GOVERNMENT OF INDIA

WESTERN RAILWAY

TENDER DOCUMENT

TENDER NOTICE NO. Dy.CSTE/C/BRC/154R
(Two Packet System)

NAME OF THE WORK: - "Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under Dy. CSTE Construction, Vadodara, Gujarat (Western Railway)

Copy No._____

Issued to: _____ **Cost of Tender Document: Nil**

Signature Not Verified
Digitally signed by HEMANT KUMAR MAHAWAR
Date: 2026.06.27 15:27:25 IST
Reason: IREPS-CRIS
Location: New Delhi

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WESTERN RAILWAY
SIGNAL & TELECOMMUNICATION DEPARTMENT

TENDER NOTICE

TENDER No: DyCSTE/C/BRC/154R

Dy Chief Signal & Telecom Engineer, Construction, Vadodara acting for and on behalf of the President of India invites e- Tender for the following work.

TENDER No	**Dy CSTE/C/BRC/154R (Two Packet System)**
Name of Work:	"Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under Dy. CSTE Construction, Vadodara, Gujarat (Western Railway)
Bidding/TenderType&System	Works Normal Open E-Tender, Single packet system. (IREPS Portal)
TenderAdvertisedValue	
BidSecurity/Earnest Money	
CostofTenderDocument	NIL
Pre-Bid Conference NA	NA
Bidstartdate	15days before closing date
Time &Dateof Closing ofBid	15.00 Hrs.on As per NIT Header.
Time & Date CommercialBid	Date will be intimated after evaluation of the technical bid.
ValidityofOffer	As per NIT Header..
Completionperiod	As per NIT Header..

Note: The tender can be viewed at web site http://www.ireps.gov.in. The tenderer/bidders must have Class-III Digital Signature Certificate & must be registered on IREPS portal. Only registered tenderer/bidders can participate in e-Tendering. All relevant papers must be uploaded at the time of participating in e-Tendering.

Manual offers are not allowed against this tender and any such manual offer received shall be ignored.

WESTERN RAILWAY

TENDER FORM (FIRST SHEET)

Tender No. DyCSTE/C/BRC/154R (Two packet System)

Name of Work -Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under Dy. CSTE Construction, Vadodara, Gujarat (Western Railway)

To
The President of India,
Acting through the Dy.Chief Signal & Telecom Engineer ,
(Construction), Field, 8th Floor,
Station Building, Western Railway
Churchgate, Mumbai -400020

1. 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 **90** 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 Western Railway, at the rates quoted in the attached bill(s) of quantities and hereby bind myself/ourselves to complete the work in all respects within 12 **(Twele) months** from the date of issue of letter of acceptance of the tender.

2. I/We also hereby agree to abide by the Indian Railways Standard General Conditions of Contract, with all correction slips up-to-date and to carry out the work according to the Special Conditions of Contract and Specifications of materials and works as laid down by Railway in the annexed Special Conditions/Specifications, Standard Schedule of Rates (SSOR) with all correction slips up-to-date for the present contract.

3. A Bid Security of ₹. {as mentioned in NIT} has already been deposited online / submitted as a 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. I/We am/are a Start-up firm registered by ……Department of Industrial Policy and Promotion (DIPP) and my registration number is ……..……., valid upto ……. (copy enclosed) and hence exempted from submission of Bid Security.

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

6. Until a formal agreement is prepared and executed, acceptance of this tender shall constitute a binding contract between us subject to modifications, as may be mutually agreed to between us and indicated in the letter of acceptance of my/our offer for this work.

Signature of Tenderer(s)
Address of the Tenderer(s)

Date_____
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) Bill(s) of quantities (enclosed)
   d) Standard General Conditions of Contract and Standard Specifications (Works and Materials) of Indian Railways as amended/corrected upto latest correction slips, copies of which can be seen in the office of DY CSTE/C/BRC or obtained from the office of the CSTE/C/CCG, Railway on payment of prescribed charges.
   e) Schedule of Rates Schedule of Rates (SSOR) as amended / corrected up to latest Correction Slips, copies of which can be seen in the office DY CSTE/C/BRC or obtained from the office of the CSTE/C/CCG, Western 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. The drawings for the work can be seen in the office of the Dy Chief Signal & Telecom Engineer (Construction) Vadodara and/or CSTE/C/CCG 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 drawings mentioned above, will be given by the Dy Chief Signal & Telecom Engineer (Construction) Vadodara or his representative from time to time.

