

**EASTERN RAILWAY**  
**Sr. DSTE/ASANSOL**

**TENDER DOCUMENT**

**e-Tender No.: 28-SDSTE-ASN-2026-27**  
**(TWO PACKET SYSTEM TENDER)**

**Name of the Work: “Asansol Division – S&T Work i/c/w 1) Interlocking of LC Gates having TVU more than 10000 in Andal-Sainthia, Deoghar-Dumka, Mohanpur Jn.- Handsiha Section in Asansol Division and 2) Interlocking of LC Gates having TVU more than 10000 in UDL-BBI, UDL/LC-BQT, MDP-GRD Section in Asansol Division”.**

**Cost of work:** Rs.14,78,98,341.23/- (Rs. Fourteen Crore Seventy-Eight Lakh Ninety-Eight Thousand Three Hundred forty-one and Twenty-Three Paise Only)

(Manual offers are not allowed against this tender document and any such manual offer received shall not be considered and will be summarily rejected)

**Issued by**

**OFFICE OF Sr. DSTE/ASN**  
**EASTERN RAILWAY, ASANSOL DIVISION**  
**ASANSOL-713301**

**DETAILS OF DOCUMENTS ENCLOSED**

**INDEX**

<b>Sl. No.</b>	<b>DOCUMENT</b>	<b>PAGE No.</b>
0	Details of Tenderer	
1	TENDER NOTICE	4
2	INSTRUCTION TO TENDERER	5 to 24
3	CHECK LIST	25 to 27
4	ITEMS TO BE FURTHER NOTED BY TENDERER	28
5	GENERAL CONDITIONS OF TENDER	29 to 51
6	GENERAL CONDITIONS OF CONTRACT	Attached separately
7	SPECIAL CONDITIONS OF CONTRACT	53 to 80
8	FORMS OF TENDERS ETC.	81 to 172

Para 1–Details of Tenderer(s)

**Tenderer should quote his/their Name and Communication Details  
and upload accordingly.**

E-TENDER NOTICE NO.:

1. PARTICULARS OF THE PARTY:

- a) NAME: \_\_\_\_\_
- b) ADDRESS: \_\_\_\_\_
- (i) HOLDING NO./PREMISES: \_\_\_\_\_
- (ii) ROOM NO: \_\_\_\_\_
- (iii) STREET NAME: \_\_\_\_\_
- (iv) CITY/VILLAGE/TOWN: \_\_\_\_\_
- (v) DISTRICT: \_\_\_\_\_
- (vi) STATE: \_\_\_\_\_ PIN: \_\_\_\_\_
- c) PHONE NO.: \_\_\_\_\_ MOBILE: \_\_\_\_\_ WhatsApp No.: \_\_\_\_\_
- E. MAIL: \_\_\_\_\_
- d) PAN No.: \_\_\_\_\_ GST REGISTRATION NO.: \_\_\_\_\_
- e) Type of Firm: \_\_\_\_\_

2. DECLARATION BY THE PARTY:

I hereby, declare that the particulars given above are correct and complete. I have understood the scheme and agree to discharge the responsibility for which I am liable as participant under the scheme.

Encl:

(i) Photocopy of PAN. (ii) Photocopy of GST Registration certificate.

Date:  
stamp

Signature of the contractor with

**(Whether the firm is “Sole Proprietorship Firm/HUF/Partnership Firm/Joint Venture (JV) / Company registered under Companies Act-2013/ LLP Limited Liability Partnership)/Registered Society & Registered Trust”)**

**CHAPTER – 1**  
**TENDER NOTICE**

**EASTERN RAILWAY**  
**e-Tender No. 28-SDSTE-ASN-2026-27 dated 29.06.2026**

**1.0 Sr. DSTE/ASN for & on behalf of 'President of India' invites 'OPEN' e-tender in Two packet system from the experienced & established contractors having sufficient experience in similar work and satisfying minimum eligibility criteria on the prescribed form for the under noted work: -**

1	Name of work	“Asansol Division – S&T Work i/c/w 1) Interlocking of LC Gates having TVU more than 10000 in Andal-Sainthia, Deoghar-Dumka, Mohanpur Jn.- Handsiha Section in Asansol Division and 2) Interlocking of LC Gates having TVU more than 10000 in UDL-BBI, UDL/LC-BQT, MDP-GRD Section in Asansol Division.”
2	Approximate cost of the work	Rs. 14,78,98,341.23/-(Rs. Fourteen Crore Seventy-Eight Lakh Ninety-Eight Thousand Three Hundred forty-one and Twenty-Three Paise Only)
3	Bid Security	Rs.29,58,000 (Rs.Twenty-Nine Lakh Fifty-Eight Thousand )
4	Completion period of the work	18 (Eighteen) months.
5	Last date and Time of online submission (closing) of tender document	22.07.2026 upto 15.00 Hrs.
6	Validity of offer	90 days from the date of closing of tender.
7	Bidding System.	Two Packet Bidding System
8	Pre-bid Conference (Applicable in tender having advertised value more than Rs. 50 Crores)	Not Applicable
9	Tendering Unit	Sr. DSTE/ASN
10	Applicability of Technical Eligibility Criteria	Applicable
11	Applicability of Financial Eligibility Criteria	Applicable
12	Similar nature of work for this tender (for consideration of Technical Eligibility Criteria)	“Panel Interlocking or Route Relay Interlocking or Electronic Interlocking or IBH or Automatic Signalling or LC gate Interlocking”.
13	Applicability of Bid Capacity (Applicable in tender having advertised value more than Rs. 10 Crores)	For tenders having an advertised tender value exceeding ₹10 crore, the tenderer shall be required to satisfy the Bid Capacity criteria. The tenderer shall be qualified only if the Available Bid Capacity is equal to or greater than the value of the present tender.
14	Permissibility of Participation of Joint Venture Firms. (Applicable in tender having advertised value more than Rs. 10 Crores)	Yes
15	Applicability of Reverse Auction	Not Applicable

	(Applicable in tender having advertised value more than Rs. 50 Crores. - Authority: Railway Board's letter No. 2017/Trans/Policy/Pt-S dt. 28.03.2018)	
16	Applicability of Price Variation Clause (Applicable in tenders having advertised value above Rs. 2 Crores)	Applicable
17	Applicability of Advances to the Contractor. (Applicable in tender having advertised value more than Rs. 50 Crores.)	Not Applicable
18	Special Instructions, if any	Mentioned in Chapter 4 of This Tender Document
19	Website address, time and Date from which tender documents will be available	On Indian Railway's website i.e. <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> from 22.07.2026.
20	Website where tender bid can be submitted	<ol style="list-style-type: none"> <li>1. Bids are to be submitted online only.</li> <li>2. Tenderer/s must register on Indian Railways E-Procurement System (IREPS) site i.e. <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> for participating in e-tender system. Necessary changes, Corrigendum /Addendum if required, would be posted on this site only.</li> <li>3. Bidders will be able to submit their original/revised bids up to closing date &amp; time only.</li> <li>4. Manual bids/offers are not allowed against this tender. Any manual offer received shall be ignored.</li> </ol>

Sr. DSTE/ASN  
Eastern Railway, Asansol

## **Salient Features of the Tender**

This document is the Standard Tender Document which consists of the conditions of the tender, instructions to the tenders, Special conditions of the tender, specifications of the works & various Annexure etc.

### **1.1 Notes:**

1.1.1 Permitting downloading of tender document by Railway is facility for convenience of Tenderer/s. In case, tender document is not uploaded on website or download failure or incomplete document downloaded, Railway shall not be responsible in anyway. Railway shall not be responsible for any direct/indirect loss of business / Profit resulting from inability to use this facility.

1.1.2 The tenderer shall maintain the integrity of downloaded tender document and shall not make any change / alteration / deletion / tampering, whatsoever, in the downloaded documents. The tenderer offer shall be rejected and full earnest money shall be forfeited, in case it is detected after submission of offer, that they have made any modification in downloaded documents. In case such modification is noticed after award of contract, Railway is liable to terminate the contract on Contractor's default. In addition, Railway reserves the right to take action against the firm as deemed fit, which may include banning of business dealings with the firm and the firm is also liable to be prosecuted as per the law. In case of any dispute over the discrepancy noted in tender document submitted by Tenderer, the master document kept with Railway shall prevail and decision of Railway thereon shall be final and binding on the tenderer/contractor.

1.1.3 The tenderer/s shall keep him updated about any modification in e-tender notice and e-tender document issued by Railway through newspapers, website or any other means and shall act accordingly. Tenderers offer shall be rejected if he has/have not enclosed all the correction/corrigendum along with downloaded tender documents.

1.1.4 Tender without Earnest Money shall be summarily rejected.

1.1.5 Tender document available on IREPS website is free of cost.

1.1.6 The Joint Venture (JV) is permitted for tender value of Rs. 10 (Ten) Crore and above as per the latest General Condition of Contracts with up-to-date modifications. In case of joint venture firms participating in the tender, all conditions mentioned in Guidelines for participation of joint venture (JV) Firms in GCC are to be strictly adhered to, and all necessary documents should be enclosed by JV Firm along with the tender

1.1.7 After opening of the tender, any document/credential pertaining to the technical & financial eligibility and constitution of the firm will neither be asked nor be entertained/considered under any circumstances & no claim or representation whatsoever in this regard, from the tenderer shall be entertained. However, the railway reserves the right to ask for any clarification on the documents already submitted by the tenderer along with the offer.

1.1.8 The tender offer complete in all respect and with all documents is to be submitted (in PDF Format) online by e-tendering process through the website [www.ireps.gov.in](http://www.ireps.gov.in) as works

tender, up to the closing time/date as mentioned in the NIT. Tenderer can revise the bids any number of times till the closing time/date of the tender. No manual offers shall be accepted. Some original documents are required to be submitted to the office of the Sr. Divisional Signal & Telecom Engineer/ASN/Eastern Railway, DRM Office Asansol, Asansol-713301, latest by the closing time & date of the tender (mentioned in the N.I.T.) or as mentioned in GCC'2022 with up-to-date modifications. Tenderers may please note that if the said original documents are not submitted by the tenderers, the offer shall be considered invalid & offer shall be rejected summarily. All such papers should be sent in a sealed envelope (with name of work and tender no clearly written over the envelope) by speed post or by courier. It is the responsibility of the tenderer to ensure that the all documents are submitted in time. Any delay in the delivery of documents due to any reason shall not be accepted. Railway shall not consider the documents submitted after the date/time of opening of the tender. The complete list of original documents to be submitted.

1.1.9 The tender document cost, if applicable, and earnest money cost are to be paid through online payment mode or as mentioned in GCC'2022 with up-to-date modifications like net banking, debit/credit cards, payment gateway etc. available on portal of IREPS web site [www.ireps.gov.in](http://www.ireps.gov.in).

No other payment mode shall be accepted in respect of e-tendering.

1.1.10 Corrigendum Notice on IREPS– For the purpose of Corrigendum in the Tender, NIT period is splitted as under: -

- (a) **Advertisement period** – Time during which all information pertaining to tender shall be available but offers cannot be submitted.
- (b) **Offer Submission Period** –Fifteen days prior to opening of tender, during which tenderers can submit their offer.

Issue of 'corrigendum notice' is permitted as an exception only during Advertisement period. No corrigendum is permitted during offer submission period and cases requiring corrigendum during offer submission period shall be retendered. (Authority Railway Board's Letter No. 2015/CE-I/CT/5/1 dated-31/08/2016).

1.1.11 The tenderer for carrying out any construction work in West Bengal/Bihar/Jharkhand must get themselves registered from Registering Officer under Section-7 of the building and other workers (Regulation of Employment and Conditions of Service) Act,1996 and Rules made thereto by the Govt. of West Bengal/Bihar/Jharkhand. The tenderer shall be required to submit certificate of registration issued from the Registering Officer of the Govt. of West Bengal/Bihar/Jharkhand (Labour Department). For enactment of this act, the tenderer shall be required to pay cess @ 1% of cost of construction work to be deducted from each bill. Cost of materials shall be outside the purview of cess, when supplied under a separate schedule item.

1.1.12 Railway reserves its right, to either cancel the tender or reject the tender without assigning any reason thereof.

1.1.13 Tenderers are requested to

- Read the NIT, tender document along with the conditions etc, Tender schedule carefully and should agree to abide by the said documents.
- Abide by the **Indian Railways Standard General Conditions of Contract'2022**, with all correction slips up-to-date and to carry out the work according to the Special Conditions of Contract and specifications of materials and works as laid down by Railway in the annexed Special Conditions/ Specifications, Schedule of Rates with all correction slips up-to-date for the present contract. In case of difference, Special Condition shall prevail.



- To ensure that the person submitting the bidding on behalf of the firm, is the authorized person to represent the firm, to sign the tender & all other document on behalf of the firm.
- To ensure that the statement and document submitted with the offer are true and correct.
- To note that their offer will be subjected to the verification of all the information submitted with the tender.

1.1.14 GST (Goods and Services Tax) as approved by the Competent Authority will be applicable in this tender and as advised from time to time by the GST issuing authority.

## **1.2 Brief Scope of Work: -**

“Asansol Division – S&T Work i/c/w 1) Interlocking of LC Gates having TVU more than 10000 in Andal-Sainthia, Deoghar-Dumka, Mohanpur Jn.- Handsiha Section in Asansol Division and 2) Interlocking of LC Gates having TVU more than 10000 in UDL-BBI, UDL/LC-BQT, MDP-GRD Section in Asansol Division.”

## **1.3 Similar nature of work required as qualifying criteria in this case of tender is-**

“Panel Interlocking OR Route Relay Interlocking OR Electronic Interlocking OR IBH OR Automatic Signalling OR LC gate Interlocking”.

**1.3 Qualifying and Eligibility Criteria for the Tender (Para 10 of IR GCC 2022).**-The tenderer, other than JV and Partnership firm (for JV refer Para 17.15 & Para 18 of IR GCC 2022), should fulfill the Eligibility Criteria below

### **1.3.1 Technical Eligibility Criteria(Para 10.2 of IR GCC 2022):**

As mentioned in NIT and as per GCC'2022 with up-to-date modifications.

### **1.3.2 Financial Eligibility Criteria (Para 10.2 of IR GCC 2022):** As mentioned in NIT and as per GCC'2022 with up-to-date modifications

**1.4 Bid Security (Para 5 of IR GCC):** Bid Security as given in NIT as auto calculated by the system. Tenders without such Bid Security shall be summarily rejected.

Payment of Bid Security Deposit (Bid Security) in respect of e-tendering, should be accepted through net banking or payment gateway or as specified in IR GCC along with its amendment only.

1.5 In case the date of CLOSING mentioned above is declared Holiday/ Strike/Bandh or on any account, the said date shall automatically be substituted by next working day. The tender notice/documents are available on website <https://www.ireps.gov.in>. This facility is available during the above-mentioned period up-to closing date & time of the tender.

1.6 Payment will be remitted through NEFT. The tenderer must submit Scanned copy of the NEFT form mentioning the Bank Account Number, Type of Account, Name of the Bank with full address and the Bank Specific Code no., Branch Telephone no. & FAX no., MICR Code of Bank.

1.7 The tenderer shall submit along with the tender document, documents in support of his/their claim to fulfill the eligibility criteria as mentioned in the tender document. Each page of the copy of documents/certificates in support of credentials, submitted by the tenderer, shall be self attested/digitally signed by the tenderer or authorized representative of the tendering firm. Self attestation shall include signature, stamp & date (on each page). Tenders not accompanied by documentary evidence in support of eligibility criteria will be

summarily rejected. No post tender communication, in any form will be made or entertained, after opening of tenders, in this regard. Railways may however call for the originals of the credentials for verification or any clarifications/ confirmations on the contents of the documents submitted.

1.8 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-A0. Non submission of above certificate by the bidder shall result in summarily rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document.

1.9 Applicability of Service Tax will be governed by latest circulars/directives issued by competent authority, and the same will be mandatory on the part of the tenderer.

1.10 If the tenderer/s deliberately gives wrong information/whose credentials/ documents in his/their tenders and thereby create(s) circumstances for acceptance of his / their tender, Railway reserves the right to reject such tender at any stage, besides suspending business dealings for minimum of three years.

1.11 The work will be a turn-key project with certain inputs by Railway and as decided by Railway.

**1.12 Care in Submission of Tenders (Para 6 of IR GCC):**

- (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.

**1.12.1** The tenderers shall submit a copy of certificate stating that all their statements/documents submitted alongwith bid are true and factual. Standard format of certificate to be submitted by the bidder is enclosed as **Annexure-V of IR GCC 2022**. Non submission of above certificate by the bidder shall result in **summarily** rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested/digitally signed by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document.

## **1.19 INSTRUCTIONS TO TENDERERS**

**1.19.1** All mandatory fields marked with (\*) have to be filled in by the bidders.

**1.19.2** Before uploading the offer, please read carefully complete E-tender document including Annexed Document which contains Instructions to Tenderers, Indian Railways Standard General Conditions of Contract-2022, General Conditions of Tender, General Conditions of Contract, Special Conditions of Contract, Technical Specifications etc. as available on the page of Eastern Railway on the web site [www.ireps.gov.in](http://www.ireps.gov.in).

**1.19.3** Your digital signature on the E-Tender form will be considered as your confirmation that you have read and accepted all the conditions laid down in the documents referred in para above as well as schedule of tender consisting of techno-commercial offer form (including special conditions attached to E-Tender), unless specific deviation is quoted in the techno-commercial offer form.

**1.19.4** The prospective tenderers are advised to revisit the website 15 (fifteen) days before the date of closing of tender to note any changes/corrigenda issued for this tender. Website: [www.ireps.gov.in](http://www.ireps.gov.in).

**1.19.5** No Manual Offers sent by Post/FAX or in person shall be accepted against such e-tenders, even if these are submitted on the firm's letter head and received in time. The manual offer uploaded as attached document shall not be considered also. All such manual offers shall be considered as in-valid offers and shall be rejected summarily without any consideration.

**1.19.6** E-tender is not transferable and the same is to be uploaded with digital signature by the pre-authorized personnel of the tenderer, already registered with the site.

**1.19.7** If the required information asked for in the tender document is not furnished, the tender will be otherwise treated incomplete and hence will not be considered.

**1.19.8** The on-line bidding doesn't permit submission of offer after stipulated date and time of the e-tender. Hence there is no scope for late/ delayed tenders.

**1.19.9** In case of Two Packet System of bidding (as in this case), after scrutinizing the Technical Bids and short listing the tenderers, the Financial Bid shall be opened on a subsequent date only for those tenderers who will be qualifying Technical Bids as per eligibility/qualifying criteria laid down. The date of opening of Financial Bid will be advised

online. The Railway's decision in this regard will be final.

#### **1.20. RULES & GENERAL INFORMATION TO TENDERER**

i. Incomplete and Conditional tenders will generally not be considered and are liable to be rejected. The Railway also reserves the right to reject any special conditions stipulated by the Tenderer as considered unacceptable to the Railway. If any deviations from the General conditions/special conditions/Technical specifications & Requirements/Schedule of works & supplies are proposed by the tenderer, they should be mentioned on — Statement of Deviation (in forms & Annexures part).

##### **ii. WRONG INFORMATION BY TENDERER OR TAMPERING WITH TENDER DOCUMENT**

(a) If the Tenderer(s) deliberately give/s wrong information in his/their tender, create/s circumstances for the acceptance of his/their tender, the employer reserves the right to reject such tender at any stage.

(b) (i) 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.

(ii) 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.

iii. All the relevant documents shall be attached along with tender form as per terms and condition of tender.

##### **iv. ERRORS, OMISSIONS & DISCREPANCIES (IN THE TENDER DOCUMENT)**

(a) The Contractor(s) shall not take any advantage of any misinterpretation of the conditions due to typing or any other error and if in doubt shall bring it to the notice of the Tender Inviting Authority, without delay. In case of any contradiction only the printed rules, and books should be followed and no claim for the misinterpretation shall be entertained.

(b) If a Tenderer finds discrepancies in, or omission from the drawing or any of the Tender document or he has any doubt to their meaning, he should at once notify the Sr.DSTE/ER/ASN who may send a written clarification to all Tenderers.

##### **v. ERRORS, OMISSIONS & DISCREPANCIES (IN THE TENDER DOCUMENT)**

(a) The Contractor(s) shall not take any advantage of any misinterpretation of the conditions due to typing or any other error and if in doubt shall bring it to the notice of the Tender Inviting Authority, without delay. In case of any contradiction only the printed rules, and books should be followed and no claim for the misinterpretation shall be entertained.

(b) If a Tenderer finds discrepancies in, or omission from the drawing or any of the Tender document or he has any doubt to their meaning, he should at once notify the Sr. DSTE/Asansol/Eastern Railway, Asansol who may send a written clarification to all Tenderers.

**1.21 SYSTEM OF TENDERING-** The tender is being invited by Railway as applicable as

per existing guidelines as per GCC'2022 / MSOP'2018 etc.

**1.22 SUBMISSION OF OFFERS-**

- 1.22.1 The tenderer shall submit along with the tender document, documents in support of his/their claim to fulfill the eligibility criteria as mentioned in the tender document. Each page of the copy of documents/certificates in support of credentials, submitted by the tenderer, shall be shelf attested/digitally signed by the tenderer or authorized representative of the tendering firm. Self attestation shall include signature, stamp & date (on each page). Only those documents which are declared explicitly by the tenderer as “documents supporting the claim of qualifying the laid down eligibility criteria”, will be considered for evaluating his/their tender.
- 1.22.2 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 IR GCC. 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.
- 1.22.3 All documents in support of fulfillment of eligibility criteria with respect to completion of Similar nature of work for Technical Eligibility Criteria and in support of financial criteria, bid capacity etc. should be furnished along with the tender and should be submitted online at the time of tender bidding. Tenders not accompanied by documentary evidence in support of eligibility criteria will be summarily rejected. No post tender communication, in any form will be made or entertained, after opening of tenders, in this regard. Railways may however call for the originals of the credentials for verification or any clarifications/confirmations on the contents of the documents submitted. The Tenderer(s) shall furnish the details of all completed works, works in progress, existing commitments, balance amount of ongoing works with tenderer and also the works which are awarded to tenderer but yet not started upto the date of opening of tender. In case of no works in hand, a 'NIL' statement should be furnished. This statement should be submitted duly verified by Chartered Accountant. 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. A statement for bid capacity calculation shall also be submitted by the tenderer duly certified by Chartered Accountant.
- 1.22.4 Applicability of Service Tax will be governed by latest circulars/directives issued by competent authority, and the same will be mandatory on the part of the tenderer.
- 1.22.5 If the tenderer/s deliberately gives wrong information/whose credentials/ documents in his/their tenders and thereby create(s) circumstances for acceptance of his / their tender, Railway reserves the right to reject such tender at any stage, besides suspending business dealings for minimum of three years.
- 1.22.6 In case the date of CLOSING mentioned above is declared Holiday/ Strike/Bandh or on any account, the said date shall automatically be substituted by next working day.
- 1.22.7 Payment will be remitted through NEFT. The tenderer must submit Scanned copy of the NEFT form mentioning the Bank Account Number, Type of Account, Name of the Bank with full address and the Bank Specific Code no., Branch Telephone no. & FAX no., MICR Code of Bank.
- 1.22.8 The Tenderers are advised to visit the site of work conduct thorough survey of site and

acquaint themselves with the existing conditions, available installed equipments, signaling system and expected quantum of work in their own interest before submitting their offer. For this, the tenderer should contact Sr. DSTE/ASN/ER at his office.

1.23 The tender notice/documents is available on website [www.ireps.gov.in](http://www.ireps.gov.in). This facility is available during the above-mentioned period up-to closing date & time of the tender. Tenderer are requested to kindly check the websites regularly for any addendum or corrigendum issued.

1.24 The work will be a turn-key project with certain inputs by Railway and as decided by Railway.

1.25 All indoor works required for any alteration in the Interlocking Plan arising during the course of execution of this work shall be carried out by the contractor expeditiously without any extra cost. The outdoor equipment required for such alteration will be made available by the Railway.

1.26 **FUTUTRE DEVELOPMENT**– The contractor shall supply to the Railway free of charge all software update, data and specifications that may result from developments effected by him or his collaborator in the period of currency of contract including warranty period. The Railway reserves the right for such modified or improved versions in lieu of these originally quoted for, based on prices and other conditions mutually agreed upon.

1.27 (a) Tenderer(s) can bid the tender in the last 15 days prior to date of closing (Offer submission period) online through the [www.ireps.gov.in](http://www.ireps.gov.in) and this will be opened at scheduled date and time as specified in N.I.T.

(b) No manual offers shall be received for this tender.

(c) The tenderer must upload the documents/certificates in support of fulfilling the eligibility criteria as specified in Tender Notice and its corrigendums, if issued any.

(d) In addition to the information given in the prescribed form of the Technical Bid, the tenderer may also upload any additional relevant information connected with this tender if considered necessary, uploading copies of the documents relied upon.

(e) Submission of Tender does not bind the Railway Authority for any claim of any nature whatsoever.

**1.28 Opening of E-Tender:**

(a) The e-tenders will be opened online using the IREPS portal. No representative is required to be present for opening of technical bid tender and details of rates quoted and ranking of all the bidders etc shall be available to the bidders in the website after the opening of the tender financial bid after finalization of technical bid.

(b) In case the date of closing mentioned in the NIT Header of e-tender document is declared a holiday/bandh/strike etc. on any account, the date of closing tender online will not be changed as the application in the website of IREPS does not permit submission of any offer after closing date and time of the tender. However, opening of tenders online will be on the following working day after the closing date/time of tenders.

1.29 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.

**CHECKLIST OF ITEMS TO BE COMPLIED BY THE TENDERERS**

**A. List of following documents (Scanned copy) which are to be submitted by the tenderer along with their offer failing which the tender shall be summarily rejected.**

SI	Subject/Context	Required Documents/Form
<b>1.</b>	Bid Security (in terms of Para-5 for Bid Security of GCC'2022)	<p><b>A. ONLINE MODE-CASH</b> (no documentary proof required)</p> <p><b>B. ONLINE MODE-BG</b> (BG Scanned copy to be uploaded with Tender Documents)</p> <p>Note for B: -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 <b>(i.e. excluding the last date of submission of bids).</b></p>
<b>2.</b>	Documents related to Constitution of Firm	
<b>2(a).</b>	In case of Sole Proprietorship Concern (As per GCC'2022 with upto date modifications)	<p>Undertaking may be given. If not given</p> <p>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.</p>
<b>2(b)</b>	In case of a "Partnership Firm/Concern" (As per GCC'2022 with upto date modifications)	<p>(i) A Notarised copy of the Partnership Deed or a copy of the Partnership Deed registered with the Registrar</p> <p>(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 .</p> <p>(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 intenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP. (As per format given in Annexure-VA)</p>
<b>2(c)</b>	In case of a "Company" (As per GCC'2022 with up to date modifications)	<p>(i) Copies of the AOA / MOA (Article of Association/ Memorandum of Association) of the Company</p> <p>(ii) A copy of certificate of incorporation.</p> <p>(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 .</p>

<b>2(d)</b>	In case of a Registered Society & Registered Trust (As per GCC'2022 with up to date modifications)	<ul style="list-style-type: none"> <li>(i) A copy of certificate of Registration.</li> <li>(ii) A copy of Memorandum of Association of Society/TrustDeed</li> <li>(iii) A copy of Power of Attorney in favour of the individual to sign the tender documents and create liability against the Society/Trust.</li> <li>(iv) A copy of Rules &amp; Regulations of the Society.</li> </ul>
<b>2(e)</b>	In case of LLP (As per GCC'2022 with up to date modifications)	<ul style="list-style-type: none"> <li>(i) A copy of LLP Agreement,</li> <li>(ii) A copy of certificate of incorporation; and</li> <li>(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 .</li> <li>(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</li> </ul>
<b>2(f)</b>	In case of a "JV Firm" (As per GCC'2022 with up to date modifications)	<ul style="list-style-type: none"> <li>(i) A copy of Memorandum of Understanding (MoU) duly executed by the JV members on a stamp paper, shall be submitted by the JV alongwith the tender. The complete details of the members of the JV, their share and responsibility in the JV etc. particularly with reference to financial, technical and other obligations shall be furnished in the MoU.</li> <li>(ii) Power of Attorney/authorization duly Notarised by all JV constituents, in favour of the individual under whose digital signature key the tender document shall</li> </ul>
<b>2(f)(i)</b>	In case one or more of the members of the JV Firm is/are Partnership Firm(s), following documents shall be submitted: (As per GCC'2022 with up to date modifications)	<ul style="list-style-type: none"> <li>(i) A Notarised copy of the Partnership Deed or a copy of the Partnership deed registered with the Registrar.</li> <li>(ii) A copy of consent of all the partners or individual authorized by partnership firm, to enter into the Joint Venture Agreement on a stamp paper .</li> <li>(iii) A notarized or registered copy of Power of Attorney in favour of the individual to sign the MOU/JV Agreement on behalf of the partnership firm and create liability against the firm.</li> <li>(iv )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 (As per format given in Annexure-VA).</li> </ul>



<b>2(f)(ii)</b>	In case one or more of the members of the JV Firmis/are Proprietary Firm or HUF, following documents shall be submitted: (As per GCC'2022 with up to date modifications)	(i) A copy of notarized affidavit on Stamp Paper declaring that his Concern is a proprietary Concern and he is sole proprietor of the Concern OR he who is signing the affidavit on behalf of HUF is in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act on behalf of HUF.
<b>2(f)(iii)</b>	In case one or more members of JV is/are Companies, the following documents shall be submitted: (As per GCC'2022 with up to date modifications)	<ul style="list-style-type: none"> <li>(i) A copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement.</li> <li>(ii) The copies of MOA (Memorandum of Association) /AOA (Articles of Association) of the company</li> <li>(iii) Copy of certificate of incorporation</li> <li>(iv) A copy of Authorization/copy of Power of Attorney issued by the Company (backed by the resolution of Board of Directors) in favour of the individual to sign the tender, sign MOU/JV Agreement on behalf of the company and create liability against the company .</li> </ul>
<b>2(f)(iv)</b>	In case one or more members of JV is/are LLP firm, the following documents shall be submitted/uploaded (As per GCC'2022 with up to date modifications)	<ul style="list-style-type: none"> <li>(i) A copy of LLP Agreement</li> <li>(ii) A copy of Certificate of Incorporation of LLP</li> <li>(iii) A copy of resolution passed by partners of LLP firm, permitting the Firm to enter into a JV agreement</li> <li>(iv) A copy of Authorization /copy of Power of Attorney issued by the LLP firm (backed by resolution passed by the Partners) in favour of the individual, to sign the tender and/or sign the MOU/ JV agreement on behalf of the LLP and create liability against the LLP.</li> <li>(v) 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. Any Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the Standard General Conditions of Contract (As per format given in Annexure-VA)</li> </ul>
<b>3.</b>	Power of attorney (As per GCC'2022 with up to date modifications.)	Power of attorney duly notarized and in favour of a specific person to sign the tender, submit the tender and further deal with the tender/contract upto the stage of signing the agreement.
<b>4.</b>	<u>Technical Eligibility Criteria:-</u> Completion/Performance Certificate in support of 30%/40%/60% similar nature of work.	All documents in support of fulfillment of Technical Eligibility Criteria as per Para NIT and GCC'2022 with up to date modifications along with Scanned copy (in PDF Form) of the work(s) completion certificate(s) as per the requirement of Technical eligibility criteria of the tender.

5.	<u>Financial Eligibility Criteria</u>	All documents in support of fulfillment of Financial Eligibility Criteria as per Para NIT and GCC'2022 with up-to-date modifications, duly filled up Annexure-VIB of GCC'200 with up-to-date modifications along with Certificate issued from Chartered Accountant.
6.	Annexure –A of Chapter-Format of Tender Document.	Declaration/Undertaking (As per Annexure-A of Tender Document) to be submitted regarding Employment /partnership of Retired Railway Employees.
7.	Annexure-A2 and A3 of Chapter-Format of Tender Document. <b>(Applicable for tender value more than Rs.20 crore)</b>	All documents related to existing commitments and balance amount of ongoing works and Value of completed works/executed works and payment received during the current and /last three financial years immediately preceding the current financial year, up to date of inviting of tender)
8.	Annexure – S-1 & S-2 of Chapter-I of Tender Document <b>(for partnership firm)</b>	If tender submitted on behalf of Partnership Firm, relevant Annexures S-1 and S-2 as Declaration to be submitted by the tenderer along with tender document.
9.	Annexure-V & V(A) (as per GCC'2022 with up-to-date modifications.	<b>Certificate</b> to be submitted by tenderer along-with the tender as per the proforma enclosed vide Annexure-V & V(A) of GCC,2022 with up to date modifications. The Tenderer(s) shall furnish the details of all completed works, works in progress, existing commitments, balance amount of ongoing works with tenderer and also the works which are awarded to tenderer but yet not started upto the date of opening of tender. In case of no works in hand, a 'NIL' statement should be furnished. <b><u>This statement should be submitted duly verified by Chartered Accountant. 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. A statement for bid capacity calculation should be submitted duly certified by Chartered Accountant.</u></b>
10.	Annexure-VI of of GCC'2022 with upto date modifications ( <b>Bid Capacity</b> )	Bid Capacity document to be submitted as per Para 10.3 & 17.15.3 duly filled up Annexure-VI, as per GCC'2022. <b>(Applicable for tender value more than Rs.10 crore).</b>

**B.List of following important documents which are to be submitted by the tenderer along with their offer.**

1	Details of <b>NEFT (in PDF format)</b> as per <b>Annexure Q</b> of the tender document.
2	<b>TENDER FORM</b> as per Annexure-I of Chapter-II of Annex Tender document duly signed by tenderers/tenderer.
3	<b>Details of agency's own equipment's</b> proposed to be included [for details please refer Annexure-VII of Ch-forms of Tender document].
4	Have you furnished the details of year-wise contractual payment received during the last three financial years & current year regarding meeting financial eligibility Criteria?
5	Whether the details of contractual amount received have been duly certified by Chartered Accountant.
6	Have you furnished List of similar type of work completed and "works on

	hand” indicating description of work, contract value, date of award of contract along with details of contractual amount received as per Annexure-A3.
7	Have you furnished Annual / Audit reports (along with details of year wise turnover / balance sheet) from registered Chartered Accountant for the last three Financial Years?
8	Have you enclosed Power of Attorney, Partnership Deed if any, Constitution of firm & copies connected to legal document?
9	Have you enclosed a declaration that the tenderer accept all the terms and conditions of Railways. In case of deviations, have you furnished —Statement of Deviations (ANNEXURE-E) or Written No Deviation clearly against each item mentioned in Annexure-E?
10	Have you uploaded the scanned copy of requisite power of attorney or such other documents empowering the individuals or the individuals to sign the Tender document?
11	Have you submitted documents pertaining to Trade License indicating License No.?
12	Have you made yourself aware that Contractor has to ensure proper arrangement at site with one table and required number of chairs (not less than 4) at each station so that work review at the site may be done by railway personnel?
13	Have you read and agree to the payment and retention money terms in Special Condition of contracts?
14	Have you quoted your rates considering all payment terms, special condition of contracts, taxes and other incidental charges etc.?
15	Have you entered Name and Address of witness properly in submitted PoA?
16	Have you kept the offer valid for a minimum period, as mentioned in NIT, from the date of opening of tender?
17	Have you enclosed a declaration that the tenderer accept all the terms and conditions of Railways? In case of deviations, have you furnished —Statement of Deviations (ANNEXURE-E) or Written No Deviation clearly against each item mentioned in Annexure-E? In case of non-submission of Annexure-E, it will be assumed to be submitted with no deviation.

**CERTIFICATE BY TENDERER:**

**It is certified that the above check list of items has been complied.**

**Signature of Tenderer**  
With Seal.

## ITEMS TO BE FURTHER NOTED BY TENDERER:

1. Acknowledge of Letter of Acceptance within 7 days from the date of issue.
2. The successful tenderer will be required to furnish a Performance Guarantee as per clause of the tender document.
3. Contract Agreement to be executed by the successful tenderer as per GCC'2022 with up-to-date modifications.

## 4 SPECIAL CONDITIONS BY TENDERERS:

The tenderers are normally not expected to make any special conditions/stipulations of their own and are expected to submit their tender in accordance with the conditions/stipulations contained in these documents. If, however, the tenderer wishes to make any special conditions/stipulations or wishes to intimate the Railway of any matter of importance, he may do so in Query tab of respective e-tender/in a separate sheet, the same should be enclosed with Price Bid document of tender document through covering letter. Conditions/stipulations of general nature having nonfinancial implication may be enclosed through a covering letter in part of the tender documents. Such conditions/stipulations shall be a part of the contract in case of acceptance of the tender, only to the extent explicitly accepted by the Railway Administration. The accepting authority reserves the right not to accept any such special conditions/stipulations made by the tenderer and may reject the tender as unacceptable without any reference to the tenderer or may ask the tenderer to withdraw any or all such conditions/stipulations before awarding the contract and in the event of his refusal to do so may not accept this tender.

## 5 ERRORS, OMISSIONS & DISCREPANCIES (IN THE TENDER DOCUMENT)

(a) The Contractor(s) shall not take any advantage of any misinterpretation of the conditions due to typing or any other error and if in doubt shall bring it to the notice of the Tender Inviting Authority, without delay. In case of any contradiction only the printed rules, and books should be followed and no claim for the misinterpretation shall be entertained.

(b) If a Tenderer finds discrepancies in, or omission from the drawing or any of the Tender document or he has any doubt to their meaning, he should at once notify the Dy. CSTE/Construction/Howrah, Eastern Railway, Kolkata who may send a written clarification to all Tenderers.

**Note:** The above check list is not exhaustive. The Tenderer must go through carefully the entire booklet and submit the tender complying with all the conditions/provisions/instructions mentioned therein irrespective of the fact that they have been highlighted in the check list or not.

