between each interrupter and its associated double pole isolator, to prevent operation of the Isolator from the open to the closed position or vice-versa, unless the interrupter is locked in the open position and to prevent operation of interrupter either manually or by remote control unless the isolator is lock in the open or closed position. The interlocking device shall consist of a lock combined with an electrical contact to make or break the remote control circuit on the operating mechanism of the interrupter and a lock on the isolator operating mechanism and interlock key for the two locks.

7.1.39. EARTHING ARRANGEMENTS:

Earthing of switching stations, booster transformer stations and L.T. transformer stations shall generally comply with the code of practice for earthing IS: 3043-1987 except where otherwise specified below:

Earthing System:

(i) Switching Stations

Each switching station two separate and independent earth pits shall be provided, one for earthing the HT equipment and other for earthing the L.T. equipment. The general arrangement earthing connections at a typical switching station is shown in relevant drawing included in Annexure – 1.

(ii) Earth Circuits

Each earth circuit shall take the form of a closed ring and shall be provided with a minimum of two earth electrodes. Each earth electrode shall consist of galvanized iron pipe, 40mm nominal bore at least 3.1 m long provided with a spike at one end and welded lug suitable for taking minimum size of 40 x 6 mm mild steel flat, directly at the other. The pipe shall be embedded into the ground. The earth electrodes of the HT and the LT earth circuits shall be located as far apart as it is possible. The drawing of typical earth electrode is included in Annexure – 1.

(iii) HT earth circuit

The resistance to earth of the HT earth circuit shall be less than 2.0 ohms. If this value cannot be achieved with a maximum of four separate but inter connected earth electrodes then the additional earth electrodes shall have the surrounding earth treated with charcoal and salt filling. All masts, structures, fencing uprights and equipment pedestals shall be connected by the two separate and distinct connections to the closed loop of the earth bus. Earth bus and connections to it shall be of M.S. flats of minimum size 40 mm x 6 mm. Potential transformers and lightning arrestors shall be bonded to masts / structures by 25mm x 3 mm copper strips.

(iv) LT earth circuits

The LT earth circuit shall also comprise of a minimum of two inter-connected earth electrodes as described in Para (iii) above and the total resistance to earth of the earth circuit shall be less

than 2 ohms. This circuit will not form a part of this contract at those feeding stations that are located within the traction sub-station premises. All low tension equipment control boards, one terminal of the secondary of the potential and LT supply transformers, metal casing of battery chargers, earth connections of 8 SWG galvanized iron wire to the LT earth bus. The section of the LT earth bus shall be the same as that of the HT earth circuit. (v) Earth Strips The earth bus and connections of HT earth circuit shall be painted with two coats of red oxide zinc chromate primer to IS 2074 : 1992 with a minimum thickness of 40 microns and with two finishing coats of bitumen 85/25 (blown grade to IS:702 :1988) with 20% mica to a thickness of about 375 microns either by hot application or by brushing a solution of it with suitable viscosity to obtain the thickness in minimum number of coats and buried at a depth of 300 mm below the ground level. The earth bus of the LT earth circuit shall run along the wall fixed on wooden gutties at a height of 300 mm from the floors. The connections to equipment will run from the bus along the wall in recesses in the floor. All recesses will be covered with cement plaster after finishing the work. The connection of earth strips to each other shall be made by 10mm dia. Steel rivets or by welding. The connections to the various items of equipment and structures or fencing posts shall be made with G.I. bolts. The earth connection to the structural members shall be made at a height of about 150 mm. above the foundation. (vi) Inter connection The HT and LT earthing systems shall be interconnected. In addition, at all switching stations, the HT earth shall be connected by the two independent mild steel flats each of minimum size 40 mm x 6 mm painted with two coats of red oxide zinc chromate primer to IS: 2074:1992 and finished with two coats of bitumen 85/25 blown grade as described above, to the nontrack circuited rail in a single-rail-track-circuited section and to the neutral point of an impedance bond provided by the purchaser where double-rail-track circuiting is employed so as to limit high potential gradients developing in the vicinity of switching stations in the event of fault.

(vii) L.T. supply Transformer Stations

The earthing arrangement of a pole mounted LT supply transformer station shall comprise inter connected earth electrode/electrodes having a resistance not exceeding 10 ohms. If this value cannot be achieved with two electrodes, additional electrodes shall have surrounding earth treated with charcoal and salt filling. The Transformer and lightning arrestor shall be connected to the supporting steel structure by means of 2 independent connections at the top by means of 25 mm x 3 mm copper strip. At the bottom, the steel structures shall be connected to the inter-connected earth electrodes and to the nearest traction rail by means of two independent connections of mild steel flats having a minimum size of 40 mm x 6 mm. In addition, the earth electrode should be connected to the traction rail by means of a minimum size of 40 mm x 6 mm mild steel flat. The mild steel flat shall be painted with two coats of red oxide zinc chromate primer to IS: 2074:1992 with a minimum thickness of 40 microns and with two finishing coats of bitumen 85/25 (blown grade to IS: 702:1988) with 20% mica to a thickness of about 375 microns either by hot application or by brushing a solution of it with suitable viscosity to obtain the thickness in minimum number of coats.

7.1.40. CABLE CONNECTION:

(a) All PVC cables provided out-door shall be either laid in the trenches or neatly clamped to the structures as approved by the Purchaser.

(b) Termination of cables

The cable shall be terminated neatly and all the Crore arranged and dressed properly. Suitable indexed terminal strips or ferrules shall be provided at all terminals to facilitate maintenance.

PART – II

FOUNDATIONS

7.2.1. SCOPE:

This chapter deals with the design of foundations and anchor blocks for traction structures carrying overhead equipment (including those on bridges), structures at switching stations and booster stations and other concrete work. It also deals with the specification for concrete.

7.2.2. DESIGN OF FOUNDATION:

(a) SOIL PRESSURE

For design of foundations for traction structures carrying overhead 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 overhead 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

Foundations for the masts of gantries at switching stations 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 – I. Employment schedules for standard foundations for traction structures for various locations and types are also included in the drawings listed in Annexure – I, Part IV.

(g) SPECIAL FOUNDATIONS

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. "A") 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. 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.

(i) 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.

7.2.3. BEARING PRESSURE:

(a) GUIDING INFORMATION

Subject to Para 7.2.2(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/sqm.

(ii) Moorum soil in cutting 22,000 kg./sqm.

(iii) New banks & bad soils in banks and cutting 5,500 kg/sqm.

(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/sqm. the depths 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/sqm. 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.