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

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

5. The work is required to be completed within a period as specified in NIT from the date of issue of acceptance letter.

6. **BID SECURITY :**

   (a) Subject to exemptions provided under para 4 & 5 of First sheet of this document, the tender must be accompanied by a Bid Security as mentioned in tender documents, failing which the tender shall be summarily rejected.

   Note: Fixed Deposit Receipt (FDR) will not be accepted as Bid security for tenders invited on IREPS (e-Tender portal). (As per FA&CAO/C-II/WR letter no. WR/AC/S&C/BKS/2025-26/Policy/BG dated 28.4.2025 all the paper securities are drawn beneficiary name / in favour of PFA/FA&CAO.)

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

(c) If his tender is accepted,

(i) the Bid Security mentioned in sub para(a) above deposited in cash through e-payment gateway will be retained as part security for the due and faithful fulfillment of the contract in terms of Clause 16 of the Standard General Conditions of Contract;

(ii) the Bid Security mentioned in sub para(a) above submitted as Bank guarantee bond, will be encashed as part security for the due and faithful fulfillment of the contract in terms of Clause 16 of the Standard General Conditions of Contract.

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

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

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

8. If the tenderer(s) deliberately gives/give wrong information in his / their tender or creates/create circumstances for the acceptance of his / their tender, the Railway reserves the right to reject such tender at any stage.

9. If any partner(s) of a partnership firm expires after the submission of its tender or after the acceptance of its tender, the Railway shall deem such tender as cancelled/contract as terminated under clause 61 of the Standard General Conditions of Contract, unless the firm retains its character as per partnership agreement. If a sole proprietor expires after the submission of tender or after the acceptance of tender, the Railway shall deem such tender as cancelled / contract as terminated under clause 61 of the Standard General Conditions of Contract.

10. ELIGIBILITY CRITERIA:

10.1 TECHNICAL ELIGIBILITY CRITERIA:

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

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

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

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

(b) **Composite work (Not Applicable)**

(b) (1) In case of tenders for composite works (e.g. works involving more than one distinct component, such as Civil Engineering works, S&T works, Electrical works, OHE works etc. and in the case of major bridges – substructure, superstructure etc.), tenderer must have successfully completed or substantially completed any one of the following categories of work(s) during last 07 (seven) years, ending last day of month previous to the one in which tender is invited:

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

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

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

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

However, if required in tender documents by way of Special Conditions, a formal agreement duly notarised, legally enforceable in the court of law, shall be executed by the main contractor with the subcontractor for the component(s) of work proposed to be executed by the subcontractor(s), and shall be submitted along with the offer for considering subletting of that scope of work towards fulfilment of technical eligibility. Such subcontractor must fulfill technical eligibility criteria as follows:
The subcontractor shall have successfully completed at least one work similar to work proposed for subcontract, costing not less than 35% value of work to be subletted, in the last 5 years, ending last day of month previous to the one in which tender is invited through a works contract.

Note: for subletting of work costing up to Rs 50 lakh, no previous work experience of subcontractor shall be asked for by the Railway.
In case after award of contract or during execution of work it becomes necessary for the contractor to change subcontractor, the same shall be done with subcontractor(s) fulfilling the requirements as per clause 7 of the Standard General Conditions of Contract, with prior approval of Railway authority in writing.

Note for Item 10.1:
Work experience certificates from private individuals shall not be considered. However, in addition to work experience certificates issued by any Govt. Organisation, work experience certificate issued by Public listed company having average annual turnover of Rs 500 crore and above in last 3 financial years excluding the current financial year, listed on National Stock Exchange or Bombay Stock Exchange, incorporated/registered at least 5 years prior to the date of closing of tender, shall also be considered provided the work experience certificate has been issued by a person authorized by the Public listed company to issue such certificates.

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

SUBCONTRACTOR CLAUSE: If a bidder has successfully completed a work as subcontractor and the work experience certificate has been issued for such work to subcontractor by a Govt. organization or public listed company as defined in Note for Item 10.1 part-I of GCC, the same shall be considered for

the purpose of fulfillment of credentials.

10.2. FINANCIAL ELIGIBILITY CRITERIA:
The tenderer must have minimum average annual contractual turnover of V/N or 'V' whichever is less
where
V= Advertised value of the tender in crores of Rupees
N= Number of years prescribed for completion of work for which bids have been invited.