**CHAPTER – 2**  
**GENERAL CONDITION OF TENDER**

**EASTERN RAILWAY**  
**GENERAL CONDITIONS OF TENDER**

<b><u>PARA No.</u></b>	<b><u>DESCRIPTION</u></b>
2.1	TENDER DOCUMENT
2.2	OFFICIAL TENDER FORM
2.3	SCHEDULE / SCHEDULES
2.4	FLUCTUATION IN MARKET RATES
2.5	SCHEDULE COVERING DELIVERY OF MATERIALS
2.6	BID SECURITY
2.7	COMMENCEMENT & COMPLETION DATES
2.8	SUBMISSION OF RECEIPT OF BID SECURITY/ SECURITY DEPOSIT
2.9	CONSTITUTION OF FIRM, SIGNING OF TENDER & ADDRESS
2.10	PREVIOUS EXPERIENCE & DECLARATION
2.11	RAILWAY NOT BOUND TO ACCEPT ANY TENDER
2.12	SECURITY DEPOSIT
2.13	CLARIFICATION OF BIDS SUBMITTED
2.14	CONFIDENTIAL DETAILS
2.15	EXECUTION OF CONTRACT AGREEMENT
2.16	PERFORMANCE GURANTEEE
2.17	EQUIPMENT AND SERVICES TO BE OFFERED
2.18	VARIATION
2.19	PROCUREMENT OF SUPPLY ITEMS
2.20	MANDATORY UPDATING OF ABOUT DATA ON RAILWAYS'S SHRAMIKKALYAN PORTAL BY CONTRACTOR
2.21	PATENTS
2.22	PAYMENT METHOD WITH GST
2.23	CANVASSING AND BRIBERY
2.24	<u>TIME LINE AND METHODOLOGY FOR EXECUTION OF THE DISTRIBUTED E.I. WORK OF Raniganj</u>
2.25	MISCELLANEOUS

## **2.1 TENDER DOCUMENT:**

- 2.1.1 The intending tender should study the General Conditions of Tender, Indian railways Standard General conditions of contract'2022 with up-to-date modifications, Special Conditions of Contact, Instructions to Tenderer, Signal Engineering Manual, Technical Specification, Drawings, Documents, Schedules IRS Conditions of Contact for the Stores department with up-to-date modifications, Telecom Manual etc. enclosed all herein after collectively referred to as Tender specifications.
- 2.1.2 Any submission of a quotation by the tenderer shall be deemed to have been done after careful study examination of these documents with full understanding of the implications shall be deemed to have been accepted, unless specially commented upon otherwise by the Tenderer in his quotation. Failure to adhere to one or all these instructions may render his offer liable to be rejected without any reference.
- 2.1.3 The typical drawings referred to in the tender shall be available in the office of the Sr. DSTE/Asansol/Eastern Railway. These can be seen and clarifications obtained during advertisement period.

## **2.2 OFFICIAL TENDER FORM:**

- 2.2.1 Sr. DSTE/ER/ASN, on behalf of President of India, invites quotations from established, experienced and reliable contractors who have adequate experience for this type of work.
- 2.2.2 Tender documents can be obtained from the website [www.ireps.gov.in](http://www.ireps.gov.in).
- 2.2.3 The tenderer must submit his tender in time within the last date of tender submission of the tender stating therein all the rates, quantities, prices, taxes & duties of the tender, giving all information and particulars asked for.
- 2.2.4 Please note that if any change/addition/deletion with malafied intension or otherwise, is made by the bidder, the tender is liable for summarily rejection. Further if the same is detected at any stage even after award of the tender, all necessary action including banning of business would be taken.
- 2.2.5 Offer **letter complete as per Tender Forms (First Sheet & Second Sheet) as per Annexure-I in next pages, duly signed and stamped on each page is to be submitted by the tenderer.**

**EASTERN RAILWAY**  
**TENDER FORM (First Sheet)**

(To be filled by Tenderer)

Tender No. 28-SDSTE-ASN-2026-27

Name of Work: "Asansol Division: S&T Work i/c/w (1) Interlocking of LC Gates having TVU more than 10,000 in Andal -Sainthia, Deoghar - Dumka, Mohanpur Jn. - Handsiha sections of Asansol Division. (2) Interlocking of L. C. Gate having TVU more than 10000 in UDL- BBI, UDL/LC-BQT, MDP-GRD Sections."

To  
The President of India  
Acting through the \_\_\_\_\_ 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 \_\_\_\_\_ 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 \_\_\_\_\_ Railway at the rates quoted in the attached Schedule of approximate 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, Schedule of Rates 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 Witnesses: \_\_\_\_\_

(1) \_\_\_\_\_ Signature of Tenderer(s)

Date \_\_\_\_\_

(2) \_\_\_\_\_ Address of the Tenderer(s)

\_\_\_\_\_



**TENDER FORM (Second Sheet)**

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) Schedule of approximate 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 \_\_\_\_\_ or obtained from the office of the Chief Engineer, \_\_\_\_\_ Railway on payment of prescribed charges.
- (e) Schedule of Rates 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 \_\_\_\_\_ and / or Chief Engineer, \_\_\_\_\_ 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 Schedule of Rates 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 Schedule of approximate quantities attached. The quantities shown in the attached Schedule 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 Schedule. 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 \_\_\_\_\_ months from the date of issue of acceptance letter.

## **2.3 SCHEDULE/SCHEDULES:**

**2.3.1** The Tenderer(s) should quote his percentage rates of the various groups as per rate index taking into consideration all the conditions of these documents and the Special Conditions mentioned in the various schedules.

**2.3.2 RATES IN FIGURES AS WELL AS IN WORDS:** The Tenderer(s) are required to quote their rate(s) and all other figures, having financial implications wherever occurring in these documents, in numerals as well as in words. **In case of difference between the two, the rates written in words shall be taken into account for all purpose connected with this tender.**

**2.3.3** Rates in % above /below: where rates have to be quoted in % above/below. The tenderer should strike out either 'above' or 'below' whichever is not applicable, otherwise rates will be considered as 'above' for all purpose connected with this tender.

**2.3.4** The prices offered against the schedules/groups will also include the following elements of cost without fail:

i) Cost of Carriage, loading and unloading at Inspector's store, and transportation of all materials required to the actual site of the work i.e., place of installation and all other incidentals connected there-with excluding the materials supplied by the Railway. For materials supplied by the Railway the execution rate should include transportation charges from the Railway Stores to the site & collection of balance materials left over after the work, if any, and handling over to Railway store.

ii) All rates quoted in the tender shall be deemed to be inclusive of all fees, duties, taxes, inspections charges, royalty, rent etc. payable by the contractor to the Government or any public body or compensation to local authorities in respect of land, structures and all materials supplied for the work or other duties of expenses and normally no additional rate will be paid or claims entertained on this account by the Railway. To be added in same heading above.

iii) All other miscellaneous expenses necessary for the execution of the work and fulfilment of the contractual obligations.

**2.3.5** i) The rate tendered for in the schedule/s attached to the tender document and accepted by the Railway shall form the basis for payment for works done/materials supplied by the contractor.

ii) The rates quoted by the contractor shall take into account the difficulties and delays encountered in course of work and nothing extra on these account shall be paid for.

**2.3.6** If any departure or substitution from the particular specification is involved this should be clearly indicated in the offer giving full details of deviations. If the offer is in accordance with the stipulated specification, "NO DEVIATION" should be clearly stated. Quotation not complete in this respect are likely to be summarily rejected. If a particular point in the specification is not clear, the same should be got clarified before submitting the quotations. No price alternation will be permitted after opening of the tender on grounds of the technical requirement not having been properly understood in the first instance by the suppliers.

**2.3.7 RATE TO INCLUDE ALL TAXES :-** All rates quoted in the tender shall be deemed to be inclusive of all fees, duties, taxes, inspections charges, royalty, rent etc. payable by the contractor to the Government or any public body or compensation to local authorities in respect of land, structures and all materials supplied for the work or other duties of expenses and normally no additional rate will be paid or claims entertained on this account by the Railway.

**2.3.8** If any “Entry Tax” is leviable, the same should be paid by Supplier/Contractor and reimbursement will be done by Railways on production of documentary evidence in original. This will be applicable only when price quoted by firm does not include ‘Entry Tax’.

**2.4 FLUCTUATION IN MARKET RATES:**

The rates quoted by the Tenderer(s) and accepted by the Railway Administration shall hold good till the completion of the work and are not subjected to fluctuation(s) of any kind, save and except what is admissible under the Price Variation Clause contained in these documents.

The tenderer for carrying out any construction work in West Bengal/Bihar/Jharkhand must get themselves registered from Registering Officer under Section-7 of the building and other workers (Regulation of Employment and Conditions of Service) Act, 1996 and Rules made thereto by the Govt. of West Bengal/Bihar/Jharkhand. The tenderer shall be required to submit certificate of registration issued from the Registering Officer of the Govt. of West Bengal/Bihar/Jharkhand (Labour Department). For enactment of this act, the tenderer shall be required to pay Cess @ 1% of cost of construction work to be deducted from each bill. Cost of materials shall be outside the purview of cess, when supplied under a separate schedule item.

**2.5 SCHEDULE COVERING DELIVERY OF MATERIALS:**

- i) a) The time Schedule shall be as referred to NIT.
  - b) Date of issue of Letter of Acceptance (D).
  - c) Time of completion of the work = D+18 Months.
- ii) Supply of materials should be regulated proportionate to the physical progress of the work & consent of the Officer controlling the work. The tenderer should submit with the Offer a ‘BAR CHART’ indicating detailed time period by which supply of materials & execution of various activities including Testing & Commissioning will be completed.
- iii) The tenderer should offer the time schedule for supply of materials, the duration of erection and completion period for the work and it should be kept the barest minimum.

**2.6 Bid Security**

The tenderer must submit prescribed amount of Bid Security as mentioned in the NIT.

**2.7 COMMENCEMENT & COMPLETION DATES:**

**2.7.1** The contract covered by this Tender shall be deemed to commence from the date of issue of Letter of Acceptance (D).

**2.7.2** After signing of the contract agreement, contractor shall furnish during the first week of every month a progress report signed jointly by the representative of both Railway and Contractor showing the materials and the equipment's delivered & received at site and the progress of work carried out at site during the preceding month to the executive officer and to Sr. DSTE/ASN, for reviewing the work, failing which action may be taken as per General Condition of Contract 2022 with up to date modifications.

**2.8 SUBMISSION OF RECEIPT OF Bid Security/SECURITY DEPOSIT:** The tenderer shall attach scanned copy of the Receipt of Bid Security/ Security Deposit shall be uploaded on e-procurement portal while applying to the Bid.

**2.9 CHANGE OF ADDRESS:**

**2.9.1** The tenderer must keep informed the Railway of any change of address during the currency of tender work in his own interest.

**2.9.2 TENDERER'S POSTAL ADDRESS:**

Every tenderer shall state in the tender, his postal address fully and clearly in - "Form of Tenders". Any communication sent in time to the Tenderer by post at the said address shall be deemed to have reached the Tenderer duly and timely, notwithstanding the fact that the communication could not reach the tenderer at all or in time because of any inaccuracy or defect in the said address. Important documents shall be sent by Registered post

## **2.10 CONSTITUTION OF FIRM, SIGNING OF TENDER & ADDRESS:**

(a) The Tender shall be signed by individual or individuals legally authorized to enter into commitments on behalf of the Tenderer(s). Any individuals or individuals signing the tender documents or other documents connected there with, should specify whether he is signing the said documents: -

(i) As a Sole Proprietor of the firm or Attorney of the Sole proprietor.

or

(ii) As a Partner of partnership firm

or

(iii) For the firm per procure

or

(iv) As a director, manager or secretary in a Limited company (duly authorized by a resolution passed by the board of directors or in presence of the authority conferred by the memorandum of association).

(b) In the case of a firm not registered under the Indian partnership act, all the partners or the attorney duly authorize by all of them should sign the tender documents and all other concerned documents.

(c) Requisite power of attorney or such other documents empowering the individuals or the individuals to sign the Tender document should be furnished in original, along with the Tender.

(d) The Railway shall not be bound by any Power of Attorney granted by the Contractor or by changes in the composition of the firm made subsequent to the execution of the Contract agreement. It may, however, recognize such Power of Attorney and changes, after obtaining legal advice to the satisfaction of the Railway, the cost of which will be borne by the Contractor.

### **2.10.1 ADVICE OF CANCELLATION OF DOCUMENTS BY TENDERER**

The cancellation of any document such as Power of Attorney/Partnership Deed etc. should be forthwith communicated by the contractor to the Railway Administration in writing, failing which the Railway Administration shall have no responsibility or liability for an action taken on the strength of the said document.

**2.10.2 EX. RAILWAY OFFICERS AS TENDERER(S) :** Should a Tenderer be, himself, a retired employee having held a Gazetted rank in any of the Railways, owned and administered by the President of India, or should a Tenderer, being a partnership firm, have, as one or more of its partners, such retired employee(s) as aforesaid, or, should the Tenderer being an incorporate company, have any such person(s) as aforesaid, as sits Director(s), or, should the tenderer have, in his employment, any person(s), as aforesaid, full information of such person(s) shall be submitted.

Further, in cases, where such a person(s), as aforesaid, has retired from the Railway service within two years of the date of opening of the Tender, the Tenderer(s) shall furnish a copy of the permission of the President of India, permitting such a person(s), as aforesaid, to associate himself with the Tenderer(s), in any of the capacity as aforesaid.

#### 2.10.3 TENDERER(S) RELATIVE EMPLOYED AS GAZETTED OFFICER

In case of a Tenderer(s) being an individual having a relative(s) employed in any Gazetted capacity in the Eastern Railway or in the case of partnership firm/or company incorporated under the Indian Company law, should any partner(s)/ Director(s) or relevant(s) of the partner(s)/Director(s) or share holder (s), be employed in any Gazetted capacity in the Eastern Railway, detailed information about such Gazetted employee(s) shall also be furnished.

2.10.4 In the case of a firm not registered under the Indian Partnership Act, all the partners, or the attorney duly authorized by all of them should sign the tender and all other connected documents.

2.10.5 The original documents empowering the individual or individuals to sign should be furnished to the Purchaser for verification if required.

2.10.6 The Tenderer whose tender is accepted shall be required to appear in the Office of the Sr. DSTE/ASN to execute the Contract Agreement as stipulated in the General Conditions of the Contract'2022 with modifications up-to-date. In case of a Firm or Corporation or consortium, authorized representative along with power of attorney, can appear for this purpose.

2.10.7 In the event of any Tenderer whose Tender either in part or in full is accepted refuses to execute the Contract documents, the Railway may determine that such Tenderer has abandoned the Contract and thereupon his Tender and the acceptance thereof shall be null and void and the Railway shall be entitled to forfeit the Bid Security as liquidated damages for such default without prejudice to any other right or remedies open to the Railway.

## **2.11 PREVIOUS EXPERIENCE & DECLARATION:**

2.11.1 The Tenderer MUST submit the following along with his bid (Not applicable for tenders costing below ₹ 50 lakhs):

- i) Details of similar jobs completed or under execution along with cost, specified completion period in the contract and actual completion period, Time taken for completion of these works with reason for delay (if any), Completion Certificate from Executive. Qualification criterion as specified in Tender Notice in respect of the works with values required to be completed will be applicable.
- ii) Jobs in hand with contract values and completion date.
- i) Performance certificate from the clients for similar works.
- ii) Particular of consultants to assist the company in the work, if any.
- iii) The tenderer must have received contractual payments in the previous three financial years and the current financial year up to the date of opening of tender, at least 150% of the advertised value of the tender. The tenderers shall submit Certificates to this effect which may be an attested Certificate from the concerned department / client and/or Audited Balance Sheet duly certified by the Chartered Accountant etc.

2.11.2 Have minimum construction machinery, tools & plants and vehicles etc. required for satisfactory execution of the works. Details to be submitted along with bid.

2.11.3 The tenderer shall not scribble or stipulate any special condition in the tender documents. Special condition, if any, may be indicated in a separate covering letter.

**2.12 THE RAILWAY NOT BOUND TO ACCEPT ANY TENDER:** The Railway shall not be bound to accept the lowest or any tender or to assign any reason for non-acceptance or rejection of a tender. No tender shall be deemed to have been accepted unless such acceptance shall have been notified in writing to the successful tender by the Railway. The Railway Reserves the right to accept any tender in respect of the whole or any portion of the work specified in the tender or to divide or reduce the work or to accept any tender for less than the tendered quantity without assigning any reason whatsoever.

The accepting authority reserves the right to split up the work without reference to the tenderer(s) and may accept the tender in respect of any portion of the work.

**2.13 SECURITY DEPOSIT:** It will be followed as per clause 16(1) of GCC'2022 with up-to-date modifications.

**2.13.1 (i) Refund of Security Deposit:** It will be followed as per clause 16(2)(i) of GCC'2022 with up-to-date modifications.

**2.13.1 (ii) Forfeiture of Security Deposit:** It will be followed as per clause 16(2)(ii) of GCC'2022 with up-to-date modifications.

**2.13.2** 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 of GCC'2022 with up-to-date modifications will be payable with interest accrued thereon. (Clause 16 (3) of GCC'2022)

**2.13.3 EXTENSIONS OF SECURITY DEPOSITS:** The tenderer should take necessary action for extension of validity of the Fixed Deposit receipt towards Security Deposit one month before the expiry of same and submit the extension of the validity of the Fixed Deposit receipts to the administration for keeping in their custody during the currency of the contract.



**2.14 CLARIFICATION OF BIDS SUBMITTED:** To assist in the examination, evaluation and comparison of tenders, the Railway or its authorized person may ask the tenderer(s) for clarification(s), if any needed, for such examination, evaluation and comparison. The request for such clarification etc. and the response thereof shall be in writing.

**2.14.1 NEGOTIATION:**

1. The accepting authority reserves the right to enter into negotiations with the L-1 or more (in special case) Tenderer(s) before acceptance of the tender in order to clarify special conditions, or, reduction of rates, or, for changes in scope of the work etc., at its sole discretion.
2. L-1 Should be defined as the lowest, valid, eligible and technically acceptable tenderer.
3. Should such negotiation with the tenderer(s) be entered into, the tenderer(s) shall not be permitted to increase their quoted rates under any circumstances, even if it includes withdrawal / modification of such special conditions as are given by the tenderer(s) along with their original tender.

**2.14.2 COUNTER OFFERS:**

In cases where the overall value of L-1 is not unreasonably high but the rate(s) for certain item(s) in a schedule or the total value for a schedule happens to be higher than those quoted by other tenderers in the same tender or higher than the last accepted rates, the method of counter offering the lower rate(s) obtained in the same tender or if all these are higher, any other rate(s) considered reasonable by tender committee may be adopted while finalizing the tender.

**2.14.3 TENDERS:**

The tender shall remain open for acceptance by the Railway for the period specified in the tenders from the date on which tenders are opened and during which period the Tenders shall not withdraw offer, nor amend, impair or derogate there from. Every Tender shall be deemed to have agreed as aforesaid in consideration of his tender being considered by the Railway. If the tenderer is notified in writing at his address given in tender, within the said period that his tender whether in whole or in part has been accepted by the Railway, he shall be bound by the terms of agreement constituted by his tender in respect of any part of the work specified in the tender document.

**2.14.4 AGREEMENT: -**

- i) The Railway shall prepare the agreement and intimate the contractor of its preparations whereupon the contractor shall sign the same within seven days of the receipt of the intimation. The agreement should normally be signed after issue of letter of acceptance with due compliance of procedure of submission of performance guarantee.
- ii) The agreement can be drawn only after the contractor deposits the amount of performance guarantee as per the requisite form.
- iii) No payment will be made until agreement is executed.
- iv) This contract agreement shall be entered into by the Railway with the Contractor(s) on the explicit understanding that the contractor(s) shall abide by all the conditions of these documents and that their implications had been fully understood by the contractor before tendering for this work.

**2.15 DETAILS CONFIDENTIAL:** The tenderer (whether his tender be accepted or not) shall treat the contents of the tender paper as private and confidential.

**2.16 CANVASSING AND BRIBERY:**

2.16.1 No tenderer shall canvass any Government official or Railway's Engineer with respect to his or any other tender. Contravention of this condition will involve rejection of the tender. This clause shall not be deemed to prevent the tenderer from supplying the Railway any information asked for from him.

2.16.2 Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the contractor or his partner, agent or servant or any one on his or their behalf, to any officer, servant, representative or agent or the railway of any person on his or their behalf, in relation to obtaining or to execution of this or any other contract with the Railway shall in addition to the criminal liability he/they may incur under the prevention of corruption act, 1908, subject the contractor to cancellation of this and other contracts, and also to payment of any loss resulting from any such cancellation, and the Railway shall be entitled to deduct the amount so payable, from money and Railway's decision shall be final and conclusive in the matter.

**2.17 EXECUTION OF CONTRACT AGREEMENT:**

2.17.1 Any Tenderer whose tender the railway elects to accept, shall after having been advised by the railways through letter of Acceptance, be bound to execute and agreement based on accepted rates and conditions in such form as the Railway may prescribe and lodge the same with Railway together with the conditions of contract, specification and schedules referred to herein duly completed within the period as specified in the letter of acceptance.

2.17.2 Failure on the part of the tenderer to execute the agreement within the time as stated herein before will constitute breach of contract and the contractor's Bid Security/security deposit shall be liable to forfeiture.

**2.17 Performance Guarantee:** - It will be followed as per clause 16(4) of GCC'2022 with up-to-date modifications.

**CHAPTER – 3**

**INDIAN RAILWAY GENERAL CONDITIONS OF CONTRACT, 2022**

**(Attached Separately as IR GCC-2022)**

## **CHAPTER – 4**

### **SPECIAL CONDITIONS OF CONTRACT**

**EASTERN RAILWAY**  
**SPECIAL CONDITIONS OF CONTRACT**

PARA No.	DESCRIPTION
4.1	General
4.2	MSDAC
4.3	Electronic Interlocking
4.4	Scope of the Work
4.5	CONTRACTOR'S DRAWINGS and EQUIPMENT'S OFFERED
4.6	Time Schedule
4.7	Variation
4.8	WORK PERFORMANCE GUARANTEE
4.9	RATES TO INCLUDE ALL TAXES
4.10	EXECUTION AT SITE
4.11	COMPLIANCE TO PROVISIONS OF APPRENTICES ACT, 1961
4.12	OMISSIONS DISCREPANCIES & CLARIFICATION
4.13	Responsibility of Contractor
4.14	Employment in Govt. Service
4.15	RESPONSIBILITY FOR CONTRACTOR'S MATERIAL
4.16	SITE CLEARANCE
4.17	CONSIGNEE
4.18	PATENT
4.19	DEPLOYMENT OF QUALIFIED ENGINEERS AT WORKS SITE BY THE CONTRACTOR
4.20	PAYMENT TERMS
4.21	PRICE VARIATION
4.22	TERMS OF GUARANTEE
4.23	WARRANTY
4.24	Mandatory updation of Labour data on Railway's Shramil Kalyan portal by contractor
4.25	ISSUE OF MATERIALS FROM THE RAILWAY STORES
4.26	INSPECTION
4.27	TENDERER'S POSTAL ADDRESS AND OTHER COMMUNICATION DETAILS
4.28	MISCELLANEOUS

**EASTERN RAILWAY**  
**SPECIAL CONDITIONS OF CONTRACT**

**4.1 General-**

i) The following Special Conditions shall apply to contracts for supply of plant and machinery and manufactured equipment and for services in connection with Transportation, Installation, and Commissioning. But where they differ from the General Conditions of Contract the Special Conditions shall over-ride the General Conditions of Contract. The Tenderer's attention is drawn to the fact that major deviations to any clause shall not be permissible.

ii) In case of conflict between Instruction to tenderers and any of the notes in Drawings, Special conditions of contract there in and Schedule of items, quantities and rates, the decision of TAA shall be final and binding on the contractor(s).

iii) Any specifications/conditions stated by the Tenderer(s) in the covering letter submitted by him along with the tender shall be deemed to be a part of the contract only to such an extent as has been expressly accepted by the Railway.

iv) All measurements, methods of measurements, meaning and item of specifications and interpretation of Special Conditions of therein made by the Engineer on behalf of the Railway shall be final and binding on the contractor and shall be considered as "Excepted matters" in terms of conditions No. 63.1 of GCC.

**4.1.1 Books of Reference:** The contractor should purchase a copy of the following books of Engineering Department of the Eastern Railway from the Office of the Principal Chief Engineer, Eastern Railway, 17, N. S. Road, Kolkata – 700001 on payment of prescribed cost and should go through them.

a. Indian Railway Signal Engineering Manual (IRSEM), Version 3.0 June 2021 with latest correctionslips etc. if any.

b. Telecom Engineering Manual with latest correction slips.

c. Drawings and Documents and Instructions issued by RDSO/Lucknow, Railway Board/New Delhi.

d. Drawings and Documents and Instructions issued by PCSTE/E. Railway.

e. Instructions given by the Original Equipment Manufacturer (OEM) and Manuals of the Equipments.

f. Drawings and Documents etc. issued by office of PCSTE.

g. Any other instructions issued from time to time by the Engineer of the Railway at site.

h. General Condition of Contract'2022 with UpToDate modifications

**Inconsistency in this tender document:** All the aforesaid books of reference shall be read with all up-to-date correction slips issued thereto from time to time. These books of reference shall govern the contract and shall form integral part thereof subject to modification, addition or suppression by special conditions of contract and/ or special specifications of the work as contained in this tender document. However, in case of any inconsistency and contradictions between the books of reference and the special conditions and specifications, the special conditions and specifications shall prevail. It must be noted that English version of this entire document will prevail.

All books, specifications, references and codes referred to hereinafter shall mean latest edition thereof incorporating all up-to-date correction slips and amendments issued thereto

**4.1.2 Use of Technical Terms and conditions:** Definitions, technical words and symbols used in circuits and other places shall be as per Indian Standard specifications, where they are not available, they should conform to appropriate British Standard Specifications. The tenderer 's representative and the Railway.

**4.1.3 SPECIFICATIONS OF WORK AND MATERIALS: -**

i) Any specifications, not covered by this tender document, shall be in accordance with relevant Indian Railway Telecom Manual, IRS codes, BIS codes and or IRC codes read in the order as they appear here.

ii) Materials to be supplied by the contractor for the work shall conform to specifications contained in this tender document. If called upon, the contractor shall state the actual source of supply of materials to be supplied by him and shall submit

samples for prior approval. During execution of the work, all materials brought to the site by the contractor must be offered for inspection and passing by the Engineer or his representative before being used in the work and such approval shall be recorded in a register maintained for the purpose.

- iii) Samples of materials to be supplied by the contractor may be got tested at the contractor's cost in any recognized laboratory at the sole discretion of the Engineer.
- iv) The Supervision of Erection according to specification shall be done by the contractor and for this purpose the contractor shall employ competent representatives to supervise the erection and the carrying out the works at all stages. The said representative shall be present on the site during hours and any written orders or instructions which Railway may give to the said representative of the contractor shall be deemed to have been duly given or communicated to the contractor.
- v) The Contractor or his representative shall accompany the Railway's Engineer on inspection tour or proceed to their offices any time he is called upon to do so.

**4.1.4 Rework on account of Discrepancy in drawings and other documents: -**

The tenderer shall carry out at his expense any alteration of the works due to any discrepancy, error or omissions in the drawings or other particulars. Any approval given by the Railway for this purpose shall be in no way absolve the tenderer from any or all responsibilities for the correct and safe functioning of the equipment. In this regard the sole responsibility rests with the tenderer in all respects. Any fittings or accessories which may have not been specifically mentioned in the tenderer the agreement executed thereon, but which are usual and / or necessary as per the normal practice are to be provided by the tenderer without extra charges so that the work is completed in all respects for rendering useful services.

**4.1.5 PROVISION OF EFFICIENT AND COMPETENT STAFF AT WORK SITES BY THE CONTRACTOR. (Railway Board's letter No. 2012/ CE-1/ CT/ 0/ 20 dated 10.05.2013 (Clause - 26 of GCC):**

- i) The contractor shall place and keep on the works at all times efficient and competent staff (Qualified in Technical/Engineering/Science field, Qualifying document is to be submitted to the Sr. DSTE/ASN office) 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. Contractor will communicate the name of staff with all the details (Address, Working Mobile no etc.) of the supervisor and will ensure that he remains at site.
- ii) The contractor shall at once remove from the works any agents, permitted sub-contractor, supervisor, workman or labourer who shall be objected to by the Engineer and if and whenever required by the Engineer, he shall submit a current return showing the names of all staff and workmen employed by him.
- iii) In the event of the Engineer being of the opinion that the Contractor is not employing on the works a sufficient number of staff and 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.
- iv) Any Staff, workmen or officers detailed by contractor to execute the work shall be deemed to be the agents or employees of the contractor for the purpose of fixing responsibility and determining liability for any loss or damage occasioned by any act of omission or commission on the part of such staff, workmen or officers while working under the supervision of the contractor.

NOTE: -

- i) The Contract shall be Governed by various provision of Eastern Railway Engg. Dept's General Condition of Contract-2022 and Standard Specification-1989 together with up-to date Correction Slips and all amendments thereof issued from time to time.
- ii) The work should be done as per Railway's requirement following the relevant Drawing/ Design/ Specification etc. and as per instruction of the Engineer at site or his representative.
- iii) All the materials supplied by the Contractor should conform to relevant GCC/ Code/ Specification etc. supported by the necessary test certificates from the Government/ Reputed Laboratories at the Contractor's own cost and should be got passed by the Competent Authority before starting of the work.
- iv) Quantities mentioned against above Item are approximate for the Tender purpose only whereas the Payment will be made for the Actual work done.
- v) If there is any Printing mistake taking place in Schedule of work, USSOR of S&T Department with up-to-date Correction Slip will prevail for the Instant work.
- vi) All the Safety measure will be taken by the Contractor and the compensation towards any Accident will be paid to the Railways.
- vii) The construction site should be properly dressed and cleaned in all respect within 07 (Seven) days after completion of work by the Contractor.
- vii) Contractor shall employ following qualified engineers during execution of allotted works.
  - a) One qualified graduate engineer when cost of the work to be executed is Rs. 2 Crore or above.
  - b) One qualified diploma holder engineer when cost of work is less than Rs. 2 crores.
  - c) Further, in case the contractor fails to employ the qualified engineer as mentioned above, he in terms of provisions of clause 26 A.2 to the GCC'2022 with up-to-date modifications shall be liable to pay an amount of Rs. 40,000/- (for CA Value > Rs. 2 crore) and Rs. 25,000/- (For CA value < Rs. 2 crore) for each month or part thereof for default period for the provisions.

#### **4.1.6 Future Development:**

If during the intervening period between the date of tender opening and signing of the contract, there have been any developments resulting in improvements or advancement to the equipments to be installed, in the design, fabrication, the tenderer shall make available to the Railway all information. The Railway may modify the orders to take advantage of these developments on the basis of mutually agreed terms. The Railway reserves the right for alteration / modification of decision in respect of the work at any stage of the execution. The charges incurred there is to be settled mutually between contractor and the Railway.

This should be clearly understood that it is entirely contractor's responsibility and liability to in procurement of such items due to their non-availability or import difficulties or any other cause of what so ever will not be taken as an excuse for slow and nonperformance of work.

#### **4.1.7 Inspection of work and Measurement: -**

- i) Measurements: After completion of the stages of work the Contractor should inform in writing about the completion of the work to the Railway Supervisor and request him for a joint inspection. The measurements of quantities for purpose of payment to the contractor will be undertaken as per IRGCC.
- ii) The Engineer or the Railway Supervisor may inspect and test the various portion of the work at all stages and shall have the full power to reject all or any portion of the work that he may consider to be defective or inferior in quality of material or workmanship or design in comparison to specification.



iii) In the event of any work already executed and not in accordance with the specification as in this tender and / or determined by the Engineer of which the Contractor have been apprised, the Contractor shall carryout alteration / replacement to such works to the satisfaction of the engineer for which no additional expenses shall be borne by the Railway Administration.

iv) The Contractor shall carryout such tests at his own expenses as are necessary in the opinion of the Engineer to determine that the contract is being complied with satisfaction and that the contractor is not entitled to the payment in respect thereof.

v) All materials to be used by the Contractor on the work shall be of approved quality and shall be approved by the engineer in charge before being used in the work.

vi) No extra charges shall be paid to the contractor towards carriage, loading, unloading and handling etc. of the materials supplied by the tenderer and he shall include all such charges in supply of materials.

vii) If the completed work or any portion thereof, before it is taken over or during the warranty period (works includes equipment also) be found defective or otherwise failed to fulfil the requirement of specification or its purpose, the Railway shall give the contractor notice setting forth, particulars of such defects or failure and the contractor shall forthwith make good the defective work or alter the same to make it satisfactory to comply with said requirement free of cost. Should the contractor failed to do so within a reasonable time (to be decided by the Engineer in charge) after the service of the said notice. The Railway may reject and replace the whole or part of such defective work as the case may be at the cost of the Contractor. Such replacement shall be carried out by or at the instance of the Railway within a reasonable time and so far, reasonably practicable under competitive conditions. The Contractor's full liability under this clause shall be satisfied by the payment to the Railway of the extra cost being the ascertained difference between the prices paid by the Railway under the above-mentioned provision for such replacement and the contract price for the work so replaced plus the sum if any paid by the Railway to the Contractor in respect of such defective work.

viii) If it becomes necessary for the Contractor to replace / review any defective portion of the work under the clause above, then the provision of the said clause, shall also apply to the portion of the work as replaced or renewed until expiry of one year from the date of such replacement or renewal. If any defect be not remedied within a reasonable time during the aforesaid period, the Railway proceed to do the work, at the Contractor 's risk and expenses but without prejudice to any other rights or remedies which the Railway may have against the Contractor in respect of such defects or faults.

ix) In the event of such rejection as aforesaid, the Railway shall without prejudice to other rights and Remedies, and in particular without prejudice to this right under the clause just preceding, be entitled to the use of the rejected work in a reasonable and proper manner for a time reasonably Sufficient and to enable the Railway to obtain other replacement. During such period, if the rejected work is used commercially; the Contractor shall be entitled to a reasonable sum as payment for such use but the Contractor shall not be entitled to claim any damages in respect of such period.

x) Railway reserves the right to suspend the progress of work or any part thereof by reason of weather Conditions or by some default on the part of the contractor or as necessary for proper execution and the safety of the work for such time or times and in such manner as may be considered necessary by the Engineer and the Contractor shall during such suspension period protect and secure the work as is necessary in the opinion of the Engineer.

xi) The Contractor shall not be entitled to the extra cost (if any) incurred by him during the period of suspension ordered by the Engineer owing to the 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 work as the Railway may consider proper.

xii) If during the progress of works any material of the Railways are damaged the cost of the repairs or replacement of such cables or accessories shall be recovered from the Contractor. Decision of Sr.DSTE/ER/ASN in regard to the cost to be recovered towards repairs or replacement of the material supplied by the Railway Administration shall be final and binding on the Contractor.

4.1.8 The Contractor shall collect the materials from the store's depot of SSE/Sig/Store/Asansol or SSE/Tele/Store/ASN and carry the materials to the work spot. No extra cost on account of this over and above the rates quoted in the schedule of rates will be accepted.

4.1.9 The Contractor will have to give a clear receipt in the prescribed Performa for materials issued from the Railway stores every time when issue is made.

4.1.10 The Contractor should keep policy of insurance for an amount and period for all the Railway materials in his custody.

4.1.11 The Contractor shall have to make his own arrangement to store the Railway materials issued to him in go down at his own cost.

4.1.12 While storing the Railway materials, the Contractor should guard against loss due to any cause whatsoever and proper care should be taken in handling the materials. The Contractor is responsible for storing the materials as mentioned above at the site of work according to the standard condition and specification.

4.1.13 The Railway Administration shall have no liability for late supply of materials by Railway Administration and the tenderer shall not be entitled to any compensation due to late supply of the same. In the event of any appreciable delay in the supply of the materials by the Railway, the completion date may be extended for the work, by the Engineer-in-charge of the work at his sole discretion and this shall be binding to the Contractor. The Contractor may however apply for extension of time required by him, bringing out clearly the nature of the delay and justifying the extension as asked for.

4.1.14 Where items not covered by the schedule are to be executed, the rates for such non-itemized works will be negotiated before commencement of such work or got executed through any other agency of the discretion of the Railway Administration.

#### 4.2 **MSDAC**

Supply, Transportation, Installation, Testing and Commissioning of Multi Section Digital Axle Counter (MSDAC) for mentioned detection Point by the purchaser & Track Section as per SIP provided, complete with all accessories, cable required with each track device & Card viz., Axle Detectors, Track Side Electronics/DAC field units, Central Evaluator (Central Evaluator unit should be housed in a pre-fabricated Rack to be supplied along with the system), Reset unit, Relay unit, Event logger & Diagnostic terminals etc. required for different Detection Points & Track Sections as per RDSO Specification No. RDSO/SPN/176/2013, Ver.3 or latest as per Part-A, B& C.

##### Part: A: Supply of MSDAC

1. It shall comprise of Axle detectors, DAC field unit, Central evaluator, reset unit, relay unit, Event logger, Diagnostic Terminal, and Line Verification Box confirming to RDSO specification no-RDSO/SPN/176/2013, Ver.3 or latest (Inspection by RDSO).

2. OEM supplied/certified Pre-fabricated Rack: OEM supplied/ certified 'with power supply arrangement for Evaluator (Inspection by RDSO) which is to be supplied along with system (Para 5.5.1) of RDSO specification no-RDSO/SPN/176/2013, Ver.3 or latest.

3. OEM supplied/ certified Reset Box as per drawing no RDSO/S/20001 (Inspected by RDSO).

4. OEM supplied and certified 'Tool Kit with marking Zig (One set for every 20 DP or part thereof)' consisting of all tools and measuring instruments required for installation, testing,

failure attention and all types of maintenance of MSDAC; to be supplied along with main equipment (Inspection by RDSO) confirming to item no. 20 of RDSO specification no-RDSO/SPN/176/2013, Ver.3 as updated by RDSO from time to time. However, if RDSO declines to inspect, then it will be inspected by authorized representative of railways.