7.2.4. CONCRETE:

Concrete for foundations shall be nominal mix of grade M.15 obtained by mixing cement, coarse aggregate, fine aggregate and water in accordance with proportions given vide Table 3 of IS: 456-1978 reproduced below. For grouting, muffing, embedding of structures in foundations and for cable trenches at switching stations, nominal mix concrete M.15 obtained by mixing materials in proportions as indicated in Table – 3 of IS: 456-1978 shall be used. Volume batching may be adopted vide clause 7.2.2. of IS: 456-1978 reproduced below:

IS: 456-1978

TABLE-3: PROPORTIONS FOR NOMINAL MIX CONCRETE

(Clause 8.3, 8.3.1 and 8.3.2)

Grade	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 max.	Proportion of fine aggregate to coarse aggregate (by mass).	Quantity of water per 50 kg. of cement max.
	concrete		

1 2 3 4
KG. Litres
M5 800 Generally 1:2 60
M7.5 625 but subject to 45
M10 480 an upper limit 34
M15 350 of 1:1.5 and 32
M20 250 a lower limit of 1:2.5 30
NOTE: 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.
Example:
For an average grading of the fine aggregate (that is zone II of Table 4 of IS : 383-1970*) the proportions shall be 1: 1.5, and 1:2 and 1:2.5 for maximum size of aggregate 10mm, 20 mm and 40 mm respectively.
* Specification for coarse and fine aggregates from natural sources for concrete (second revision). "In case uniformity in the materials used for concrete making has been established over a period of time, the proportioning may be done by volume batching, provided periodic checks are made on mass/volume relationships of the materials, where weigh-batching is not practicable, the quantities of fine and coarse aggregate (not cement) may be determined by volume. If the fine aggregate is moist and volume batching is adopted, allowance shall be made for bulking in accordance with IS: 2386 (Part – III) – 1963". *
* Method of test for aggregates for concrete part – III specific gravity, density, voids,
absorption and bulking. 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:456-1978. The crushing strength of concrete shall not be
less than the limits given below:
Crushing strength of 15cm cubes by works test.
Concrete. At 7 days age. At 28 days age.
(a) M. 10 70 kg/cm2 100 Kg/cm2
(b) M. 15 100 kg/cm2 150 Kg/cm2
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:516-1959 or its latest version. 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.

7.2.5. SIZE AND GRADING OF AGGREGATES:

The graded coarse aggregate 20 mm nominal size (table 2 of IS: 383-1970) 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: 383-1970 (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.

7.2.6. SAND CORED FOUNDATIONS:

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.

7.2.7. SINKING OF CONCRETE SHELLS:

Where the water – level 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 inch) dia. rods spaced 150 mm apart, both longitudinally and circumferentially, the concrete shall be of grade M.15 as per provisions of Para 9.2.4.

7.2.8. TYPE OF FOUNDATION IN BLACK COTTON SOIL:

Types of foundations in black cotton soil. The foundations in dry black cotton soil should be of type BC or NBC or any other type as approved by the Purchaser.

7.2.9. CEMENT:

The cement to be used in the OHE foundation work should be of ordinary Portland /slag cement of 43/53 grade conforming to the relevant BIS specification. Make of cement used for foundation must be: ACC, Ambuja, Binani, Birla Gold, Century Gold, Lafarge and Ultra Tech.

PART – III

STRUCTURES

7.3.1. SCOPE:

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.

7.3.2. TYPES:

Structures and gantries may consist of any or more of the following types :-

(i) Broad flange beams.

(ii) Rolled steel joists (I section).

(iii) Fabricated steel Structures (welded /bolted).

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.

7.3.3. DESIGN:

(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 : 800-1984. The thickness of smallest steel sections used shall be 5 mm for galvanized members. (b) All the steel Structures and small part steel for carrying overhead equipment are to be fully galvanized after drilling and fabrication as per specification ETI / OHE / 13 (4/84) with A & C slip number 1 of 5/86, 2 of 4/90, 3 of 4/90 and no painted structures are to be used.

7.3.4. CANTILEVER MASTS:

(a) LOAD

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 overhead equipment (1.60 kg/meter for each conventional and 1.32 kg / meter for each composite OHE).

(ii) Weight of bracket supporting the overhead 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.

(b) DEFLECTION

Notwithstanding the provisions contained in IS: 800 – 1984 referred to in para 7.3.3. 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 – I, part – IV. Employment schedules for standard masts for various locations and types are included in the standard drawings listed in Annexure – I, part IV, to enable selection of suitable type for different locations and local conditions.

7.3.5. ANCHOR MASTS:

(a) Masts at which overhead 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.

7.3.6. HEAD SPANS: (See para 7.1.18 and 7.4.19)

(a) LOAD -

The loads to be considered shall be as detailed in para 7.3.4 (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 (1/80) 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 overhead equipment for 4 tracks will be furnished to the contractor.

7.3.7. PORTALS (See 7.1.18)

(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 – I, Part – IV.

(b) LOAD

The load shall be as detailed in para 7.3.4 (a) as applicable.

7.3.8. STRUCTURES ON BRIDGES:

(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 to the contractor by the Purchaser.

7.3.9. SPECIAL STRUCTURES:

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.

7.3.10. SETTING OF STRUCTURES:

(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 – I, Part IV. Minimum setting of structures shall be 2.5 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 – I, 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 – I, Part – IV.

(g) SETTING OF STRUCTURES

The value of setting of masts/structures shall be painted on each mast/structure. The figure shall be 25mm 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.

7.3.11. NUMBERING OF STRUCTURES CARRYING OVERHEAD EQUIPMENT:

All structures shall be numbered in accordance with the numbering given in the approved overhead equipment layout plans. Enameled number plate shall be provided on each mast or structure as per approved designs (See Annexure – I, Part – IV).

7.3.12. STEEL WORK FOR SWITCHING STATIONS AND GANTRIES

(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 combination 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 wind load, 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 18m ……. 100 kgf.

(2) For spans more than 18m ……200 kgf.

(iii) Maximum tension in longitudinal feeders running parallel to the track at the switching stations under worst conditions. 1,500 kgf.

(iv) Tension in anchored overhead 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 350C. 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) ANCHOR MAST

Masts of the gantry at which feeder or overhead 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, lightning 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 masts 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.

7.3.13. STEEL:

Steel conforming to IS: 2062-1992 shall be used for all fabricated steel work.

PART – IV

EQUIPMENTS, COMPONENTS & MATERIALS

7.4.1. GENERAL

This chapter deals with the details and specifications of the equipments, components & materials to be used for traction overhead equipment, switching stations, booster transformer stations & LT supply transformer stations. This chapter does not cover structures and foundations, which are dealt with in Chapter – IX, Part –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 brought 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.

7.4.2. COMPLIANCE WITH STANDARD SPECIFICATIONS:

In the technical specifications of equipments, components and materials, references are made to the following standard specifications:

1) International Electro Technical Commission (abbreviated as IEC) publications.

2) British Standards (abbreviated as BS).

3) 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(b). English rendering of the text illustrations of the national standard specifications and explanatory notes on the specific deviations from IEC, British Bureau of Indian Standards, in question, shall also be submitting in Form –3. 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.

7.4.3. QUALITY ASSURANCE:

The provisions of Part-I or quality assurance will apply, including facilities to be provided by the manufacturer (see para 1.2.25).

7.4.4. PROTO TYPE TESTS:

a) FITTINGS, COMPONENTS AND MATERIALS

All the fittings, components & materials to be supplied by the contractor, in terms of this contract, the requisite number of proto types 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. Test to be carried as per RDSO's specification no. ETI/OHE/49 with its latest amends.

(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 7.4.1 above, in the presence of the purchaser's representative. The contractor shall arrange to get these tests conducted at his own cost.

(c) RESPONSEBILITY

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 25KV, 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.

7.4.5. INSPECTION AND TESTS:

These comprise inspection and tests conducted at the manufacturers' factory for ensuring quality of manufactured items as part of the Quality Assurance Programme.

7.4.6. TEST CERTIFICATES:

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).

7.4.7. BULK MANUFACTURE:

Bulk manufacture 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.

7.4.8 INTER- CHANGEABILITY:

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 for as possible.