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

The tenderers shall submit requisite information as per Format-6 (Chapter- 7 VARIOUS FORMATS & PROFORMA), along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet.

10.3. BID CAPACITY: The tender/technical bid will be evaluated based on bid capacity formula detailed as Annexure-VIB.

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

10.5 Credentials if submitted in foreign currency shall be converted into Indian currency i.e., Indian Rupee as under:The conversion rate of US Dollars into Rupees shall be the daily representative exchange rates published by the Reserve Bank of India or entity authorized by RBI to do so for the relevant date or immediately previous date for which rates have been published. Where, relevant date shall be as on the last day of month previous to the one in which tender is invited. In case of any other currency, the same shall first be converted to US Dollars as on the last day of month previous to the one in which tender is invited, and the amount so derived in US Dollars shall be converted into Rupees at the aforesaid rate. The conversion rate of such currencies shall be the daily representative exchange rates published by the International Monetary Fund for the relevant date or immediately previous date for which rates have been published.

[Explanation for Para 10 of the Tender Form (Second Sheet) including Para 10.1 to 10.5 - Eligibility Criteria:

1. *Substantially Completed Work means an ongoing work in which payment equal to or more than 90% of the present contract value (excluding the payment made for adjustment of Price variation (PVC), if any) has been made to the contractor in that ongoing contract and no proceedings of termination of contract on Contractor's default has been initiated. The credential certificate in this regard should have been issued not prior to 60 days of date of invitation of present tender.*
2. *In case a work is started prior to 07 (seven) years, ending last day of month previous to the one in which tender is invited, but completed in last 07 (seven) years, ending last day of month previous to the one in which tender is invited, the completed work shall be considered for fulfillment of credentials.*
3. *If a work is physically completed and completion certificate to this extent is issued by the concerned organization but final bill is pending, such work shall be considered for fulfillment of credentials*
4. *In case of completed work, the value of the final bill (gross amount) including the PVC amount (if paid) shall be considered as the completion cost of work. In case the final bill is pending, only the total gross amount already paid including the PVC amount (if paid) shall be considered as the completion cost of work.*

   In case of substantially completed work, the total gross amount already paid including the PVC amount (if paid), as mentioned in the certificate, shall be considered as the cost of substantially completed work.
5. *If a bidder has successfully completed a work as subcontractor and the work experience certificate has been issued for such work to the subcontractor by a Govt. Organization or public listed company as defined in Note for Item 10.1 Para 10 of the Tender Form (Second Sheet), the same shall be considered for the purpose of fulfillment of credentials.*
6. *In case a work is considered similar in nature for fulfillment of technical credentials, the overall cost including the PVC amount (if paid) of that completed work or substantially completed work, shall be*

considered and no separate evaluation for each component of that work shall be made to decide eligibility.

7. *In case of newly formed partnership firm, the credentials of individual partners from previous proprietary firm(s) or dissolved previous partnership firm(s) or split previous partnership firm(s), shall be considered only to the extent of their share in previous entity on the date of dissolution / split and their share in newly formed partnership firm. For example, a partner A had 30% share in previous entity and his share in the present partnership firm is 20%. In the present tender under consideration, the credentials of partner A will be considered to the extent of 0.3*0.2*value of the work done in the previous entity. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include a copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.*
8. *In case of existing partnership firm, if any one or more partners quit the partnership firm, the credentials of remaining partnership firm shall be re-worked out i.e., the quitting partner(s) shall take away his credentials to the extent of his share on the date of quitting the partnership firm(e.g. in a partnership firm of partners A, B & C having share 30%, 30% & 40% respectively and credentials of Rs 10 crore; in case partner C quits the firm, the credentials of this partnership firm shall remain as Rs 6 crore). For this purpose, the tenderer shall submit along with his bid all the relevant documents which include a copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.*
9. *In case of existing partnership firm if any new partner(s) joins the firm without any modification in the name and PAN/TAN no. of the firm, the credentials of partnership firm shall get enhanced to the extent of credentials of newly added partner(s) on the same principles as mentioned in item 6 above. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include a copy of previous partnership deeds, dissolution/splitting deeds and proof of surrender of PAN No.(s) in case of dissolution of partnership firm etc.*
10. *Any partner in a partnership firm cannot use or claim his credentials in any other firm without leaving the partnership firm i.e., In a partnership firm of A&B partners, A or B partner cannot use credentials of partnership firm of A&B partners in any other partnership firm or proprietary firm without leaving partnership firm of A&B partners.*
11. *In case a partner in a partnership firm is replaced due to succession as per succession law, the proportion of credentials of the previous partner will be passed on to the successor.*
12. *If the percentage share among partners of a partnership firm is changed, but the partners remain the same, the credentials of the firm before such modification in the share will continue to be considered for the firm as it is without any change in their value. Further, in case a partner of a partnership firm retires without taking away any credentials from the firm, the credentials of the partnership firm shall remain the same as it is without any change in their value.*
13. *In a partnership firm "AB" of A&B partners, in case A also works as propriety firm "P" or partner in some other partnership firm "AX", credentials of A in propriety firm "P" or in other partnership firm "AX" earned after the date of becoming a partner of the firm AB shall not be added in partnership firm AB.*
14. *In case a tenderer is LLP, the credentials of tenderer shall be worked out on above lines similar to a partnership firm.*
15. *In case company A is merged with company B, then company B would get the credentials of company A also.]*