5. OEM supplied '**Line Verification Boxes**' as per drawing no RDSO/S/20002. (Inspection by RDSO)

6. OEM supplied/ certified **Mushroom cover/** Half apparatus case(s) (If required for installation) for track-side equipment's/ each detection point housing (Inspection by RDSO for OEM supplied/ certified Mushroom cover; consignee for half apparatus case). Quantity of Mushroom Cover/Half apparatus case shall be same as that of detection point. However, if RDSO declines, will be inspected by authorized representative of railways.

7. OEM recommended **Lightning and surge protection devices** for all sub-systems as per RDSO specification no RDSO/SPN/144/2006. (Inspection by RDSO) as per Para - 5.0.24 of RDSO/SPN/176)

8. Instruction manuals, Installation manual & maintenance manuals including DO's Don'ts, mechanical drawing for each subsystem, schematic block diagram showing mounting arrangement of various component & details of each type of assembled PCB, troubleshooting manual, pre-commissioning check list and other technical information regarding MSDAC supplied (As per item no. 18 of RDSO specification no-RDSO/SPN/176/2013, Ver.3 as updated by RDSO from time to time).

9. Supply of **Event logger** (In-Built) & diagnostic terminal with monitoring software (one Set).

a) **Event logger Diagnostic software** (Inspection by RDSO). (One Set per evaluator Rack in separate Pen drive as per Para 5.9.1 of RDSO/SPN/176).

b) **Event logger Diagnostic PC** (Inspection by consignee) - One system per Evaluator Rack as per following specifications:

- CPU: - Intel i5 or latest
- Processor Family: 8<sup>th</sup> Generation or higher
- Cache: - 8MB or higher
- RAM: Minimum 8GB, DDR-4 or better
- Hard Disc Drive — Min 1TB SATA
- Ports - 2 serials, 2 USB-2, 2 USB-3, 2 PCI slot
- Monitor 22-inch LED flat panel, resolution-1920x1080 at 60 Hz or better.
- Network Interface: Integrated 10/100/1000 GbE LAN
- Wireless: 802.11a/b/g/n Wi-Fi and Bluetooth
- Keyboard: QWERTY
- Optical scroll mouse
- Optical Drive: DVD
- Audio: 2.1 speaker;
- Antivirus single license for 3 years for single user;
- Operating System-Windows 10 or latest pre-loaded with license and MS office 2018 or higher with license and media.
- Connecting cord between Evaluator and PC;
- Suggested module makes Compaq, HP, Lenovo, Dell, Acer or Wipro.
- Any other software/hardware/switch etc. required for commissioning of diagnostic PC for the complete MSDAC system.

10. **LaserJet printer:** Size A4, Minimum 20 copies per minute, Colour) suggested Brand- HP/DELL/CANON (Inspection by consignee) for each Diagnostic PC.

11. **Table:** Godrej make interio Companion C3 Engineered Wood computer desk or similar (Inspected by consignee). for each Diagnostic PC.

12. **Chair:** Godrej make PCH-7003 premium Executive chair or Similar. (Inspected by consignee). for each Diagnostic PC.

13. All empty slots in card-file shall have **dummy cards** fitted to prevent entry of lizards, etc.

14. Training on installations, maintenance & trouble shooting shall be imparted to Railway Personnel at site or at OEM's premises (10 man-days for 20 DPs or part thereof).

a) Training shall be organized for OL and Railway staff & officers through OEM/agency before commencement of work and proper record shall be maintained.

b) During programming, testing and commissioning one more round of training shall be organized for the OL staff to have better understanding of the product going to be commissioned.

c) During the training each of the attendee shall be given copy of the training manual and copies of the approved document without any exception.

15. The warranty of the equipment should be in accordance with IRS specification No. S-23. The duration of warranty shall be as per Indian Railway Standard Conditions of Contract, vide Para-417 of Indian Railway Code for Store Department and clause 3202 & 3203.

The contractor also guarantees that the said goods/stores/ articles would continue to conform to the description and quality as aforesaid, for a period of 30 months after their delivery or 24 months from the date of placement in service whichever shall be sooner, and this warranty shall survive notwithstanding the fact that the goods/stores/articles may have been inspected, accepted and payment thereof by the purchaser.

If during aforesaid period, the said goods/stores/articles be discovered not to conform to the description and quality aforesaid or have deteriorated, otherwise that by fair wear and tear the decision of the purchaser in that behalf being final and conclusive that the purchaser will be entitled to reject the said goods/stores/articles or such portions thereof as may be discovered not to conform to the said description and quality. On such rejection, the goods/stores/articles will be at the seller's risk.

During the period of warranty, the supplier shall remain responsible to arrange for replacement and for getting right at his own cost of any equipment supplied by him which is defective during manufacturing or defective in design or due to defective material component or due to any cause what's ever.

All replacement and repair and design change that the Railway shall call upon the supplier to perform under this warranty period within one month, properly and satisfactorily.

16. Signaling Plan of the section/station is attached. The supplier will submit following documents along with the offer.

i) 6 quad cable plan.

ii) Breakup of number of each cards/modules & other accessories authorized by OEM/its RDSO approved Indian partner's for each Hut/Station with corresponding circuit as per Table given below-

S N	Description of Card / Subassembly/ items	Part No.	Unit	Quantity in Nos.

17. Materials, which are not in the list of RDSO, shall be inspected by the Representative of Sr DSTE/ASN.

## **Part: B: Transportation, Installation, Testing and Commissioning**

1. **Transportation, Installation, Testing & Commissioning** Multi section digital Axle Counter (MSDAC) as per approved yard layout with Reset unit, Relay unit, Evaluator(s), line verification boxes, Power supply, event loggers, diagnostic terminals, programming etc with supply of all necessary cable, connectors, fixture, clamps.

2. **Individual Earthing of all detection Points** shall be provided by the tenderer if required by the OEM. This includes both complete supply and installation of earthing arrangement. The earth value shall be within the limits recommended by the OEM &

those shall be certified by OEM site engineer. If required, multiple earth-pits to be installed to bring earth value within limit, in each location. This includes supply & installation of maintenance free earth materials and exothermic bonding and other connecting cable etc as per Railway practice, if required as per OEM specification/requirement (As per RDSO Spec no: RDSO/SPN/197/2008 or Latest).

3. Provision of Earthing should be there in the Central evaluator, field units, reset Box and any other locations prescribed by OEM/ RDSO.

4. **Evaluators & resetting equipment to be connected to the El Ring earth.** (Central Relay room/Goomty). (El ring earth will be provided by Railway). The earth connection between Evaluator /Resetting equipment to Ring earth will be dealt by the MSDAC supplier.

5. **Foundation & erection of Track side. Equipment** i.e. Mushroom/ Location Box (If required).

6. In case **the track side equipment is fixed in location box, separate location earthing** to be done and value should be less than 1 ohm. This included supply of all associated materials and execution. The earth of location Box /mushroom to be connected with the detection point earth.

7. Installation of Event logger & diagnostic terminal with monitoring software at Maintainers room and connectivity from evaluator to Diagnostic terminal.

8. Submission and approval of documents.

a) The following documents, in addition to the documents specified elsewhere is to be Submitted by the agency to the field unit for approval before commencement of actual work. Call letter for inspection of MSDAC is to be given only after submitted the following documents.

i) Evaluator summary, DP summary and evaluator communication summary.

ii) MSDAC DP plan.

iii) Rack-wise evaluator allotment plan.

iv) Wiring Diagram.

v) MSDAC DP connection between 2 CTRs.

vi) Reset box disposition & resetting arrangement.

vii) Cable core plan.

viii) Quad allocation plan.

ix) For each track section, relay drive evaluator, direct DP and indirect DP connected to the valuator to be shown in a tabular format.

x) Pre-commissioning check list and other technical information regarding MSDAC supplied (One copy for each evaluator).

b) Hard copy and soft copy in PDF format shall be submitted by the supplier.

9. For each installation / location of evaluator the supplier should give following information regarding power requirement.

SN	Supply voltage nominal with range	Load requirement in ampere

**Part – C**

**Item-wise details / Quantity / rates of MSDAC of each station/Hut**

S N	Description of Card / Sub-assembly / items	Part No.	Unit	Unit Rate in (Rs)	Quantity in No
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**PART:C: Payment Term for MSDAC:** 70% of the payment is to be done after supply of MSDAC and rest 15% payment is to be done after successful commissioning and production of OEM Certificate. Rest 15% will be retained as retention money which will be released as para 4.20 of Special Condition of Contract.

### **4.3 Electronic Interlocking (EI)-**

Following provisions of EI are to be followed to ensure timely and safely completion of targets-

#### **4.3.1: Supply of EI Materials-(Rate in Group A1 include following Supply and execution Items)**

1. Dual VDU ([two nos. of industrial grade high resolution VDUs(Note: Size of VDU to be provided shall be based on the no. of routes,(i)For less than 100 Routes-55" LED based VDU with 4K resolution suitable for 24x7 application,(ii)For more than 100 routes and less than 200 Routes-65" LED based VDU with 4K resolution suitable for 24x7 application(iii)For more than 200 routes-Larger size of LED based VDU with 4K resolution suitable for 24x7 application or array of LED panel with minimum/zero bezel or video wall with redundant controller in hot standby configuration, as specified by purchaser is to be provided) conforming to SIL-II certification for operator console at central location, Maintenance Terminals(Size of VDU should be same as for operator VDU as indicated in (i)&(ii),however for(iii)purchaser will specify)along with laser printer(HP Pro 1108 or superior)at central & goomties locations along with corresponding Office Chair make Godrej CH-7B or similar of reputed brand and Office table with laminated top with three drawers on left hand side and one locker on the right hand side. Olive brown with duplicate keys. Make: Godrej Model T-9(136.5 cmX68cmX 75cm)or Similar of reputed brand
2. Embedded industrial grade fan less PCs (2 No's for Operator VDU and 1 VDU for Maintenance VDU for each station) should be of rugged and reliable type like MOXA series V 2406, Kontron MPCX28R, MEN BC50M or Similar with compact flash drives in non-AC and in normal environment to be used. Minimum requirement of Embedded PC for EI shall be as per RDSO Specification.
3. The optical Fiber connectivity with fiber management and diagnostic analysis system shall be provided to connect EI with SM room PC terminal. All interface relays for EI shall be supplied by Railways except vendor specific relays.
4. Supply & provision of protective devices like surge and lightning protection devices compatible to RE standards as recommended by OEM / RDSO. Inspection: RDSO
5. Supply and installation of one PC based work station with minimum configuration of workstation should be Intel i5 with 8 GB RAM, 500 GB HDD and 15 inches LED display of standard make such as Dell/HP/Lenovo or Equivalent with required software's as mentioned above and compatible ports to connect with EI for data input and configuration, simulation and functional testing, diagnostic & trouble shooting and commissioning of EI System. Instruments and Tool Kits required for trouble shooting and repair of hardware and software as certified by OEM. This item also includes supply of following :-(a) Supply of documents/manuals for EI system as per RDSO Spec. No. RDSO/SPN/192/2019 Ver.2 or latest in printed and digital form (In Pen Drive) in EI.
6. Break-up of cards are not to be submitted as per latest guidelines of Railway Board.

#### **4.3.2 Design, Approval and other requirements-**

- 1 All drawings including but not limited to Interface Circuit, Logic Circuit, Route Control Chart, Sub Route Control Chart, Point Control Chart, Crank Handle Control Chart, LC Control Chart etc. is to be submitted to railway for approval only after approval from the Firm and OEM by IRSE/IRSTELO license holder. Checksum/CRC is to be printed on each and every page of logic. Fresh complete set is to be submitted each time circuit is submitted to railways for approval. Approval will be done as mentioned in para 8.1.4 item (d) sub item (f) and (g) of SEM which is reiterated as-
- (f) Every plan/drawing/circuit should bear in small letters at the lower left-hand corner, the name and initials with designation of the JE/SSE (D&D) who prepared and

officials who checked & approved the plan/drawings/circuits. If plan/drawing/circuits are prepared by contractor, then Contractor's designer name/designation/license number with their initials shall be ensured

- (g) All signatures in tracings should be in indelible ink. All signatures should be dated with date month and year. If feasible, plans/drawings/circuits may be digitally signed  
If required, OEM authorized Engineer/Designer may consult with Dy. CSTE/Con/D&D/ER or his representative to get any clarification regarding interlocking issues.
- 2 Any change in interface or logic due to observation given by competent authority (CRS, PCSTE etc.) or due to policy decision or any post commissioning deficiency noticed at any stage is to be done free of cost. However additional hardware (Relays, Processor, I/O cards, Consumables etc.) if required will be dealt as per existing clause and will be provided by Railways either through variation of by any other means.
  - 3 Bidder to ensure that OEM is to carry out preparatory work of system design, interface design should be started based on tentative SIP provided and final interface circuit and system configuration is to be submitted for approval within 7 days of approval of SIP supplied to him.
  - 4 Bidder to ensure that OEM is to carry out logic preparation on tentatively approved RCC with other control charts provided submitted by the bidder to the railways for approval and it is to offered for cFAT(After duly conducting iFAT with concerned certificates) within 15 days of final approval of RCC and other control charts considering all requirements including CRS Observation.
  - 5 Application Logic circuit should be submitted along with internal FAT certificate (I-FAT) issued by OEM duly incorporating the CRC checksum and other Details in the I-FAT Certificates before start of the FAT testing in each page I-FAT Certificates. Internal FAT(I-FAT) and square sheet testing should be done meticulously by the OEM Engineers before submission of Application Logic for External FAT Testing by Railway as per Approved RCC. There should not be any flaws/errors/bugs found during the external FAT with respect to the RCC as submitted by Agency (checked through OEM)/ Approved RCC as internal FAT is already completed successfully by the OEM. Any doubt arising during Internal FAT /Design stage also should be cleared by the OEM in consultation with Railway Design Engineer before submission of Application Logic circuits. Railway will also ensure the Approval of RCC as submitted by Agency through OEM at the earliest, But E.I. OEM and Agency cannot hold their design and drawing activities and /I-FAT Activities on this account on any pretext as Application Logic design is a very modular design concept.  
Moreover, E.I. OEM and concerned Agency both will intimate the Railway about starting of likely date of I-FAT at least one fortnight in advance after “design of the application logic as per Route Control Chart (RCC)” as submitted for approval as a check/reminder so that Railway can intimate in advance if there is any other suggestions/corrections/ deviation/changes etc. as per railway requirements in the RCC as submitted for approval from Railway side. This must be ensured by E.I. OEM without fail to expedite the work. In this regard, decision of Sr.DSTE/ER/ASN will be final and binding to E.I. OEM and Agency both without any further delay and to avoid the wastage of precious prime time.
  - 6 Key pad and Mouse with VDU will be of wired type and all unused ports will be disabled by OEM due to security reasons.
  - 7 EI materials should be supplied only after approval of system configuration and interface circuits. Along with system configuration, the OEM will give details of system loading and spare capacity of input/outputs provided in each rack/sub system with respect to specs.

**4.3.3 Time line and different stages of EI-***Note: All the target dates of activities mentioned are with respect to the day of issue of LOA denoted as — “D”.*

1. Design and drawing activities details including timeline is listed under item No. 4.3.2 above.

2. All other field activities of the station/section will be taken and decided by Sr. DSTE/ER/ASN and other field Railway Engineers after the issues of LOA will be executed and signed as per extant practice in vogue as per prevailing Rules and Regulations.

3. Call letters for Supply of Materials for EI Material and other should be issued only after finalization of tentative working plan/scheme and handing over to the Agency by Railway for execution of the work in the field and preparation of various other related Drawing & Documents and activities etc.

4. **External FAT-** External FAT to be started after I-FAT testing by OEM and after receipt of approved application Logic circuit as per approved RCC by the Railways. This FAT testing must be planned in advance by the OEM and the Agency both with Railway Engineers in well co-ordinate manner. All arrangement for FAT will be done by the tenderer at their expense at divisional HQ or at any other place as desired by Sr. DSTE/ASN. Any fault log during external FAT will not be accepted and suitable penalty in multiple of Rs.10,000/- may be imposed in each case if the fault logs are more than 10% of RCC routes (in numbers) with respect to “RCC submitted by the Agency/OEM for approval to Railway” subject to penalty not exceeding 0.5% of total contract value.

5. After completion of External FAT, two sets of complete documents for submission of Technical System Application Approval must be submitted as required as per RDSO's Letter No. STS/L/SSI/General/160 Dated 07.12.2018. This is mandatory on the part of E.I. OEM and Agency/Firm both. VDU Layout should also be submitted for submission of Technical System Application Approval (TSAA) for obtaining the Approval of RDSO as the case may be. All these soft copies of AutoCAD and PDF copy must be made available to concerned Sr.DSTE/ER/ASN also for minor changes/alterations/modifications etc. as might be required and for the use at later stage also by Railway.

6. Railway will approve the Route Control Chart (RCC) submitted for the purpose of submission of “CRS Application as a statutory requirement” for obtaining the CRS sanction. However, If there is any suggestions/changes/deviations etc. in the RCC as observed/noticed during approval then same will be communicated to the E.I. OEM and agency both during the design stage of application logic itself for incorporating and updating the same in the Application Logic at later stage also to the E.I. OEM.

10. Therefore, E.I. OEM must have to deploy the Competent Engineers for Testing at all the Level of FAT Testing and SAT Testing, Functional Testing and Finally Commissioning as well and FAT Certificate, SAT certificates etc. must also be issued by the OEM Engineer conducting FAT/SAT Testing along with Railway Engineer duly mentioning their name and Designation etc. along with RDSO Specification number also. Similarly, for Final Testing and commissioning of the Electronic Interlocking, OEM must deploy adequate numbers of the Competent Engineers for Commissioning without and delay and any excuses in this regard. Integration of Complete System of Distributed Sig. E.I., Testing and commissioning of the Multiple Relay Huts/End Goomties. OEM must deploy adequate numbers of the Competent Engineers for Testing and Commissioning.



**11.** As per RDSO Guidelines, Technical Advisory Note (TAN) RDSO Letter No. STS/E/TAN/3012 Version 3.0 Dated 28.06.2021 vide RDSO Letter No. RDSO-SIG 0EI(GEN)/1/2020 Dated 30.06.2021 or latest, All the directions and instructions of RDSO guidelines has to be implemented in Electronic Interlocking without any deviation in the right professional spirit and after implementation this has to be jointly cross examined , verified with E.I. OEM Engineers and Railway Engineer duly signed all the Items as above. Preferably before taking non-interlocking almost all the Items must be complied. Few critical items can be implemented during the commissioning as it may not be feasible before commissioning and that must be complied during commission.

**12.** “Synchronization of the Clock of Distributed E.I., with all the Data Loggers at Stations and End Goomties and Clock of Distributed E.I. and Dataloggers etc. as the case may be through CMU in network conditions”

**13.** Commissioning must be ensured as per RDSO Guidelines, Technical Advisory Note (TAN), Technical Advisory Note No. STS/E/TAN/3012 Version 2.0 Dated 10.08.2016 vide RDSO Letter No. STS/E/TAN/DS- III/Vol-I dated 22.08.2016 in this regard.

**This has been again re-emphasized by RDSO Guidelines, Technical Advisory Note (TAN) RDSO Letter No. STS/E/TAN/3012 Version 3.0 dated 28.06.2021 vide RDSO Letter No. RDSO-SIG 0EI(GEN)/1/2020 Dated 30.06.2021 in this regard. This Technical Advisory Note (TAN) RDSO Letter No. STS/E/TAN/3012 Version 3.0 dated 28.06.2021 has to be implemented in toto and must be ensured during execution & SAT testing stage itself and re-verified and confirmed during commissioning without fail.**

**14.** Interface Wiring in the New Relay Rack/Existing Relay Racks inside the Relay Room/End Goomties Relay Room related work has to be done of very good quality workmanship which includes termination of wiring, soldering and provision of connectors in the Relay Base etc. “Interface wiring” include any “wiring activities and workmanship” Originating and/or terminating to and/or from “one E.I. Rack to another E.I. rack/Relay Racks and vice versa where Vital Input/output Relays are installed and vice -versa. “Interface Wiring” also includes any wiring originating from “Relay Racks Directly Interfaced with E.I.” and going to any other equipment’s/coming from such as Data logger/ CTRs etc. as well beyond doubt.

**15.** Separate colour wire as per the zonal railway policy for Relay wiring has to be used for “Data logger” for easy identification in the alteration and modification work as a precautionary measures during NI working. This must be ensured by E.I. OEM, concerned Agency and Railway Engineer at site by all concerned without fail and without any deviation.

**16.** Quality and Workmanship such related to Wiring, crimping, cutting of wires, terminations of wiring, soldering including provision of connectors of Relays being provided in the Relay Bases etc. in the E.I. Racks and Relays Racks etc., Primary responsibilities lie and remain with the E.I. OEM only in addition to the concerned agency beyond doubt. Therefore, E.I. OEM must ensure all these issues and matters while execution of the work.

**17.** Concerned Bidders and OEM of must ensure the error free commissioning of Distributed EI work without any hitches and glitches at any stage of the work.

**18. Documents for TSAA:** All necessary documents for TSAA approval should be submitted by the OEM/Tenderer within 15 days of approval of Interface Circuits.

**19.** Wiring in the Relay should be done as per approved Interface Circuits and as per site requirement. Any deviation can be done by Sr. DSTE/ASN as per site requirement in prior consultation with Dy. CSTE/W/D&D or as per instructions of Sr DSTE/ASN. After Complete wiring, Bell testing must be done including **“wire count” and “contact analysis”** duly updated in the original site copy.

**20. SAT:** All arrangement for SAT should be made within a week time after completion of external FAT by Railway, or within 60 days of handing over of the EI building/Goomties/Distributed Goomty whichever is later.

**21.** Submission of Cable route plan and cable corage plan, other necessary drawings etc. must be expedited as per site survey within 30 Days of the Issue of LOA.

**22. Submission of Completion Drawing:** This should be followed as below: -

**A.** Immediately after SAT, Agency will take the coloured scan copy from the “original approved updated site copy” for updating the actual CAD copy.

**B.** After updating the actual AUTOCAD copy, Agency will submit the one set copy duly marked. “As Built” in “Blue Ink” in the right bottom corner with updating Date also. e.g. “As Built Dated as on “mention the Date” in each and every page of all the Drawings, be it Interface Circuits, Out Door Location Particular, Cable Corage, Cable Route Plan , Track Bonding Plan, MSDAC DP Plan, or Details Power Supply Distribution from IPS any other such drawing, as applicable.

**C.** During Commissioning or Immediately after commissioning, this “As Built” must be updated along with original Approved copy. Agency must submit all the Completion Drawing within 15 Days after the commissioning.

**23.** Thus, During NI updated copy of approved copy of Application logic, interface circuit, RCC, outdoor circuit, power diagram etc. shall be made available at site. Completion circuit should be submitted to HQ for final approval within 15 days after commissioning of the Station.

**24.** Submission of documents, Manuals etc.-15 Days well before Pre-NI.

**25.** Concerned Bidders and OEM of must ensure the error free commissioning of EI work without any hitches and glitches at any stage of the work.

#### 4.3.4 **ANNEXURE-010100 of SOR**

##### **Completion Drawings of EI Stations**

##### **(A) INDOOR & OUTDOOR DRAWINGS:**

##### **(i) Design & submission of three number of paper copies making one set-**

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>
1	Design of SIP & submission of three copies for approval	Set	1
2	Design SWRD & submission of three copies for approval	Set	1
3	Design of cable route plan (station section) & submission of three copies for approval	Set	1

4	Design cable route plan (Block section) (if any as instructed by Railway Engineer) & submission of three copies for approval	Set	1
5	Design of cable distribution plan / Cable Core Plan & submission of three copies for approval.	Set	1
6	Design of Track Bonding plan & submission of three copies for approval	Set	1
7	Design of Circuit Diagrams consisting as mentioned below & submission of three copies for approval (a)Wiring diagram along with all Logic details & interface circuit. (b)Relay Disposition chart (c) Contact analysis and fuse particulars. (d)Panel Termination Chart (e) CT rack Particulars (f) Input & Output bit chart	Per station	1
8	Design of Miscellaneous diagrams consisting as mentioned below & submission of three copies for approval (a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc. (b) Power supply diagram along with power supply calculation (c) Earthing diagram.	Per station	1
9	Design of Location Box Details (including contact analysis, Fuse particulars etc.) and submission of three paper copies for approval	Per station	1
10	Design of Goomty/OC/End Cabin Details (including Relay disposition charge, Contact analysis, Fuse particulars, CT Rake particulars and floor plan etc.) and submission of three paper copies for approval	Per station	1

**(ii) Supply of original tracings**

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>
1	Supply of original tracing of SIP after incorporating all the corrections	Nos.	1
2	Supply of original tracing of SWRD after incorporating all the corrections	Nos.	1
3	Supply of original tracing of RCC/ST after incorporating all the corrections	Nos.	1
4	Supply of original tracing of PANEL Diagram/VDU after incorporating all the corrections	Nos.	1
5	Supply of original tracing of cable route plan (station section) after incorporating all the corrections	Nos.	1
6	Supply of original tracing cable route plan (Block section) (if any as instructed by Railway Engineer) after incorporating all the corrections	Nos.	1
7	Supply of original tracing of cable distribution plan/ Cable Core Plan after incorporating all the corrections	Nos.	1
8	Supply of original tracing of Track bonding plan after incorporating all the corrections	Nos.	1

9	Supply of original tracing of circuit diagrams consisting of the items as mentioned below after incorporating all the corrections	Per station	1
	(a)Wiring diagram along with all Logic details & interface circuit		
	(b) Relay disposition chart		
	(c) Contact analysis and fuse particulars.		
	(d) Panel Termination Chart		
	(e) CT rack Particulars		
	(f) Input & Output bit chart		
10	Supply of original tracing of miscellaneous diagram consisting of the items as mentioned below after incorporating all the connections	Per station	1
	(a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc.		
	(b) Power supply diagram along with power supply calculation		
	(c) Earthing diagram.		
11	Supply of original tracing of location box Details (including contact analysis, Fuse particulars etc.) after incorporating all the corrections.	Per station	1
12	Supply of original tracing of Goomty/End Cabins/OC Drawings (including relay Disposition chart, Contact Analysis and fuse particulars, CT rack particulars and floor plan etc.) after incorporating all the corrections	Per station	1

**(iii) Supply of Ammonia print/Paper Print**

Sr. No.	Description	Unit	Qty.
1	Supply of Ammonia print/Paper Print of approval SIP	Nos.	3
2	Supply of Ammonia print/Paper Print of approval SWRD	Nos.	3
3	Supply of Ammonia print/Paper Print of approved cable route plan (station section)	Nos.	3
4	Supply of Ammonia print/Paper Print of approved cable route plan(Block section ) <i>(if any as instructed by Railway Engineer)</i>	Nos.	3
5	Supply of Ammonia print/Paper Print of approved cable distribution plan/ Cable Core Plan	Nos.	3
6	Supply of Ammonia print/Paper Print of approved Track bonding plan	Nos.	3
7	Supply of Ammonia print/Paper Print of approved circuit diagrams consisting of the items as mentioned below	Nos.	3
	(a) Wiring diagram along with all Logic details & interface circuit		
	(b) Relay disposition chart		
	(c) Contact analysis and fuse particulars.		
	(d) Panel Termination Chart		
	(e) CT rack Particulars		
	(f) Input & Output bit chart		

8	Supply of Ammonia print/Paper Print of approved miscellaneous diagram consisting of the items as mentioned below	Nos.	3
	(a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc.		
	(b) Power supply diagram along with power supply calculation		
	(c) Earthing diagram.		
9	Supply of Ammonia print/Paper Print of approved location box Details (including contact analysis, Fuse particulars etc.)	Per station	3
10	Supply of Ammonia print/Paper Print of approved Goomty/OC/End Cabin Details (including relay Disposition chart, Contact analysis, fuse particulars, CT rack particulars and floor plan etc.	Per station	3

**(iv) Supply of completion diagram (6 sets.)**

Sr. No.	Description	Unit	Qty.
1	Supply of six sets of Ammonia print/Paper Print of approved completion SIP	Per station	1
2	Supply of six sets of Ammonia print/Paper Print of approved completion SWRD	Per station	1
3	Supply of six sets of Ammonia print/Paper Print of approved completion RCC/ST	Per Station	1
4	Supply of six sets of Ammonia print/Paper Print of approved completion FPD/VDU/Panel Diagram	Per station	1
5	Supply of six sets of Ammonia print/Paper Print of approved completion cable route plan (station section)	Per station	1
6	Supply of six sets of Ammonia print/Paper Print of approved completion cable route plan (Block section ) (if any as instructed by Railway Engineer)	Per station	1
7	Supply of six sets of Ammonia print/Paper Print of approved completion cable distribution plan/ Cable Core Plan	Per Station	1
8	Supply of six sets of Ammonia print/Paper Print of approved completion Track bonding plan	Per station	1
9	Supply of six sets of Ammonia print/Paper Print of approved completion circuit diagrams consisting of the items as mentioned below	Per station	1
	(a)Wiring diagram along with all Logic details & interface circuit		
	(b) Relay disposition chart		
	(c) Contact analysis and fuse particulars.		
	(d) Panel Termination Chart		
	(e) CT rack Particulars		
	(f) Input & Output bit chart		
10	Supply of six sets of Ammonia print/Paper Print of approved completion miscellaneous diagram consisting of the items as mentioned below	Per station	1
	(a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc.		
	(b) Power supply diagram along with power supply		

	calculation		
	(c) Earthing diagram.		
11	Supply of six sets of Ammonia print/Paper Print of approved completion location box drawing (including contact analysis, Fuses particulars etc.)	Per station	1
	Supply of six sets of Ammonia print/Paper Print of approved completion Goomty drawings (including relay Disposition chart, Contact Analysis, fuse particulars, CT rack particulars and floor plan etc.)	Per station	1

4.3.5 As per Railway Board Letter number:2013/Sig/23/01/(pt) Dup Dated: 17.02.2022, item No.- 3(ii) **“The successful bidder shall submit and undertaking from RDSO approved EI OEM, before the supply of material, to confirm compliance with extant RDSO guidelines and to meet contract specific requirements.”**

In relation with above, successful bidder must ensure undertaking from RDSO approved OEM to confirm compliance with extant RDSO guidelines and following contract specific requirements-

1 All drawings including but not limited to Interface Circuit, Logic Circuit, Route Control Chart, Sub Route Control Chart, Point Control Chart, Crank Handle Control Chart, LC Control Chart etc. is to be submitted to railway for approval only after approval from the Firm and OEM by IRSTELO license holder. Checksum/CRC is to be printed on each and every page of logic. Fresh complete set is to be submitted each time circuit is submitted to railways for approval. Approval will be done as mentioned in para 8.1.4 item (d) sub item (f) and (g) which is reiterated as

(f) Every plan/drawing/circuit should bear in small letters at the lower left-hand corner, the name and initials with designation of the JE/SSE (D&D) who prepared and officials who checked & approved the plan/drawings/circuits. If plan/drawing/circuits are prepared by contractor, then Contractor's designer name/designation/license number with their initials shall be ensured

(g) All signatures in tracings should be in indelible ink. All signatures should be dated with date month and year. If feasible, plans/drawings/circuits may be digitally signed

If required, OEM authorized Engineer/Designer may consult with Dy. CSTE/D&D/ER or his representative to get any clarification regarding interlocking issues. EI design, so submitted after completion of iFAT with corresponding certificate, should be free of logical errors. In case, errors are beyond reasonable limit during approval any deficiency noticed during cFAT from iFAT, suitable penalty may be imposed by executive in charge not exceeding 0.5% of total contract value. This ceiling does not include penalty for extension of contract on contractor's account.

2 Any change in interface or logic due to observation given by competent authority (CRS, PCSTE etc.) or due to policy decision or any post commissioning deficiency noticed at any stage is to be done free of cost. However additional hardware (Relays, Processor, I/O cards, Consumables etc.) if required will be dealt as per existing clause and will be provided by Railways either through variation of by any other means.

3 OEM will conduct cFAT at EI LAB facility in Eastern Railway jurisdiction, if available. Otherwise, OEM will arrange cFAT at railway premises.

4 cFAT will be done as per direction of Sr. DSTE/ASN in single or multiple shift to achieve the target.

5 OEM should certify complete list of Instruments and Tool Kits required for trouble shooting and repair of hardware and software.

6 EI materials should be supplied only after approval of system configuration and interface circuits. Along with system configuration, the OEM will give details of

system loading and spare capacity of input/outputs provided in each rack/sub system with respect to specs.

**4.3.6 Payment terms for EI**-Payment terms for EI is as follows-

- 60% of the payment for the item will be done on submission & approval of interface by Railways including supply of all required material as included in group and accessed by Circuits approved by Railways.
- 25% of the payment for the item will be done on approval of logic circuit and successful completion of SAT and issue of SAT certificate.
- 15% of the payment for the item will be retained as retention money and will be released as per release of retention money rules mentioned in item **4.20 of Special Condition of Contract of Tender Documents**.
- Quantity indicated in items are calculated tentatively on attached SIPs. However, payment will be made on actual functional vital bit required for station. It will not include non-vital bit required for the system operation.

**4.4 SCOPE OF THE WORK:** - As given in Annexure - 'R'

**4.5 CONTRACTOR'S DRAWINGS and EQUIPMENT'S OFFERED:** -

**4.5.1** The tenderer may furnish with his proposal:

- 1) Drawings as well as full details of the equipment he proposes to supply which are not covered by the Railway.
- 2) Two copies of typical circuit diagrams with a write up that the tenderer proposes to adopt, in English or as per practice already accepted on Eastern Railway in similar contracts.
- 3) Two copies of each of the drawings showing construction particulars, power connections and an outline of the power supply requirements with the distribution scheme together with explanatory notes, in English.
- 4) Two copies of cable requirement chart / figures along with its basis. Cable shall be calculated with additional length required to be provided at joints, crossings, spare in loops etc. as per technical specification.

**4.5.2** Contractor shall be solely responsible for ensuring that the end requirements are incorporated in all designs and drawings furnished by him. **Although the drawing, designs may have been approved by the Railway, it shall be the responsibility of the contractor to ensure the end requirement of the system.**

**4.5.3** Any work done by the contractor prior to the approval of the contractor's drawings will be done at the contractor's risk, unless previously authorized specifically in writing in each individual case by an authorized representative of the Railway.

**4.5.4** If the Contractor shall have any doubt as to the meaning of any portion of the conditions of the specifications, drawings or plans, he shall (before submitting the tender) set forth the particulars thereof and submit them to the PURCHASER in writing, in order that any such doubt may be removed. No change shall be made in any approved drawing without the written consent of the Railway.

**4.5.5** For the approval of the Railway the contractor shall furnish to the Railway corrected tracings of the drawings furnished by him along with six copies each of such corrected drawings.

**4.5.6** After the completion of the work the following drawings, in addition to the other drawing mentioned elsewhere, should be supplied to the Railways in six copies. Two copies duly laminated and rest four copies in plastic Folder.

- i) System Design which will include detailed Technical Literature of Equipment, Components & Parts thereof, Users & Maintenance Guide/Manual.

- ii) Cable Route Diagram with position of Joints. Location Huts and Cabins etc. indicated.
- iii) Wiring Diagram of Equipment/Components/Modules/Parts.
- 4.5.7 Wiring Diagrams and other Plans shall be uniform in size and the size shall be preferably to an overall Dimension of **A2 Size or size where drawings are readable.**
- 4.5.8 The Contractor shall be responsible for and shall pay for any alterations of the works due to any discrepancies, errors or omissions in the drawings or other particulars, whether they have been approved by the PURCHASER or not, provided that such discrepancies, errors or omissions are not due to inaccurate information or particulars furnished to the Contractor on behalf of the PURCHASER. If any dimensions figured upon a drawing or plan differ from those obtained by scaling the drawing or plan, the dimensions as figured upon the drawing or plan shall be taken as correct.
- 4.5.9 After completion of the work the contractor should arrange and submit detailed completion drawings as per zonal railway policy above as approved by Railways in 1 + 6 laminated copies including polyester sheet as original.
- 4.5.10 **EQUIPMENT AND SERVICES TO BE OFFERED: -** In tender Schedule, where batteries, battery chargers, Voltage Stabilizers, wiring materials, cables, IPS, Datalogger, MSDAC, VDU, LED lighting unit etc. have been included in the tender of various capacities, such items of different capacities shall be from only one source/manufacturer unless specifically permitted in the tender otherwise. This is to ensure uniformity in maintenance, to facilitate procurement of spares and for training of technicians, and for keeping record of failures of equipment of each manufacturer during the life of the assets. This clause is mandatory.
- 4.6 **TIME SCHEDULE: -**
- 4.6.1 Time is the essence of contract and the item for completion of the entire work is of utmost importance. The complete system at the station is required to be fully operational within specified months for the completion period mentioned in Tender Document from the date of issue of letter of acceptance. Tenderer is required to provide adequate detail of the activities involved, to substantiate their claim of being able to meet the above dead line for handing over the system to the Railways for regular operational use.
- 4.6.2 Time is essence of the Contract and the time schedule given in Annexure - 'R' shall be the basis for contract administration except due to Force Majeure Clause.
- 4.6.3 The contract covered by this Tender shall be deemed to commence from the date of issue of Letter of Acceptance.
- 4.6.4 The tenderer must submit a BAR CHART in their tender offer indicating the time period by which the supply of materials will be completed. The tenderer also shall indicate in their BAR CHART, the completion period of various activities like cable laying, location hut erection, relay rack fixing, relay fixing, panel fixing and wiring, testing & commissioning as applicable. The bar chart must clearly include any inputs required from railway side.
- 4.6.5 The tenderer should indicate the details of total for technical staff under their employment (category wise) and also the details of technical staff (with identity card) proposed to be deployed by them for the subject work.
- 4.6.6 The delivery of Stores required for the project may be regulated at the discretion of Railway in accordance with the requirements and Targets of Railways.