7.4.9. TECHNICAL SPECIFICATIONS:

The following specifications (latest revision) will govern the supply and testing of important materials, components and equipments: conductors have to be supplied as per RDSO's Drg. No.ETI/OHE/G/5600 Mod. A or latest Gr.A Structural steel
IS : 2062-1992
IS : 800-1984
IS : 808-1989
Tensile testing IS : 1731-1971
IS : 2004-1991.
IS : 1608-1972 For steel products etc
Welding IS : 816-1969
Disc insulator IS : 731-1971
IS : 3188-1980
Dropper wire IS : 282-1982
Annealed copper IS : 9968(PT.2) 1981
Jumper wire
AL Jumper wire IS : 694:1990

All aluminium conductor IS : 398(PT.I)-1976
Aluminium conductors
Galvanized steel reinforced IS : 398(PT-III)1976
Material for Aluminium IS : 5082-1981
Tubular bus bar
Dimensions for Aluminium IS : 2673-1979
Tubular bus bar.
General requirements for IS : 1387-1993
the supply of metals and metal products Galvanized stay strand
IS : 2141-1992
PVC insulated cables IS : 1354-(Part-I) 1988
Tin bronze castings IS : 306-1983
Aluminium bronze castings IS : 3091-1965
Malleable iron castings IS : 2108-1977
Coarse and fine aggregate IS : 383-1970
From natural sources for Concrete Code of practice for general
IS : 456-1978
Construction of plain and Reinforced concrete Method of tests for strength
IS : 516-1950
of concrete Gray iron castings IS : 210-1978
Aluminium castings IS : 617-1975
Copper strip for formed IS : 1897-1985
Fittings.
Cadmium copper conductor ETI/OHE/50(6/97)AMEND-1(6/97)
For overhead Rly. Traction.
Contact wire ETI/OHE/76(6/97) with A&C slip no.3(3/05).
(Continuous cast.)
Annealed stranded copper ETI/OHE/3(2/94)With A&C slip
Conductors for jumper wire No.1 of (4/95).
Copper Bus bar. RE/30/OHE/5(11/60) IS-613.
Structural Steel tubes. ETI/OHE/11(5/89).
Hot dip galvanization of steel ETI/OHE/13(4/84) with A&C Slip
Masts (Rolled and fabricated) No.1 of (5/86).2 of (4/90)&3 of (4/90).
Tubes and fittings used on 25 KV
A.C OHE.
Stainless Steel wire ropes. TI/SPC/OHE/WR/1060 (6/06).
25KV solid core insulator ETI/OHE/15(9/91) with A&C slip no.6 (9/05).
Including those for polluted Zones.
25KV single and double pole ETI/OHE/16(1/94) with A&C slip no.2 (3/04).
Isolator.
Bolts, nuts and washers. ETI/OHE/18(4/84) with A&C Slip No. 1 of
(11/84) 2of (6/87) 3 of (9/87) & 4 of (10/02). Aluminum Alloy Section and ETI/OHE/21(9/74).
Tubes.
Standard drawings for Traction Deleted from latest master list. No.TIM 0002
Overhead equipment. Rev.7 dated 31.08.2005.
Section Insulator Assembly. ETI/OHE/27(8/84) with A&C slip No.1 (10/92)
Enameled Steel Plates. ETI/OHE/33 (8/85).
Galvanized Steel Wire. ETI/OHE/36(12/73) with A&C slip no.1 (5/98).
Fittings for 25KV 50HZ A.C ETI/OHE/49(9/95) with A&C Slip No.1
Traction equipment. Of (3/97).

25KV Potential Transformer. TI/SPC/PSI/PTS/0992 with A&C slip no.3
(8/05).
25 KV drop out fuse switch ETI/PSI/14 (1/86) with A&C slip no.1
& operating pole for use with of (4/87).
10 KVA, 25KV/230V LT supply transformer.
25 KV/240 V, 10 KVA LT ETI/PSI/15 (8/03).
supply transformer.
Metal oxide gapless type ETI/PSI/71 Rev. 1 (1/87) with A&C
Lightning Arrestor for use slip no. 1 of 3/87,2 of 9/90, 3 of (2/91),
On 25 KV side. 4 of 12/91, 5 of (8/94).
110 V Lead Acid Battery RDSO/SPEC/TL/0040-2003 (Rev.0)
40 AH SMF.
25 KV, 50 Hz. single pole ETI/PSI/167 (9/97)
outdoor interrupter for
Railway Traction switching station.
3-Pulley type regulating TI/DRG./OHE/ATD/RDSO/00001/99/1.
Equipment (3:1).
Specification for short TI/SPC/OHE/SNS/0000 (01/00).
Neutral section assembly
(Phase Break).
110 V 40 AH battery ETI/PSI/1 (6/81).
Charger SMF.
Aluminium alloy stranded ETI/OHE/54(2/85) with A.C slip no.1
Catenary wire 19/2.79 mm of (11/89) & 2 of (10/92)
Bi-metallic (AL-CU) strip ETI/OHE/55(4/90)
Insulated cadmium copper TI/SPC/OHE/INS CAT/0000 (04/00)
catenary

7.4.10. NOMENCLATURE AND MARKING

(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 galvanized tubes, bolts and nuts and / or any other fittings as may be agreed to by the purchaser.

(b) In case of insulators, galvanized steel tubes, stainless steel wire rope and conductors, name of manufacturer shall be specified in "As Erected "drawings for identification.

7.4.11. STEEL WORK AND PROTECTION AGAINST RUST:

(a) GALVANIZING

All ferrous materials and fittings shall be hot dip galvanized according to the specification ETI/OHE/13(4/84) with A&C slip no. 1 of (5/86) no. 2 of (4/90) & no.3 of (4/90).

(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 days 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) with A&C slip no. 1 of 5/86,2of 4/96 &3of 4/90 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.

7.4.12 BRACKET ASSEMBLY COMPONENTS: (See para 7.1.19)

ARRANGEMENT FOR NORMAL OHE (High Speed)

The arrangement of the different fittings and structural components of bracket assemblies are shown in drawings listed in Annexure-I, Part-IV. The employment schedule of bracket will be furnished to the Contractor.

(a) BRACKET:

Bracket tubes shall be of seamless cold drawn or electric resistance weld steel complying with ETI/OHE/11(5/89) 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))

(b) TUBULAR STAY ARM:

Steel tubes with adjustable steel rods shall be used for tubular stay arm of all bracket assemblies.

(c) REGISTER ARM:

The register arm shall also be electrical resistance weld or cold drawn steel tubes or proper dimension 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 directions.

(d) STEADY ARM:

Steady arm shall normally be fitted in all assemblies for overhead 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). Steady arms of secondary tracks may be off solid galvanized 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 turn outs, diamond crossing etc. Steady arms shall be longer as indicated in the relevant drawings listed in Annexure-I, Part-IV. Bent Steady arms of aluminium alloy tubes conforming to Spec. ETI/OHE/21(9/74) shall be used for neutral Section overlap and in the Central mast of a 4 span insulated overlap.

7.4.13. DROPPERS: (See Para 7.1.10)

(a) GENERAL DESIGNS:

The droppers shall generally be designed as shown in Standard drawings and made of copper wire about 5 mm diameter conforming to IS : 282:1982 and shall be attached to the catenary wire by a copper dropper clip. The Contact wire shall be held by a clip of aluminium bronze as shown in the standard drawings. The distribution of dropper shall be in accordance with standard design.

(b) LOADING:

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 slip under a horizontal load of 120 kgf. (c) The permissible tolerance in the overall length of a dropper will be +/-5 mm.

7.4.14. INSULATORS:

(a) All insulators shall be of the solid core type. All solid core insulators shall conform to ETI/OHE/15 (9/91).