11. TENDERER CREDENTIALS:

Documents testifying tenderer previous experience and financial status should be produced along with the tender.
Tenderer(s) who is / are not borne on the approved list of the Contractors of _____ Railway shall submit along with his / their tender:

(i) Certificates and testimonials regarding contracting experience for the type of job for which tender is invited with a list of works carried out in the past.

(ii) Audited Balance Sheet duly certified by the Chartered Accountant regarding contractual payments received in the past.

(iii) The list of personnel / organization on hand and proposed to be engaged for the tendered work. Similarly list of Plant & Machinery available on hand and proposed to be inducted and hired for the tendered work.

(iv) A copy of certificate stating that they are not liable to be disqualified and all their statements/documents submitted along with the bid are true and factual. Standard format of the certificate to be submitted by the bidder is enclosed as Annexure-V. In addition to Annexure-V, in case of other than Company/Proprietary firm, Annexure –V(A) shall also be submitted by the each member of a Partnership Firm / Joint Venture (JV) / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc. as the case may be. Non submission of a copy of certificate by the bidder shall result in summarily rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested / digitally signed by which they/he are/is qualifying the Qualifying Criteria mentioned in the Tender Document.

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

(vi) (a) In case any information submitted by a 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 two years.

(b) In case any information submitted by the 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 the agency shall be banned for doing business for a period of up to two years.

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

13. **EXECUTION OF CONTRACT DOCUMENTS**: The successful tenderer(s) shall be required to execute an agreement with the President of India acting through the Dy Chief Signal & Telecom Engineer (Construction) (Field), Churchgate- 20 , Western Railway for carrying out the work according to Standard General Conditions of Contract, Special Conditions / Specifications annexed to the tender and Standard Specifications (Works and Materials) of Railway as amended/corrected upto latest correction slips, mentioned in tender form (First Sheet).

14. DOCUMENTS TO BE SUBMITTED ALONG WITH TENDER:

(i) The tenderer shall clearly specify whether the tender is submitted on his own (Proprietary Firm) or on behalf of a Partnership Firm / Company / Joint Venture (JV) / Registered Society / Registered Trust / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc. The tenderer(s) shall enclose the attested copies of the constitution of their concern, and copy of PAN Card along with their tender. Tender Documents in such cases are to be signed by such persons as may be legally competent to sign them on behalf of the firm, company, association, trust or society, as the case may be.

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

(a) SOLE PROPRIETORSHIP FIRM:

(i) All documents in terms of Para 10 of the Tender Form (Second Sheet) above.

(b) **HUF:**

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

(ii) All other documents in terms of Para 10 of the Tender Form (Second Sheet) above.

(c) **PARTNERSHIP FIRM:**

(i) i) All documents as mentioned in para18 of the Tender Form (Second Sheet).

(d) Joint Venture (JV): All documents as mentioned in para 17 of the Tender Form (Second Sheet).

(e) Company registered under Companies Act2013:

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

(ii) A copy of Certificate of Incorporation

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

(iv) All other documents in terms Para 10 of the Tender Form (Second Sheet) above.

(f) LLP (Limited Liability Partnership):

(i) A copy of LLP Agreement

(ii) A copy of Certificate of Incorporation

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

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

(v) All other documents in terms of Para 10 of the Tender Form (Second Sheet).