#### **4.7 VARIATIONS: -**

- 4.7.1 No alterations, amendments, omissions, additions, suspensions or variations of the work (hereinafter referred to as “Variations”) under the contract as shown by the drawings of the specifications shall be made by the Contractor except as directed in writing by the Engineer, but the Engineer shall have full power, subject to the provision hereinafter contained, from time to time, during the execution of the contract, by notice in writing to instruct the contractor to make such variations without prejudice to the contract as per GCC and MSOP of Indian Railways, and the contractor shall carry out such variations and be bound by the same conditions, so far as applicable, as though the said variations occurred in the specifications. If any suggested variation would, in the opinion of the Contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the contract, he shall notify the Engineer thereof in writing and the Inspector shall decide forthwith, whether or not they shall be carried out. If the Engineer confirms his instructions, the Contractor’s obligations and guarantees shall be modified to such an extent as may, in the opinion of the Engineer, be justified. The difference of cost, if any, occasioned by any such variations shall be added to or deducted from the contract price as the case may require. The amount of such difference, if any, shall be ascertained as determined in accordance with the rates specified in the schedules of prices, so far as the same may be applicable, and where the rates are not contained in the said schedules or not applicable, they shall be settled by the PURCHASER and Contractor jointly. But the PURCHASER shall not become liable for the payment of any such variations unless the instructions for the performance of the same have been given in writing by the Engineer.
- 4.7.2 The modifications to the terminology used in General Conditions of Contract 2022 for Indian Railway with up-to date modifications applicable in S&T contracts is at Annexure- ‘M’. In the event of the Engineer requiring any variations, such reasonable and proper notice shall be given to the Contractor, as will enable him to make his arrangements accordingly, and in case where goods or materials are already prepared, or any designs, drawings, or patterns made or work done is required to be altered, a reasonable sum in respect thereof shall be allowed by the PURSHASER, provided that no such variations shall, except with the consent in writing of the Contractor, be such as will involve an increase or decrease in the total price payable under the contract by more than 10 per cent thereof.
- 4.7.3 In any case, in which the contractor has received instructions from the Engineer for carrying out the work which either then or later, will in the opinion of Contractor, involve a claim for additional payment, the Contractor shall, as soon as reasonably possible, after receipt of the instructions aforesaid, advise the Engineer to that effect.

#### **4.8 WORK PERFORMANCE GUARANTEE: -**

Since the supply and execution of the work by the Contractor is to achieve the end objective of providing suitable equipment and facilities to the specifications given in the Tender for the ultimate objective as detailed in the tender, the tenderer shall give unqualified and unconditional guarantee that the supply of Materials and work as designed and/or executed by him will achieve the desired objective and that in the event of the performance of the system not complying with the end objective or with the specifications, he shall provide further inputs to enable the Railways to realize the end objective with full compliance of the specifications contained in these documents and no additional payment will be made to the contractor for the supply of any additional inputs required in this regard.

The certificate as per the format in **Annexure- G** shall accompany the quotation. Quotations which do not contain this guarantee in the format are liable for rejection.

- 4.9 **RATES TO INCLUDE ALL TAXES :-**The work being nearly on a turnkey basis, evaluation shall be done on the basis of the supply and execution portions taken together even though the Railway reserves the option to supply some of the items as mentioned in Annexure - 'R'. Accordingly, the contractor shall not be entitled normally to get any Works contract Sale Tax from the Railway Administration for the supply of materials. However in case any taxes/duties are extra, the exact rate and firm applicability and any certificates / forms if any to be given by the Railway will have to be specified in respect of the various items as per Annexure 'Z' (Schedule/s). Railway decision in this regard will be final. If no duties/taxes are mentioned in Annexure-Z, rate offered by the bidder will be considered inclusive of all variables including taxes.

**4.10 EXECUTION AT SITE :-**

- 4.10.1 The Contractor shall abide by all the Railway rules relating to safety of personnel and Railway operation.
- 4.10.2 The Contractor shall not do any work that may interfere with traffic until protection has been ensured by the Railway.
- 4.10.3 The Railway will promptly arrange to protect traffic upon request of the Contractor, when required.
- 4.10.4 The contractor shall ensure that his technical Engineer/Supervisor is always available at the site of work during the execution period till commissioning and during the period of the maintenance supervision to ensure that no time is lost in correspondence. Any written orders or instructions which the Railway Engineers may give to such representative of the contractor shall be deemed to have been duly given or communicated to the contractor.
- 4.10.5 In respect of important items of work the contractor's representative should be present at site at least for the execution and supervision of Maintenance period (if applicable) and under his supervision the installation of the work & Tests should be completed in all respects to the satisfaction of Railway officials concerned.
- 4.10.6 The cable laying, if included in the schedule shall be as per Annexure- 'P' and technical circulars wherever applicable.
- 4.10.7 Before proceeding to execute any work, the contractor shall obtain from the Railway's Engineer or his authorized representative, approval in writing in the manner in which the contractor proposes to execute each portion of the work.
- 4.10.8 The contractor shall during the progress of the work remain answerable and liable for all accidents or injuries which may arise from or be occasioned by the acts of omissions of contractor or his representative or agents or workmen. All losses or damages arising from such incidents or injuries aforesaid shall be made good in the most complete and substantial manner at site by and at the cost of the contractor, in all respect, to the entire satisfaction of the Railway.
- 4.10.9 Until the official's tests have taken place and the contract works have been finally accepted by the Railway, the contractor shall be solely responsible for all the contract works whether such is in use for train operation, or for the purposes of testing under construction during tests, or in use of Railway's service.
- 4.10.10 The contractor shall make such tests as may be necessary to demonstrate to the satisfaction of the railway that the works are executed in accordance with the requirements of the specification and contract.
- 4.11 **COMPLIANCE TO PROVISIONS OF APPRENTICES ACT, 1961 :-**The contractor shall be responsible to ensure compliance with the provisions of the

Apprentices Act, 1961 as modified up to date and the Rules & Orders issued hereunder 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 contractor or sub-contractors fail to do so, his failure will be a breach of contract and the Railway may in its discretion rescind the contract. The contractor shall also be liable for any liability arising on account of any violation of the provisions of the Act.

- 4.12 **OMISSIONS DISCREPANCIES & CLARIFICATION :-**Should a tenderer find , discrepancies in, or omission from the drawings or any of Tender papers / specifications/ or he has any doubt to their meanings, he should at once notify to Sr. DSTE/ASN, Asansol-713301 who may send a written instruction to all tenderer. It shall be understood that every endeavor has been made to avoid any error which can materially affect the basis of the tender and the successful tenderer shall take upon himself and provide for the risk of any error which may subsequently be discovered and shall make no subsequent claim on account thereof. **Any clarifications required may be obtained from Sr. DSTE/ASN, Asansol-713301 until one working day before the last day of closing of tender.**

4.13 **RESPONSIBILITY of CONTRACTOR:**

4.13.1 **For Material:**

- 4.13.1.1 The Railway Administration will not be responsible for loss or damage to the Contractor's materials, equipment, tools & plants due to floods, thefts or any other cause or causes whatsoever.
- 4.13.1.2 The contractor shall be held responsible for any damage to Railway property like telephone lines, cables which may be caused by any of his action in connection with or in the execution of the work.
- 4.13.1.3 **CLAIMS:** - The contractor will indemnify the Railways from all claims made in respect of loss or injury suffered by the contractor's representatives at site.

4.13.2 **For Labour:**

- 4.13.2.1 The contractor shall not employ children below the age of 15 years as labour directly or through petty contractor or sub contractor for the execution of the works.
- 4.13.2.2 The contractor will be responsible for pay and allowance and claims under the factory act, payment of wages act and Workmen's Compensation Acts in respect of the labour supplied by him, the contractor will be responsible for their technical direction and supervision, out-turn of work both as regards quantity, quality and progress accuracy of erection of installation and for any defects arising out of the work done by labour.
- 4.13.2.3 The contractor shall comply with the provisions of the Contract Labour (Regulation & Abolition) Act, 1970 and the Contract Labour (Regulation & 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.
- 4.13.2.4 The Contractor should enclose their existing Contract Labour license along with their offer failing which it is considered as an incomplete offer.
- 4.13.2.5 In case if any notice is received from the concerned State Governments for any violation of any clause of Contract Labour (Regulation and Abolition) Act, 1970 and the Central Rules 1971 during the currency of the Contract and if any amount is payable as per Contract Labour Act to the staff employed the same will be deducted from there on Account/ Final Bills without any intimation unless the tenderer submits the clearance certificates from the concerned department of the State/ Central concerned for non deduction of the same from there on Account/ Final Bill.

4.13.2.6 The contractor shall be responsible for the safety of all employees employed by him directly or indirectly on the works and shall report serious accident to any of them however and wherever occurring on the works to the engineer's representative and shall make every arrangement to render all possible assistance.

4.13.2.7 The contractor shall indemnify and protect the Railway against all actions, suits, claims, demands, costs charges or expenses arising in connection with any death or injury sustained by any person or persons within the Railway premises by the acts or omissions of the contractor, his agents or his staff during the execution of this contract, irrespective of whether such liability arises under the Workmen's Compensation Act, 1923 or the Fatal Accidents Act or any other statute in force for the time being.

#### 4.13.3 For Safety-

- 4.13.3.1 The contractor shall take all possible precautions to ensure that none of his workers knowingly or otherwise cause interference to the circuits or equipment's in use and give rise to unsafe conditions or dislocation of traffic.
- 4.13.3.2 No work shall be begun above or under or adjacent to any line of the Railway, in consequence of which it may become necessary to foul any such line or it may in any way prejudice the same for safe passage of traffic until look out men and hand signal men as required by the Engineer or his representative. Shall have taken their duties.
- 4.13.3.3 The contractor shall take all precautionary measures in order to ensure the protection of their own personal moving about or working in the Railway Premises, which shall conform to the rules and regulations of the Railway. If and when, in the course of the works, there is likely to be any danger to persons in the employment of the contractor or of the railways, contractor will provide flagmen or look out men for protection of such persons.
- 4.13.3.4 The Railway shall remain indemnified by the contractor, in the event of any accident occurring in the normal course of work, arising out of the failure of contractor or his men to exercise reasonable precautions at all places of work.
- 4.13.3.5 While working within station limits, especially on passenger platforms, the contractor shall ensure that at all times sufficient space as per Railway's Schedule of Dimension as left for free movement of passenger traffic. He must cover and/or barricade the excavations carried out in such areas and continue to maintain these, till the work is completed with a view to avoid any accident to public or a Railway Staff.
- 4.13.3.6 The works must be carried out most carefully without any infringement of the Indian Railways Act or the General and Subsidiary Rules in force on the Railway, in such a way that they do not hinder railway operation nor affect the proper functioning of or damages any Railway Land, Equipment, Structure or Rolling Stock except as agreed to by the Railway, provided that all damage and disfiguration caused by the Contractor to any Railway or Public property must be made good by the Contractor at his own expenses failing which cost of such repairs shall be recovered from the Contractor.
- 4.13.3.7 If safety of track etc. is affected, as a consequence of works undertaken by the Contractor, the Contractor shall take immediate steps to restore normal conditions. In case of delay, the Railway shall, after giving due notice to the contractor in writing take necessary steps and recover the cost from the contractor.
- 4.13.3.8 The Contractor shall be held responsible for any damage to Railway property like telephone lines, cables or any other Railway gears & equipment, which may be caused by any of his action in connection with or in the execution of the work. All costs, damages or expenses which the Railway may have paid, for which under the contract, the contractor is liable, may be either deducted by the Railway at its discretion from any moneys due or to become due or refundable to the contractor under the contract, or may be recovered by actions at law or otherwise from the contractor under this contract and to set off the same against all claims whether arising out of this contract or out of any other transaction whatever against the contractor.

#### 4.13.4 **PROCUREMENT OF SUPPLY ITEMS by Contractor :-**

- 4.13.4.1 All items supplied to Railway should be procured from the list of firms approved by RDSO wherever such a list exists. Inspection certificates of RDSO wherever applicable must accompany along with these items. All such items should be procured

by the tenderer from the list of RDSO approved Manufacturers or their Distributors with inspections to be done at the premises of the original manufacturer.

- 4.13.4.2 In case if any supply item is not in the list of RDSO approved firms, material is to be procured as decided by railway to ensure safety and minimum down time due to procurement. In case IRS specification are not available for any items, the materials should conform to Bureau of Standard Institution (Latest) (i.e. ISI) where-ever the specifications.
- 4.13.4.3 The Contractor shall be held responsible for the execution of the works according to the time schedule given above in full compliance of the specifications and the various clauses of Technical Specifications, Instructions and drawings. Failure to comply with any of these will be dealt with as per provision laid down in the General Condition of Contract and Instructions for tenderer of the Engineering Department of Eastern Railway.
- 4.13.4.4 It should be clearly understood that it is entirely contractor's responsibility and liability to find, procure and use machineries, tools, plants and their spare parts that are required for efficient and methodical execution of work. Delay in procurement of such items due to non availability or import difficulties or any other causes what so ever will not be taken as an excuse for slow and non performance of work.
- 4.13.4.5 All materials in the tender documents shall be supplied by the contractor at site. These shall include the materials in addition to any other minor items such as bolts, nuts, brackets, support materials which may be considered necessary for execution of the work according to the specifications.
- 4.13.4.6 All instruments required, for testing shall be arranged by the contractor and shall remain his property.
- 4.13.4.7 Material should be supplied as per the progress of the work.

#### **4.14 EMPLOYMENT IN GOVT. SERVICE:-**

- 4.14.1 Should the Tenderer have a relative or relatives in the name of a firm or company or contractor, one or more of the shareholders or relative of the shareholders are employed in Gazetted capacity in the Signal & Telecommunication Department of any of the Railways, the authority inviting the tender shall be advised to this effect at the time of submission of the tender failing which the tender is liable to be disqualified as mentioned in GCC 2022 with up to date modifications. Moreover, if such a fact subsequently comes to light, the Contract will be rescinded in accordance with the provisions in the General Conditions of Contract 2022 with up-to date modifications.
- 4.14.2 Should a tenderer 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 any of the Departments of any of the Railways owned and administrated by the President of India for the time being, or should a tenderer being partnership firm have one of the partners a retired engineer or a retired Gazetted officer as aforesaid, or should a tenderer being an incorporated company have any such retired engineer or retired officer as one of its Directors, or should a tenderer have in his employment any retired engineer or retired Gazetted officer as aforesaid, the full information as the date of retirement of such engineer or Gazetted officer from the said service and in cases where such engineer or officer had not retired from Government Service at least two years prior to the date of submission of the tender as to whether permission for undertaking such contracts, join his contractor in a partnership firm or any incorporated company, to become a Partner or Director as the case may be, or to take employment under the contractor has been

obtained by the tenderer or the engineer or the officer as the case may be, from the President of India or any officer duly authorized by him on his behalf shall be clearly stated in writing at the time of submitting the tender. Tenders without the information referred to above or a statement to the effect that no such retired engineer/or retired Gazetted officer in accordance to GCC is so associated with the tender, as the case may be, is liable to be rejected.

#### **4.15 RESPONSIBILITY FOR CONTRACTOR'S MATERIAL:-**

4.15.1 The Railway Administration will not be responsible for loss or damage to the Contractor's materials, equipment, tools & plants due to floods, thefts or any other cause or causes whatsoever.

4.15.2 The contractor shall be held responsible for any damage to Railway property like telephone lines, cables which may be caused by any of his action in connection with or in the execution of the work.

4.15.3 **CLAIMS: -** The contractor will indemnify the Railways from all claims made in respect of loss or injury suffered by the contractor's representatives at site.

#### **4.16 SITE CLEARANCE: -**

At the end of the work at each location the contractor shall as a part of his contractual obligation, leave the area completely cleared of rubbish and obstructions of all kinds according to the instructions of the Railway's representative. Besides, he shall take all necessary steps in the course of the execution of work to avoid the presence of loose earth and ballast on platforms, in drains, on the track formation and pathways in the vicinity. If within a fortnight of completion of the particular item of site work, the refuge is not cleared, the Railway will arrange to get them removed at the cost of the contractor. However, before the Railway actually gets the site cleared, intimation in writing shall be sent to the contractor.

#### **4.17 CONSIGNEE :-**

The contractor should consign, if need be, all the materials to 'Self' to the nearest stations where materials can be booked for stacking before erection. For such items, as admit part payment on receipt by the Railway, the materials can be booked to **SSE/Sig/Store/ASN or SSE/Tele/Store/ASN** where from the materials shall be handed over to the contractor for installation. However all handling charges for each such items shall be borne by the contractor.

#### **4.18 PATENT :-**

4.18.1 The tenderer is prevented from using any patented detailed drawings, process or patents without the previous consent of the owner of such patent etc. The tenderer for the use of such patented drawings, process should bear the royalties payable to the patents.

4.18.2 The tenderer is also required to indemnify the Railway against all costs and expenses arising from any claim or action being brought against the Railway for infringement of letters of patents.

#### **4.19 DEPLOYMENT OF QUALIFIED ENGINEERS AT WORKS SITE BY THE CONTRACTOR(Railway Board's letter No. 2012/ CE-1/ CT/ 0/ 20 dated 10.05.2013 (Clause - 26 of GCC) :-**

4.19.1 The contractor shall place and keep on the works at all times efficient and competent staff (Qualified in Technical/Engineering/Science field, Qualifying document is to be submitted to the Sr. DSTE/ASN office) 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. Contractor will communicate the name of staff with all the details (Address, Working Mobile no etc.) of the supervisor and will ensure that he remains at site. Any Staff, workmen or officers detailed by contractor to execute the work shall be deemed to be the agents or employees of the contractor for the purpose of fixing responsibility and determining liability for any loss or damage occasioned by any act of omission or commission on the part of such staff, workmen or officers while working under the supervision of the contractor.

4.19.2 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.

4.19.3 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

4.19.4 In terms of Clause 26A of GCC, Tenderer(s)/Contractors after award of the contract shall be required to employ graduate engineer or equivalent or qualified diploma engineer on monthly salary and for the duration as indicated below:

<b>Contract value</b>	<b>No of Graduate Engineer /Diploma Holders Engineer</b>	<b>Duration</b>
Upto 2 Crore	One Diploma Engineer	During currency of Contract.
From 2 Crore to 10 Crore	One Degree Engineer + OneDiploma Engineer	During currency of Contract.
From 10 Crore to 20 Crore	One Degree Engineer + TwoDiploma Engineer	During currency of Contract.
Above 20 Crore	Two Degree Engineer + TwoDiploma Engineer	During currency of Contract.

4.19.5 In case contractor fails to employ the Engineer, as aforesaid in above, he shall be liable to pay liquidated damages for an amount of Rs. 40,000/- per Degree Engineer and Rs. 25,000/- per Diploma Engineer for each month or part thereof for the default period.

#### **4.20 PAYMENT TERMS: -**

4.20.1 For all items involving supply in the rate schedule, 85% of the supply rate quoted in the rate schedule shall be paid to the contractor as on account bills only on receipt of the materials in good condition at the stores of **SSE/Sig/Store/ASN or SSE/Tele/Store/ASN** on production of the following documents of the materials in good condition at the stores of the consignee on production of the following documents:



(a) Inspection Certificate issued by RDSO/RITES/Railway representative in respect of items wherever necessary, else inspection waiver certificate issued by Eastern Railway.

(b) Store receipt certificate issued by Railway official/Representative as per format at Annexure- 'J'.

4.20.2 For all items involving either installation only or supply and installation, 85% of the installation rate quoted in the rate schedule shall be paid to the contractor(after completing both supply and installation unless mentioned otherwise anywhere in tender document.) as on account bills only on production of certificate by the Site Engineer that relevant portion of installation has been completed.

4.20.3 The balance retention money of 15% of the supply, installation and supply & installation rate quoted against rate quoted in respect of items shall be paid on completion of the installation/ erection and on issue of the completion certificate by the authorized Railway official/ representative on submission of Final Bill in Railway Format along with Measurement Book duly measured by site supervisor. Before issue of completion certificate the firm is required to submit budgetary quotation for comprehensive AMC of system to the Railways.

4.20.4 For items involving only supply such as Test and Measuring Instruments, Tools & Plants accessories if any etc. which do not have any installation element, 100% shall be paid on receipt of the same in the stores against the documents given in **(a) & (b) (if applicable) of para 4.20.1 above.**

**4.20.5 All payments to contractors/ Suppliers will be made through National Electronic Fund Transfer (NEFT) system. It is mandatory. MANDATE FORM as Annexure-Q is enclosed in tender document which will require to be filled in along-with the offer.**

4.20.6 I. On Indian Railways presently "work executed by contractor" is recorded in measurement books by railway, duly accepted by contractor. Railway prepares 'on account / final contract certificate' for the payable amount based on the work executed and the rates quoted by the contractor duly deducting various statutory taxes like – work contract tax / service tax / royalties / income tax etc. as per applicable rates. Further, railways deposit the statutory deductions themselves to the concerned authorities.

**II.** With GST act in force, it will be the responsibility of service providers (i.e., contractors) to submit the invoice (bill) duly segregating the GST component from the Gross of work executed.

**III.** Railways are therefore advised to follow the procedure as mentioned below while dealing with contractor's payment, once GST is applicable:

**A. (i)** All works contracts are to be provided with goods/service code based on the type of contract. In case contract consists of both goods & service, then interpretation regarding nature of contract shall be done as per clause 8, Chapter III of CGST Act, 2017. The goods/service code is notified by Ministry of Finance and can be downloaded from the website [www.cbec.gov.in](http://www.cbec.gov.in).

**(ii)** The 'on account / final contract certificate' shall be prepared by the Railway on the basis of quantity of work executed and agreemental rates, duly segregating the GST component as detailed in para (iii) below.

**(iii)** Since the agreemental rates of contracts are inclusive of all taxes as per GCC-2019, the calculation of 'Gross amount of work executed', 'Amount of work executed excluding GST amount' and 'GST amount' in the 'on account / final contract certificate' shall be done as under:

Let Z = Gross amount of work executed on the basis of quantum of work executed and agreemental rates.

X = Amount of work executed excluding GST amount.

Y = GST amount as per applicable GST rate for that goods/service code.

R = Percentage rate of GST for that goods/service code.

**Then,  $Z = X + Y$ ,  $Y = X \times R/100$ .**

(iv) Percentage rate of GST for various types of goods/services as finalized by GST council can be downloaded from the website [www.cbec.gov.in](http://www.cbec.gov.in).

**B. (i)** Once the 'on account / final contract certificate' is prepared by railway and communicated to contractor, the contractor shall submit invoice (bill) on his Letter head duly segregating the 'Amount of work executed excluding GST amount' and 'GST amount' (i.e., 'X' & 'Y' as mentioned in para 3(A)(iii) above) along with Invoice No. (Bill no.) and all other details required under GST act. The sample GST complaint invoice is annexed herewith.

#### **ANNEXURE**

1.	Supplier Name	-
2.	Supplier GSTIN	-
3.	Invoice No.	-
4.	Invoice Issue Date	-
5.	Total Value	-
6.	Taxable Value	-
7.	Goods A/c HSN, Service Accounting Code	-
8.	Goods and Services Description	-
9.	Unit Qty. Code	-
10.	Quantity	-
11.	Rate	-
12.	Whether eligible for ITC – Partial/Full/Nil	-
13.	IGST rate	-
14.	IGST Charged Amount.	-
15.	CGST Rate	-
16.	CGST Charged Amount.	-
17.	SGST / UGST rate.	-
18.	SGST Charged Amount	-
19.	Cess rate	-
20.	Cess Charged Amount	-
21.	Name / Recipient of Service / Goods-	-
22.	Place of Supply	-
23.	Recipient GSTIN	-
24.	Tax payable on Reverse Charge Basis (Y/N)	-
25.	TDS	-

**(ii)** In case contractor is liable to be registered under GST Act, Railway shall pay to the contractor 'Gross amount of work executed' (i.e., 'Z' as mentioned in para 3(A)(iii) above) duly deducting all other leviable taxes like I/Tax, labour cess, royalty etc. as applicable. Contractor shall be liable to pay 'GST amount' to respective authority himself. Whereas, railway shall deposit all other taxes deducted to concerned authority as is being done presently.

**(iii)** In case contractor is not liable to be registered under GST Act, contractor shall be paid 'Amount of work executed excluding GST amount' (i.e., 'X' as mentioned in para 3(A)(iii) above) duly deducting all other leviable taxes like I/Tax, labour cess, royalty etc. as applicable. Railway shall deposit 'GST amount' as well as all other taxes deducted to concerned authority.

(iv) In case any need arises to modify the Invoice (Bill) due to any reason, contractor shall submit amended fresh invoice for processing the payment.

**4.20.7 Letter of credit as mode of payment -**

(i) For all the tenders having advertised cost of `10 lakh or above, the contractor shall have the option to take payment from Railways through a letter of credit (LC) arrangement.

(ii) This option of taking payment through LC arrangement has to be exercised in IREPS (Indian Railway Electronic Procurement System- the e-application on which tender are called by Railways) by the tenderer at the time of bidding itself, and the tenderer shall affirm having read over and agreed to the terms and conditions of the LC option.

(iii) The option so exercised, shall be an integral part of the bidder's offer.

(iv) The above option of taking payment through LC arrangement, once exercised by tenderer at the time of bidding, shall be final and no change shall be permitted, thereafter, during execution of contract.

(v) In case tenderer opts for payment through LC, following shall be the procedure to deal release of payment through LC, following shall be the procedure to deal release of payment through LC:

(a) The LC shall be a sight LC.

(b) The contractor shall select his Advising/Negotiating bank for LC. The incidental cost towards issue of LC and its operation thereof shall be borne by the contractor.

(c) The contractor shall select his Advising/Negotiating bank for LC. The incidental cost towards issue of LC and its operation thereof shall be borne by the contractor.

(d) SBI, New Delhi, Main Branch will be the nodal branch for issue of LCs based on online requests received from Railway Accounts Units for tenders opened in financial year 2018-19. SBI branches where the respective Railway Accounts Office has its Account (Local SBI Branch) will be the issuance/reimbursing branch for LC issue under this arrangement. The Bank shall remain same for this tender till completion of contract. The incidental cost @ 0.15% per annum of LC value, towards issue of LC and operation thereof shall be borne by the contractor and shall be recovered from his bills.

(e) The LC shall be opened initially for duration of 180 to 365 days in consultation with contractor. The LC shall be extended time to time as per the progress of the contract, on the request of the contractor. The value of LC to be opened initially as well as extended thereafter shall be finalised by the engineer in consultation with the contractor on the basis of expected progress of work.

(f) The LC terms and conditions shall inter-alia indemnify and save harmless the Railway from and against all losses, claims and demands of ever nature and description brought or recovered against the Railways by reason of any act or omission of the contractor, his agents or employees, in relation to the Letter of Credit (LC). All sums payable/borne by Railways on this account shall be considered as reasonable compensation and paid by contractor.

(g) The LC terms and conditions shall inter-alia provide that Railways will issue a Document of Authorisation (format enclosed as Annexure-2) after passing the bill for completed work, to enable contractor to claim the authorised amount from their bank.

(h) The acceptable, agreed upon document for payments to be released under the LC shall be the Document of Authorisation.

- (i) The Document of Authorisation shall be issued by Railway Accounts Office against each bill passed by Railways.
- (j) On issuance of Document of Authorisation, a copy of Document of Authorisation shall be posted on IREPS for download by the contractor. A digitally signed copy of Document of Authorisation shall also be sent by Railway Accounts Office to Railway's bank (Local SBI Branch).
- (k) The contractor shall take print out of the Document of Authorisation available on IREPS and present his claim to his bank (advising Bank) for necessary payments as per LC terms and conditions. The Claim shall comprise of copy of Document of Authorisation, Bill of Exchange and Bill.
- (l) The payment against LC shall be subject to verification from Railway's Bank (Local SBI Branch)
- (m) The contractor's bank (advising bank) shall submit the documents to the Railway's Bank (Local SBI Branch)
- (n) The railway's bank (issuing bank) shall, after verifying the claim so received w.r.t. the digitally signed Document of Authorization received from Railway Accounts Office, release the payment o contractor's bank (advising bank) for crediting the same to contractor's account.
- (o) Any number of bills can be dealt within one LC, provided the sum total of payments to contractor is within the amount for which LC has been opened.
- (d) The LC shall be closed after the release of final payment including PVC amount, if any, to the contractor.
- (e) The release of performance guarantee or security deposit shall be dealt directly by railway with the contractor i.e. not through LC.

### **Annexure-2**

LCDA No. (18 DIGIT IPAS GENERATED NO.)

Dated .....

#### DOCUMENT OF AUTHORISATION

Reference: (i) Works Contract/Supply Contract No.....Dated.....

(ii) Inland Letter of Credit No..... Dated.....

This document is issued against contract No.....(FROM IREPS) .... Dated.....for supply/works of (DESCRIPTION OF GOODS/WORK FROM IREPS) .....

The beneficiary of the aforementioned Letter of Credit M/s. ....(NAME AND VENDOR CODE) ..... (Vendor Code.....as per IRPES.....) is entitled to receive payment aggregating INR.....SSS..... (FROM ABSTRACT OF BILL PASSED) ....out of a total LC amount of INR.....(FROM MASGTER TABLE OF LC OPENED) .....against the First/second\* commercial Invoice No. (FROM IPASS).....dated .....FROM IPAS .....for INR (FROM IPAS) .....raised against the above contract from State Bank of India .... (Branch --- FROM LC MASTER TABLE).....on the strength of this certificate.

The details payments already made to the beneficiary under this Letter of Credit are as follows :

SL. No.	Invoice No.	Invoice Date	Invoice Amount (INR)	LCDA No.	LCDA Date	Amount paid (INR)
Total Paid						

THIS PAYMENT :: .....

LC BALANCE AFTER THIS PAYMENT :: .....

Signature of authorized Railway authority

Name

Designation

Official Seal

**4.21 PRICE VARIATION: -**

4.21.1 Price variation shall be governed as per clause no. 46A. of GCC with upto date modifications for signaling & Telecommunication work. with the following percentages given below in the table against this tender.

**4.21.2 CLAIMS FOR PRICE VARIATION: -**

4.21.2.1 Contractor shall submit all bills for on account payment at the rates provided in the contract which shall include excise duty, sales tax and other Govt. levies paid at actual.

4.21.2.2 All claims for reimbursement/recovery due to variation in the price on account of Foreign Exchange, Customs Duty if any or PVC shall be prepared and settled at the end of six-monthly period for the supplies and services effected during the previous six months.

**NOTE: -**

Material supplied by the Railway to the contractor will not form a part of the value of contract entered into and will fall outside the purview of the Price Variation Clause.

**4.22 TERMS OF GUARANTEE: -**

4.22.1 After the installation is placed in service by the Railway, after the proving test as per above, the contractor shall maintain the installation for 2 months and be responsible for the proper functioning of his portion of the work for a period of 12 months from the date of completion of the last portion of the main work. Any lacunas noticed in the functioning of the work as a result of any design/ fabrication/erection feature shall be rectified by the contractor free of cost during this period. Till the installation at each station/site is placed in service and completion certificate for that portion is issued the security of the materials outside the Railway Buildings shall be the responsibility of the contractor. The Equipment inside Railways buildings, after commissioning even individually shall be taken over by the Railway for necessary security. This will be considered for releasing of security deposit.

4.22.2 During the period of guarantee the contractor shall keep all materials, tools and other requisite equipment readily available and shall carry out at his own expense all modifications, additions or substitutions that may be considered necessary for satisfactory working of the contracted work or equipment supplied by him. Final decision in respect of unsatisfactory working of the contracted work or equipment or faulty design or workmanship, etc. shall rest with the Purchaser.

4.22.3 If it becomes necessary for the contractor to replace or renew any defective portions of the system under this clause the provisions of this clause shall apply to the portions of the plant to be replaced or renewed until the expiration of six months from the date of such replacement or renewal or until the end of the warranty period whichever may be later. If any defect is not remedied within reasonable time, the purchaser may proceed to do the work at contractor's risk and expenses, but without prejudice to any other rights which the purchaser may have against the contractor in respect of such defects.

**4.23 WARRANTY:-**

4.23.1 The work done and executed by the Contractor shall be guaranteed against defects and to conform to parameters in the technical specifications for a

period of **12 months from the date of issue of completion certificate** as stated in clause 48 of General Conditions of Contract 2022 with up-to date modifications or 18 months from the date of supply of the last vital/main equipment in the contract, whichever is later. However, for the items involving only supply the warranty shall be for 18 months from the date of supply even if the order is split separately into supply and execution portions for benefit of the Railway.

4.23.2 During the period of warranty the Contractor shall remain responsible to arrange replacement and for setting at his own cost any equipment installed by him which is of a defective manufacture or design or workmanship or becomes unworkable due to any cause whatsoever. The decision of the Railway in this regard to direct the Contractor to attend to any damage or defect or defect in work or arrange replacement of any part thereof shall be final and binding on the Contractor.

4.23.3 During the period of warranty, the contractor shall be responsible to the extent expressed in this clause for any defects that may develop under the conditions provided for by the contract and under proper use, arising from faulty materials, design of workmanship in the plant, or from faulty execution of the plant by the contractor but not otherwise and shall remedy such defects at his own cost when called upon to do so by the Purchaser who shall state in writing in what respect the portion is faulty.

4.23.4 If it becomes necessary for the contractor to replace or renew any defective portions of the system under this clause the provisions of this clause shall apply to the portions of the plant to be replaced or renewed until the expiration of six months from the date of such replacement or renewal or until the end of the warranty period whichever may be later. If any defect is not remedied within reasonable time, the purchaser may proceed to do the work at contractor's risk and expenses, but without prejudice to any other rights which the purchaser may have against the contractor in respect of such defects.

4.23.5 If the replacement or renewal are of such a character as may affect the efficiency of the system the purchaser shall have the right to give to the contractor within one month from such replacement or renewal notice in writing for the tests to be carried out. The cost of all such tests shall be borne by the contractor.

4.23.6 All inspections, adjustments, replacements or renewals carried out by the contractor during the supervised maintenance period shall be governed by the provisions of this contract.

4.23.7 Until the final certificate shall have been issued, the contractor shall have the right of entry, at his own risk and expense, by himself or his duly authorized representatives, whose names shall have previously been communicated in writing to the purchaser at all reasonable working hours upon all necessary parts of the works for the purpose of inspecting the working and the records of the system and taking notes there from and, if he desires at his own risk and expense, making any tests subject to the approval of the purchaser which shall not be unreasonably withheld.

4.23.8 **Completion certificate will be issued only after submitting completion drawing as per Schedule and tender document and it will be considered for releasing Performance Guarantee and Retention Money.**

**4.24 Mandatory updation of Labour data on Railway's Shramil Kalyan portal by contractor-**

A. Contractor is to abide by the provisions of Payment of Wages act & Minimum Wages act in terms of clause 54 and 55 of Indian Railways General Condition of Contract. In order to ensure the same, an application has been developed and hosted on website 'www.shramikkalyan.indianrailways.gov.in'.

Contractor shall register his firm/company etc. and upload requisite details of labour and their payment in this portal. These details shall be available in public domain. The Registration/updation of Portal shall be done as under:

(a) Contractor shall apply for onetime registration of his company/firm etc. in the Shramikkalyan portal with requisite details subsequent to issue of Letter of Acceptance. Engineer shall approve the contractor's registration on the portal within 7 days of receipt of such request.

(b) Contractor once approved by any Engineer, can create password with login ID (PAN No.) for subsequent use of portal for all LoAs issued in his favour.

(c) The contractor once registered on the portal, shall provide details of his Letter of Acceptances (LoA) / Contract Agreements on shramik kalyan 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 shramik kalyan 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.

B. 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 contractor 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."

**4.25 ISSUE OF MATERIALS FROM THE RAILWAY STORES:** If any material, which the Contractor would normally have arranged for himself, if supplied by the Railway either at Contractor's request or suo-moto in order to prevent any possible delay in the execution of the work likely to occur due to Contractor's inability to make adequate arrangement of supply thereof or otherwise, recovery of prices of such materials will be made from Contractor's bill at the highest of the following rates:

Book rate OR Last purchase rate Whichever is higher	Plus 5% on account of freight 2% on account of incidental charges and 12.5% towards departmental charges on the overall cost.
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ii) Accepted tender rates for such materials under the Contract, If however, material required by the Contractor is not available in the Railway stock, or the Railway decides not to supply the same, be that for whatever reason, the Railway should not be bound to arrange for the supply at cost quoted above or at any other cost nor will this fact be accepted as an excuse for delay in execution of the works.

**4.26. INSPECTION :**

**1(a) Inspection Cost :-** The contractor should bear the cost of inspection of all materials both unfinished and finished products (especially lab test etc.) at his or at the manufacturer's premises by the Railway's representative as applicable. The correctness and quality of the various items shall be checked by the Railway's representative before installation is commenced. If required, they should take necessary measures to ensure that the work at various stage are in order and to the specification prescribed by Railway.

**1(b) Inspection Charges :-**

Inspection charges to be borne by the contractor as follows:-

- (i) RDSO Inspection: - 'NIL' vide letter no. DI/S&T/NDLS/MISC/03. dt. 30/1/2003. (If applicable, inspection charges to be borne by the contractor as per latest guide lines of RDSO).
- (ii) RITES Inspection: - As applicable and asked by RITES. To be borne by Contractor.
- (iii) CONSIGNEE Inspection: - 'NIL'

**1(c) Consignee Inspection: -**

- (i) Inspection is to be carried out invariably in the manufacturer premises, unless dispensation is taken from higher authority.
- (ii) Inspection to be carried out by authorized representative of Sr. DSTE/ASN/ER.
- (iii) During inspection of material is to be ensured that details of supplies are noted in the inspection certificate.