(b) INTER CHANGEABILITY:

For free inter changeability only the following types insulators shall be used. While the shapes of the insulators may vary slightly from those shown in the drawings, the essential dimension of the galvanized 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.

7.4.15. ENDING FITTINGS AND SPLICES GENERAL DESIGNS:

(a) 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 ETI/OHE/49 (9/95) with A.C. slip No. 1 of 13/27).

(b) LOADING:

All the parts shall be capable of withstanding without damage, a load greater than the ultimate strength of the wire 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 is 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 not be less than that of the conductor or wire it.

(e) ADDITIONAL TERMINATING WIRES:

Cadmium copper stranded wire of 65 sq.mm. nominal section or 37/2.1mm (130mm as used in head span construction) may be used as additional terminating wires of extending single and double conductors respectively, if termination at the nearest structures is not feasible.

7.4.16. ELECTRICAL CONNECTIONS FOR OHE

(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) JUMPER:

Copper jumper shall be of any of the followings:

(i) Large jumpers of annealed copper in accordance with specification ETI/OHE/3 (2/94) with A and C Slip No. 1 of (4/95).

(ii) Small jumper of annealed copper in accordance with the specification IS: 9968 (PT.2)-1981 & ETI/OHE/3 (2/94) A&C No.1.

(c) BUSBARS:

Bus bars or rigid jumpers of copper where used shall be of 18 mm □ copper rod in accordance with RE/30/OHE/5 (11/60 IS.613.) Aluminium bus bars wherever used shall be of 36/28 mm tubing (See 2. 4.22). Aluminium tubular bus bars shall be made of AI. Alloy grade 63401 (WP condition) to IS: 5082 – 1981. The tolerance on diameter and thickness shall be as per class I, IS: 2673 – 1979.

(d) FEEDERS:

Feeders shall be of all Copper conductors 37/2.25 mm.

7.4.17. TERMINAL CONNECTORS FOR EQUIPMENTS:

Interrupter, Booster Transformer and L.T. supply Transformer shall be supplied by the Purchaser along with the terminal connectors suitable for taking jumper/bus bar as required. However, ALCU strips shall be provided by the Contractor for bimetallic connections wherever required.

7.4.18. REGULATING EQUIPMENT:

(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 ETI/OHE/14 (9/94) with incorporated A&C slip No.1 to 4 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 three in case of three pulley type.

7.4.19. HEAD SPAN CONSTRUCTION: (See Para 9.1.18 and 9.3.6)

(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.

7.4.20. ISOLATORS:

25 KV Isolator switches shall comply with specifications as indicated in Para-7.4.9.

7.4.21. INSULATION LEVEL:

Interrupters, potential transformers line indication type, 42 KV lighting arrestors and other equipments shall be suitable for insulation level indicated in the relevant specifications.

7.4.22. BUSBARS:

(a) No splicing will normally be allowed in the tubular bus bars unless the length of the bas bars exceed 6 m.

(b) GENERAL:

The bas bar shall be clean, smooth, mechanically sound and free from surface and other defects. Provision shall be made when necessary to allow for expansion and contraction of bus-bars caused by temperature variation. The open ends of the bus-bar shall be covered by suitable caps, whenever the tubular bus bars are required to be bent; the radius of the bent shall be not less than 200 mm.

(c) JOINTS:

The joints in bus bars shall be mechanically and electrically sound so that the temperature rise under normal working condition does not exceed 40 degree C for an ambient temperature of 65 degree C.

(d) All Aluminium joints shall be thoroughly clean and smeared with suitable oxidation inhibiting joint compound before and after assembling the joint. Similar procedure shall be followed for connecting the equipment the terminals to the aluminium bus bars with bimetallic connectors.

7.4.23. CABLING:

(a) CABLE FOR LT SUPPLY:

240V AC supply from LT supply Transformer at switching station shall be brought and terminated on the LT AC distribution Board in the remote control Cubicles at the switching stations 1100V 25 sq.mm. aluminium 2 Core PVC insulated PVC sheathed and steel armoured heavy duty cable conforming to IS: 1554 (Part-1): 1988.

(b) CONTROL & INDICATION CIRCUITS:

All other Cables for control and indication at switching station shall be 1100 V grade PVC insulated and sheathed armoured (heavy duty) complying with IS: 1554 (Part-1) 1988. The cables shall be provided as indicated in the Table below:

PURPOSE RUN CIRCUIT VOLTAGE CORE SIZE & MATERIAL No. OF CORES Control & indication Of interrupters From each interrupter to terminal Board. 110V D.C. 2.5 sq. mm copper
7 Heater supply for interrupter control mechanism cabinet
(i)From Interrupter to interrupter
(ii)From each interrupter to fuse box.
(iii) From fuse box to distribution Board. 240V A.C.
- do -
- do -
4.0 sq. mm
Aluminium
- do -
- do -
2
- do -
- do -
Battery Supply
(i) 110V Battery Charger to 110V Battery.
(ii) 110V Battery to 15 A, DC fuse box.
(iii) 15A DC fuse box to terminal board.
110 V D.C
110 V D.C.
110 V D.C.
2.5 sq. mm.
Copper
2.5. sq.mm.
Copper
2.5. sq. mm
copper
2
2
2
NOTE:

(1) In case of feeding station which are located within the traction substation premises, the cables shall be run from individual equipment and terminated inside the sub station control room
(2) Notwithstanding the size of cable given above, the Tenderer shall assured that various cables would suit the ratings of equipment offered by him.
TENDER NO: ELD-300-WC-16-2017-18 Page-141/191
(c) SPECIFICATION:
The cables shall be resistant to decay abrasion, acids alkalis and other corrosive materials. All indoor wiring all on walls shall be clamped neatly on teak wood battens fixed to the wall by means of wall plugs wooden pegs. The cable run lay out at a typical switching station shown in the relevant drawings already include in Annexure-I.

7.4.24. LITERATURE FOR EQUIPMENT:

The Contractor shall within six months of issue of letter of acceptance of tender, supply 25 copies of detailed schedule, catalogues and drawings of all parts of the equipme

PART – V

DESIGNS & DRAWINGS

7.5.1. General:

(a) This Chapter deals with the procedure for approval of designs and drawings.
(b) The type designs shall be as few as possible to cover the largest field of application consistent with economic consideration.
(c) In all drawings as far as possible only such symbols as are in international use, shall be used.

7.5.2. CONTRACTOR'S DRAWINGS:

(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, component and materials and to enable correct and complete erection of overhead equipment, switching stations, LT supply transformer stations in an expeditious and economic manner.
(b) RESPONSIBILITY:
It is to be clearly understood that all original drawings and designs 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.

7.5.3. STANDARDS FOR DRAWINGS:

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 conform to specifications RE/OHE/25(3/66).

7.5.4. BASIC DESIGNS:

(a) STANDARD DESIGNS:
Where the Contractor adopts designs and drawings conforming to the standard designs, drawings and specifications of the research, designs and standard organizations. Manaknagar, Lucknow – 226 011 (RDSO) for basic arrangements, equipments, components & fittings of traction overhead equipment, switching stations, L.T supply transformer stations and adopts

employment schedules furnished by the purchaser, he shall verify each design, drawing and employment schedule 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 reproducible transparent film (50 microns) each of such standard basic arrangement, component & fitting drawings and employment schedules from Chief ElectricalEngineer/E. Railway/Calcutta 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 results of his experience or other development, he shall justify his proposals with supporting explanatory notes.
(c) STANDARD DRAWINGS EMPLOYMENT SCHEDULES ETC. -Deleted.