(g) **REGISTERED SOCIETY & REGISTERED TRUST:**

(i) A copy of Certificate of Registration

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

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

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

(v) All other documents in terms of Para 10 of the Tender Form (Second Sheet) above.

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

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

(v) A tender from JV shall be considered only where permissible as per the tender conditions.

(vi) The Railway will not be bound by any change of power of attorney or in the composition of the firm made subsequent to the submission of tender. Railway may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Contractor.

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

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

activities subsequent to signing of agreement, if required.

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

16. EMPLOYMENT/PARTNERSHIP ETC. OF RETIRED RAILWAY EMPLOYEES:

(a) Should a tenderer

i) be a retired Engineer of the gazetted rank or any other gazetted officer working before his retirement, whether in the executive or administrative capacity or whether holding a pensionable post or not, in the Engineering or any other department of any of the railways owned and administered by the President of India for the time being, OR

ii) being partnership firm / joint venture (JV) / registered society / registered trust etc have as one of its partners/members a retired Engineer of the gazetted rank or any other gazetted officer working before his retirement, OR

iii) being an incorporated company have any such retired Engineer of the gazetted rank or any other gazetted officer working before his retirement as one of its directors

AND

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

THEN

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

b) In case, upon successful award of contract, should a tenderer depute for execution of the works under or to deal matters related with this contract, any retired Engineer of gazette rank or retired gazetted officer working before his retirement in the Engineering or any other department of any of the railways owned and administered by the President of India for the time being, and now in his employment, then the tenderer will ensure that retired Engineer or retired gazetted officer had retired from government service at least 1 year prior to the date of his employment with tenderer and in case he had retired from service within a year then he possesses the requisite permission from the President of India or any officer, duly authorized by him in this behalf, to get associated with the tenderer.

c) Should a tenderer or Contractor being an individual, have member(s) of his family or in the case of partnership firm/ company / joint venture (JV) / registered society / registered trust etc. one or more of his partner(s)/shareholder(s) or member(s) of the family of partner(s)/shareholder(s) having share of more than 1%in the tendering entity employed in gazetted capacity in the Engineering or any other department of the railway, then the tenderer at the time of submission of tender, will inform the authority inviting tenders the details of such persons.

Note: -If information as required as per 16.a), b), c) above has not been furnished, contract is liable to be dealt in accordance with provision of clause 62 of the Standard General Condition of contract.

JOINT VENTURE (JV) IN WORKS TENDERS

17. **PARTICIPATION OF JOINT VENTURE (JV) IN WORKS TENDER:** This para shall be applicable for works tenders wherein tender documents provide for the same.

Applicable for works costing more than Rs. 10 Cr., as per Railway Board's letter no. 2002/CE-I/CT/37 JV Pt-VIII dated 14-12-2012)

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

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

17.3 A member of JV shall not be permitted to participate either in individual capacity or as a member of another JV in the same tender.

17.4 The tender form shall be purchased and submitted only in the name of the JV and not in the name of any constituent member. The tender form can however be submitted by JV or any of its constituent member or any person authorized by JV through Power of Attorney to submit tender.

17.5 Bid Security shall be submitted by JV or authorized person of JV either as :

(i) Cash through e-payment gateway or as mentioned in tender document, or

(ii) Bank Guarantee bond either in the name of JV, or in the name of all members of JV as per MOU irrespective of their share in the JV if the JV has not been constituted legally till the date of submission of tender.

17.6 A copy of Memorandum of Understanding (MoU) duly executed by the JV members on a stamp paper, shall be submitted by the JV alongwith the tender. The complete details of the members of the JV, their share and responsibility in the JV etc. particularly with reference to financial, technical and other obligations shall be furnished in the MoU.

17.7 Once the tender is submitted, the MoU shall not normally be modified / altered / terminated during the validity of the tender. In case the tenderer fails to observe/comply with this stipulation, the full Bid Security shall be liable to be forfeited.

17.8 Approval for change of constitution of JV shall be at the sole discretion of the Railway. The constitution of the JV shall not normally be allowed to be modified after submission of the bid by the JV, except when modification becomes inevitable due to succession laws etc., provided further that there is no change in qualification of minimum eligibility criteria by JV after change of composition. However, the Lead Member shall continue to be the Lead Member of the JV. Failure to observe this requirement would render the offer invalid.