**4.27 TENDERER'S POSTAL ADDRESSAND OTHER COMMUNICATION DETAILS:** Every tenderer shall state in the tender, his postal address, Telephone and Mobile No, e-mail id etc. fully and clearly in- "Form of Tenders". Any communication sent in time to the Tenderer by post at the said address shall be deemed to have reached the Tenderer duly and in time. Important documents shall be sent by Registered post. Any communication eg Postal, e-mail, WhatsApp will be deemed the official communication.

**CHANGE OF ADDRESSAND OTHER COMMUNICATION DETAILS:** The tenderer must keep informed the Railway of any change of address and other communication details during the currency of tender work in his own interest.

**4.28 Miscellaneous:**

**4.28.1 SUPPLY OF RAILWAY MATERIALS FROM RAILWAY GODOWNS:**

- 1 Materials to be supplied by the Railway are Signaling Cable/OFC Cable/Quad Cable/Telecom: Cable, Relays, Point Machines, IPS, SSDAC etc. (as applicable).
- 2 Stores will be supplied by Railway at SSE/SIG/CON/BDC's stores go down. The quantity required would be determined by the Railway according to the quantum of work to be done. The contractor shall be responsible for checking before taking delivery that all materials given to him are in good conditions. The receipt of the materials shall be acknowledged by the contractor or his authorized representative, mentioning details of materials and their quantity. The left over/ un-used materials if any, shall be returned to Railway Depot by the contractor for which no extra charges shall be paid by the Railway.
- 3 The contractor shall return all the excess or un-used materials supplied to him by the Railway including cement bags, empty cable drum, wooden crates, other packing materials use or all released materials to the authorized representative, Railway representative at stores go down from where the materials were drawn by the contractor. If the contractor fails to return any excess un-used Railway material, the cost thereof shall be recovered from him as per the extent rules and their on-account Bill/ final Bill will not be passed without the receipt of the excess materials by SSE/SE/JE/Sig/Tele/ Con concerned.
  - (a) All materials issued by the Railway in excess of requirement shall be returned by the Contractor in good condition free of cost at the store of JE /SSE (Con) from where they were issued.
  - (b) If the Contractor fails to return excesses material issued to him, the cost of such excess materials shall be recovered at 1.5 times the prevailing procurement cost at the time of last issue plus 5% (Five percent) for freight, 12.5% (Twelve and half percent) for supervision charges and 2% (two percent) towards incidental charges on the quantity not returned.

**4.28.2 Storage of Material:**



The storage of materials, tools and machinery used by the contractor shall be done in an orderly manner and anything used by the contractor for the execution of the work should in no way cause a danger or hindrance to the working of the Railway or to the movement of its staff or passengers.

Temporary depot for tools and equipments of any kind can only be opened in Railway premises after prior permission has been granted by authorized Railway's representative.

**4.28.3 Other Items-**

1. Works carried out by the Railway in presence of several contractor at Site: It should be noted that other works outside the scope of this contract may be undertaken simultaneously by the Railway or any other contractor at various work sites. The contractor shall afford every facility to the Railway or to other contractor to execute their works simultaneously. The contractor shall prefer no claim for the delay or hindrance, if there be any, caused in this process to his work. The contractor shall comply with the instructions that may be given to him in order to permit simultaneous execution of his portion of the work and those undertaken by other contractor of the Railway without being entitled on this account to any extra charge. The contractor shall also not be entitled to any extra payment due to hindrance resulting normal Railway operation.
2. Conveyance of Staff and Carriage of material of contractor: The Railway shall not render any assistance to the contractor in the matter of obtaining required permits, priorities for procurement of materials etc. for execution of works. No Railway pass or concessional facilities be granted either to the contractor or their agents/ labours for execution of the work. The contractor's materials required for execution of contract will have to be carried out at the public rate of Railway freight in force time to time and no concessional rate of Railway freight will be applicable.
3. **Contractor will ensure proper arrangement at site with one table and required number of chairs (not less than 4) at each station so that work review at the site may be done by railway personnel. Rates for the contract must be quoted keeping this**
4. Quantities mentioned against above Item are approximate for the Tender purpose only whereas the Payment will be made for the Actual work done.
5. If there is any Printing mistake taking place in Schedule of work, USSOR of S&T Department with up-to-date Correction Slip will prevail for the Instant work.
6. All the Safety measure will be taken by the Contractor and the compensation towards any Accident will be paid to the Railways.

### **FORMS OF TENDERS ETC.**

<b><u>Annexure</u></b>	<b><u>Description</u></b>
Annexure-A0	: CERTIFICATE TO BE SUBMITTED/UPLOADED BY TENDERER
ANNEXURE A1	: FORMAT FOR TECHNICAL CREDENTIALS
ANNEXURE A2	: FORMAT FOR FINANCIAL ELIGIBILITY CRITERIA
ANNEXURE A3	: TENDERER'S CREDENTIALS (BID CAPACITY)
ANNEXURE-B	: GUARANTEE BOND FOR SECURITY DEPOSIT
ANNEXURE-C	: BANK GUARANTEE
ANNEXURE-D	: STANDING INDEMNITY BOND
ANNEXURE-E	: STATEMENT OF DEVIATIONS
ANNEXURE-F	: PROFORMA OF BANK GUARANTEE FOR MOBILIZATION ADVANCE
ANNEXURE-G	: PROFORMA FOR THE WORK PERFORMANCE GUARANTEE
ANNEXURE-H	: QUALIFICATION EXPERIENCE
ANNEXURE-I	: CERTIFICATE OF JOINT INSPECTION
ANNEXURE-J	: RECEIPT CERTIFICATE
ANNEXURE-K	: EXTENSION OF PERIOD OF COMPLETION OF WORK (CONTRACTOR'S A/C'S)
ANNEXURE-L	: EXTENSION OF PERIOD OF COMPLETION OF WORK
ANNEXURE-M	: ACKNOWLEDGEMENT FOR RECEIVING MATERIALS AND CABLES FROM RAILWAY
ANNEXURE-N	: SOURCE FOR SPECIFICATIONS / DRAWINGS
ANNEXURE-O	: Specification of Major items of installation
ANNEXURE-P	: Procedure for Cable Route Survey, trenching, laying, termination jointing etc.
ANNEXURE-Q	: PAYMENT FASTER THROUGH NATIONAL ELECTRONIC FUND TRANSFER SYSTEM (NEFT)
ANNEXURE-R	: GENERAL SPECIFICATIONS AND RAILWAY'S REQUIREMENTS
ANNEXURE-S1	: DECLARATION BY AN EXISTING PARTNERSHIP FIRM
ANNEXURE-S2	: DECLARATION BY NEWLY FORMED PARTNERSHIP FIRM
ANNEXURE-A	: DECLARATION/UNDERTAKING (For Association of Rly. Officer)

**FORMAT FOR CERTIFICATE TO BE SUBMITTED / UPLOADED BY  
TENDERER ALONGWITH THE TENDER DOCUMENTS**

As per IR GCC Annexure-V and Annexure-VA

**TECHNICAL CREDENTIALS**

{Only for technical eligibility criteria (completed similar work)}

For the most eligible completed similar works, tenderers shall have to submit following details along with tender duly attested by tenderer; otherwise the railway reserves the right to reject such tender. Tenderer shall also enclose relevant certificate/documents issued by concerned authority in this regard

1.	Name of work.	
2.	Contract awarding Authority	
3.	Contact agreement No.	
4.	Name of the firm	
5.	Date of award	
6.	Original value of contract	
7.	Original date of completion.	
8.	(a) Whether work has been physically completed	
	(b) Actual date of completion.	
9.	Final value of contract	
10.	Payment received upto date.	
11.	Whether worked as a main contractor	
12.	Whether worked in the individual capacity or in a joint venture etc.	
13.	If the work was executed as a joint venture firm, the share of each partner to be given.	
14.	Brief scope of work	
15.	Performance of the contractor.	

**Financial Eligibility Criteria**

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)

**TENDERER'S CREDENTIALS (BID CAPACITY)**

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

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

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

B = Value of existing commitments and balance amount of ongoing works with the tenderer as on date one month prior to the tender closing date to be completed in next 'N' years.

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



**Certificate for arriving the value of 'B' for Bid Capacity –**

LIST OF AWARDED WORKS UNDER EXECUTION AND/OR WORK AWARDED BUT NOT YET STARTED TILL DATE OF OPENING OF TENDER (Mandatory for tenders more than Rs. 10 Cr value wherein eligibility criteria includes Bid Capacity also, to evaluate Bid Capacity of tenderer)

Sr. No	Name & place of work	Organization for whom work is being carried out	Date of award of contract, Contract Agreement No. & Date	Original cost of work / Revised Cost (up to latest corrigendum)	Date of Completion (Original Extended)	Payment Received Till Date of opening of present tender	Balance amount of the work to be executed	Balance period of work to be executed	'B' Value of work to be done in 'N' years (See note .....below)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) (5)-(7)	(9)	(10)
1									
2									
3									
4									
								Total	

Date \_\_\_\_\_ Signature of Chartered Accountant \_\_\_\_\_ Signature of Tenderer/s with seal \_\_\_\_\_

NOTE :- (a) This statement should be submitted duly verified by Chartered Accountant.

(b) In case of no works in hand, a 'NIL' statement should be furnished duly verified by chartered Accountant.

(c) In case of JV firm, the details of works with each member of JV is required to be submitted duly verified by Chartered Accountant.

(d) 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.

(e) N for column 10 –Number of years prescribed for completion of work for which bids has been invited.

(f) 'B' is the value of existing commitments and balance amount of ongoing works with the tenderer to be completed in next 'N' years.

(g) For N equal or more than column (9) , Value of 'B' will be same as column (8)

(h) For contracts not having any defined part financial /physical completion stages /milestones, and  $N < \text{column (9)}$  then the value of 'B' will be as per formula  $B = (8) * N / (9)$

(i) In case part financial / physical completion stages / milestone is defined in the contract's value of 'B' shall be calculated accordingly.

(j) No technical and financial credentials are required for tenders having value upto Rs. 50 lakhs



**FORMAT OF BANK GUARANTEE FOR BID SECURITY**

**(ON STAMP PAPER OF REQUISITE VALUE)  
As per IR GCC 2022**

**FORMAT OF BANK GUARANTEE BOND FOR PERFORMANCE SECURITY**  
**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,  
Sr. DSTE/ASN,  
E. Railway,

Beneficiary: FA&CAO/KKK,  
E. Railway

Date:.....

Bank Guarantee Bond No.:

Date:-----

In consideration of the President of India acting through.....(Designation & address of Contract Signing Authority),

E. Railway, Asansol (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 Performance Guarantee for the sum of [Insert required Value of Performance Guarantee], 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 Performance Guarantee 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 Performance Guarantee] 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 Performance Guarantee.
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	
IFSC TYPE	
BANK NAME	
BRANCH NAME	
CITY NAME	
ADDRESS	
DISTRICT	
STATE	
BG ENABLED	

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.

**FORMAT FOR STANDING INDEMNITY BOND**

(FOR ON ACCOUNT PAYMENTS & STORES SUPPLIED BY RLYS.)

(On Stamp paper of Requisite Value)

We, M/s..... hereby undertake that we hold at our stores Depot/s at ..... for and on behalf of the President of India in the premises through the General Manager or his successor, Eastern Railway (herein after referred to as "the Purchaser") all materials for which "On Account" payments have been made to us against the contract for -----

-----of Eastern Railway vide letter of Acceptance of Tender No..... dated ..... and the materials handed over to us by the purchaser for the purpose of execution of the said Contract, until such time the materials are duly erected or otherwise handed over to him.

We shall be entirely responsible for the safe custody and protection of the said materials against all risk till they are duly delivered as installed and/or erected equipment to the purchaser or as he may direct otherwise and shall indemnify the Purchaser against any loss, damage or deterioration what so ever in respect of the said materials while in our possession and against disposal of surplus materials. The said materials shall at all times be open to inspection by any Officer authorized by the Sr.DSTE/ER/ASN

Should any loss, damage or deterioration of materials occur or surplus materials disposed off and refund becomes due, the purchaser shall be entitled to recover from us the full cost as per prices included in the Contract (as applicable) and also compensation for such loss or damage if any along with the amount to be refunded without prejudice to any other remedies available to him by deduction from any sum due or any sum which at any time hereafter becomes due to us under the said or any other Contract.

In the event of any loss or damage as aforesaid the assessment of such loss or damage and the assessment of the compensation there for would be made by the President of India acting through the Sr.DSTE/ER/ASN or his authorized nominee shall be final and binding upon us.

Dated this ..... day of ....., 20 ..... for  
and on behalf of Messers ..... (Contractor)

Signature of Witness :

Name of Witness in block letters :

Address :

**STATEMENT OF DEVIATIONS**

**PROFORMA FOR STATEMENT OF DEVIATIONS**

1. The following are the particulars of deviations from requirement of the instructions to Tenderers, General Conditions of contract.

1.1 General Conditions of Tender

CLAUSE	DEVIATION	REMARKS
		(INCLUDING JUSTIFICATION)

1.2 General Conditions of Contract

CLAUSE	DEVIATION	REMARKS
		(INCLUDING JUSTIFICATION)

1.3 Special Conditions of Contract

CLAUSE	DEVIATION	REMARKS
		(INCLUDING JUSTIFICATION)

1.4 Instructions to Tenderers

CLAUSE	DEVIATION	REMARKS
		(INCLUDING JUSTIFICATION)

2. The following are the particulars of deviations from requirement of the technical specifications :

( Separate Statement for each specification)

CLAUSE	DEVIATION	REMARKS
		(INCLUDING JUSTIFICATION)

**Note :-**

Where there is no deviation, the statement should be returned duly signed with an endorsement indicating no deviations.

**PROFORMA OF BANK GUARANTEE FOR MOBILIZATION ADVANCE**

(On Stamp Paper of requisite value)

(To be used by approved Scheduled Banks)

1. In consideration of the President of India (hereinafter called "the Government") having agreed to exempt ..... {hereinafter called "the said Contractor(s)"} from the demand, under the terms and conditions of an Agreement No..... dated ..... made between ..... and ..... for ..... (hereinafter called "the said Agreement") of **Mobilization advance payment** for the due fulfillment by the said Contractor(s) of the terms and conditions contained in the said Agreement, or production of a Bank Guarantee for Rs..... (Rupees..... only). We, ..... hereinafter

(indicate the name of the Bank)

referred to as "the Bank") at the request of ..... Contractor(s) do hereby undertake to pay Rs..... against any loss or damage caused to or suffered or would be caused to or suffered by the Government by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.

2. We, ..... Bank do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on demand from the Government stating that the amount is claimed is due by way of loss or damage caused to or would be caused to or suffered by the Government by reason of breach by the said Contractor(s) of any of terms or conditions contained in the said Agreement or by reason of the Contractor(s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....

3. We, ..... bank undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s)/Supplier(s) in any suit or proceedings pending before any Court or Tribunal relating thereto our liability under this present being, absolute and unequivocal. The payment so made by us under this Bond shall be a valid discharge of our liability for payment there under and the Contractor(s)/Supplier(s) shall have no claim against us for making such payment.

4. We, ..... Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till ..... office/Department) Ministry of ..... certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this Guarantee. Unless a demand or claim under the Guarantee is made on us in writing on or before the ..... (1) ..... we shall be discharged from all liability under this Guarantee thereafter.

5. We, ..... further agree with the  
(indicate the name of Bank)

Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and

conditions of the Agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension to the said Contractor(s) or for any forbearance, act or omission on the part of Government or any indulgence by the Government to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This Guarantee will not be discharged due to the change in the Constitution of the Bank or the Contractor(s)/Supplier(s).

7. We, ..... lastly undertake not to revoke this  
(indicate the name of Bank)

Guarantee during its currency except with the previous consent of the Government in writing.

Dated the ..... day of ..... 20

for .....  
(indicate the name of the Bank)

Witness

1      Signature .....  
         Name        .....

2      Signature .....  
         Name        .....

NOTE :-

The guarantee shall be valid for a period of two months after the expiry        of the  
currency of the contract.

PROFORMA FOR THE WORK PERFORMANCE GUARANTEE

To  
The President of India,

I/We..... hereby guarantee that the design on the basis of which we have submitted our Tender No..... has been carefully made to confirm to the end objectives in the tender documents and to technical specification therein. We further guarantee that in the event of the performance of the equipment and/or work, when installed, not complying with the end objectives or with the specifications contained in the tender documents, we shall provide further inputs to enable the Railways to realize the end objectives contained in these documents without any additional payment for any additional equipment which may be required in this regard. We further guarantee that all the expenses including the expenses incurred in India for providing the additional inputs under the System guarantee will be borne by us. We further guarantee that these additional inputs will be provided by us to make the system workable within **8 months** from the date on which this guarantee is invoked by the Purchaser.

I/We have noted Special Condition of Contract and agree to abide by the same.

( Signature of firm's authorized Officer)

Seal :

Signature of Witness :

1.....

2.....



**QUALIFICATION EXPERIENCE****List of Works completed**

Description of Work	Organization for whom executed	Approx. value of contract at the time of award	Date of award	Date of scheduled completion of work	Date of actual		Final value of contract
					Start	Completion	

**List of Works in Hand**

Description of work	Contract Value	Payment Received till the tender closing Date	Date of award

**CERTIFICATE**

**Joint Inspection of Cable Trench & Protective Works**

1. The cable trench/chase including ducts, pipes etc. arrangements en route has been jointly inspected by us on the following sections and the work has been done according to the specifications. The laying of cable can be taken on these sections after the deficiencies noted below are rectified and offered for further check .

2.

-----  
Sl. No.            From KM.            To KM.            Remarks/Deficiency if any  
-----

-----  
3. The following Joints have been jointly supervised and provided as per manufacturer's instructions and it is confirmed that all the materials or kit have been used up.

-----  
Sl. No.            Type of Joint            Location (KM. No.)            Remarks/Deficiency if any  
-----  
-----

Signature of Contractor's  
Representative with  
Designation

Signature of Purchaser's  
Representative with  
Designation

**RECEIPT CERTIFICATE (FOR SUPPLY ONLY)**

From: Sr. Section Engineer/Section Engineer (Signal/Telecom)/Works Eastern Railway,

No.

Date :

1	Contract No.	
2	Name of Work	
3	Item No. As in Rate Schedule	
4	Description of Item.	
5	Material inspected by :	
6	Dispatch particular & date	
7	Quantity as per dispatch particular	
8	Quantity received	
9	Quantity short received	
10	Condition of Stores Received	
11	Name of Firm & Address	
12	Place of receipt	
13	Date of receipt	
14	Ledger No.	
15	Name & designation of Stores In-charge	

-----  
**Signature of Stores-in-Charge**

**ANNEXURE-K**

**EXTENSION OF PERIOD OF COMPLETION OF WORK ON CONTRACTOR'S  
ACCOUNT**

Reference Para 17(B)

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 penalty fixed earlier*) will be recovered from you as mentioned in Clause 17-B 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

EXTENSION OF PERIOD OF COMPLETION OF WORK

No.

Date :

To

.....  
.....  
.....

Dear Sirs,

- Sub : (i) ..... (Name of work)  
(ii) Acceptance Letter No.....  
(iii) Undertaking/Agreement No.....

Ref : ..... (quote specific application of the  
Contractor for extension to the date, if received).

The stipulated date for completion of subject work under the above contract was ..... In consideration of the Contractor's Letter No....., The General Manager (or his successor) on behalf of the President of India, is pleased to grant extension of the time for completion of works without liquidated damages under para 19.2 of General Conditions of Contract for the contract as mentioned below :

“.....”

It may be noted that unless repugnant to the context, all the terms and conditions of the Contract will remain unaltered during the extended period from ..... to ..... also, and further no increased additional rates and claims of recoveries which have not been already envisaged in terms of the conditions of the Contract will be livable either by you or by the purchaser in respect of this extended period.

Yours faithfully,

( )

for and on behalf of President of India

**ACKNOWLEDGEMENT FOR RECEIVING MATERIALS AND CABLES FROM  
RAILWAY**

STATION:

DATE:

Sub: - Receipt of Materials /Cable from Railway.

It is hereby acknowledged that the following material/and cable as detailed have been received in full and good condition by me on ..... at ..... for the work coming under the Agreement No..... dated .....

Sl. No.	Description of Material and cable	Quantity (Meter/Nos.)	Remarks if any
------------	--------------------------------------	--------------------------	-------------------

Witnessed by :-

-----  
(Signature of Purchaser's  
Representative with  
Designation )

-----  
(Signature of Contractor or  
Contractor's Representative)

**SOURCE FOR SPECIFICATIONS/DRAWINGS**

1. IRS Drawings and Specification - Director General, RDSO, Lucknow
2. TEC Drawings & specifications - Telecommunications Engineering Centre, Kurshid Lal Bhawan, Janpath, New Delhi - 110 001.
3. Standar Specifications (BSS & ISS, etc.) - Indian Standard Institution, 9, Mathura Road, New Delhi.
4. Railway Publications such as Railway Rules, Codes and Practices, etc. - Government of India, Ministry of Railways, Rail Bhawan, New-Delhi.
5. Eastern Railway Drawings – Principal Chief Signal & Telecom. Engineer, 17, Netaji Subhas Road, 3<sup>rd</sup> floor, Kolkata - 700 001.
6. Central Government Laws and Acts - Government of India, Ministry of Information, Publications Division, Tilak Road, New-Delhi.
7. Manual of Instructions for Installation of S&T Equipment 25 KV 50 C/S single phase Electrified section - Director General, RDSO, Lucknow.

**TECHNICAL SPECIFICATION FOR DESIGN OF RAILWAY SIGNALLING DRAWINGS INCLUDING CIRCUITS / WIRING DRAGRMS ETC.**

- 1 All the plans should be compliable with requirement of **RE/Non Electrified** area and as per site requirement.
- 2 The designing of Circuit Diagrams shall be done as per extant Railway practice, SEM, General and Subsidiary rules, the guide lines provided by RDSO and as per the latest rules prescribed by the Railway. Wiring diagram for provision of DATA LOGGER shall be prepared on separate sheets.
- 3 Alteration column should be shown on every sheet and sufficient space should be left for further alteration on each sheet.
- 4 All drawings shall be prepared with suitable CAD system. All original drawings shall be supplied in tracing paper of 90/100 GSM of GATEWAY qualities. All drawings shall be prepared on A2 size unless otherwise stated specifically. Each drawing sheet shall have Border Line, Margin, Name Plate / Approval Column, Alteration Column and drawing space as per latest approved practice of Eastern Railway.
- 5 At least 20% of available drawing space shall be kept blank at the bottom of each original sheet, above Name Plate / Approval Column, to accommodate future expansion.
- 6 In addition to the above specifications the contractor shall follow any other standards as followed by the S&T Dept. of Eastern Railway during preparation of drawings.
- 7 All original drawings and prints shall have relay contact no. / terminal no. / fuse no. already incorporated.
- 8 During preparation of the drawings the following shall be kept in view:
  - (a) Optimization in using of relays.
  - (b) Economization in using relay contacts.
  - (c) Optimization in using of cables.
9. All Original drawings shall be printed through Ink Jet Plotter.
  - [a] No hand correction shall be allowed on the original tracing. If any connection is required on a sheet the original tracing of that particular sheet shall be replaced with a new one and the same shall be submitted for fresh approval of Railway.
  - [b] Railway reserves the right to add/delete/modify the requirement of Drawings at any point of time.
  - [c] Checking of check prints shall be done only one time by Railway.
  - [d] Copy/Prints of drawings whenever submitted shall be accepted by Railway in the form of 'Ferro Prints' only.
  - [e] After the initial checking is over subsequent drawings shall be submitted in original tracing only.
  - [f] In case of repeated mistakes the drawings shall be rejected and fresh drawing shall be submitted by the contractor for which no extra payment shall be made by Railway.
  - [g] In case of any modification in Engineering plan or Interlocking Plan the subsequent modifications in all drawings shall be carried out by the contractor at his own cost.
  - [h] All transaction shall be made through Sr.DSTE/ER/ASN.
  - [i] The contractor shall be responsible for collection of all field data from the site of work for preparation of 'As made' drawings.
  - [j] Original Tracings of approved 'As Planned' drawings shall be submitted by the contractor to the Railways if so advised.
1. **Inspection & Approval:** Inspection as per schedule and approval by Sr.DSTE/E.Rly/Asansol.
2. For all Technical discussions with Railways regarding the work, the authorized qualified Design Engineer(s), who is well versed in Railway Signaling system shall attend concerned Railway Offices and represent the tenderer.



**TECHNICAL SPECIFICATIONS**

**ELECTRONIC INTERLOCKING SYSTEM**

**TECHNICAL SPECIFICATION AND SCOPE OF WORKS**

**(EI - INDOOR WORK)**

**1. Electronic Interlocking Equipment:**

Design, manufacture and supply of EI equipment with software, installation, testing and commissioning of Electronic Interlocking system. The equipment shall conform to RDSO specification RDSO/SPN/203/2011 LATEST VERSION IF ANY IN DISTRIBUTED ARCHITECTURE WITH ONE CENTRAL AND 2 HUT as on date of opening of tender and directive issued by RAILWAY BOARD & RDSO with sectional route release feature.

**Note: The successful bidder shall submit an undertaking from RDSO approved EI OEM before the supply of material, to conform compliance with extant RDSO guidelines and to meet contract specific requirements.**

- 1.2. Stations Interlocking shall be implemented by the Central processors connected with VDU Control Terminal in Dual Mode. Hot standby shall be provided to these processors. These processors apart from implementing the Interlocking, shall also drive the I/O cards suitable to operate Interface Relay for the following functions:
- [i] Single line / Double Line Block Instruments/ UFSBI with BPAC etc.
  - [ii] LVCD Resetting.
  - [iii] Berthing Track circuits/Axle counters.
  - [iv] IB, Sidings, L.C. Gates, etc.
- 1.2 (i) In case of Centralized mode EI System, the electronic interlocking equipment will be at central Location.
- 1.2 (ii) In case of Distributed mode EI System, the electronic interlocking equipment at central location is to be connected to the object controller with relay drive cards at end location by OFC on a Ring Main basis.
- 1.2 (iii) Berthing Track Circuit/ Axle Counter, Points, Horizontal & Vertical cascading of Signal aspect etc.
- 1.1 The role of the object controllers provided at the ends of yard shall be limited to drive the I/O cards. No. interlocking shall be implemented by these processors. Hot standby shall be provided for these processors.
2. Details of supply of materials and Scope of the work (For each station) -
- [i] Supply of PC based work station with VDU of (65" or above) size 4K LED type Samsung / LG or similar make of Industrial Grade for EI Panel operator with 05 year warranty.
  - [ii] Supply of PC based work station with VDU (with size mentioned in LoA schedule) 4K LED type Samsung / LG or similar make Industrial Grade for Maintainer to monitor the system EI at central EI and Supply of 2 No. PC based work station with VDU-(with size mentioned in LoA schedule) 4K LED type Samsung / LG or similar make Industrial Grade for Maintainer to monitor the system EI at EI Hut with 05 year warranty.
  - [iii] Supply of Godrej Make Computer Table Stylo - two nos.
  - [iv] Supply of Godrej make, model pulse full back chair or Similar - one no.
  - [v] Supply of Godrej make interio Enzo main table 5026 - 1500x750 computer desk or similar of reputed brand - two nos.
  - [vi] Supply of relays (duly inspected by RDSO), Execution of Labour portion of Interface relay wiring. This includes erection of relay racks, fixing of relays and other associated work in relay room. The wiring material, Relay racks, Relays (except those

mentioned in schedule) and fuses for interface relays wiring, terminals, fuses, bus bars, etc will be supplied by contractor. The wire to be used for this purpose should be as per RDSO Spec. duly inspected by RDSO and to be procured from RDSO approved source only. Requirement of Interface relay as per instructions detailed in "Information to be furnished by Purchaser".

- [vii] Provision of ring earth arrangement inside the relay room.
- [viii] Supply and installation of lightning and surge protection arrangements as per the manufacturer's specifications.
- [ix] Stable 110 D.C. supply will be made available from Integrated Power Supply at location where I/O cards are located. The D.C. power required for functioning of the equipment shall be derived from 110V DC supply through a suitable **DC-DC converters (RDSO type tested Model No. DD2410V2, DD1210V2, DD5065V2) in redundant manner** to be supplied by the tenderer.
- [x] If the equipment works on AC supply suitable inverter shall be provided by the tenderer.
- [xi] Suitable B&C class surge protection equipment as per RDSO's recommendation on IPS shall also be provided by the tenderer at Central and End location as per site. Wherever materials supplied with RDSO inspection, contractor shall submit inspection certificates to the Railway stores.

### **3. Details of installation works:**

The contractor shall execute the following works at station and end Goomty as applicable-

- (a) Installation of complete EI equipment including all subsystems at station Relay Room.
- (b) Installation of all racks pertaining to EI system at station Relay Room which includes input and output Relay housing racks.
- (c) Installation of VDUs, SM Console etc. and all other accessories.
- (d) Inter connection wiring of EI Equipment, Inter connection ring-main wiring with ladder arrangement from CLS Panel to IPS, IPS to Relay Rack, Battery Rack & CTR. It also includes interconnection wiring with ladder arrangement between relay racks, CTRs and data logger. This also includes termination of cables / wires on all the above and dressing, bunching etc. as required at site. 16 Sq. mm. Cable to be used between IPS and its Battery duly soldered with good quality lugs in duplicate. Cable to be supplied by the contractor. Wire would be 16/ 0.2 mm for relays, 3/0.73 mm for MCBs and 10 sq. mm for power wiring. Indoor cable 60 x 1 mm / 40 x 1 mm as per IRS-S-76/89 for interconnection of indication board. Supply of wires/cables by the contractor, shall be procured from RDSO'S approved firm only & to be inspected by RDSO. Note: Necessary 40/60 multi-core, 16/0.20 mm, 3.0.75 mm, 10 sq.mm cables required for inter-wiring of EI equipment, Relay Racks, VDUs and up to outdoor Cable Termination rack are to be supplied by the contractor. 110V DC supply from IPS room to EI rack shall be provided with duplicate cable with suitable gauge so as to ensure that the voltage drop in cable shall not be more than 1.0V from IPS. Supply of fan shall be fed with separate power supply which should be completely isolated from electronic interlocking supply and to be provided with fuse. Input and output cables (RDSO approved) of EI shall be twisted to minimize EMI & EMC effect.
- (e) Complete laddering for interconnecting wiring up to outdoor Cable Termination rack.
- (f) VDU's shall be installed for operation by the operator. One shall be working and other shall be in standby mode. Arrangement shall be made to switch over to the standby VDU as and when required by the operator. Both VDU shall be connected through OFC cable.

- (g) Entire yard diagram along with all details including alarms shall be depicted on the VDUs as per approved Front Plate Diagram. Counters shall be provided separately as per latest guidelines.
- (h) **VDU** shall be of Industrial Grade embedded fan less PC As per RDSO Guide lines vide document no. STS/E/TAN/3007,version-1.0, dtd.02.11.2012 or latest specification as applicable of reputed make.
- (i) Supply and installation of suitable Surge Protection Devices to the E.I. Equipment.
- (j) Testing of complete installation and generation of pre-commissioning check lists.
- (k) Testing of interlocking and generation of test reports.
- (l) All sorts of cutting, drilling, riveting, masonry works etc. wherever required.
- (m) Painting and lettering works as per Railway standard and guidelines.
- (n) Transportation of all materials from Railway stores to station and back shall be done by the contractor for which no additional payment shall be made by the Railways.
- (o) The contractor shall arrange inspection of all items by the Railway authorities before installation irrespective of the Inspection clause.
- (p) The contractor shall be responsible for handling and safeguarding of all equipments till commissioning the station.
- (q) The quality and integrity of the installation remains complete responsibility of the OEM. The contractor must provide an OEM certificate regarding this before commissioning of installation, any deficiency pointed out later shall be done free of cost by OEM, this shall be confirmed by OEM before commissioning. Contractor shall undertake 12 months maintenance / 36 months maintenance (as applicable as per schedule) after commissioning of the system as per schedule.
- (r) Phoenix /Wago terminal with suitable fixing arrangements shall only be used for termination of indoor wires. The Terminals shall be supplied by the contractor and inspected by the Railway representative at site before use. 20% spare terminals are to be kept as spare for future provision / expansion.
- (s) Approved type of Fuse base with cartridge are to be used for wiring of E.I. Equipment and 20% spares Fuse base with cartridges subject to minimum 4 Nos. shall be provided by the contractor. The type of rating fuses to be supplied shall be as per manufacturer's instructions and Railways guidelines. Fuse should be indicative type.

**GENERAL:**

The term Track Circuit may be read as Track circuit/Axle counter wherever it appears in the Technical Specifications.

The functional requirements of Data logger with Protocol Converter in Schedule will be generally in conformity with the latest RDSO's Specification with latest amendments with RDSO Inspection.

**ANNEXURE-O2.1**

INFORMATION TO BE FURNISHED BY PURCHASER AS PER PARA 15 OF RDSO SPEC. NO. RDSO/SPN/203/2011	
(a) Datalogger to be supplied or not (clause 6.2)	In built data logger to be supplied and datalogger for wiring of physical relay to be supplied as per schedule of work.
(b) Approved interlocking plan, selection table and panel diagram of the station (Clause 7.1).	Approved SIP is attached as Annexure-SIP, approved selection table and panel diagram of the station will be handed over to successful bidder.
(c) Interfacing with outdoor gears using relays or solid state modules (Clause 8.4.2).	Relay interface with Q Series relay.

(d) Locations of object controllers (Clause 8.4.3)	At 2 EI huts as mentioned in (b) above..
(e) Power supply details provided by purchaser (Clause 8.12.1).	230V commercial grade power will be provided by Railway at Central & Huts. It is to mention that IPS is included in as a separate schedule item in the tender.
f) Detail of VDU control terminal (Clause 8.5.1)	65" or above VDU monitor Screen of industrial grade is required at Central EI for operation and maintenance and 65" or above VDU monitor screen of industrial grade is required at 2 No. EI Huts with industrial grade embedded fan less PC conforming to latest RDSO specification.
g) Counter box having non-resettable counters requires or not.(Clause 7.4)	Required.
h) Warranty if required for more than three years of EI system including its equipments and sub system from the date of commissioning of complete system.(Clause 13.1)	Standard warranty as per RDSO specification and as specified in this document shall be followed.

**SPECIFICATION FOR OPERATORS INTERFACE EQUIPMENT AND VDU [TO BE SUPPLIED ALONGWITH E.I. EQUIPMENT AGAINST - EI - INDOOR-MAIN.]**

1	The E.I. system shall work with double VDU.
2	Two VDU shall be configured in hot standby mode such a way that if one system fails another should take over without losing any control and data.
3	The control terminal VDUs for operation & maintenance shall be embedded industrial grade fan less PC with the minimum specification as mentioned in latest RDSO specification.
4	3KVA On line UPS (INDUSTRIAL GRADE) similar to <b>Su-Kam/ APC/ LUMINOUS/ MICROTEK/SWITCHING AVO WITH MINIMUM THREE (03) YEARS WARRANTY.</b>
5	Logitech keyboard. [should dust & water proof].
6	Logitech optical scroll mouse
7	Monitor shall be as per schedule description and it will be of industrial grade with 05 year warranty with suitable stand/wall mount of reputed brand such as Samsung/LG or similar.
8	1 NO. LASER JET Colour PRINTER (HP PAGE WIDE PRO 452 DW PRINTER (D3Q16D) OR LATEST TO BE SUPPLIED.

**TOOL KITS AND MEASURING INSTRUMENTS FOR TECHNICIANS/JR.  
ENGINEER FOR TESTING, MAINTENANCE AND REPAIR AT SITE.**

SN	DESCRIPTION	QUANTITY.
1	Track Drilling Machine hand operated– WOLF MAKE	1 No.
2	Electrically Operated Drilling Machine up to 12 mm with stand: WOLF MAKE.	1 No.
3	Adjustable Spanner – [6", 12", 18"]	1 No. each
4	Cutting Pliers Insulated 6" & 8"	1 No. each
5	Allen Key set 3mm to 20 mm of 8 pieces	1 set.
6	Screw Driver Set with Neon Tester.	1 set.
7	Long Nose pliers insulated 6"	1 No.
8	Wire stripper insulated.	2 Nos.
9	Crimping Tool [ up to 10 Sq. mm & up to 50 sq. mm]	1 No. each
10	B.P. Hammer with handle 1.5 lb	1 No.
11	Hacksaw Frame fixed 12"	1 No.
12	Hacksaw Blade 12"x1/2" High Speed.	6 Nos.
13	Box Spanner Set 10 mm to 16 mm – set of 7 pieces.	1 set.
14	File Flat Smooth 12"	2 Nos.
15	File Square smooth 4"	2 Nos.
16	Crocodile Clips.	10 Nos.
17	HSS Drill bit 9/32"	6 Nos.
18	HSS Drill Bit 6mm, 10mm, 12mm	6 Nos. each
19	Soldering Iron 25 Watts & 65 Watts of Soldron make or equivalent.	1 No. each
20	Measuring Tape Steel 3 Mtrs.	1 No.
21	Test Piece[1.75mm, 3.25mm and 5 mm]	2 set.
22	Digital multimeter with following range = 1 no. a> 0-1000 V AC/DC b> 0-20 Amp c> 0-1000 Ohms d> 3 1/2 digits e> Frequency range up to 30 KHz. the Meter shall be supplied with test probes, leather cover battery and is of reputed make like Fluke/Meco/Rishabh/Motwane.	1 No.
23	AC/DC (Alternating Current/Direct Current) TRMS clamp meter 3-4/5 Digits 5000 count backlight Led with Analogue Bar graphs. Measure from 1 MA upto 80 a-ac T-RMS/DC. AC Current measuring bandwidth 50 to 60 HZ. AC T-RMS/DC Voltage measuring bandwidth 50 to 400 HZ. Input protection 250V DC or 250V AC RMS Make:- CEM or Similar.	1 No.
24	Tool Box of GI Sheet having 5 compartments suitable size in such a way so as to store and carry all the above tools conveniently except item No.1. This should be provided with a GODREJ Lock 7 Levers and with provision of locking.	1 No.