7.5.5. SPECIAL DESIGNS:

(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 by 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.

7.5.6. PARTICULAR DESIGNS AND WORKING DRAWINGS FOR OHE:

(a) PURCHASER'S PEGGING PLANS:
The pegging plans for sections to be equipped indicating the type of overhead equipment, locations of masts and other general particulars prepared on the basic 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 carry out survey and prepare overhead equipment pegging plans, he shall submit such plans for approval after checking their feasibility at site.
(c) PRINCIPLES OF LAY OUT:
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.
(d) PROVISIONAL LAYOUT PLANS:
The Contractor shall prepare and submit overhead equipment layout plans incorporating the following information's:
(i) The run of wires in different thickness or color in special cases and termination.
(ii) The run of wires for future wiring indicated to the contractor in dotted lines.
(iii) Erect 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) Lay out of feeders.
(vii) Jumper connections and connection to switches and switching stations.

(viii) List of infringements.
(ix) Kilometer nos. and type of structures.
(x) Location and no. of switches.
(xi) Schematic sectioning diagram drawn to convenient scale showing section insulator, no. of switches, elementary sections and connections to switches and switching stations.
(xii) Table giving references of approved profile drawings, feeder layout plan and other relevant drawings.
(xiii) Implantation.
(xiv) Location of mast.

(e) OHE PROFILE DRAWINGS:

After completion of the overhead equipment layout plans, the contractor shall prepare an overhead 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 finalized, 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, point rods and their correct location in references to track/tracks as well as underground
obstructions like pipe cables, etc. after connecting 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 ……
Sl. No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
……
LOCATION NO.
CHAINAGE
D SETTING
DISTANCE
E in m.
_____
T STEP DISTANCE
in m.
A_____
F.B. M. CODE
I_____
SOIL TYPE &
L PRESSURE
_____
S FOUNDATION TYPE & SIZE
_____

MAST SIZE AND
LENGTH in m.
MAST EMBEDED
LENGTH in m.

_____

REVERSE DEFLECTION
(cm.)

_____

SUPER MAST
LENGTH in m.

_____

CROSS ARM
LENGTH in m.

_____

ANY OBSTRUCTION

_____

(g) FINAL LAYOUT PLANS:

After all the cross section drawings in a section covered by the layout plan are finalized 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.

(h) STRUCTURE ERECTION DRAWINGS:

The contractors shall then submit structure erection drawings for each structure incorporating all the details included in the cross section drawings for the structure and as erected at site and the details or the bracket assembly, mast extensions, isolator mounting frame and anchorage of overhead equipment, feeder or return conductors proposed for each structure together with all particulars necessary for the correct erection of overhead 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 tropical 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 finalized 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
TENDER NO: ELD-300-WC-16-2017-18 Page-147/191
3. STAGGER
(I) CATENARY
(II) CONTACT
4. STAY ARM
(i) (a) M
(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 MISC. SINGLE/DOUBLE CAT. ETC. WILL BE INDICATED.
ITEMS:
(9) SUB-STATION FEEDER DRAWING Deleted.

7.5.7. PARTICULARS DESIGNS & DRAWING FOR SWITCHING STATIONS & BOOSTER STATIONS:

(a) PURCHASER'S LOCATION PLAN ETC.

The location plans and schematic diagrams of connection for all the switching stations, and L.T. supply transformer stations will be furnished by the purchaser to the contractor. These will indicate the following as applicable.

i) Overhead equipment layout in the vicinity of switching or other stations.

ii) Location of main masts.

iii) Arrangement of cross feeders and longitudinal feeders to be anchored on the gantry if any, including jumper connection to the overhead equipment.

iv) Scheme of connections of interrupters.

v) Position of the remote control cubicle with respect to the switching stations.

vi) Fencing outline at the switching stations.

The contractor shall satisfy himself about the correctness and applicability of the location plans given by the purchaser before adopting them for detailed designs.

(b) DETAILED DRAWINGS:

The Contractor shall submit for approval of the purchaser. The following drawings:

i) Cross section drawings for each switching station indicating the cross section of the formation transverse to the tract at such location of main masts and longitudinal section parallel to the track along the central line of the interrupters. This drawing shall be prepared after an accurate survey and site and shall indicate the nature of the soil, its bearing capacity, and compactness and in case of loose soil, transverse section of the parent soil. In the preparation of the drawings care shall be taken to show all obstruction to be removed, such a signal wire, rods and their correct location with reference to the tracks as well as underground construction like pipes, cables etc. after collection such formation from the site.

ii) GENERAL ARRANGEMENT DRAWINGS:

General arrangement drawings for switching station indicating the general arrangement of all equipment, run bus bars, position of pedestal insulators steel framework and fencing. The drawing shall also given a schematic connection/diagram and an isometric view of bus bars and connection. The drawing shall include an elevation view of the switching station from behind at transverse cross section and plan sectional views at the level of feeder anchors insulator beams, potential transformer and ground. Each drawing shall have a schedule of all
equipment required at the switching stations along with drawing reference of details of the equipments.

iii) STRUCTURAL DRAWINGS:

Structural assembly drawing for switching station indicating the steel framework assembly. The drawing shall include one elevation view of the steel framework assembly from behind. A transverse cross section and plan views at various levels such as at the level of feeder anchors, Insulator beam/and ground. In the assembly each component number shall be marked with its reference number. The drawing shall also have a schedule of component numbers along with drawing reference various numbers. The weight of the component numbers shall be indicated in

a separate weight schedule. The drawings shall be prepared for the various structural components. Individual drawings shall be made for each component and this shall include all fixing board, nuts and washers whose sizes will be maintained all the drawings. A unit isolator beams; potential transformer beam weight of the component shall also be given in the drawings.

iv) FOUNDATION LAYOUT AND CROSS SECTION DRAWINGS:

Foundation layout and cross section drawings for each switching station indicating layout of all foundation in plan, transverse cross section of various foundations through central line of main masts, interrupters, fencing uprights and LT supply transformers, if any, an longitudinal sections parallel to track through the central line of the cable trench .All foundation shall be marked serially on the drawing and listed in a schedule on the drawing indicating the volume of concrete for each foundation block.

v) FENCING LAYOUT DRAWINGS:

Fencing layout drawings for each switching station indicating the layout of the entire fencing and anti climbing device in plan. Each up right, fencing plan and fixture on the upright shall be indicated on the drawing by its reference number. A schedule of components viz. uprights, panel fixture and barbed oil shall be included in the drawings indicating the drawing reference of components. An individual drawing shall be made for each type pane, fencing and fixture for mounting the anti climbing device. The drawing of each fencing post shall indicate the unit weight of the fencing post.

vi) EARTHING LAYOUT DRAWINGS:

Earthing layout drawings for each switching station indicating the layout of full earthing system in plan. The drawing shall show the location of earth electrodes and mark the run of earthing strips and connection to each equipment, mast, fencing post and fencing panel. All components shall be marked with their reference n. for further details of the run of conductors and connections, separate drawings which may be common to all switching station may be made and reference to this drawings mark on the layout. A schedule of components shall be made out in the given drawing reference of components.

vii) CABLE RUN LAYOUT:

Cable run layout of each switching station indicating inter connection between various equipments, indoor and outdoor along with schematic arrangements and physical disposition of equipment, color coding or code no. and the index scheme adopted for terminal. The drawings shall also indicate the cable size and grades of insulation. The quality of various cables required shall be indicated on the drawings.

viii) EQUIPMENT DRAWINGS:

Equipment drawings applicable to all switching station except the ones for the equipments to be supplied by the purchaser. Drawings shall be dimensioned and should indicated:

1. Fixing or mounting hole dimensions and arrangement.
2. Net weight of the equipment.
3. Characteristic and rating of equipment.
4. Circuit and diagram.
5. Overall dimensions and other important dimension.
6. Height and vertical and horizontal dimensions of all exposed live parts; and
7. Notes explaining the operation of the equipment.

ix) MISCELLENIOUS DRAWINGS:

Misc. drawing applicable to all switching station. This drawings shall include drawings or sketched made for study of clearance, isolator alignment details, scheme of interlocks, no. plates or various equipments and “U” bolts for cable mounting, caution or instruction boards, out riggers for bus bars support and non-standard bus bar connectors.

x) EMPLOYMENT SCHEDULES & CHARTS:

Employment schedules and charts applicable to all switching stations. These will include:

1. Employment schedule for pure gravity type of foundation for main masts for various direct leads and bending moments.

2. Employment schedule for all other foundations for various depths of parent soil from the datum level.

3. Sag tension charts for cross feeders for various spans and tensions.

7.5.8. LT.SUPPLY TRANSFORMER STATION DRAWING:

The contractor shall submit for approval to the purchaser drawing for L.T. Supply transformer station, similar to those detailed for switching station in 2.5.7(b). The following drawings may, however, be combined together:

i) cross section and foundation layout drawing.

ii) General arrangement, structural and earthing layout drawings.

7.5.9. SCHEDULE OF QUANTITIES:

Within 30 days of issue of letter of acceptance of tender, the Contractor shall assess the quantities of various items of work including various component and fitting as covered in schedule-1 and submit schedule-1 (assess-1) along with the corresponding quantity of various fittings and components included in 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 following schedules of quantities relating to each layout plan shall be submitted within a fortnight.

i) Schedules of nos. of masts, types, weight of different masts and total weight of masts;

ii) Schedules of no. of foundation, types, volume of different foundations and total value;

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 and steel work to be supplied by the purchaser.

7.5.10 SUBMISSION OF DRAWINGS & SCHEDULES:

a) The submission of designs and drawings for approval shall be done in the manner indicated (See also Para-1.2.23)

GENERAL:

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 the case of deviation on working drawing, decision shall be communicated by the purchaser to the Contractor. The no. of copies of drawings, which shall be submitted, is indicated in the following sub-paras. The purchaser will return one copy of the drawing either with approval subject to modification where necessary or with comments. The purchaser shall endeavor to return this copy within a period of 15 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 15 days of receipt of such advice revised drawings for approval taking in to account the comments or modifications. Also

the contractor shall as far as possible avoid correspondence on such comments 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, N.F.Railway, Maligaon, and his successor/nominee (whose address will be intimated in the due course). In the particular case of deviation 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 additions 4 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:

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 approvals (See Paras-7.5.6).

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 convenient sections 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- 7.5.6).

g) OHE LAYOUT PLANS AND PROFILE DRAWINGS:

Overhead equipment layout plans, provisional and final and profile drawings shall be submitted for approval in 03 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.

i) SCHEDULE OF QUANTITIES:

Schedules of quantities for each approved layout plan/switching station shall be submitted for approval in two copies.

j) SUB-SECTION FEEDER DRAWINGS: ---------- Deleted.

k) All drawings for switching stations, booster transformer stations and LT supply transformer stations shall be submitted for approval in three copies.

l) DISTRIBUTION COPIES:

On receipt of purchaser's un-qualified 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 7 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 9.5.10 (b) … 8 copies.

ii) Special designs … 8 copies

iii) Final pegging plans … 8 copies

iv) Structure cross-section drawings … 8 copies
v) OHE layout plans … 12 copies
vi) OHE profile drawings … 8 copies
vii) Structure erection drawings … 8 copies
viii) Deleted
ix) Schedule of quantities … 6 copies
x) Drawings for switching stations, booster transformer stations and LT transformer stations. … 9 copies
In all the above cases, the contractor has the option to supply only 06 copies of the approved drawings provided one of them is a transparent paper print.

7.5.11. COMPLETION DRAWINGS AND SCHEDULES:

After completion of works, all drawings and designs submitted by the contractor and approved by the purchaser shall be made up to date incorporation actual supply and erection particulars including the name and make of insulators, galvanized steel tubes, stainless steel wire rope etc. 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 4 sets including 2 sets of RTF. All as erected drawings shall also be submitted in Compact Disk (CD) in duplicate.

7.5.12. ADDRESSES

Addresses to which designs and drawings should be submitted are indicated in Part-III.

PART – VI

ERECTION AND INSTALLATION OF EQUIPMENT

SECTION – 1: PRINCIPLES

7.6.1. SCOPE

This Chapter deals with the methods of erection and installation of traction equipment, including casting of foundations and erection of structures.

7.6.2. METHODS OF ERECTION

All work shall be done in accordance with methods of erection and installation of equipment approved by the purchaser. In the case of switching station, booster transformer stations, L.T. supply transformer stations, standard methods adopted for erection and installation of electrical equipment shall be adopted.

7.6.3. SECTIONING

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.

7.6.4. INSPECTION

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.

7.6.5. MEASUREMENTS

All measurements for location of structures and foundation shall be made with the aid of steel tapes. On curves, the 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 center of the formation in the case of an even no. of tracks, structures on curves shall be located in the radial offset of the location as determined.

7.6.6. BOLTS, NUTS ETC.

All bolts, nuts, locknuts, screws, locking plates and split cotter pins etc. shall be properly tightened and secured and the contractor shall carry out systematic inspection of this aspect of work after all adjustments to overhead equipment are completed and prior to offering completed sections of equipment to the purchaser for inspection and testing.

7.6.7. DAMAGE TO GAVANISING PAINTING

In loading, transport and erection, all galvanized painted materials shall be handled with care to avoid damage to galvanizing/painting. If galvanizing/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 9.4.11(c).

7.6.8. FOUNDATIONS

(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 of 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:

The Contractor shall adopt mechanized method (concrete mixture) for installation of foundation in the station areas with 5 track lines or more. The contractor may adopt either manual or mechanized method for installation of foundations in the other areas. 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 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 up to 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 over night, shoring shall otherwise be done unless the hole is refilled 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 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 satisfactions of the purchaser's representative, if the excavated hole is left overnight. All waterlogged 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 waterlogged 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 hrs.) and their edges cemented to the foundation blocks. Prior to doing so, water should be

filled in the core hole, so as to assist 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 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 7.2.4 with ballast graded for the purpose specified in para 7.2.5. 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:

All anchor blocks and foundations of structures carrying overhead 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 framework of the equipment.

(g) Suitable grooves or niches shall be provided in the foundation blocks, wherever
required, at the time of casting, to enable embedment of earth strips etc. to avoid the necessity of chipping of concrete.

(h) Conduits for cables should be embedded in the foundation blocks, wherever required, to avoid subsequent chapping off and breading of the foundation blocks.

7.6.9. MASTS AND STRUCTURES

(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 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 1676 gauge printed in metric units in 1978.

(d) ALIGNMENT OF MAST AT GANTRIES

The main masts of gantries shall be carefully aligned to enable easy and good assembly of fabricated steel work.

7.6.10. OVERHEAD EQUIPMENT

(a) A suggested method for erection of traction overhead equipment, which would ensure good speed, and quality erection, included in section 2 of this part. 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 strong 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 200 mm to facilitate adjustment during maintenance.

(c) STAY ARMS

The choice of stay arms shall be such that their adjuster is 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.