NOTE: All the above items shall be of standard and reputed brand available in market.

**Completion Drawings of EI Stations****(B) INDOOR & OUTDOORDRAWINGS:****(i) Design & submission of three sets of paper copies-**

Sr. No.	Description	Unit	Qty.
1	Design of SIP & submission of three copies for approval	Set	1
2	Design SWRD & submission of three copies for approval	Set	1
3	Design of cable route plan (station section) & submission of three copies for approval	Set	1
4	Design cable route plan (Block section) (if any as instructed by Railway Engineer) & submission of three copies for approval	Set	1
5	Design of cable distribution plan / Cable Core Plan & submission of three copies for approval.	Set	1
6	Design of Track Bonding plan & submission of three copies for approval	Set	1
7	Design of Circuit Diagrams consisting as mentioned below & submission of three copies for approval (a)Wiring diagram along with all Logic details & interface circuit. (b)Relay Disposition chart (c) Contact analysis and fuse particulars. (d)Panel Termination Chart (e) CT rack Particulars (f) Input & Output bit chart	Per station	1
8	Design of Miscellaneous diagrams consisting as mentioned below & submission of three copies for approval (a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc. (b) Power supply diagram along with power supply calculation (c) Earthing diagram.	Per station	1
9	Design of Location Box Details (including contact analysis, Fuse particulars etc.) and submission of three paper copies for approval	Per station	1
10	Design of Goomty/OC/End Cabin Details (including Relay disposition charge, Contact analysis, Fuse particulars, CT Rake particulars and floor plan etc.) and submission of three paper copies for approval	Per station	1

**(ii) Supply of original tracings**

Sr. No.	Description	Unit	Qty.
1	Supply of original tracing of SIP after incorporating all the corrections	Nos.	1
2	Supply of original tracing of SWRD after incorporating all the corrections	Nos.	1
3	Supply of original tracing of RCC/ST after incorporating all the corrections	Nos.	1

4	Supply of original tracing of PANEL Diagram/VDU after incorporating all the corrections	Nos.	1
5	Supply of original tracing of cable route plan (station section) after incorporating all the corrections	Nos.	1
6	Supply of original tracing cable route plan (Block section) (if any as instructed by Railway Engineer) after incorporating all the corrections	Nos.	1
7	Supply of original tracing of cable distribution plan/ Cable Core Plan after incorporating all the corrections	Nos.	1
8	Supply of original tracing of Track bonding plan after incorporating all the corrections	Nos.	1
9	Supply of original tracing of circuit diagrams consisting of the items as mentioned below after incorporating all the corrections	Per station	1
	(a) Wiring diagram along with all Logic details & interface circuit		
	(b) Relay disposition chart		
	(c) Contact analysis and fuse particulars.		
	(d) Panel Termination Chart		
	(e) CT rack Particulars		
	(f) Input & Output bit chart		
10	Supply of original tracing of miscellaneous diagram consisting of the items as mentioned below after incorporating all the connections	Per station	1
	(a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc.		
	(b) Power supply diagram along with power supply calculation		
	(c) Earthing diagram.		
11	Supply of original tracing of location box Details (including contact analysis, Fuse particulars etc.) after incorporating all the corrections.	Per station	1
12	Supply of original tracing of Goomty/End Cabins/OC Drawings (including relay Disposition chart, Contact Analysis and fuse particulars, CT rack particulars and floor plan etc.) after incorporating all the corrections	Per station	1

**(iii) Supply of Ammonia print/Paper Print**

Sr. No.	Description	Unit	Qty.
1	Supply of Ammonia print/Paper Print of approval SIP	Nos.	3
2	Supply of Ammonia print/Paper Print of approval SWRD	Nos.	3
3	Supply of Ammonia print/Paper Print of approved cable route plan (station section)	Nos.	3
4	Supply of Ammonia print/Paper Print of approved cable route plan(Block section ) <i>(if any as instructed by Railway Engineer)</i>	Nos.	3
5	Supply of Ammonia print/Paper Print of approved cable distribution plan/ Cable Core Plan	Nos.	3
6	Supply of Ammonia print/Paper Print of approved Track bonding plan	Nos.	3

7	Supply of Ammonia print/Paper Print of approved circuit diagrams consisting of the items as mentioned below	Nos.	3
	(a) Wiring diagram along with all Logic details & interface circuit		
	(b) Relay disposition chart		
	(c) Contact analysis and fuse particulars.		
	(d) Panel Termination Chart		
	(e) CT rack Particulars		
8	Supply of Ammonia print/Paper Print of approved miscellaneous diagram consisting of the items as mentioned below	Nos.	3
	(a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc.		
	(b) Power supply diagram along with power supply calculation		
	(c) Earthing diagram.		
9	Supply of Ammonia print/Paper Print of approved location box Details (including contact analysis, Fuse particulars etc.)	Per station	3
10	Supply of Ammonia print/Paper Print of approved Goomty/OC/End Cabin Details (including relay Disposition chart, Contact analysis, fuse particulars, CT rack particulars and floor plan etc.	Per station	3

**(iv) Supply of completion diagram (6 sets.)**

Sr. No.	Description	Unit	Qty.
1	Supply of six sets of Ammonia print/Paper Print of approved completion SIP	Per station	1
2	Supply of six sets of Ammonia print/Paper Print of approved completion SWRD	Per station	1
3	Supply of six sets of Ammonia print/Paper Print of approved completion RCC/ST	Per station	1
4	Supply of six sets of Ammonia print/Paper Print of approved completion FPD/VDU/Panel Diagram	Per station	1
5	Supply of six sets of Ammonia print/Paper Print of approved completion cable route plan (station section)	Per station	1
6	Supply of six sets of Ammonia print/Paper Print of approved completion cable route plan (Block section ) (if any as instructed by Railway Engineer)	Per station	1
7	Supply of six sets of Ammonia print/Paper Print of approved completion cable distribution plan/ Cable Core Plan	Per station	1
8	Supply of six sets of Ammonia print/Paper Print of approved completion Track bonding plan	Per station	1
9	Supply of six sets of Ammonia print/Paper Print of approved completion circuit diagrams consisting of the items as mentioned below	Per station	1
	(a)Wiring diagram along with all Logic details & interface circuit		
	(b) Relay disposition chart		



	(c) Contact analysis and fuse particulars.		
	(d) Panel Termination Chart		
	(e) CT rack Particulars		
	(f) Input & Output bit chart		
10	Supply of six sets of Ammonia print/Paper Print of approved completion miscellaneous diagram consisting of the items as mentioned below	Per station	1
	(a) Floor plan for Relay room, Battery room, Power Eq. room, Data logger room etc.		
	(b) Power supply diagram along with power supply calculation		
	(c) Earthing diagram.		
11	Supply of six sets of Ammonia print/Paper Print of approved completion location box drawing (including contact analysis, Fuses particulars etc.)	Per station	1
	Supply of six sets of Ammonia print/Paper Print of approved completion Goomty drawings (including relay Disposition chart, Contact Analysis, fuse particulars, CT rack particulars and floor plan etc.)	Per station	1

**Earth Leakage Detector**

It should be as per RDSO specification No. RDSO/SPN/256/2002 or latest.

**POLYOLEFIN CABLE CHANNEL OF SIZE WIDTH 240/340 MM**

S.No.	Parameters	Specification (Type-I)
1	Width (Internal/External)	240mm/340mm
2	Height (Internal/External)	155mm/230mm
3	Weight per Mt/ PC (including bottom & top cover)	8.00Kg
4	Length per PC/per Mt.	1000mm (approx.)
5	Material	Polyolefin/Polymers/Engineering Plastics
6	Fire Behaviors	Fire protection class K1 in accordance with DIN-53438 part-2
7	Breaking Load (Minimum)	$\geq 12\text{KN}$ , at room temperature, over the specified surface area of 250mm x 150mm
8	Thermal Characteristics	Thermal stability from -10 degree to +70 degree (as per IS9000-part-2 & part-3 :1977)
9	Electrical Characteristics	Dielectric strength ; 48kv (Minm breakdown voltage) as per IEC-60243-1-2013
10	Tolerance	( +/-) 10mm
11	Complying to	RDSO Reference No. STS/Cable-Laying Practice Vol-IV

**HASSDAC Tool Kit (List of Tool kit is to be approved by OEM. Below given parts are for illustrative purpose only).**

SN	Description	Unit	Quantity	Remarks
1.1	Portable Data Analyzer (Downloading Event Logger Data for analysis and report generation)	Nos.	1	
1.2	Pure Sine Wave Digital Multimeter Fluke Make(Model-1871) or Rishab Make(Model-28S)	Nos.	1	
1.3	Train Simulator Mode 11TS267P)	Nos.	1	
1.4	Extender Card	Nos.	1	
1.5	Dummy Wheel	Nos.	1	
1.6	Ring Spanner	Nos.	1	
1.7	Open End Spanner	Nos.	1	
1.8	Socket Spanner with handle	Nos.	1	
1.9	Torque Wrench (Jaicom JPR 65 or equivalent 88NM)	Nos.	1	
1.10	Screw Driver no.902	Nos.	1	
1.11	Screw Driver no.935- 1 No	Nos.	1	
1.12	Dummy Load to check Power Supply(Resistive)	Nos.	1	

Marking Jig for drilling as applicable

**SPECIFICATION FOR INSTALLATION OF CABLE ROUTES**

(Authority : CSTE's Technical Circular No :- 30)

**1.0 SCOPE :**

- 1.1 This Specification covers the basic requirement for cable laying in an area where signal control circuits are carried in cables. They do not include particular requirements of any type of Signaling or the particular requirement of a Geographical area.

**2. GENERAL :**

- a. The contractor shall provide and install all cable routes, where referred to as main or subsidiary.
- b. The design of the cable route material (Trunking, brick covering, cover slabs, marker posts etc) shall be as laid down in these specifications. Any alterations should have the specific approval of the Engineer-in-Charge.
- c. Where it is necessary to provide or conduct underline crossings, these will be installed by the Railways' Civil Engineering Staff. If cable bridges are found to be necessary, under special circumstances, these also will be provided by the Railway.
- d. Where required in Platforms, the Railway will provide routes ducts and access chambers.
- e. The Railway will negotiate any way leaves for cable routes which lie outside the Railway Boundary.
- f. The Contractor shall ensure that the complete cable route is available by the stipulated date. The Contractor shall co-operate as far as possible, in laying the signaling cables at the same time as the Telecommunication Cables or any other type of underground cable, in order to reduce the number of occasions on which covers on the cable route are disturbed or to avoid digging of a separate trench for the Telecommunication cable.
- g. Some subsidiary routes may not be definable until later stages of planning but the contractor shall install these as may be found necessary and additional payment for such cases shall be the subject of negotiation.

**3. TYPE OF MAIN CABLE ROUTES:-**

**a. Signaling Cables:**

Unless otherwise stated specifically, Signaling cables shall be laid as follows :-

- i. Signaling Cables should normally be buried direct in the ground. However, where special conditions exist such as in vulnerable areas or in the Suburban section, other methods as listed below may be adopted. Within the station yards between Home Signals, the cable laid underground shall be protected by bricks laid width-wise on the cables after the cables have been covered by a layer of 150 mm. of stone free earth.
- ii. In the case of suburban section, RCC trunking or RCC pipe shall be laid at surface level throughout. However, if disturbance due to theft is anticipated, the trunking shall be laid with the top of the cover 300 mm. below the ground level.
- iii. In vulnerable areas of non-suburban section or in major yards the method-(ii) above may be adopted.

iv. In cases like bridges, culverts, platforms, tracks & Level crossings, special arrangement as described in relevant paras shall be provided.

v. Where specifically required, full round or half round pipes of RCC Asbestos Cement, Polythene, Fiber glass, Pitch Fiber or Metal may be used.

**b. Telecommunication Cables :**

Unless otherwise stated in specification, Telecommunication main or subsidiary cables shall be laid as follows :-

i. Within the Station yards between Home Signals on other than suburban section cables shall be laid in RCC trunking. Where convenient, the cables may be laid in the same trunking along with signaling cables but in a separate compartment.

ii. Beyond Home Signals on other than Suburban section, the cables shall be laid underground. Where the cables are laid along with signaling cables or where disturbance due to digging expected, RCC covers shall be laid over the cables as protection.

iii. In the case of Suburban section, the cables shall be laid in RCC trunking throughout. Where convenient the cables may be laid in the same trunking along with signaling cables, but in a separate compartment. If disturbance due to theft is anticipated, the trunking shall be laid with the top of the cover 300 mm. below ground level.

iv. Where it is not convenient to use trunking at surface level between Home Signals, the cables may be buried underground and RCC covers provided as a protection.

v. In case like Bridges, Culverts, Platform, Track and Level Crossings, Special arrangements shall be provided.

vi. Where Telecommunication cable is laid in the same trunk as Signaling cable, the two types of cable shall be separated by 200mm. by a brick placed at intervals of 2 meters. The Telecommunication cable shall be provided on the field side and in addition be provided with suitable identifying marks near each brick.

vii. When specified full round or half round pieces of RCC, Asbestos Cement, Polythene, Fiber chips, Pitch Fiber or Metal may be used.

**4. BURIED ROUTES :-**

a. Where cables are required to be buried direct in the ground, this shall be done at a minimum depth of 800mm from the ground level to the bottom of the trench.

b. Where the route is being installed on an uneven ground, reasonably long sections of consistent grading shall be dug, rather than following every undulation of the ground.

c. Normally the trench shall be dug at a distance of 3100 mm from the centre of the track to centre of the trench.

d. The size of the trench shall be sufficient to accommodate all the Signaling cables to be installed and shall allow for the laying at the time of the Signaling cables of one Telecommunication cable approximately 50mm in diameter.

e. Where excavation is being carried out adjacent to the track, soil shall not be placed on the walking ease. Excavation must be suitably protected where necessary e.g. at places where public or staff of the Railway have authorized access.

f. The bottom of the trench shall be reasonably compacted and leveled with a view to obviating voids forming under the cables.

g. Where required concrete cover slabs in accordance with approved samples or design shall be provided throughout the width sufficient to overlap the group of cables by at least 50mm on either side.

- h. Where specified, the cables shall be covered with 'A' class bricks placed width wise, approximately 9 bricks per meter. Before placing the bricks, the cables shall be covered with 150 mm of fine stone free earth.
- i. If at any place, excavation is necessary within 2200 mm. of the nearest running rail, the permission of the Divisional Engineer shall be obtained before the work is started, and any stipulations that he may make with regard to protection of the excavation or track must be strictly observed.
- j. The attention of the Sr. DSTE/DSTE/ASTE shall be drawn to any unusual ground found during the excavation i.e. rough ashes or water logged ground. Sand filling or any other treatment as he considers necessary shall be done.
- k. The back filling will normally take up all soil but if at any place it is necessary to dispose of any soil this shall be done.
- l. The line of the cable route shall be indicated by concrete or steel posts of approved design fixed at a minimum spacing of one Telegraph post or OHE post or any intermediate points where deviations or branch routes are made.
- m. Location boxes will be situated adjacent to the track and where it is necessary to bring cables from the main route to those locations, they shall be buried in the cutting or embankment slopes as specified above. The method of entry into the Location Box base shall be in accordance with the approved drawings.

#### **5. GROUND LEVEL ROUTE : RE-INFORCED CONCRETE TRUNKING:**

- a. Unless otherwise stated the main cable route shall comprise concrete trunking laid in the ground so that the top of the trunking (less lid) is 30 mm. above mean ground level except where instructed by the Sr. DSTE/DSTE to the contrary. In general a single route shall be installed. Sufficient room in the cable route to accommodate one Telecommunication cable approximately 50 mm. dia. shall be allowed.
- b. Unless specified otherwise, only reinforced concrete trunking shall be used. The trunking shall be as per the approved design or approved sample.
- c. The units shall be placed together with a good butt joint.
- d. Grouting between units shall not normally be necessary , but where this may be considered desirable it shall be performed so that the duct is rendered with a smooth face across the joint. Grouting shall also be carried out in this manner where it may be necessary to make slight bends in the route by placing the units at a slight angle at each other. In these cases special lead shall be cast at site to suit the angle of bend of the route.
- e. The covers shall be laid so that their joints are mid way along the duct sections and the completed route shall be left free of ballast or other extraneous material.

#### **6. ARRANGEMENTS FOR CABLES CROSSING TRACKS AND FOR SUBSIDIARY CABLES:**

- a. Where main cable route crosses the track(s), the Railway will provide an underline crossing and necessary manholes connected therewith. The contractor shall arrange to connect the cable route he is providing to the underline crossing at the entrance/exit manholes. Not more than two cables shall be drawn through any pipe and where more cables are to be laid additional pipes shall be installed.
- b. For subsidiary cables crossing the track(s) the contractor shall provide and install a surface trunking route. This surface trunking shall not exceed an overall dimension of 100 mm. X 100 mm. and shall be constructed of Metal or Fiber glass. The trunking shall be closed box cross section and shall be sited centrally in sleeper bays. The contractor shall state in his tender the type of cable trunking proposed for track crossing routes which type shall be subjected to the approval of the Sr. DSTE/DSTE.
- c. As an alternative to Metal or Fiber glass, Pitch Fiber pipes or Polyethylene tube of 75 mm. internal dia. and 2 mm. wall thickness (Hestalen or similar) may be used.

d. The pipe of trunking shall be secured at either end and also in the centre to prevent movement.

**7. CABLE ROUTES ACCROSS ROADS :-**

a. When a cable laid underground crosses a road a RCC or CI pipe should be used. The pipe should be anchored at the ends and project 12 mtr. on either side of the edges of the road.

b. For crossing a cable laid in surface trunking, the trunking alignment should be curved down to meet the pipe. A proper brick or concrete joint should be made between the pipe and the trunking.

**8. CABLE ROUTES OVER STEEL BRIDGES :-**

a. For laying cables along steel bridges, steel pipes or trunking is used which is carried on channels securely anchored to the girders. In case more than one cable is laid, the steel pipe or trunking shall be large enough to contain all the cables.

b. Where cables are carried over Bridges subject to severe vibrations, the trunking shall be filled with suitable shock absorbing materials such as sand or soft compound or insulated wool.

c. The trunking should be fitted on top with bituminous compound as an anti theft measure and to prevent overheating of the cable.

**9. CABLE ROUTES OVER RCC OR MASONARY CULVERTS:-**

For laying cables along culverts, a brick channel should be built along top of the parapet wall or by the side. Alternatively a RCC or steel pipe should be laid on the bed of the culvert along the side of the parapet. The arrangement adopted should have the approval of the Engineering Department.

**10. CABLE ROUTES ON ROCKY SOIL OR ON PLATFORMS :-**

Cable shall be laid in chassis cut in the rock or concrete platform. Sharp edges on the sides should be smoothened out and bottom of the chassis leveled by cement plaster. The size and shape of the chassis shall be as per the approved design.

**11. CABLES LAID ALONGSIDE PLATFORMS :-**

The edge of the platform where cables will come in contact shall be cement plastered to avoid damage to the sheath. After the cables are laid, half round RCC, Asbestos, Fiber Glass or Metal pipes shall be provided covering the cable. The pipes shall be supported by special clamps to be approved by the Sr. DSTE/DSTE. The Contractor shall state in his tender the type of protective pipe going to be used.

**LAYING OF SIGNALLING CABLES**

(Authority : CSTE's Technical Circular No.39)

**Introduction :**

Life and performance of a signaling cable depend to a large extent on the care taken in installation the cable and its jointing. It has been observed that adequate care is not being exercised in handling and laying the cable as a result of which such cables have developed faults within a few months of their installation.

The following instructions are accordingly issued for laying down a uniform practice for correct procedure of laying signaling cables which should be followed by all concerned. Whenever laying of cables is entrusted to contractors, these instructions should be brought home to them as special conditions in the tender paper. While supervising the cable laying work to be done by the contractor, the field inspectors and officers shall ensure compliance :

1. **Planning :**

- 1.1.1 While planning for cabling on a route, the number of conductors required, depending upon the circuits required should be first determined.
- 1.1.2 Spare conductors to a minimum of 20% of the total conductors used shall be provided in each cable between the outermost facing point and minimum of 10% of the total conductors, in each cable between the point area and outer-most signals.
- 1.1.3 Where a number of cables have been laid along a route, the circuits shall be so distributed that cables can be disconnected for maintenance purpose with the least possible dislocation to traffic. In a double line station, it will be preferable to use separate cables for UP and DN line.
- 1.1.4 After deciding the size and number of conductors in the different types of cables to be used on a route, a foot by foot survey along the track should be done to determine best route for the cable.
- 1.1.5 The desired route should be shown clearly on a cable route plan, showing the actual alignment of track, giving offsets from permanent way or permanent structures. The diagram should preferably indicate the various road and track crossing with power cables, water and sewage mains and other points of importance.
- 1.1.6 A cable core distribution plan should be drawn in respect of each installation. In the case of core distribution plan, all the cables should be numbered in ascending order from right hand side of the plan. If there be necessity to lay any extra cable higher numbers can be used without disturbing the existing numbering arrangement. The cables are numbered as follows : say the number is 0112(4) the extreme left two digits 01 - indicates Cable No. 1, the next two digits 12 - indicates Total no. of the cores of the cable ; the digit in bracket (4) - indicate the No. of spare core is available.  
  
The tail cable is also numbered in the similar fashion with the insertion of the letter 'T' after the extreme left two digits.
- 1.1.7 All the cables should be given distinctive numbers when the cables are initially laid. The number should be punched on a lead sleeve and the sleeve should wrapped round the cable every 3 Meters. The numbering should be in a row at one place and not put haphazardly.
- 1.1.8 Circuit route termination chart should be drawn in respect of each circuit starting from beginning to end. The route of circuit should be shown in each location but concerning it. All the cores of the existing cable should be numbered



with plastic markers. These markers should generally tally with the terminal numbers. This core numbering is essential so that under no circumstances a wrong connection can take place.

2.0 Cable Laid Underground :

2.1 Cable should be laid underground, either directly in the trench, in ducts, in cement troughs or in pipes.

2.2 Laying the Cables in Ducts :

2.2.1 In yards where a large number of cables are required to be laid in connection with Panel/RRI Installation, the cables may be laid in RCC Ducts or Brick Channels with removable top cover. In such cases the cable shall be laid in a serial order with one or two rows as necessary taking care to avoid crossing of the cable inside the duct and at the entry to the cable termination room. The location of cable duct should be so decided that in case of derailment there is no possibility of damage of the cable inside the duct by the derailed vehicles.

2.2.2 Laying of the cables inside the ducts is subject to a special check to ensure that the area is not theft prone.

2.2.3 The ducts shall have suitable covers capable of being removed for inspection.

2.2.4 Whenever the cable is laid in the duct there shall be holes on the bottom of the ducts for draining away any water that may collect.

2.2.5 Ducts shall be kept close to the surface of the ground so that the cover can be removed easily without digging the earth.

2.2.6 When cables are laid in rocky areas, it is desirable to protect them with split RCC Duct.

2.2.7 Where several cables of different categories have to be laid in the same trench, they shall be placed as far as possible in the following order starting from the main track side, so that in the event of failures the maintenance staff may easily recognize the damaged cables.

i) Derivation Cable for Axle Counter.

ii) Signalling Cable or Cables.

iii) L. T. Power Cables (less than 660 Volts) (if necessary).

2.2.8 Telecom. cable or cables belonging to Dept. of Telecom. (DOT) or cables or Electrical Department must not be laid in the same trench along with Signal Cables. However, laying of derivation cable for Axle Counter and L.T. Power Cable for signalling circuit is permitted in the same trench along with signal cable. However, laying of derivation cables along with signalling cable as a special case. The signalling cables must be separated from Power Cables by a row of bricks between them.

3.0 **Installation :**

3.1 **Testing of Cable Before Laying :**

3.1.1 Before the cable is laid, visual inspection of cable shall be made and it shall be tested for insulation and continuity of the cores.

3.1.2 Bedding and armoring shall also be inspected to see that there has been no damage during transit or in storage.

3.1.3 Before the cable is unwound from the drum, its insulation must be measured after removing the end seals. No cable having insulation lower than that specified in the specification shall be laid.

**Paying out the Cables :**

- 3.1.4 For paying out cables, the cable drum shall be mounted on cable wheels.
- 3.1.5 The drum on the wheel shall be brought to one end of the trench and the end of the cable freed and laid in the trench.
- 3.1.6 The cable wheel shall then be drawn along the road or track.
- 3.1.7 A party of labours shall follow the drum and guide the cable from the road into the trench carefully so that the cable is not damaged or bent unduly.
- 3.1.8 In cases where the wheels are not available, the drums shall be mounted on an axle at one end of the trench and cable paid out and carried by labours.
- 3.1.9 In no case, shall the drum be rolled off on to the road for laying the cable and the cable dragged on the ground for laying purposes.
- 3.1.10 It should be ensured that no Kink is formed while paying out the cable.
- 3.1.11 In no case shall the cable drum be laid flat on the ground and cable unrolled from the drum by twisting the cable. The Procedure may cause permanent damage to the cable.
- 3.2 **Laying** : Cables shall be laid generally as per standard instructions. Special precautions shall be taken in the station yards etc. where a number of other utilizes may be existing.
- 3.2.1 The cable laid parallel to the track and between home signal of a station shall be laid at a depth of 1 meter. Cable laid across the track shall be 1 meter below the rail flanges. Cable laid beyond the home signal in a yard, Automatic signals area or IBS or level crossing gates must be at a depth of 1-2 meter. At station yards which are theft prone, the cable shall be laid at 1-2 meter depth.
- 3.2.2 The width of the cable trench shall normally be 0.5 meter. The bottom of the cable trench shall be leveled and got rid of any sharp materials.
- A layer of sieved earth or sand of 0.075 meter (3") thickness shall be spread over the ground before laying the cable. The cable shall be covered with a layer of sand or sieved earth of 0.075 meter (3") thickness.
- 3.2.3 **Laying of Bricks (fully burnt country bricks) :**
- Whenever Power Cables are laid along with other cables, bricks are to be laid between the Power Cable and other cables for separation at the rate of 5 bricks per meter, placed length wise.
- Bricks shall be laid over the cables laid, at the rate of 10 bricks per running meter, placed breadth wise.
- There shall be no gap between successive bricks.
- 3.2.4 **Cable Crossing :**
- 3.2.5 When a cable has to cross the track, it should be ensured that:
- i) The cable crosses the track at right angles.
  - ii) The cable does not cross the track under points and crossing and
  - vi) The cable is laid in concrete/GI/CI pipes or suitable ducts while crossing the track
  - iv) In no case Cable should be laid without ends having been sealed to avoid water entering through bare end and damaging the cables.
- 3.2.6 When cables have to be laid along culverts they shall be suitably protected and supported. These shall be taken either (a) on the culvert through G.I. pipe not less

than 2" dia. or (b) taken in the bed of the culvert provided the river or gutter remains dry most of the season. When taking cable through pipe along the bridge, it should be suitably supported. In addition the entry and exit ends of the cable from the pipe to the diversion point of the cable shall be laid in concrete duct this being the most vulnerable portion of the cable run.

**Note :** Extreme care should be taken to ensure that outer PVC insulation and armoring of the cable are not damaged while taking cables through pipes. Size of the pipe should be to cater to the number of cables laid.

3.2.7 When cables have to be laid along a metallic bridge, they should be placed inside a metallic trough which may be filled as an anti- theft measure with sealing compound. The cable should be supported across the bridge in a manner which would involve minimum vibration to the cable and which will facilitate maintenance work. In AC electrified areas where suitable return path may not available for traction current; an additional thick conductor must be laid along with signalling cable and should be earthed at both ends. At extra length of about 6 meters should be kept at both ends in the form of coils in case it is laid along culvert or bridge.

3.2.8 In theft-prone areas cable markers must not be provided but the route plan should clearly indicate the offsets from reference marks.

3.2.9 While laying the cables in accordance with the above instructions, the following precautions should be adhered to for the safety of the track

i) Outside the station limits, the trenches shall preferably be dug at a distance not less than 3 meters from the centre of the track, width of the trench being outside the 3 meters distance.

ii) At each end of the main cable, an extra loop length of not less than 5 meters shall be kept.

3.2.10 It is desirable that the excavation of the trenches is not done in long lengths and does not remain uncovered overnight. It is preferable that trenches are dug, cable laid and refilling done on the same day.

3.2.11 The inspecting official, who supervises the excavation work, shall have the shoring materials ready in hand, so that in banks where ashes or loose materials are encountered, shoring can be adopted.

3.2.12 Back filling of the trench should be done properly rammed and consolidated.

3.2.13 During excavation, the earth of the trenches shall be not be thrown on the ballast. The earth shall be thrown by the side of the trenches away from the track.

3.2.14 In places where cable are to be laid close to the track, through preliminary digging up to 0.50 meters may be done excavation to the full depth should be done only just before the laying of the cables in presence of an official from Engineering Department, Caution order, messages may be issued wherever considered necessary.

3.2.15 The work shall be supervised at site personally by an official of the Signal & Telecommunication Department not below the rank of Junior Engineer (Signal).

3.2.16 **Jointing of Cables in 25 KV AC Electrified Area :**

When underground straight through joints are made, special care must be taken to maintain the electrical continuity of the sheath and armoring. For jointing PVC cables, EPOXY cable jointing kit similar to M-Seal Kit No. S/II, S/III & S/V should be used.

4.0 **Junction Box :**

Precautions to be taken for installation of junction boxes are indicated below.

- a) The installation of junction boxes for cable terminations are to be restricted strictly between the Home Signals of a station.
- b) The junction boxes should only be installed where different conductor capacities of cables are to be put through or for connecting main cable to the tail cables.
- c) For putting through two main cables of similar conductor capacities, only underground joints are to be made. Underground joints must be Epoxy joint to similar to M-Seal type.
- d) Beyond the Home Signal of a station where termination of the main cables are required for connecting to track point or signal control, location boxes only should be installed and not junction boxes.
- e) The cable leading into the junction box suitably protected by GI pipes.
- f) The bolt heads of the junction box covers shall be invariably riveted.

#### 5.0 **Cables leading to Signal Post :-**

Cables leading to the signal posts should be taken through the post if the signal post is tubular. In case of any other type of signal posts such as lattice type or joint type, cables should be taken through pipes.

#### 6.0 **Cables leading to Cabin/Station Building/Relay Room/Goomties :-**

6.1 In case of cables leading to Cabins/Station Building/Relay Rooms/ Goomties the floor of which are considerably higher, they should be taken through GI pipes by giving off sets. A number of cables should not be tightly filled in one pipe. Extreme care should be taken that outer PVC insulation or Armor of the cable is not damaged while these are taken through GI pipes.

6.2 In the Cabin/Relay Room/Gomutis/Location Hut the entry point of cable from the outdoor should be protected by suitably masonry and plaster to guard against physical damage as well as entry of water and insects. The area enclosing the base of the cable should be filled up with layer of sand. In addition a thin layer of cement plaster with good top finish should be provided. The cement plaster layer should be such that in case of necessity, the same can be easily broken for repair of cables or for laying additional cables. This arrangement is to be adopted in respect of both existing and future installation.

#### 7.0 **Maintenance :-**

7.1 Cable routes should be checked by walking along the route to ensure that there is no feasibility of cable exposure on account of any excavation work over the cable route or due to soil erosion. If necessary, earth work to be done over the cable route to ensure that there is no possibility of accumulation of rain water over the cable route due to the formation of drain on account of sink age of soil. The cable route should be checked at least once in a month. The cable route should also be kept free from jungle growth, etc., so that in case of necessity, excavation work can be undertaken by S&T staff without difficulty.

7.2 Should an existing cable be exposed due to making of a drain, the same should be protected by two channel of irons of adequate length to cover the exposed length. The channel irons should be firmly secured with clamps and riveted with bolts. The inter distance between two clamps should not exceed one meter. The end of the channels should be concreted.

7.3 Should there be heavy soil erosion over a portion of cable route and it is not possible to cover the same with earth, the effected portion of the cable route should be concreted taking precaution that the cable is not damaged on account of concreting.

7.4 Before any excavation work is undertaken by Engineering or S&T officials affecting the cable route, signalling staff should be posted at site to guide the excavating party so that the cable is not exposed or damaged. It must be ensured that such excavation work is not undertaken by any party without the express permission of the concerned Signal Inspector. Copies of the cable route plan should be given to IOW, PWI, Electrical Foreman etc. as necessary so that possibility of damage to cable by inadvertent excavation is avoided. The path for diversion of cable shall be decided by the maintenance inspector after a joint inspection.

The cost of Damages, if done, to the existing cables shall be DEBITED TO AGENCY CARRYING OUT THE WORK through the executive officials.

#### 8.0 **Measurement of Insulation Resistance of the Cable :-**

The insulation resistance of the Main Cable should be measured at least once in a year. The insulation resistance of Tail Cable should be measured at least once in a six months.

The insulation resistance should be measured strictly as per procedure mentioned in CSTE's Technical Circular No.: 33. The test results should be recorded in a register according to the proforma supplied along with above circular. The defective cable, if any, should be rectified at the earliest. The details of all joints in a cable should also be mentioned in the register in addition to mentioning them in the cable route plan.

**ROUTE SURVEY FOR CABLE**

<u>Para No.</u>	<u>Subject</u>
1.1	Preliminary Cable Route Survey.
1.2	Points to be covered in Preliminary Survey.
1.3	Proposed Cable Route Plan.
1.4	Information in Cable Route Plan.
1.5	Detailed Cable Route Survey.
1.6	Main Item of Work.
1.7	Finalization of Cable Route Plan.
1.8	Length of Cable.
1.9	Preparation of Joint Schedules.
1.10	Materials required for Protective Work.
1.11	Special Problem of the Section.
1.1	<b><u>PRELIMINARY CABLE ROUTE SURVEY :-</u></b> The objective of this survey is :
a)	Designing and finalising drawing for the proposed route of the cable laying.
b)	Planning Location of crossing tracks, over bridges, culverts etc.
1.2	Points to be covered under the preliminary survey for cable route :
1.2.1	Avoiding underground structures, Optic Fiber Cable, signaling cable, power cables and pipe lines etc.
1.2.2	Avoid rodent/termite infested or infected side on the alignment.
1.2.3	Avoiding areas having burrows.
1.2.4	Avoiding proximity to chemical, paper and such other industries which discharge chemically active affluent.
1.2.5	Avoiding areas prone to water logging.
1.2.6	Avoiding large rock cutting/thick jungles and areas difficult to approach etc.
1.2.7	Avoid the side of the alignment which is likely to be affected due to addition/alteration of earth work/super structures (such as doubling, shifting of alignment of the existing track etc.). For this, cable route should be discussed with construction and doubling organization.
1.2.8	The orientation of the route (left or right side of the track in the sections) to be decided on following :-
	1. That side of main line which is away from other cables such as telecom, signaling and power.
	2. Side which is likely to involve least track crossings and likely to be more convenient for crossing the track, bridges, culverts etc.
1.2.9	Figure out and scale crossing of roads, tracks etc.
1.2.10	Scale out proposed arrangement of crossing bridges, culverts etc. out of the many alternative available.
1.2.11	Assess special problems, if any, of the section such as undulating surfaces, long cutting, tunnels etc.
1.2.12	Scale out the cable entry/exit arrangement at the cable huts of drop insert locations. Avoid built up areas including those area where buildings etc. are likely to come up in future.
1.2.13	Verify pathways/pedestrian crossing and other lateral clearances.
1.2.14	Scale out the special work required if any and the manner of the cable route in approach of the existing bridges locations.
1.2.15	Identify locations where special lengths of cable are required to avoid joints on bridges/culverts etc.

1.2.16 For the straight runs as far as possible a separation of 10 Meter should be kept from the nearest track. This is as per CCITT recommendation K.8.

1.2.17 As a rule a minimum distance of 3M should be maintained between the OHE masts and the cable. In exceptional cases where the cable trench depth is less than 0.5 M the lateral distance may be reduced to 1 M. In such trenches which are in close proximity to OHE masts the cable should be laid in GI/HDPE PIPE.

### 1.3 **Proposed cable route plan :-**

Based on above survey, the cable route plan should be prepared :

1.3.1 Signaling cable route plan (5 Km. charts) with horizontal scale as 1 Km=10 Cm. The approved OHE locations, ASM's Office, cabin etc. are to be marked on the chart.

1.3.2 Drawings of the laying of the cable in the special terrain viz. Station yards, approaches of repeater station, long bridges, culverts etc. are to be made as 1 Km. chart (Scale 1 Km = 10 cm.) to show the details.

1.3.3 The name of the location should be put in the 'LOC' column and the chain age in the 'CH' column. At every 10 cm. the Km. post number should be written and its exact equivalent chain age as per OHE Survey plan entered in the 'CH' column. The equivalent chain age is required for working out the length of the main cable required. The name of station should be shown against the location of the Station Master's Office.

1.3.4 Based on the OHE Survey, the serial number and the length of culverts, bridges and level crossings should be marked on the 'Track Line of the cable route plan. The survey party should be supplied with prints of 5 Km. charts' with the above details entered for enabling them to mark the route, and other details after surveying.

1.3.5 The actual measurement of the separation distance from the central line of the track (the adjacent main line) is initially to be shown keeping the minimum clearances from OHE masts mentioned above. This is to be compiled on the 5 Km. charts.

1.3.6 All the plans and drawings shall be neatly prepared preferably using Computer Aided Design System & plotter etc. The drawings shall be in A3 or A4 size & suitably filed for ease of handling.

1.4 **Information in Cable route plan :-** The cable route plan shall contain following information :-

1.4.1 Whether the cable route is on the up or down side or the Railway Tracks.

1.4.2 Approximate locations and lengths where the cable shall be laid in steel pipes and G.I. pipes, and under the bed on culverts.

1.4.3 Location of track crossing and the number of tracks to be crossed.

1.4.4 Location of road crossing and the number of pipes to be provided.

1.4.5 Location and length for protection of cable in platform cutting etc.

### 1.5 **Detailed cable route survey :-**

The purpose of the detailed survey is to undertake the closer study of the various existing Signaling gears, to workout the exact requirement of the signaling cables and materials required for different items of work, finalize all the drawings and site plans required for the execution of work as also to examine the details collected during preliminary survey and to effect necessary changes/modifications, if any.

### 1.6 **Main Items of Work :-**

The following are the main items of work which should constitute the detailed survey.

1.6.1 Closely examining the proposed cable route and prepare cable route plans.

1.6.2 Sitting of areas for loading/unloading of cable drums.

1.6.3 Estimating the requirement of special cable lengths of cables for long girder bridge.

1.6.4 Deciding locations for each joint and preparation of a joint schedule.

1.6.5 Determining earth resistivity measurements for each cable section along the proposed cable route.

1.6.6 Working out the exact length of Signaling, power and 4/6 Quad Cable.

1.6.7 Preparation of the material schedule required for different protective works.

1.6.8 Arranging isolated telephone circuits to be provided in the cable.

1.6.9 Investigation on special problems of the section and finding out proposed solution thereof.

1.6.10 Examination of Chemical composition of soil to see whether any special precautions are to be taken to protect cable from soil corrosion.

1.7 **Finalization of cable route plan :-**

The following are the guidelines for finalization the route and preparation of the cable route plan.

1.7.1 Prepare the "5 Km. Charts" as explained above and collect the latest copy of approved OHE survey plan to enter the relevant chain ages and details in the "5 Km. Charts".

1.7.2 Actual measurement by 30 M steel tape or chain along the route is necessary only in case of important locations, to be termed as "Special terrains", for example, approach to repeater station/cable hut, long bridges, big yards, sharp diversions in the cable route from its parallel course along the main railway tracks due to obstruction, cuttings etc.

1.7.3 Inspect and decide the portions of route falling in category of "Special terrains" stated in para 1.7.2 above, i.e. where actual longitudinal measurement is necessary.

1.7.4 The remaining portions of the route, i.e. other than the portion decided as "Special terrain" as per para 1.7.2 above are to be termed as "straight runs". Actual chaining along the route is not necessary for such "straight runs" and these can be marked on the "5 Km. charts" by taking chain ages from the OHE plan.

1.7.5 For the "straight runs" on the cable route as per para 1.7.4 above, an allowance of 3.5% of the drum length should be made for the contours, jointing etc. and each drum length should be considered to cover a route length of  $0.965 \times \text{cable drum length}$ .

The cable route should be started from a cabin. Actual measurement along the route should be done by means of a 30 M steel tape for a few drum lengths upto a convenient point along the main line where from the distances along the route may be reckoned from the OHE Plan. A termination allowance of 5 M cable length inside the repeater station/cable hut building should be made, in addition to a length of about 20 M being kept in a pit just outside the building.

1.7.6 It should be ensured that both "Special terrain" and "straight runs" should consist of full drum lengths, so that the position of joints (other than T-Joint) is fixed without difficulty in both cases.

1.7.7 Actual measurements of the separation distance from the centre line of the reference track. On 'straight runs' this measurement should be made where necessary. In case of 'Special terrains' the separation distance at some points on the route may also have to be reckoned from some other permanent structures depending upon the site conditions.

1.7.8 The separation distance of the cable route from the nearest track on the "straight runs" should be 10 M. The deviation from this standard separation of 10 M should be kept to the minimum and as soon as any obstruction has been negotiated, the route should again follow this standard separation distance. It is desirable from the point of view of calculating the induced voltage that the uniformity of separation is maintained for the maximum possible length of the main cable route.

1.7.9 Separation distance should be marked on the "straight runs" portion of the cable route plan (5 Km. Charts) at intervals of not more than 250 M. In addition, the separation distances at points of change in the cable route such as diversions, track crossings, approach to bridges, culverts etc. should invariably be marked on the cable route plan in such a way as the intended cable route is clearly defined for "special terrains" the separation distance should be marked at as close intervals as is considered necessary depending on the site conditions.



1.7.10 The route should be decided by walking along the track. On long stretches of "straight runs" a push trolley moving slowly may be used. The trolley should be on the track closer to the proposed route.

1.7.11 Actual measurement should be made for the protective works required for the cable passing over the culverts, under tracks, over long girder bridges, arch bridges, level crossings, rocky areas, under the bed of culverts and near OHE switching posts etc.

1.7.12 Once the cables are laid, the actual length of cable as per the printed marking on the cable is required to be indicated at every Km. of cable route, at diversions, crossings, approaches of bridges and joints for Cables.

This is necessary for fault localization. Subsequently the cable length from cable hut can be corroborated with respect to nearest track centre.

#### **1.8 Length of Cable:-**

The cable length is worked out on following basis to arrive at the location of the straight joints :

- (a) Route length as per actual measurement plus contour allowances of 2.5%.
- (b) Extra length for track crossing including 2 & 1/2 meter loop on each side etc.
- (c) Extra length on Approach/crossing of the bridges and culverts as per measurement in the detailed survey.
- (d) 10 Meter of cable to be kept on either side of major steel bridges and 5 meters on minor bridges.
- (e) At every joint a loop of 2-5 meters on either side.
- (f) In cable hut a loop of 10 meters in the cable pit.

#### **1.9 Preparation of joint schedules :-**

1.9.1 For Cables, the requirement and location of opening joints shall be worked out. The jointing schedule shall be made as straight line diagram indicating the locations of various joints with ref. to nearest track centers /chain age.

1.9.2 The requirement of termination boxes for cables at various locations shall be worked out.

#### **1.10 Materials required for protective works :-**

1.10.1 The cables are meant for direct burial in the underground at a depth of 1.2 M/1M and special protection is required in a plain normal territory as envisaged in the schedule. For building, masonry platforms, culverts, crossing of tracks, level crossings and roads etc. special protection for the cables is required.

1.10.2 Actual measurement should be made for the length for which special protection is necessary and the requirement of materials for the protective works should be worked out. The requirement of materials based on the actual measurement should be shown in the cable route plan at the appropriate place.

#### **1.11 Special problems of the section :-**

1.11.1 Certain Sections may present special problems such as presence of chemically active soils, marshy areas, requirement of specially constructed platforms for distribution of cable drums along a high embankment etc.

1.11.2 Approaches to large bridges may also present special problems due to high embankment as well as deep ravines.

1.11.3 At the junction points of electrified and non-electrified areas, the cabling as also the linking arrangements of circuits from electrified to non-electrified sections may also present special problems.

1.11.4 The survey party should inspect and report to Sr.DSTE/ER/ASN, such problems at the very outset so that suitable solution.

**JOINTING AND TERMINATION OF FIBRE OPTIC CABLE**

<b><u>Para No.</u></b>	<b><u>Subject</u></b>
3.1	Techniques for Jointing of Fibre Optic Cable.
3.2	Straight Joint for Fibre Optic Cable.
3.3	Preparation of Cable for jointing.
3.4	Stripping/Cutting of the cable.
3.5	Preparation of Cable joint closure for splicing.
3.6	Stripping and Cleaving of Fibre.
3.7	Splicing of the Fibres.
3.8	Fusion splicing of Fibre.
3.9	Mechanical splicing of the Fibre.
3.10	Organising Fibre & Finishing Joints.
3.11	Placing of completed joint in Pit.
3.12	Reopening of the joint.
3.13	Termination joint for Fibre Optic Cable.
3.14	Marking the Cable.
3.15	Cutting/Stripping the cable.
3.16	Gripping the cable.
3.17	Fixing of Tension member.
3.18	Fibre Splicing.
3.19	Enclosing Fibres.
3.20	Mounting of Termination Box.
3.21	Fixing the Cable.
3.22	Isolation of Armour of OFC Cable.
3.23	Acceptance test for Fibre Optic Cable.
3.24	Pro-forma.
3.25	Tools and Equipment, required for jointing and Termination.

**3.1 Techniques for Jointing of fibre optic cable :****3.1.1 Following types of techniques are used for splicing of fibres :-****a) Mechanical Splices.**

This align the axis of the two fibres to be joined and physically hold the together.

**b) Fusion Splicing.**

This is accomplished by applying localised heating (i.e. by electric arc or flame) at the interface between two butted, pre-aligned fibre ends, causing them to soften and fuse together.

**3.1.2 Mechanical splicing can be used for temporary splicing of fibres or where fusion splicing is impractical or undesirable.****3.1.3 At all other location and during initial installation of fibre optic cable, fusion splicing should be adopted.****3.2 STRAIGHT JOINT FOR FIBRE OPTIC CABLE :**

- 3.2.1 The Optic Fibre straight through joint closure shall be as per TEC specification No.: G/OJC-02/01 Mar.'99 with latest amendment. The joint shall be protected in brick chamber as per RDSO drawing.
- 3.2.2 There are various types of joint enclosures available in the market. The procedure for assembly of joint closure is described in the installation manual supplied with straight joint closure. This includes the following :
- Material inside joint closure kit
  - Installation tools required
  - Detailed procedure for cable jointing
  - Procedure for re-opening the closure.
- 3.2.3 Generally, the following steps are involved for jointing of the cables :
- Preparation of cable for jointing
  - Stripping/cutting the cable
  - Preparation of Cable and joint closure for splicing
  - Stripping and Cleaving of Fibres
  - Fibre splicing
  - Organising fibres and Finishing joints
  - Sealing of joint closure and
  - Placing joint in pit
- 3.3 **PREPARATION OF CABLE FOR JOINTING :**
- During the installation, a minimum of 10 meter of cable of each end is coiled in the jointing pit to provide for jointing to be carried out at convenient location as well as spare length to be available for future use in case of failures.
  - The pit size must be chosen carefully to ensure the length of the wall on which joint is mounted is greater than closure length plus twice the minimum bending radius of the cable. A pit length of 1 metre is sufficient for most of the cable and joint closures. Bracket to support the cable coil are also fixed on the wall of the pit. Details of cable pit are given in RDSO/TCDO/COP-21.
  - The cable is then coiled on to the pit wall in the same position as required after the joint is complete. The marking is done on all the loops so that it will be easier to install it later.
  - The distance from the last centre to the end of the cable must be at least 1.8 metre. This is being the minimum to be stripped for preparation of joint.
  - Sufficient cable at each end up to the jointing vehicle/enclosure is then uncoiled from the pit for jointing.
- 3.4 **STRIPPING/CUTTING OF THE CABLE**
- The cable are stripped of their outer and inner sheath with each sheath staggered approximately 10mm. from the one above it.
  - Proper care must be taken when removing the inner sheath to ensure the fibres are not scratched or cut with the stripping knife or tool. To prevent this, it is best to only score the inner sheath twice on opposite sides of the cable, rather than cut completely through it. The two scores marking on either side of the cable are then stripped of the inner sheath by hand quite easily.
  - The fibres are then removed from cable one by one and each fibre is cleaned individually using Kerosene to remove the jelly.
  - Among shall remain outside the gland and will not be connected through.
- 3.5 **PREPARATION OF CABLE JOINT CLOSURE FOR SPLICING**
- The type of preparation work performed on the cable prior to splicing differs on the type of joint closure and fibre organiser used. However, the following steps are usually common :
- The strength member of each cable are joined to each other and/or the central frame of the joint closure.

- b) The joint closure is assembled around the cable.
- c) The sealing compound or heat shrink sleeve is applied to the cables and closure, or prepared for application after splicing is complete.
- d) The fibres are protected (usually with plastic tubing) in their run from the cable core to the fibre organiser trays (particularly if cable construction is slotted core type).
- e) Tags which identify the fibres no. are attached at suitable location on the fibres.
- f) Splice protectors shall be slipped over each fibre in readiness for placing over the bare fibre after splicing.

### 3.6 **STRIPPING AND CLEAVING OF FIBRE :**

- a) Prior to splicing each fibre must have approximately 50mm. of its primary protective UV cured coating removed, using fibre stripper which are manufactured to fine tolerances and only score the coating without contacting the glass fibre.
- b) The bare fibre is then wiped with a lint free tissue doused with ethyl alcohol.
- c) Cleaving of the fibre is then performed to obtain as close as possible to a perfect 90 degree face on the fibre.

### 3.7 **SPlicing OF THE FIBRES :**

As discussed above there are two types of methods which can be used for fibre splicing. Some of the basic steps for both the type are as under :

### 3.8 **FUSION SPlicing OF FIBRE :**

Some of the general steps with full automatic microprocessor control splicing machine are as under :

- a) Hands shall be thoroughly washed prior to commencing this procedure.
- b) The clean bare fibre shall be dipped in the beaker of ethyl alcohol of the ultrasonic cleaver and ultrasonic cleaver switched on for 5-10 seconds.
- c) The bare fibre shall then be placed inside 'V' groove of the splicing machine by opening clamp handle, in such a way so that 1mm gap is available between the electrode and the end of fibre being spliced and heat shrink protector inserted.
- d) The same procedure shall be repeated for other fibre.
- e) The start button on the splice controller shall be pressed.
- f) The machine shall pre fuse, set align both in 'X' and 'Y' direction and then finally fuse the fibre.
- g) The splice shall be inspected on monitor provide on the fusion splicing machine, there shall be no nicking, bulging is there and cores are adequately aligned. The above procedure shall be repeated if the splice does not visually good looking.
- h) The heat shrink protector shall be side over the splice and tube shall be placed in heater. Heating shall be considered complete when soft inner layer is seen to be 'oozing' out of the outer layer of the protector.
- i) The steps (a) to (h) shall be repeated for other fibres.

### 3.9 **MECHANICAL SPlicing OF THE FIBRE :**

There are two types of splicing system. In case, one with precision alignment of fibre in "V" groove and the fibre ends are sealed with some index matching fluid and adhesive. The other system uses ultrasonic light source for curing optical adhesive in addition to alignment etc. The general steps involved for the above are as under :

- a) Stripping and cleaving of fibres is done as per clause - 3.6.
- b) Protective end cap shall be removed from mechanical splice and vent tube pulled up.
- c) Adhesive shall be injected into splice as specified by supplier.
- d) Fibre shall be inserted till it butts against fibre end already bonded in place.
- e) Adhesive shall be cured with UV light following exposure times as specified by supplier.
- f) The steps (a) to (e) above shall be repeated for all the fibres.

### 3.10 **ORGANISING FIBRE AND FINISHING JOINTS**

- a) After each fibre has been spliced, the heat shrink protection sleeve shall be slipped over the bare fibre before any handling of fibre takes place, as uncoated fibres are very brittle and cannot withstand small radius bends without breaking.
- b) The fibre shall then be organised into its tray by coiling the fibres on each side of the protection sleeve using the full tray side to ensure the maximum radius possible for fibre coils.
- c) The tray shall then be placed in the position.
- d) OTDR reading shall be taken for all splices in this organised state and recorded on the test sheet to confirm that all fibres attenuation is within specified limits. The OTDR test confirms that fibres were not subjected to excessive stress during the organising process. Care should be taken that the fibres are not interchange while jointing.
- e) The joint shall then be closed with necessary sealing etc. and considered ready for placement in the pit.

### **3.11 PLACING OF COMPLETED JOINT IN PIT :**

- a) Joint shall be taken out from the vehicle and placed on the tarpaulin provided near the pit.
- b) The cable is laid on the ground, looped according to the marking done in the beginning. This loops shall then be tied together with the tape.
- c) The joint shall be permanently closed and sealed by heating heat shrinkable sleeve etc.
- d) Joint closure shall be fixed to the bracket on the pit wall and pit is closed. Cable Pit for Joint to be as per RDSO drawing No. RDSO/TCDO/COP-21

### **3.12 RE-OPENING OF THE JOINT :**

For attending faults etc., special kits shall be used for opening of the joint and the instructions shall be followed. The general steps are as under :

- a) Suitable knife shall be used to cut heat shrink sleeve longitudinally along its entire length.
- b) It shall be ensured that there is no damage the smaller heat shrunk sleeve on the ends of the joint.
- c) Heat shall then be applied to the cut sleeve until it begins to separate.
- d) The cut sleeve shall be removed gently from the joint so that the joint can be opened.
- e) Protective sleeve/cover shall be removed for attending to faults etc.

### **3.13 TERMINATION JOINT FOR FIBRE OPTIC CABLE**

3.13.1 This joint is provided in the cable hut for terminating the outdoor fibre optic cable of both the sides, splicing through fibres, connecting fibres to pigtails for connection to optical line terminal equipment etc.

3.13.2 The OFC cables shall be dressed up on teak wood plank/Aluminium ladder inside the repeater station. The armour of the OFC Cable shall be cut before taking the cable in the equipment rack. The cables shall be terminated on OFC termination joint closures. The Optic Fibre termination joint closure as per specification given in tender document shall be provided in each cable hut to terminate both optical fibre cables and deriving required pigtails. This shall be mounted suitably inside the equipment rack. Four pairs of fibres shall be derived from either side cable at every OFC hut through pigtails with FC/PC connectors.

At terminal or MW repeater stations, while the OFC will be terminated in OFC termination box, all fibres shall be derived from either side cable through pigtails and FC/PC connectors and pigtails will be terminated in FDF.

3.13.2 The procedure for installation of termination joint box shall depend upon the type of joint enclosure. The installation manual shall contain the step by step procedure for installation. However, the general steps shall be as under :-

- Marking the Cable
- Stripping/cutting the cable
- Gripping cable in sheath/clamp

- Treatment of tension member
- Fibre splicing
- Enclosing fibre
- Fixing strength member
- Closing the cover
- Fixing termination box
- Fixing the cable

### **3.14 MARKING THE CABLE**

- a) The cable length shall be determined upto the proposed location of termination box. It shall also to be ensured that at least 10 metres of cable is coiled in the cable pit.
- b) The cutting point shall be determined and the cable marked.
- c) The length sheath peeling point shall be determined and the cable marked.

### **3.15 CUTTING/STRIPPING THE CABLE**

- a) The cable shall be cut as per the marking.
- b) The sheath shall be removed from cable ends. During sheath stripping care shall be taken the fibres are not damage.
- c) The length and the steps for various sheath cutting shall be as per the instruction given in the manual.

### **3.16 GRIPPING THE CABLE**

- a) PVC tape shall be wound around the cable core just beside edge of the sheath.
- b) The bushing inside sheath shall be inserted by cutting the cable sheath for about 25 mm.
- c) The sheath grip (lower half and upper half) shall be placed and tighten it with the help of torque wrench.

### **3.17 FIXING OF TENSION MEMBER**

- a) The tension member shall be marked for the specified length and cut.
- b) The tension member shall be thoroughly cleaned by Alcohol and cotton cloth.
- c) Tension member shall be fixed at the end of tension member with the help of instant adhesive.

### **3.18 FIBRE SPLICING**

The procedure for splicing shall be same as described for straight joint closure.

### **3.19 ENCLOSING FIBRES**

- a) The fibre cassette shall be set on the base of the joint closure.
- b) Excess length of fibre shall be arranged to make double figure of eight.
- c) The spliced fibre and its excess length shall be enclosed carefully.
- d) The steps (a) to (c) above shall be repeated for other fibres.
- e) After this, the box can be closed. However, a packet of silica gel may be placed inside for protection from entry of moisture.

### **3.20 MOUNTING OF TERMINATION BOX**

Termination box shall be fixed either on wall or on equipment rack.

- a) The fixing holes shall be marked on the walls/bracket/frame
- b) The termination box shall be placed and nuts inside the base box shall be tightened.
- c) Sufficient silica gel in bags shall be kept inside and the covers shall then the put on termination box and closed.
- d) Jointing /splicing: Optic fibre placed in the joint should be safely protected in a brick machinery chamber as per RDSO drawing. The Chamber shall be filled with fine sieved sand, the upper surface of the chamber should be kept 50 cm below the surface; a suitable join marker should be place on all joint location. 10 meters of extra cable should be coiled in the pit for future use. Armouring must not be put through. The Armouring should be earthed.

### **3.21 FIXING THE CABLE**

The cable on wall/frame shall be secured at two places within one meter from termination box keeping in view straight entry of cable into termination box.

- 3.21.1 After the cable is laid and splicing has been completed, measurement in the enclosed proforma has to be prepared. The end to end loss should not exceed 0.25 db per Km at 1550 nm and 0.40 db per km at 1310 nm.

3.22 **ISOLATION OF ARMOUR OF OFC CABLE**

The maximum continuous length of armour of OFC cable should not exceed 1.6 Kms. in order to keep the induced voltage within permissible limits. Where the continuous length of cable exceeds 1.6 Kms. a 50 mm. cut shall be made in the armour after every 1.6 Km. The Exposed cable at the cut shall be covered by shrinking suitable heat shrink sleeve as per TEC specifications.

3.23 **ACCEPTANCE TEST FOR FIBRE OPTIC CABLE**

The Procedure for Testing of Fibre Optic Cable shall be jointly finalised by Contractor with Engineer of the Railways. The parameters specified by manufacturer shall be taken as reference. The Test shall be conducted from cable hut to cable hut once the Splicing & Termination Joints are completed. The length of cable (as per marking in cable & as measured by OTDR), loss in cable, average loss per Km., No. of Splices, Splice loss, etc. shall be recorded and jointly signed as per proforma given in para 3.24 below.

3.24 **TEST PROTOCOL FOR OPTICAL FIBRE CABLE**

SYSTEM TEST PROTOCOL      OPTICAL FIBRE CABLE      FIELD TEST

Route : \_\_\_\_\_ Date : \_\_\_\_\_

Station : \_\_\_\_\_ No. of mid-section splices: \_\_\_\_\_

Section : \_\_\_\_\_ Measured by : \_\_\_\_\_

Length \_\_\_\_\_ Length (by OTDR): \_\_\_\_\_

meter marking on cable sheath : \_\_\_\_\_

1) Optical measurements (On Line) :

Measurement	Fibre-number	Accepted value
	1   2   3         23   24	

1.1 Total attenuation at 1310 /1500

nm with OTDR

1.2 Total attenuation per Km

1.3 Splice Loss in dB with

OTDR Location :

OHE Mast No.

A.

B.

C.

D.

E.

Average splice Loss		
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**NOTE - ALSO ATTACH OTDR RESULTS**

2. Visual Inspection (On Line) : -----

2.1 No. of Cable drum used in the section : \_\_\_\_\_

2.2 Sl. No. of cable and length of each drum :

<u>Sl. NO.</u>	<u>LENGTH</u>
1. -----	----- M.
2. -----	----- M.
3. -----	----- M.
4. -----	----- M.
5. -----	----- M.

2.5 Location of Isolation Sleeves : 1.      2.      3.

Contractor's Representative

Railway Representative

**3.25 TOOLS AND EQUIPMENTS REQUIRED FOR JOINTING AND TERMINATION OF FIBRE OPTIC CABLE.**

<u>Sl.No.</u>	<u>Tool's Name</u>
1.	Branch Joint Closure
2.	Termination Box
3.	Rubber end Block
4.	Sheath Clamp
5.	Bushing
6.	Strength Member holder
7.	Heat Shrinkage tube
8.	Arc fusion splicer machine.
9.	Power cord AC/DC
10.	Walkie-Talkie 12V DC sources
11.	Tube heater
12.	Precision Cleaver
13.	Cable sheath Stripper
14.	Fibre Stripper
15.	Knife for HDPE cutting
16.	Hacksaw for strength membrane
17.	Isopropyl alcohol or methanol of high specific gravity
18.	Johnson Buds
19.	Tweezers
20.	Gun heater Blower type
21.	Sleeve for splice protection
22.	O.T.D.R.
23.	Stickers for numbering of splicers.
24.	Portable generator.



**TECHNICAL SPECIFICATION AND INSTRUCTIONS FOR TRENCHING AND LAYING OF OFC, AND PROTECTIVE WORKS**

<b><u>Para No.</u></b>	<b><u>Subject</u></b>
4.1	Scope
4.2	Supply of Tapping and Route Plan.
4.3	Instructions for excavation & back filling of Trenches.
4.4	Track Crossing.
4.5	Road Crossing.
4.6	Cable over Culverts/Bridges.
4.7	Cables in Congested Residential areas and Marshy Areas.
4.8	Cable laying on platforms.
4.9	Leading in of Main/Derivation Cable in Masonary buildings Cabins.
4.10	Laying of Cable in Special Cases.
4.11	Handling of cable Drum & paying of cables.
4.12	Cable Laying.
4.13	Cable Reserve.
4.14	Cable Marker.
4.15	Tools Required for Trenching, Cable Laying and Filling.

**4.1 SCOPE :**

This chapter deals with the specification under which the various work for trenching & laying of OFC cables coming under the purview of the contract are to be executed by the contractor.

**4.2 SUPPLY OF TAPPING & ROUTE PLAN:**

Cable Route plan, and jointing schedule for jointing of cable will be prepared and supplied by the contractor in consultation with the Engineer before the commencement of the work. Drawings as well as full details for the apparatus the contractor proposes to supply but not covered in drawings or specifications furnished by the Railways should also be supplied. These shall be supplied in three copies and got approved from the Engineer. All these drawings shall be drawn in ink on durable Acrylic sheets to be approved by the Railway in suitable PVC folders.

4.2.1 All design and drawings supplied by the contractor must incorporate all safety measures.

4.2.2 No change shall be made in the approved drawing without the written consent of the Railway Engineer.

4.2.3 The contractor shall prepare reproducible tracing of corrected and final drawings of cable route plan for the whole section including cables laid in the station areas showing cable details, protection adopted, length and exact depth, distance from the nearest traction mast, fixed structures such as ASM office, Cabin, Repeater station, SP/SSP/FP and LC gates etc. Five copies of each of such tracing shall be handed over by the contractor to the Railway before handing over the laid cable to the Railway and after duly varified and approved by the Railway Engineer.

**4.3 INSTRUCTIONS FOR EXCAVATION & BACK FILLING OF TRENCHES :**

4.3.1 The Representative of Engineer In-charge of the work will mark the route of the cable as per the instructions given to him by the Engineer, to meet the requirement of local conditions at site, and shall be taken by the contractor to be final. The contractor shall be present at the time of marking and he shall furnish to the Engineer's representative required quantities of lime, rope, labour etc. for carrying out this work. The marking will be given on the track side of the trench at a distance approximately one meter away from the centre line of the trench. In the difficult terrains such as water logged areas, the position of the cable route will be specified by off sets from the centre line of the nearest track.

4.3.2 The Railway will provide the following to the tenderer :

- a) Necessary protection for track crossing or approvals for road crossing in city as required while cable laying is being done.
- b) The exact location for the termination of cables and the cable laying route.

4.3.3 Trenches for optic Fibre cable shall be dug to a depth of 1.2 metre. The width of the trench shall be adequate at the bottom to accommodate cables and their protection. Normally width of approx. 250-300mm at the bottom is sufficient. In places where underground pipes, electric main etc. come in the way or due to any other reason considered sufficient by the Engineer and certified by him, trenches deeper than 1.2 metre shall be dug as necessary and G.I. pipes shall be placed to protect the cables. The payment will be made on prorata basis of the relevant standard depth, in case excavation up to 1.2 meter is not possible due to local conditions or excavation are required to be done in excess of 1.2 mtr. due to local condition. Before cable laying is done the depth of excavation is to be certified by the Inspector/Engineer.

4.3.4 The cable laying work includes transportation from Railway store to the site, including loading/unloading of cable drums, laying of cable in-trenches/G.I./ HDPE pipes as required. While taking cable from store, the firm may test the cables for specified parameters.

4.3.5 The contractor, shall book all materials and shall be responsible for safe custody of all the materials used to him for execution at site.

4.3.6 Cable required for doing the job of 3 or more sections at a time will be given to the contractor. While taking the cable, the contractor should submit a Bank guarantee of `2,00,000/- (which is only a token money) valid till the laid cable is taken over by the Railway under satisfactory condition. Any damage to the cable will be recovered from the contractor and in this respect the decision of Railway Engineer shall be final. If the cable laying is completed at each Section/station one after another, cables for 3 or more Sections/stations at any time would be made available against the above Bank Guarantee till the last station is completed. Thereafter the bank guarantee will be returned to the contractor.

4.3.7 Metalled, concrete and stone paved roads shall also be cut to a depth of at least 1.2 metre. The cable shall be laid through RCC/GI pipe as per RDSO Drg. No. RDSO/TCDO/COP-20. The road surface shall be restored to original.

4.3.8 The bottom of the trench where the OFC is to be laid shall be thoroughly prepared and shall be free from any stones. The bottom of the trench shall be horizontal and shall in no case be undulating. When the cable bed changes from solid to soft surface or from the bridge to soft soil, tapered fill at the transition point shall be provided so that cable is not pressed against the edge of a hard surface.

4.3.9 The Contractor shall arrange supply and distribution of a Second Class bricks of standard size at site and after uniformly covering the cable laid in the trenches by Stone-free sieved soil upto 50 mm. height above the cable, he shall arrange to place the bricks flat and position them breadth wise so that on an average, 8 (eight) bricks shall be laid in a metre length.

NOTE : In order to be certain that the full requirement of bricks has been arranged by the Contractor for placing on the top of the cable to be laid on any day he shall arrange to spread the bricks side by side on the top of the trenches before the depth of the trenches are inspected by the Railways' representative.

4.3.10 The back filling of trenches shall be done by ramming and consolidating the excavated soil in layers of 15-20 cm at time. All the soil that is excavated shall be put back to the trench and care shall be taken in consolidation to ensure that the back filling does not suffer any sinkage in monsoon. The left out earth if any within station limit has to be smeared out properly so that the left out earth does not cause any infringement or obstruction to either train movement or to any gear in the station section.

4.3.11 When the excavation is to be done between the tracks and between OHE foundation and track, it shall be done to the full depth just before laying the cable in the presence of the Engineers' representative.

4.3.12 Wherever the Engineer's representative considers it necessary to adopt shoring / shuttering, the Contractor will be required to adopt shoring/shuttering for which the Contractor shall have sufficient quantities of shoring / shuttering material on hand as per RDSO Drawing given.

4.3.13 The excavation shall include clearing bushes and roots of trees along the trenches and adopting shoring / shuttering in case of loose soil or banks made of cinders and ashes.

4.3.14 Where the direction of the trench has to change, it should be done in a gentle curve of not less than one metre radius and not at sharp angles.

4.3.15 Places where back filling is not done properly are likely to get water logged with the first rains after completion of the work, the Contractor and Engineer-in-charge will inspect the entire Section soon after the first monsoon and the contractor will arrange to set right such areas. The Engineer-in-charge will then issue a Certificate of Satisfactory Completion of this work and this shall constitute as one of the authorities for the refund of the Security Deposit.

#### **4.4 TRACK CROSSING :**

All cable crossings across railway tracks shall be done in H.D.P.E./G.I. pipes, threading the cable through these pipes. The contractor shall do the trenching to the required depth wherever necessary such as approaches to track crossing and the length in between the adjacent tracks. Two G.I. wires of 10 SWG size shall be threaded through H.D.P.E./G.I. pipes, one to pull the cable and one for future use. The arrangement of cable and G.I./HDPE Pipe trunking under Track crossings has been shown in RDSO Drg. No. RDSO/TCDO/COP-19.

#### **4.5 Road Crossing :**

4.5.1 When crossing road ways, it is necessary to lay the cables in such a manner as to avoid the necessity of sharp bends and minimise the excavation of road surface as far as possible. Where cable is laid in surfaced trunking the trunking alignment should be curved down to the pipes and proper brick or concrete joint should be made between trunking and pipe.

4.5.2 The crossing of main roads often involves difficulties especially if traffic is heavy, precautions to avoid accidents to workmen, pedestrians and vehicles should be taken. On minor roads which can be temporarily closed to traffic it is possible to open up and cross the entire width of the road. Pipes should be installed quickly in the cutting which is then filled in there by reducing to a minimum time for which the road is closed.

4.5.3 Some roadways which are broad may be opened for half their width allowing the other half for use of traffic. Pipes are laid, trench filled in the first half and the other half opened up after the first half is opened for the traffic. Pipes laid in the second half is linked with those laid in the first half. GI/HDPE pipes shall be used for road crossings. In all cases pipes should be laid at a depth of 1.0 mtr. below the formation level or lower as may be required.

4.5.4 Whenever a cable is laid across an important road particularly one with a special surface it is good investment to provide for future expansion. The following methods may be adopted :

- (a) The size of the pipe should be so chosen that other Cables may be drawn in subsequently, Pipes having diameters of 100 mm. shall be used for laying the cable through pipes. Two such lengths of G.I. Wire 10 SWG shall be laid through the pipe. One wire shall be used

for leading in the cable and the other wire shall be kept with suitable overlay to enable cable pulled out at later stage, if required.

4.5.5 RDSO Drawing No. RDSO/TCDO/COP-20 shows the arrangement of GI/ HDPE pipe trunking under metal roads. At road crossings RCC/GI/HDPE pipe of suitable dia. shall be used.

4.5.6 The contractor will be responsible to reinstate the roads and pavements after the cable is laid so that no damage occurs to the vehicles or pedestrians passing by. Any such damage should be made good by the contractor who should also arrange for the supply of red barriers, signals and red lamps at his cost. These should be placed at the ends and sides of trench to protect it properly.

Surplus earth and road spoils must be removed within 48 hrs. of the completion of the work to the satisfaction of the authorised concerned. Failure to remove the surplus earth, road spoils within specified times will result in a penalty of maximum of 10% of the cost of trenching plus the cost of temporary restoration done through other agencies and charged by the latter. Permanent restoration to pre-trenching state of surface is to be done within 7 days maximum after trenching, failure to which will invite penalty of maximum of 10%.

#### **4.6 Cables over Culverts/bridges :**

The cables over culverts/bridges are to be laid in perforated G.I.pipe as per arrangement shown in RDSO Drawing No. RDSO/TCDO/COP-16. In case the culverts/bridges upto 6 metres span, the cable can be crossed without any intermediate support. However, in case of culverts/bridges of span greater than 6 mtr. intermediate supports are required at every 6 mtr.

4.6.1 The laying of the cable on the bridges is to be done with much care and planning. It is necessary that the cable drum to be laid on the bridge is inspected and tested thoroughly so that damaged cable is not installed.

4.6.2 As the laying involves movement of large number of staff over the bridge the line should be blocked and flagman posted on other side. On a double line only the line near which the cable is being laid should be blocked but care should be taken to see that staff are aware of this and measures taken to prevent staff from staying on to the unblocked line.

#### **4.7 CABLES IN CONGESTED RESIDENTIAL AREAS AND MARSHY AREAS :**

4.7.1 When laying the cable in residential sections, the cable should be specially protected on both sides up to a distance of about 300 meters beyond the building line. In such cases the cable should be protected by means of split asbestos cement or RCC ducts which are placed directly over the cable. This is better than using bricks as in a residential area bricks are usually found, while digging and its special significance of cable protection may be overlooked. Special precautions to be taken to protect public property. During digging if any cable etc. is encountered further precaution will have to be taken to ensure that no damage occurs to these cables.

4.7.2 In marshy area where it is not possible to divert the cable route the cable shall be suitably laid and protected as per decision of Engineer depending on site condition, like laying cable in G.I. pipe 75mm dia. or RCC pipe 150 mm. dia. supported on Masonry Pillars/Iron Channels etc.

#### **4.8 Cable Laying on Platforms:**

On platform face the cable shall be laid inside the platform face and cementing the surface has to be done as per drawing given at Annexure-4.9.

#### **4.9 Leading in of Main/Derivation cable in masonry buildings & cabins :**

4.9.1 Cables will have to be led inside any masonry building such as Cabin, ASM's room at a depth of 0.75 metres by cutting the masonry structure of the wall as per Drawing as given at Annexure-4.6. After the cable has been led inside the masonry wall the floor inside shall be duly repaired and plastered.

4.9.2 When a cable has to be taken and terminated on the 1st floor cabin it shall be first led inside the ground floor of the cabin by cutting the masonry structure of the wall of the cabin and then it will be taken through a G.I. pipe fixed vertically on the inside of the cabin wall by

suitable clamps to be embodied on the wall as per arrangement shown in Drawing as given at Annexure-4.6.

#### **4.10 LAYING OF CABLE IN SPECIAL CASES :**

##### **4.10.1 Near Power Cable :**

When the contractor comes across any other cable already laid, he shall first report the fact to the Engineer. Should the cable be identified by the Engineer as a power cable (LT or HT), the trench shall be dug as far away from the route of the power cable as practicable.

4.10.2 Crossing of OFC Cable with another cable shall be avoided wherever possible. Where, however, this is not possible, the OFC cable shall be laid in R.C.C. or asbestos cement pipes. The length of the pipe to be provided on either side of the crossing shall be at least one metre.

4.10.3 Laying of other than Telecom. cables in the same Trench No other cable shall be laid in the trench for the telecommunication cable. Where, however, exceptional circumstances exist, the telecommunication cable may be laid along with another cable in the same trench provided a specific permission of each such case is obtained in writing from Engineer. When telecommunication cable and L.T. power cable/Signalling cable have to be laid in the same trench they shall be separated by placing a layer of brick between them vertically (approx. 16 bricks/meter) or laid in RCC/GI pipe.

##### **4.10.4 Laying of cable through pipes :**

(i) The cable shall be laid through GI/HDPE pipes at the locations marked on the tapping and route plan and as advised by the Engineer or his representative.

(ii) Laying the cable through Telecom ducts/GI pipes, galvanised steel wires of a cross section not less than 10 SWG shall be used as a lead wire. Two such lengths of wires shall be laid through the pipes, so that after the cable is laid through the pipe, one lead wire is permanently left in the pipe with a suitable overlay at two ends, to enable the cable to be pulled out at a later stage if required to do so.

(iii) On Arch bridges and culvert bridges the cables will be laid through G.I./RCC pipes etc. While laying the cable through these pipes the contractor shall do the trenching to the required depth wherever necessary for which no extra charge will be paid.