(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 assembly. 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 Sec.2 of this part) for a minimum duration of 48 hrs. 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) AUTO TENSIONING DEVICE

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

degree C before it is connected to the overhead equipment and put into action. The installation of the device shall be such as to permit free, easy and unobstructed movement of counter weight.

(j) CUT- IN- INSULATORS

All insulators in out of run shall be so positioned that they are away from the swept zone 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 overhead equipment.

(k) 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 overhead equipment connected to it shall be parallel to the track plane.

(l) ANTI-WIND CLAMP

Anti-wind clamp shall be provided as shown in drawing (Annexure-1).

(m) 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 flexible jumpers shall be adequate to avoid any disturbance to overhead 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.

(n) SEPARATION BETWEEN OHE

In erection, the physical separation required between overhead equipments and bracket assemblies on the same structure at insulated overlaps shall be ensured.

(o) 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 structures and live equipments.

(p) ADJUSTMENT AT TURNOUTS ETC.

Careful adjustment of equipment shall be made on equipments at turnouts, crossovers, 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 if any parts of the bracket assemblies and changeover of the contact wire is effected smoothly.

(q) 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.

7.6.11. ISOLATORS

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.

7.6.12. BUS BARS AND CONFECTIONS

Bus bars and connections shall be neatly shaped and bent to give a good appearance.

7.6.13. EARTHING

The copper earth strips or MS flats used for earthing shall be bent and shape 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 15cm. from the datum level of a switching station. Before making earth connections the ends shall be cleaned thoroughly and tinned for copper stripes. All junctions shall be properly secured to avoid loose contact. Portions of copper earth stripes, which remain visible above the ground level, should be painted with suitable paint to make them inconspicuous.

7.6.14. TOLERANCE

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 9.6.5). The cumulative error of measurement of all spans in a km. 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 2.36 m. A tolerance + 20 mm will be permitted subject to minimum specified value, 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 + 20 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.

7.6.15. SUPPLEMENTARY INSTRUCTIONS

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.

SECTION 2:

WIRING PROCEDURE

7.6.16. WIRING PROCEDURE

These sections deal with wiring procedure, which may be adopted for erections of normal overhead equipment. The following procedure for erection of overhead 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 overhead equipment immediately before energisation and commissioning is virtually eliminated.

7.6.17. GENERAL

In the case regulated overhead 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 equipment is unregulated in the intervening period. Any of the

following two procedures may be followed for tensioning and clamping of conductors of regulated overhead equipment during stringing operating, i.e. before the regulating equipments are brought into action.

(i) The catenary is tensioned to 1000 kgf, the stipulated tension at the mean temperature of 35 degree 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 bracket 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 aluminium catenary is tensioned at the calculated tension to correspond to 1000 kgf, the stipulated tension at the mean temperature of 35 degree 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 of 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 overhead equipment.

7.6.18. ERECTION OF BRACKETS

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 site of the track for other suitable means.

7.6.19. ANTICREEP

The anti-creep of the tension length installed in its final positions.

7.6.20. LOCKING THE REGULATING EQUIPMENT

In the case of regulated overhead 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 C.

7.6.21. TEMPORARY ARRANGEMENT

A pulley approximate 30-cm. dia. is attached to the overhead equipment and of the regulating equipment by means of temporary accommodation fitting at both ends of the tension length to be wired. Over this pulley his 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 ends of the catenary and contact wire is their final position, to permit easy clamping of terminal fittings during the final termination of the wire.

7.6.22. STRINGING CATENARY

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 hang from the suspensions clamps eyes of bracket until the terminating point at the other end of the tension length is reached.

7.6.23. TENSIONING OF CATENARY

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 the temperature register by a thermometer tied to a length of catenary wire 3 to 4 mts. 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 suspensions points and to the catenary at mid span by ladder working party. The sag shall be measured in two spans, each preferably greater than 54 mts., and situated on either side of anti-creep approximately mid way between the anti-creep and the termination point. The value of sag measured by this method should be within +5% of the theoretical value for the corresponding string tension, and the temperature at the time of this measurement in case the discrepancy is more the tension should be adjusted and sag rechecked 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 block to the minimum into first block, the catenary is strained to the stringing tension with the aid of dynamometer and the catenary is terminated. In the subsequent block, the sag is checked and the tension readjusted with ladders, if necessary.

7.6 24. CLAMPING THE CATENARY

The catenary is clamped on the bracket placed at right angles to the track (See note-2, Para-7.6.30).

7.6.25. DROPPERING

Droppers are fitted to the catenary at the correct locations at the contact wires ends this dropper may be provided with small pulleys or hooks to act as temporary support when the contact wire is strung. Hooks made of scrap contact wire, suspended from the catenary wire, may also be used as temporary supports.

7.6.26. STRINGING CONTACT WIRE

The contact wire is initially terminated in the contact wire ending clamp of the temporary arrangement at one of the tension length. The wires is then fade out from the reel wagon of the wiring train and supported on the pulleys hang from dropper 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 support corresponding to the approximate final poison of the wire. The axes of the pulleys should be more or less vertical.

7.6.27. TENSIONING OF CONTACT WIRE

The contact wire is strained to a tension of approximately 1.2 times the tension corresponding to the ambient temperature and the terminated in the ending clamp of the temporary arrangement.

7.6.28. REGULATING EQUIPMENT IN ACTION

The regulating equipment is put in to action with the counterweight at the correct height above rail level and with distance between pulleys or the regulating equipment corresponding to a temperature of 35 degree 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.

7.6.29. FINAL ADJUSTMENT

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, insulator and term 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 are arm clearance.

7.6.30. CONCLUDING REMARKS

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 turnbuckle is inserted in the temporary termination.

The use of leveling lathes is recommended for the following reasons:

(i) The accuracy of adjust is greater than that with a dynamometer.

(ii) No traffic block is required for this operation.

(iii) It obviates the necessity initial tension of the catenary accurately thus permitting a reduction in the period of traffic block required for the wiring train.

2. If feasible, without any hindrance to progresses of works, the catenary may be maintained at stringing tension for a period of 48 hrs. before checking sag and clamping it to the brackets. This would ensure equalization of tension in different spans. Before clamping the catenary to the brackets, the sag should however be checked in to spans as indicated in Para-7.6.23.

3. 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. The contact wire should not be suspended from the catenary until the latter is clamped on the brackets.

(ii) The tension in the contact wire before termination should be about 1500 Kgf. This will ensured that sag is not excessive.

(iii) The adjustment of tension and checking of sag of the catenary wire is carried out as if the contact wire had not 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-7.6.27.

4. When the contact wire is under tension creep takes place which results in an increase in the length of wire and consequently the droppers and the equalizer 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 equalizer plates, all in the vertical position and the necessity for any further adjustment 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 the 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 conductor it should be ensured that two marks are in the same relative longitudinal position as they were before the removal of the temporary arrangement.

PART – VII

INSPECTION AND TESTING

7.7.1. SCOPE

This chapter deals with the inspection and testing of completely erected overhead equipment, switching station, booster transformer station and L.T. transformer stations supply as provided in Part-I.

7.7.2. OVERALL PERFORMANCE

The overall performance of the overhead equipment should be such as would permit collection of current by electric rolling stock with full load at speeds, up to and including the maximum specified for the design of overhead equipment, smoothly, without mechanical shocks or prejudicial sparks (See Para 9.1.10) and without under heating in the case of other equipment.