##### **4.10.5 Laying cable near feeding post :**

In the vicinity of feeding posts, as far as possible the cable shall be laid on the side of the track opposite to the feeding post. Further the Telecom. cable shall be at least one metre away from any metallic part of the O.H.E. and other equipment at the sub station which is fixed on the ground and at least one metre away from the sub station earthing. In addition, the cable shall be laid in RCC/GI pipes of suitable dia. (standard 2 metre length) complete or capable of being split into two half as per specn. No. ISS-458 latest for a length of 300 metres on either side of the feeding point.

##### **4.10.6 Running of cables at foundations others than OHE Masts and from pipe outlets :**

Damages to cable is likely to occur if care is not taken in laying cable where the bed changes from solid support such as a foundation pipe or bridge to soft support such as soft soil. The cable must not press against the edge of the solid support. The soft soil near the edge must be rammed and the cable raised slightly.

##### **4.10.7 Laying near oily surface :**

If during the excavation of trenches for laying cables the Contractor or his representative notices the presence of oil or oily substance or any other chemical which is likely to cause deterioration of the cable protective material he shall bring the matter to the notice of the Engineer or his representative and on the latter's decision he shall choose an alternative cable route or he shall protect the cable in such places in such a manner as advised in writing by the Engineer or his representative. No additional charges are payable.

##### **4.10.8 Special soil condition :**

Cable should not be run through abnormally high acidic or alkaline soil or through sewages. If this is unavoidable, special measures should be taken against corrosion as advised by the Engineer in Charge. No additional charges to be paid for the same.

**4.10.9 Provision of damage due to sharp edges :**

When cable are laid in trunking, care should be taken to see that no ballast or stones have been dropped inside the trunking. The trunking should be cleared of all ballast and stones before the cover is secured. When the ends of covers are joined together with cement plaster a piece of paper or wood should be placed under the joint to prevent the cement plaster from falling on the cables.

**4.11 HANDLING OF CABLE DRUMS & PAYING OF CABLES :**

4.11.1 The drums shall be unloaded by the side of the Railway Track from either a crane or any other suitable means very carefully so as not to cause any damage to the cable. The drums at site shall be protected until they are laid.

4.11.2 On each drum there are two ends, A&B. The 'B' end of one cable length shall meet 'A' end of the next cable at a joint. The 'A' end shall be normally on the top unless indicated otherwise on a drum.

4.11.3 The drums shall always be kept upright, i.e. axle in parallel position to the base. The drums shall not be set by jerks but shall be handled slowly and with care. The walls of the drums should not be damaged while moving the drums if required for unrolling.

4.11.4 The drums shall normally be unrolled at the same place and the cable carried by workmen near the trench. The drums, shall not be dragged in any case, but where drums of cable have to be moved would always be rolled in the direction of the arrow, otherwise the coils tend to unwind and the cable may get battered. In case no direction arrow is marked on the drum remove several battens and determine the direction in which the cable is coiled. The arrow should then be painted on the drum pointing in the opposite direction in which the upper cable end is coiled so that future handling of the cable drum is facilitated and then replace the battens carefully.

4.11.5 The drum should be properly mounted on jacks making sure that the spindle is large enough to carry the weight without bending and that it is lying horizontally in the bearings so as to prevent the drum creeping to one side or the other while it is rotating. Before attempting to pull off the cable, remove the end protection box attached to the flange of the drum and cut the security ropes so as to leave the cable and free to move.

4.11.6 If a portion of the cable only is taken out from the cable drum, the battens should be immediately replaced to prevent damage to the balance of the cable. This is important.

4.11.7 With armoured cables having hessian serving it is possible under extreme conditions for the bitumen to soften and cause adjacent turns of the cable on the drum to stick to each other. In such cases, particular care must be taken to pull the cable of these drums very slowly and to free the cables carefully from the adjacent turns on the drums. Snatching of the cable to cause it to break away may result in kinks and damage, small size cable require care in this respect.

4.11.8 The use of steel bars between the bolt heads to 'jump' or turn the drum around is dangerous to staff and likely to damage the drums. A better method is to use two steel plates with grease between them by standing the drum on these greased plates, it can be easily elevated round to the desired position.

4.11.9 All care should be taken in handling cable drums with a view to ensure safety not of the cables but also of the working party handling them. The man should not be allowed to brake the cable drum by standing in front but only from side.

**4.11.10 Rewinding and Redruming of cables :**

(i) If for any reason it is found necessary to rewind a cable on a drum, cable drum with a proper barrel diameter not less than of the original drum should be chosen.

(ii) The drums should be mounted on cable jacks during rewinding operations using proper size of spindles passed through the flange holes which will not buckle under the load. The cable should not be bent opposite to the set it is having already.

(iii) In the redruming operations the full and empty drums should be so turned that the cable passes from the bottom of the original set as little as possible.

(iv) Replace all the loggings on the cable drum.

#### **4.12 CABLE LAYING :**

4.12.1 It is advisable to employ the same people at the same place or job while cable is being laid.

4.12.2 Before commencement of the laying inspection of the trench and inspection of protection works should be carried out so as to ensure their conformity with the specification. The trench bottom should be clean, smooth and free of small stone and sharp objects. In case of soft rock or hard rock sieved earth will be used.

4.12.3 The cable drum should be brought as close to the cable trench as possible. It should be lifted with the aid of cable jacks firmly mounted on a support of stone or wood. The spindle should be minimum of 55 mm. diameter. The bottom of the cable drum should be at least 5 to 10 cm. above the ground.

4.12.4 The wooden battens on the drums should be carefully removed shortly prior to laying and before the drum is mounted on the jack. The nails on the logging should be carefully removed.

**IF ANY DAMAGE IS DETECTED AT THE SEALING END THE CABLE SHOULD BE TESTED FOR CABLE LOSS SPECTRUM USING OTDR BEFORE LAYING.**

The defective end should be carefully preserved and Engineer in Charge informed about it immediately.

4.12.5 While rolling a cable drum for laying, the drum shall be supported on an axle running through its centre, the height of the axle being such that the end frames are free to rotate and do not touch the ground at any point. The cable shall be carefully uncoiled by gently pulling the cable assisted as necessary by carefully turning the drums, quick pulling of the cable or turning the drums shall be avoided at all costs. Each cable drum shall be braked while laying is in progress to prevent sharp bending or buckling, particularly when the cable coils are sticking together.

4.12.6 The method of mounting the brakes is shown in Drawing No. SGW/T/5/SDAH/06/98.

4.12.7 When drums are turned for change of direction, wooden blocks shall be carefully put under the drum bolts which stand out from the drum discs.

4.12.8 When the cable drums are exposed to great heat before laying, then danger exists that the individual coils and layers stick together in spite of the half overlay. Special attention should be paid to see that no buckling of the cable occurs while pulling the cable. A man should stand near the drum and loosen' the cable carefully, and shout a warning whenever the cable cannot be loosened. Separation must be affected as close to the drum as possible as otherwise kinks may result. The rate of pulling should also be slow to prevent possible damage to cable that is being carried when the paying out stops. The drum should be kept in shade where possible.

4.12.9 While the laying work is in progress one man must continuously observe the cable and feel along its length in order to determine whether any indentations, holes or other damaged parts are apparent. Such damaged parts have to be protected immediately by the cable jointer provided with the laying party.

4.12.10 When two or three turns of cable are left on the drum the pulling should be stopped and the inner end of the cable removed from the slot in the drum. Pulling should then be continued. If this is not done the cable end is likely to be stretched and damaged.

4.12.11 The ends of the telecommunication cable should have an overlap of 1 M at the end of each drum for jointing purpose.

4.12.12 The conditions of the cable shall be visually inspected through out its length and in case any damage or defect is noticed, the trench shall not be filled up until the Engineer's representative is notified to examine and authorise filling of the trench.

**4.12.13 MINIMUM BENDING RADIUS :**

Cables should always be bent (or straightened) slowly, they should never be bent to small radius while handling. The minimum safe bendings radius for telecommunication cables should be 30 times the diameter of the cable but wherever possible larger radius should be used.

**4.13 CABLE RESERVE :**

(a) At the following locations, it will be necessary to provide reserve cable for future possible use.

1) Where a change to cable line is expected, the reserve to be allowed depends on circumstances.

2) In freshly banked soil to allow for slipping of the bank an allowance of 30 cm. should be provided for every 10 meters of trench (3 percent). The cable should be laid in a sinous form.

3) Near roadways, buildings and culverts reserve of 5 metres should be allowed at drum end.

4) On each side of major girder bridge a reserve of 10 metres should be left. For minor bridges 5 metres shall be left.

5) Where remodelling works on culverts, bridges and track doubling work are going on, it may be necessary to keep loops of cable as an extra reserve pending finalisation of its future route.

6) At the repeater a loop of 10 metres in the cable pit.

7) At every joint a loop of 10 metres on either side.

**4.14 CABLE MARKERS :**

The cable markers shall normally be provided at the distance of every 200 metres on the cable route and also at places or corner wherever the route of the cable changes. The joint indicators shall be provided at all types of cable joints. The cable Marker and joint markers provided shall be as per Drawing No. SGW/T/5/ G/01/07 for rocky area and normal with standard trench as per site conditions.

**4.15 DUCT LAYING:**

It is advisable to employ the same people at the same place or job while duct is being laid.

Before commencement of the laying, inspection of trench and inspection of protection works should be carried out so as to ensure their conformity with the specification. The trench bottom should be clean, smooth and free of small stone. When the soil contains stone or pieces of rock and therefore cannot be raddled, sieved earth about 10 cm. thick should be used both for the bedding on which the duct is being laid. The duct coil should be brought as close to the trench as possible. It should be lifted carefully with the aid of jacks.

4.15.1 (i) It is customary for the mate to stand in a commanding position where he can view the entire road and shout evenly and call his men to pull. If there is proper synchronization between the mates call in the pulling by the men the duct will leave the coil without difficulty. It is important that the duct shall be pulled with steady and even pulls and there should not be unnecessary twists. Care should be taken to avoid twist as this is likely to damage the duct. When pulling around bends one or two men should be stationed to give the duct the correct bent when it passes.

(ii) While laying the duct employ adequate number of men so that the duct can be conveniently carried by them in both hands without stretched arms. The distance between any two persons carrying the duct shall be two to ten meters depending upon the weight such that the maximum sag of the duct between any two persons is not more than 0.5 meters.



(iii) While laying work is in progress one man has to continuously observe the duct along its line in order to determine indentations poles or other damaged parts are apparent. Such damaged parts have to be protected immediately.

(iv) The conditions of the duct shall be visually inspected throughout its line and in case damage or defect is noticed, the trench shall be filled up only after ensuring that the damage is not likely to affect the cable.

(v) The end of the duct should be sealed with flex to prevent entry of soil before filling back. Adjoining ducts shall be joined by couplers. Duct integrity testing shall be carried out when laying is completed in block section (8 –10 Kms). In case the continuity is not achieved the fault shall be localized and rectified by providing HDPE couplers / compression couplers.

#### 4.15.2 Tools necessary for laying Duct is detailed at the end of chapter to be checked as physically available before starting the duct laying.

For efficient and safe duct laying, communication may be provided between following points using portable VHF Walkie Talkie sets:

- a. Duct coil end.
- b. Any intermediate manhole/diversion //track crossing through which the duct will be pass.
- c. The super visor in charge of the Duct laying.

During duct laying care must be taken not to twist duct in any direction. For this purpose, the survival (rotate hook) shall attached between pulling line and pulling eyes at the end of duct so as to avoid any possible twist during pulling and laying of the cable.

Whenever duct is to be laid in the duct (GI pipe or RCC pipe), suitable lubricant on duct may be used to reduce friction and consequently the tension on the cable.

In case it is planned to pull the cable using winch instead of blowing as per site conditions and as advised by Site Engineer; the duct should be provide with a polypropylene rope of 4mm in diameter and conform to IS:5175 with a minimum slackness of 2% for pulling the cable as specified in TEC specification No. GR/CSD-08/02 Nov.2004 for Permanently Lubricated HDPE Telecom Ducts.

#### 4.16 PREPARATION FOR PAYING OUT CABLE

- (a) Check the drum number and length of the cable etc.
- (b) Entrust cable drum to the contractor after testing the fibres with OTDR for attenuation and to ensure that no mechanical damage of the fibre exists while handing over the cable to the contractor.
- (c) Place the cable jack (to support cable drum) on a flat surface.
- (d) Put cable spindle through drum and adjust cable jacks so that the drum may be clear 3-5 cm from the grounds and that the spindle may become horizontal. Remove carefully lags of drum with bar or other means by taking care that no damage to the cable takes place.
- (e) Pull out nails from lags or bend them so that operation can be done safely.
- (f) Normally both end of the cable is provided with cable grip and pulling eye. In case, it is not already provided, fit the cable grip/pulling eye to the survival and pull the wires by means of shackle.

#### 4.17 LAYING OF CABLE BY WINCH

- (a) Stretch pulling rope on rollers and fix its end on which.

- (b) Use 2-3 tonnes winch and put it near the duct trench. The winch shall be fastened at the back wire to a pile driven into the ground to prevent from moving out of place due to pulling tension may arise during operation.
- (c) After all is ready, post workman at winch, cable and using communication, pull slowly into the duct by means of winch.
- (d) Cable shall be laid under a specific pulling tension bending radius and pulling speed as shown below:

	Item	Value
During installation	Pulling Tension	1.1 *w KG
	Bending radius	30*D
	Pulling Speed	Max. 15 m/min

D - Cable outer dia.

W - Weight of cable per Km. In Kg.

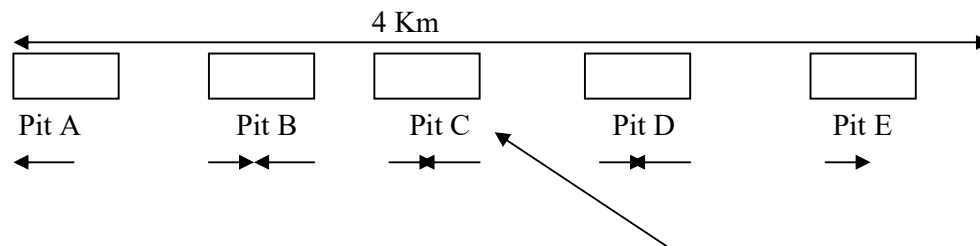
#### 4.18 BLOWING OF OFC CABLE

Optical Fiber cable will be blown into pre-lubricated HDPE duct laid with the help of a compressor and blowing equipment . (With minimum pressure of 8 bar and maximum pressure of 12 bar with flow rate of minimum 10 m<sup>3</sup> /minutes).

The blowing method involves feeding of optical fibre cable into duct with the help of consistent high pressure airflow, equally distributed along the entire cable throughout the duct.

The following steps may be adopted for safe blowing of OFC:

- i) Position the compressor and blowing machine at blowing pit C for location A&E shown below.



(Location of Compressor and blowing M/C)

- ii) Put the cable drum on cable wheel and blow the OFC towards pit A. A pusher equipment may be placed at B if required.
- iii) When the cable reaches pit A and coil of 10-15m of OFC should be kept in pit A. Then seal the duct end at A with the sealing plug.
- iv) Uncoil the cable on the drum in a figure of eight configuration and blow towards blowing pit E and coil of 10 –15m OFC should be kept in pit E.
- v) Since the cable will be available on length of 3 km and above, so the contractor has to plan the location of blowing pits before laying of HDPE duct. The contractor has to ensure that excess OFC is not coiled in the blowing pit and also optical fiber cable does not fall short of the location blowing pit. The contractor has to match the cable drum length with the location of blowing pits, to ensure minimum cut length and wastage of OFC. To achieve the blowing of above shown strength, blowing can be carried out downhill, wherever possible.
- vi) HDPE ducts will be sealed with the help of cable sealing plugs after blowing of OFC into the duct at jointing pit locations.

#### 4.19 TREATMENT OF CABLE AFTER IT IS LAID

- a. After completion of cable laying check the following items:

- Confirm extra jointing length as required at end.
  - In case cable is damaged, take necessary prevention and remedial steps for removal of defects.
  - If there is any snaking or rise in cable put right.
  - Examine interior of the trench and remove any pebbles etc.
  - Take protective step for such objects projecting the trench such as sewer pipe etc.
- b. While laying one piece of cable, when part of the work is to be put off till the following day, keep the remaining portion of cable wound on the drum, reduce as much as possible the distance of the drum from already laid cable considering cable bending radius and general traffic safety and also ensure that drum is prevented from tumbling down or rolling away. Already laid cable shall be fully covered to avoid outside interface.

#### **4.15 TOOLS REQUIRED FOR TRENCHING, CABLE LAYING AND FILLING.**

<b><u>S.NO.</u></b>	<b><u>TOOL'S NAME</u></b>
1.	Cable Jack
2.	Cable Grip
3.	Reopening Device
4.	Free Hood Hook
5.	Shackle free head hook
6.	Grouling Hook
7.	Pulling Bolt
8.	Tension meter
9.	Pulley
10.	Anti Twist Device (swivel)
11.	Roller
12.	Flexible Cable
13.	Pulling Rope
14.	Brush
15.	Mandrel
16.	Chain
17.	Measuring cord for strain gauge
18.	Slip Winch
19.	Wire rope
20.	Portable VHF set
21.	Measuring tape
22.	Phawarah
23.	Iron plate
24.	Loader Backhoe for Drilling
25.	Warning Tape
26.	Caterpillar tracktor
27.	Fork Lifter
28.	Vehicle Van type
29.	Tacho-meter
30.	Road measurer.
31.	Umbrella
32.	Blank dark coloured cloth for splicing machine.

**Annexure to Telecommunication Circular No. 17/2013**

**JOINT PROCEDURE ORDER FOR UNDERTAKING DIGGING WORK IN THE VICINITY OF UNDERGROUND SIGNALING, ELECTRICAL & TELECOMMUNICATION CABLES.**

**A.** A number of Engineering works in connection with gauge conversion / doubling / third line are in progress on various Railways, which require extensive digging work near the running track, in close vicinity of the working S&T cables carrying vital safety circuits as well as electrical cables feeding the power supply to cabins, ASM room, RRI Cabin, Intermediate Block Huts (IBH) etc. Similarly, S&T organisation under open line or construction units under CAO/C, are executing various Signaling and Telecom works requiring digging of earth for laying of cables or casting of foundations for the erection of signal posts etc. RailTel is also executing the work of laying of quad cable and OFC on various Railways as a part of sanctioned works for exclusive use of Railways for carrying voice and data i.e. administrative and control communication, PRS, FOIS etc. or shared by RailTel Corporation of India Ltd. On certain sections digging is also required for laying of electrical cable and casting of foundation for the erection of OHE masts by Electrical Deptt. Generally, these works are executed by contractors employed by these organisations.

**B.** However, while carrying out these works in the vicinity of working signaling, telecommunication and electrical cables, at times, cable cuts take place due to JCB machines working along the track or during the digging work being done by contractors carrying out the Civil Engineering works. Similarly, such cable cuts are also resulting due to works undertaken by S&T or Electrical departments. Such cable faults results in the failure of vital signaling and telecommunication circuits & electrical installations.

**C.** Henceforth, the following joint procedure shall be followed by Engineering, Electrical and S&T (and RailTel organisation, wherever such works are being done by them) officers of the respective divisions and by the construction organization, while carrying out any digging work near to existing signaling & telecommunication and electrical cables, so that the instances of cable cut due to execution of works, can be controlled and minimized.

1. S&T department (and RailTel, where they have laid the cables) and Electrical department shall provide a detailed cable route plan showing exact location of cable at an interval of 200 m or wherever there is change in alignment so that the same is located easily by the Engineering official/contractor. In addition, S&T department and Electrical department shall also provide cable markers along the alignment of the cable. These cable route plans shall be made available to the Sr.DEN/DEN or Dy.CE/C, as the case may be, by Sr.DSTE/DSTE or Sr.DEE/DEE of the divisions or Sr.DSTE/ER/ASN or Dy.CEE/C within 15 days in duplicate. Sr.DEN/DEN or Dy.CE/C will send copies to their filed unit i.e. AEN/SE/P.Way & Works.

2. Before taking up any digging activity on a particular work by any agency, Sr.DSTE/DSTE or Sr.DEE/DEE of the section shall be approached in writing by the concerned Engg. or S&T or Electrical officer for permitting to undertake the work. Sr.DSTE/DSTE or Sr.DEE/DEE, after ensuring that the concerned executing agencies including the contractor have fully understood the S&T and Electrical cable route plan, shall permit the work in writing within 7 days of the request by concerned department.

3. After getting the permission from S&T or Electrical department as the case may be, the relevant portion of the cable route plan shall be attached to the letter through which permission is issued to the contractor by concerned Engg. official for commencement of work and ensuring that the contractors have fully understood the cable route

plan and precautions to be taken to prevent damage to the underground cables. The contractor shall be asked to study the cable plan and follow it meticulously to ensure that the safety of the cable is not endangered. Such a provision, including any penalty for default, should form part of agreement also. It is advisable that a suitable post of SE/Sig or SE/Tele or SE/ Electrical (TRD or G) shall be created chargeable to the estimates of doubling/ gauge conversion, who can help Engg. agencies in the execution of the work. However basic responsibility will be of the department executing the work and the contractor. Creation of posts is not mandatory.

4. The SE/P.Way or SE/Works shall pass on the information to the concerned SE/Sig. or SE/Tele or SE/Electrical (TRD or G) about the works being taken up by the contractors in their sections at least 3 days in advance of the day of the work. In addition Engineering control shall also be informed by SE/P,Way or SE/Works, who in turn shall pass on the information to the test room/network operation center of RailTel/TPC/Electrical control,

5. On receiving the above information, SE/Sig or SE/Tele or SE/Electrical(TRD or G) shall visit the site on or before the date of taking up the work and issue permission to the contractor to commence the work after checking that adequate precautions have been taken to avoid the damage to the cables. The permission shall be granted within 3 days of submission of such requests.

6. The name of the contractor, his contact telephone number, the nature of the work shall be notified in the Engineering control as soon as the concerned Engineering officials issue the letter authorizing commencement of work to the contractor. Test room shall be given copies. Test room shall collect any further details from the Engineering control and shall pass it on to S&T/RailTel & Electrical officials regularly. In case the supervisors of concerned departments do not turn up on the day as advised in terms of para 4 and 5 above, the works of contractor should not be stopped on this account.

7. In case of works being taken up by the State Government, National **Highway Authority etc., the details of the permission given i.e. the nature of work**, kilometer etc. be given to the Engineering control including the contact person's number so that the work can be done in a planned manner, The permission letter shall indicate the contact numbers of Test room/Network Operating Centre of RailTel/TPC/Elect. Control.

8. Where the nature of the work taken up by the Engineering department is such that the OFC or other S&T cables or Electrical cables is to be shifted and relocated, notice of minimum one week shall be given so that the Division / RailTel / Construction can plan the works properly for shifting. Such shifting works shall in addition, for security and integrity of the cables, be supervised by S&T supervisors/RailTel supervisors/Electrical supervisors.

9. The concerned SE/P.Way/SE/Works/SE/Sig/SE/Tele/SE/Electrical (TRD or G) or RailTel supervisors supervising the work of the contractor shall ensure that the existing emergency sockets are not damaged in view of their importance in providing communication during accident/emergency.

10. In case of minor nature of works where shifting of cable is not required, in order to prevent damage to the cable, the Engineering contractor shall take out the S&T or optical fibre cable or Electrical cable carefully from the trench and place it properly alongside at a safe location before starting the earthwork under the supervision of SE/Sig. or SE/Tele or SE/Electrical(TRD or G). The cable shall be reburied soon after completion of excavation with proper care including placement of the brick over the cable under the supervision of S&T or Electrical supervisors. However, the work will be charged to the concerned engineering works. The responsibility for ensuring availability of SE (Signal), SE (Electrical) as per para 4 and 5 above lies with the

respective department. The contractor will go ahead with the shifting of cables as per the program decided and he will not be held responsible for any cable cut.

11. In all the sections where major project are to be taken up/going on RailTel/S&T department shall deploy their official to take preventive/corrective action at site of work. As regards Electrical Department, the official may be deputed on need basis.

12. No new OFC or quad cable shall be laid close to the existing track. It shall be laid close to the Railway boundary on one side of the Railway track to the extent possible to avoid any interference with the future works (doubling etc.). It shall be ensured in the new works of cable laying that the cable route is properly identified with electronic or concrete markers. Wherever multiple cables are laid in a trench, RFID markers may be provided for easy identification of the cable. Henceforth, wherever cable laying is planned, before undertaking the cable laying work, the cable route plan of the same shall be prepared by the Sr.DSTE/ER/ASN or Dy.CEE/C and shall be got approved from the concerned Sr. DSTE/DSTE or Sr. DEE/DEE and also from the concerned Dy. CE/C for new lines and from the concerned Sr.DEN for all other projects including doubling GC etc., to avoid possible damage in future. Such approval shall be granted within 15 days of the submission of the request.

13. The works of excavating the trench and laying of the cable should proceed in quick succession, leaving a minimum time between the two activities.

14 In case damage is caused to OFC/Quad cable during execution of the work, the contractor is liable to pay a penalty for damaging the cable. Penalty shall not be levied in case of the following:-

- (i) Detailed cable route plan as per clause C-1 not provided by concerned department or cable is not protected as per laid down procedures.
- (ii) The alignment of the cable does not tally with the information provided to the contractor.
- (iii) The cable depth is found to be less than 800 mm from normal ground level.
- (iv) No representative of S&T department/RailTel was available at site guarding the cables on the fixed pre determined date and time.

15. Penalty to be imposed for damages to cable shall be as under:-

Cable damaged	Penalty per location
Only Quad cable or Signaling cable	₹ 1.0 Lakh
Only OFC	₹ 1.25 Lakh
Both OFC & Quad	₹ 1.5 Lakh
Electrical Cable	₹ 1.0 Lakh

Necessary debit in this regard shall be raised on the department undertaking the work who shall in turn levy the penalty on the defaulting contractor. S&T department shall raise the debits in case of damage to OFC or Quad or Signaling cable and Electrical department shall raise the debits in case of damage to Electrical cable.

16. Railways will not lodge FIR with RPF in cases of works being executed by authorized contractors of Railways who have been duly permitted to execute the works in accordance with this JPO. Joint note by the supervisors of the concerned department shall be prepared and the responsibility of the cable cut should be decided without involving RPF. The joint note deciding the fact whether the contractor should be penalized shall be completed in a day's time from the occurrence of cable cut.

In all other cases, when the cable is cut by an agency that was not permitted that was not permitted to execute any work, FIR should be lodged with RPF.

17. While giving permission for taking up the works, concerned departments may note that earthwork by engineering contractors will normally be done by machines except in a few isolated locations where the quantity of earth work is very less.
18. Railways shall make necessary correction in their future contract so that this JPO can also be enforced contractually.
19. In case of damage to OFC, RailTel should be paid  $\frac{5}{6}^{\text{th}}$  of the penalty recovered. RailTel shall raise demands on the S&T department in this regard.
20. All types of signaling & OHE bonds i.e. rail bond, cross bond and structure bond shall be restored by the contractor with a view to keep the rail voltage low to ensure safety of personnel.
21. Above joint circular shall be applicable for construction as well as open line organisation of Engineering, S&T & Electrical.
22. S&T cable and electrical cable route plan should be prepared by the concerned S&T and Electrical officers respectively and got approved as stipulated in para C-12 before undertaking the work. The completion cable route plan should be finalized block section by block section as soon as the work is completed.
23. All cable laying works shall be executed as per laid down technical specifications, such as protection measures/protective cover, compaction of refilled material etc.

**EASTERN RAILWAY**  
**ASANSOL ACCOUNTS DEPARTMENT**

**ATTENTION CONTRACTORS/STORES SUPPLIERS**

**“NOW GET YOUR PAYMENT FASTER THROUGH NATIONAL  
ELECTRONIC FUND TRANSFER (NEFT)”**

EASTERN RAILWAY ASANSOL DIVISION HAS INTRODUCED THE NEFT SYSTEM TO FACILITATE FASTER PAYMENT TO CONTRACTORS/ STORES SUPPLIERS, FOR BILLS / PURCHASE ORDERS PLACED BY EXECUTIVES / CONTROLLER OF STORES TRANSACTIONS WILL BE AS PER THE RESERVE BANK OF INDIA ELECTRONIC FUND TRANSFER SCHEME.

**B E F E N I T S**

1. Direct credit to the Contractor's / Supplier's Bank Account with intimation to the Contractor / Suppliers.
2. No postal delays or intermediate stages like receipt / dispatch.
3. No collection / clearance charges.

Interested contractors / suppliers may please contact to details :-

Sr. DFM/ASN

Interested contractors / suppliers are requested to come to collect the **MANDATE FORM** from Sr. DFM/ASN which will contain the following details.

3. **NAME OF ORGANISATION & ADDRESS:-**
4. **MICR CODE OF BANK:-**
5. **IFSC CODE :-**
6. **BANK NAME:-**
7. **BRANCH NAME:-**
8. **BANK ADDRESS:-**
9. **BRANCH TELE/FAX No:-**
10. **BANK ACCOUNT No:-**
11. **TYPE OF ACCOUNT:-**

**Signature & Stamp**



**GENERAL SPECIFICATIONS AND RAILWAY'S REQUIREMENTS.**

**1. SCOPE OF WORK:**

- (a) **NAME OF THE WORK:** "Asansol Division – S&T Work i/c/w 1) Interlocking of LC Gates having TVU more than 10000 in Andal-Sainthia, Deoghar-Dumka, Mohanpur Jn.- Handsiha Section in Asansol Division and 2) Interlocking of LC Gates having TVU more than 10000 in UDL-BBI, UDL/LC-BQT, MDP-GRD Section in Asansol Division".
- (b) (TWO PACKET SYSTEM TENDER).
- (c) Design of detailed interlocking scheme as per typical circuit diagram of Eastern Railway & RDSO guidelines. Also changes/addition/alteration of existing wiring of existing installation, as will be required to be done during the work.
- (d) Design & Supply of Dual VDU along with mounting arrangement and accessories.
- (e) Design & Supply of relay racks, CT racks etc. along with associated accessories like tag blocks, terminal strips, fuses, bus bars, capacitors, resistors etc.
- (f) Supply of complete indoor cables and indoor power cables conforming to Specification No.IRS:S-76(latest) of 1100V grade for connecting relay racks to other racks, Cable termination rack, Control cum Indication Panel.
- (g) Installation, Testing, Interlocking & Commissioning of entire system pertaining to both **indoor and outdoor signaling equipments**. Testing and Interlocking of circuits includes continuity test of wiring. Wires continuity checking and interlocking test with the helps of simulation panel. Supply and Wiring of Simulation Panel required for testing and commissioning to be done by tenderer.
- (h) Provision of additional contacts from relays to tag block to be used by Data Logger installed in future.
- (i) Excavation, Trenching and laying of Signalling, Quad and Power cable.
- (j) Special condition of the tender attached separately shall be strictly followed.

**2. PRESENT CONDITION OF SITE :**

The station is located on **Railway Electrified** section of Asansol Division. In case Railway Administration requires some work to be executed in adjacent station/section the same has to be executed by the contractor as per contract provision of the present work.

**3. TIME SCHEDULE:-**

- |  |                      |
|--|----------------------|
| 1) Date of issue of Letter of Acceptance | = D day.             |
| 2) Completion of this work               | = D day + 18 months. |

**4. RESPONSIBILITY OF THE RAILWAYS :-**

Railway shall provide the following when required:

- i. Provide 230V AC power supply at station/cabin/New panel room (if provided)/ new mid section buildings ( if provided)/ LC gates (where existing).
- ii. Contractor has to pay nominal charges for the same as per Railway norms.Provide site for construction of building (if any).
- iii. Provide Electrical fittings in Panel building.
- iv. Provide accommodation of system in existing relay rooms.

**Annexure-‘S-1’.**

**DECLARATION BY AN EXISTING PARTNERSHIP FIRM**

(As per Explanation No. 8 & 9 for Eligibility Criteria given in Chapter-II of Tender Document)

**(Fill the relevant para (1.1, 1.2 & 1.3) and strike off the para which is not relevant under Partnership Firm)**

1.0 I.....S/o Shri ....., the authorized signatory of partnership firm M/s .....do hereby solemnly affirm and declare as under:

1.1 That, we are an existing Partnership Firm in the name and style of M/s -----

---

---, since -----(MM/YY), having GST Registration no. ...., PAN/TAN No.-----

. There has been no change in the Partner(s) of our firm during last 07(Seven) years ending last day of the telec previous to the one in which tender is invited.

OR

1.2 That, we are an existing Partnership Firm in the name and style of M/s -----

---

---, since -----(MM/YY), having GST Registration no.....,PAN/TAN No. --. Following of our partner(s) has/have quit the Partnership firm during last 07 (Seven) years ending last day of the month previous to the one in which tender is invited with details as under:

S.No.	Name of quitting Partner(s)	Share of Partner(s) who has/have quitted	Date of quitting(MM/YY)

**AND / OR**

1.3 That, we are an existing Partnership Firm in the name and style of M/s -----, since -----(MM/YY), having GST Registration no. -----, PAN/TAN No.-----  
----- Following partner(s) has/have joined our Partnership Firm during last 07(Seven) years ending last day of the month previous to the one in which tender is invited with details as under:

S.No.	Name of joining Partner(s)	Share of joining Partner(s)	
		In the present firm	In the previous firm from where he/they has/have quit and joined the present firm

1.4 In case of Para 1.2 and 1.3 , following documents as applicable are required to be submitted along-with bid:-

- (a) Copy of previous Partnership Deed(s).
- (b) Copy of Dissolution Deed(s) of previous partnership deed(s).
- (c) Proof of surrender of PAN No(s) (in case of dissolution of previous partnership firm).

Declaration by the Tenderer:-

**I hereby declare that the information given above are true. If any of the above information is found to be wrong at any time, my tender will be liable to be rejected.**

Name and Signature of tenderer along with Seal

## DECLARATION BY NEWLY FORMED PARTNERSHIP FIRM

(As per Explanation No. 7 for Eligibility Criteria given in Chapter-II of Tender Document)

**I.....S/o Shri ..... , the authorized signatory of partnership firm M/s..... do hereby solemnly affirm and declare as under:**

(a) That, we are the newly formed partnership firm in the name and style of M/s.....Registered with Registrar of firm vide Registration No....., dated .....

(b) In this newly formed Partnership Firm, we are .....no. of partners. The details of the previous proprietary firm or previous dissolved partnership firm or previous spitted partnership firm(s) wherein any of the partners of the present firm was a proprietor / partner and proposed to use credentials obtained in such previous propriety firm (s) / partnership firm(s) is as under:-

S.N.	Name of person in the newly formed partnership firm	Details of Previous proprietary/ Partnership Firm	Share in newly formed Partnership firm	Share in previous partnership firm	Remarks
1.					
2.					
3.					

(i) That, following relevant documents are Annexed with bid:-

(ii) Copy of previous Partnership Deed(s).

(iii) Copy of previous Dissolution/splitting Deed(s) of previous partnership deed(s).

(iv) Proof of surrender of PAN No(s) (in case of dissolution of partnership firm).

**Declaration by the Tenderer:-**

**I hereby declare that the information given above are true. If any of the above information is found to be wrong at any time, my tender will liable to be rejected.**

Name and Signature of tenderer along with Seal

**Annexure –A**

**DECLARATION/UNDERTAKING (For Association of Rly. Officer)**

(As per para 16 of Chapter-II of Tender Document)

I/We .....(Name and Designation of tenderer/Authorized Person of tender) do hereby declare as under :

1. That I/We are an individual/ Partnership firm/Company/ Society/JV and :
  - (a) That I/We are not a retired Engineer of the gazetted rank or any other gazetted officer working before 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,
  - (b) That I/We being partnership firm / company / joint venture (JV) / registered society / registered trust etc have none of our partners a retired Engineer or retired gazetted officer as aforesaid.
  - (c) That I/We being an incorporated company have not any such retired Engineer or retired officer as one of directors.
  - (d) That I/We do not have in our employment any retired Engineer or retired gazetted officer retired from government service (at least 1 year prior to the date of submission of the tender)
  - (e) That I/We being an individual contractors, do not have a Member (s) of family or in the case of partnership firm/ company / joint venture (jv) / registered society / registered trust etc. have one or more of partner(s) /shareholder(s) or member(s) of family of the partner(s)/shareholder(s) employed in gazetted capacity in the Engineering or any other department of the railway.

**OR**

- 2 (a) That I am a Retired Engineer of the Gazetted rank participated in the tender in individual capacity as ..... (Name of the firm) with following details :

Name	Date of retirement	Post held, Place and Railway unit from which retired	Details of permission taken if such retired Engineer or Gazetted Officer had not retired from Govt. Office at least 1 year prior to the date of submission of tender

- 2 (b) That I/We are a Partnership firm/Company/Society/JV and have following retired Railway Gazetted Officer as our Partner(s)/ Director(s)/Employee :

S.No.	Name	Position in tendering entity i.e. Partner/Director Employee	Date of Retirement, Post held, Place and Railway unit from which retired	Details of permission taken if such Retired Engineer or Gazetted Officer had not retired from Govt. Office at least 1 year prior to the date of submission of tender

- 2 (c) That I/We are an Individual/Partnership firm/Company/Registered Society/Trust/JV and have following partner(s) /Share Holder(s) not having share of more than 1% or member(s) of family of the individual tenders/ partner(s) /Share Holder(s) employed in Gazetted capacity in the Indian Railways:

S.No.	Name of the gazetted railway Officer who is/are partner(s) /Share Holder(s) or member(s) of family of Share Holder(s) of tenderer	Post held and Place of Posting	Railway / Unit	Details of Share holding or Relationship with individual/ share holder of the tenderer

**Note :**

- (i) **Strike Off (1) or (2) as applicable.**
- (ii) **In case (1) is applicable and any of the 2(a), (b) or (c) is not applicable NIL may be filled.**
- (iii) **This Annexure-A is to be given by each member of JV**

Place:-  
Dated:

(Signatures of Authorized signatory)  
Name of the tendering firm