7.7.3. RESPONSIBILITY

The general tests of overall performance stipulated below and only supplementary to other tests on structures, foundations, equipment, components and fittings as specified in Chapter - IX, part – II, III & 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.

7.7.4. TESTS OF OHE

(a) GENERAL

As soon as a section is ready for inspection and testing the contractor shall advice the purchaser in writing. Test to be carried out by the purchaser will be done in presence of the contractor's representative and shall include the following apart from the other reasonable tests that the purchaser may like to conduct with a view of 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 2500 volt Megger.

(c) CONTINUITY

The electrical continuity of the line and existence of bad contracts, if any will be tested with a Megger.

(d) ELECTRICAL INDEPENDENCE

The electrical independence of individual elementary sections in relation to one another shall 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 overhead 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. Tolerances that will be permitted on the dimensions indicated in the approved drawings are shown in Chapter –IX, part-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 that are likely to be frequently traversed.

(h) MECHANICAL BEHAVIOUR

Mechanical behavior of the entire equipment shall be tested at various speeds under normal pantographs pressure without energizing the overhead equipment.

(i) ENERGISING

If the overhead equipment, after being subjected to the above test in an unenergised condition, is found to be satisfactory, it will be energized with the normal 25 KV AC supply.

(j) POWER COLLECTION

Tests shall then be conducted to check if the power collection performances of the overhead equipment satisfactory after ensuring that the contact wires are adequately clean. For the purpose and observation core shall be attached next to the electric locomotive. The behavior of the overhead 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.

7.7.5. INSPECTION AND TESTING OF SWITCHING STATION ETC.

(a) GENERAL

As soon as a switching station, booster transformer station or L.T. supply transformer station is ready for inspection and testing, the contractor shall advise the purchaser in writing. Testing will be carried out by the purchaser at contractor's cost jointly with the contractor. These shall include the tests, which the purchaser may like to conduct with a view to assure him of the soundness of the equipments and their erection in compliance with these specifications. 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) 2500 V and 500 V megger.

(iii) Earth meager and accessories.

(iv) Continuity test apparatus.

(v) Avometer.

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 conditions, painting, plastering, cleanliness of all insulators etc. and compliance with Indian Electricity Rules.

(c) OPERATION TEST

This test will be conducted on every individual items of equipments 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 operation does not cause undue strain on the equipments. The operation test will be carried out with the high-tension installation disconnected from the supply, but by actuating power devices where shall be provided. Continuity test of hightension connections after setting such interrupters and isolators in their respective positions shall also be conducted as per 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 2500V/500V meager or as required.

(e) DI-ELECTRIC STRENGTH OF OIL

The di-electric strength of the oil of the Booster transformer & LT supply transformer, at each station shall be tested before commissioning in accordance with IS: 335-1983 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.

(g) INTERRUPTORS

Operation of trip and close coils for interrupters shall be tested for satisfactory performance with the respective equipments de-energized.

7.7.6. EARTHING

(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 overhead 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.

7.7.7. DETAILS PROCEDURES FOR TESTS

The detail 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.

PART – VIII

PARTICULAR SPECIFICATIONS

7.8.1. INTRODUCTION

This part of the specification is complementary to Part-I

7.8.2. LOCATION

The section is located within entire Katihar Division.

7.8.3. TRACKS TO BE EQUIPPED

The routes and track lengths of the sections to be equipped with overhead are as under: SECTION TKM As mentioned in the NIT As mentioned in the NIT

7.8.4. GENERAL PARTICULARS

(a) The sections are generally passes through open country in domestic area. The soil character strips of the entire area are generally normal soil. The type of soil ranges from normal to filled up 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

The section is located within entire Sealdah Division.

(c) Remodeling works affecting the tracks to be wired will be intimated as a when the work is planned/commenced at various stations.

7.8.5. CLIMATIC CONDITIOSN

(a) TEMPERATURE

For the overhead equipment which will be in open space a minimum temperature of 4 degree C and the maximum temperature of 65 degree C are to be considered. The mean temperature shall be taken as 35 degree C.

(b) RAINFALL

Rains occur generally from June to November. The average rainfall during the monsoon season is approx. 135 cm annually.

(c) HUMIDITY

The maximum relative humidity is nearly 50% to 95%.

(d) THUNDER STORMS

The region is subject to thunder storms during monsoon from June to September.

(e) WIND PRESSURE

This section falls in the Red Wind Pressure zone (IS: 875). Accordingly, the basic wind pressure 150 Kgf/Sqm. In terms if IS 875:87 amendment is to be adopted. Increased wind pressure is to be adopted on embankments more than 10 m i.e. 200 Kgf/Sqm. The Confirms with the wind pressure adopted by state Electricity Board for the design of their EHT transmission lines.

7.8.6. ROLLING STOCK

Electric locomotives with height not exceeding 4.165m their pantographs in the locked down position and Diesel locomotives 4.42m (14ft.6inch.) high would run on this section.

7.8.7. OVER DIMENSIONAL CONSIGNMENTS

The maximum height of over dimensional consignment which runs on this section is 4.80m (15’9”) with movement to specified lines.

7.8.8. POWER SUPPLY

Electric power will be supplied to the overhead equipment from adjacent/nearest FP/TSS on its completion.

7.8.9. L.T. SUPPLY TRANSFORMER STATIONS

Pole mounted auxiliary transformers will be installed for giving power supply to colour light signaling, repeater stations, switching stations, traction sub-stations, MEMU Shed and some other places as required by the purchaser In double line section, important stations, 1No. Auxiliary transformer will be provided at each station to be fed from one different elementary section.

7.8.10. TYPE OF OHE

The overhead equipment used will normally be of regulated conventional type. The egulated Tramway Type will be used for yards and sidings and semi-regulated in cross overs.

7.8.11. PEGGING PLANS

See Chapter -VII, part-V.

7.8.12. TRACTION SUB-STATION FEEDERS

25KV feeders from traction sub-stations to feeding posts are not envisaged at present.

7.8.13. TRACK CIRCUITS

Track circuits are to be provided by S&T and Civil Engg. Depts.

7.8.14. LABOUR AND MATERIALS

Unskilled labour is available almost all over the section while skilled labour would be available generally at the main towns in the section.

7.8.15. CONTRACTOR'S OFFICE

It is obligatory on the part of the contractor to establish an office at the HQs of Chief Electrical Engineer, Eastern Railway, Kolkata, for planning, design and for expeditious finalization of particular designs and working drawings. The office should be headed by a qualified engineer whose credentials shall be approved by the purchaser engineer. In addition, the contractor will have to establish field construction offices at convenient and approved locations for co-ordination and progressing of field works.

7.8.16. CONTRACTOR'S DEPOT AND WORK TRAINS

Suitable space shall be made available for the contractor to set up one main depot or the work. The exact location will be advised later on for work trains. However, additional work trains may be made available at the request of the contractor, if considered necessary by the purchaser to suit the time schedule for completion of works.

7.8.17. DURATION OF TRAFFIC BLOCKS

(a) Track occupation 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 time over a distance covered by one or two consecutive block sections. Work trains will normally be allowed to take advantage of block shadows. Normally, the total durations of block on any section will be maximum of 2 to 3 hrs. in a day for all the tracks in the section taken together, the total of blocks on any track being limited to 2-3 hrs. 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.

(b) Material train and blocks will not ordinarily be given for paying out the feeders except where crossing of track is involved which will have to be paid out manually generally. However, material train can be used to drop the feeder drums alongside the track. 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 TKM. For purpose of Para 1.2.28(c), the total block hours for completion of works shall also be taken as 5 per TKM.