17.9 Similarly, after the contract is awarded, the constitution of JV shall not be normally allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract conditions.

17.10 On award of contract to a JV, a single Performance Guarantee shall be submitted by the JV as per tender conditions. All the Guarantees like Performance Guarantee, Bank Guarantee for Mobilization Advance, Machinery Advance etc. shall be accepted only in the name of the JV and no splitting of guarantees amongst the members of the JV shall be permitted.

17.11 On issue of LOA (Letter of Acceptance), the JV entity to whom the work has been awarded, with the same shareholding pattern as was declared in the MOU/JV Agreement submitted alongwith the tender, shall be got registered before the Registrar of the Companies under 'The Companies Act -2013' (in case JV entity is to be registered as Company) or before the Registrar/Sub-Registrar under the 'The Indian Partnership Act, 1932' (in case JV entity is to be registered as Partnership Firm) or under 'The LLP Act 2008' (in case JV entity is to be registered as LLP). A separate PAN shall be obtained for this entity. The documents pertaining to this entity including its PAN shall be furnished to the Railways before signing the contract agreement for the work. In case the tenderer fails to observe/comply with this stipulation within 60 days of issue of LOA, contract is liable to be terminated. In case contract is terminated railway shall be entitled to forfeit the full amount of the Bid Security and other dues payable to the Contractor under this contract. The entity so registered, in the registered documents, shall have, inter-alia, following Clauses:

17.11.1 Joint and Several Liability - Members of the entity to which the contract is awarded, shall be jointly and severally liable to the Railway for execution of the project in accordance with General and Special Conditions of Contract. The members of the entity shall also be liable jointly and severally for

the loss, damages caused to the Railways during the course of execution of the contract or due to non-execution of the contract or part thereof.

17.11.2 Duration of the Registered Entity - It shall be valid during the entire currency of the contract including the period of extension, if any and the maintenance period after the work is completed.

17.11.3 Governing Laws - The Registered Entity shall in all respect be governed by and interpreted in accordance with Indian Laws.

17.12 Authorized Member - Joint Venture members in the JV MoU shall authorize Lead member on behalf of the Joint Venture to deal with the Contract, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said tender/contract. All notices/correspondences with respect to the contract would be sent only to this authorized member of the JV.

17.13 No member of the Joint Venture shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the Railway in respect of the said tender/contract.

17.14 Documents to be enclosed by the JV along with the tender:

17.14.1 In case one or more of the members of the JV is/are partnership firm(s), following documents shall be submitted:

(i) A notarized copy of the Partnership Deed or a copy of the Partnership deed registered with the Registrar.
(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,
(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.
(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.

17.14.2 In case one or more members is/are Proprietary Firm or HUF, the following documents shall be enclosed:

(i) A copy of notarized affidavit on Stamp Paper declaring that his Concern is a proprietary Concern and he is sole proprietor of the Concern OR he who is signing the affidavit on behalf of HUF is in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act on behalf of HUF.

17.14.3 In case one or more members of the JV is/are companies, the following documents shall be submitted:

(i) A copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement,
(ii) The copies of MOA (Memorandum of Association) / AOA (Articles of Association) of the company
(iii) A copy of Certificate of Incorporation
(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

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

(i) A copy of LLP Agreement
(ii) A copy of Certificate of Incorporation of LLP
(iii) A copy of resolution passed by partners of LLP firm, permitting the Firm to enter into a JV agreement

(iv) A copy of Authorization /copy of Power of Attorney issued by the LLP firm (backed by resolution passed by the Partners) in favour of the individual**,** to sign the tender and/or sign the MOU/ JV agreement on behalf of the LLP and create liability against the LLP.

(v) An undertaking by all partners of the LLP 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.

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

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

17.14.6 All other documents in terms of Para 10 of the Tender Form (Second Sheet) above.

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

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

17.15.1 Technical Eligibility Criteria (‘a’ or ‘b’ mentioned hereunder)**:**

(a) For Works without composite components

The technical eligibility for the work as per para 10.1 above, shall be satisfied by either the ‘JV in its own name & style’ or ‘Lead member of the JV’.

Each other (non-lead) member(s) of JV, who is/ are not satisfying the technical eligibility for the work as per para 10.1 above, shall have technical capacity of minimum 10% of the cost of work i.e., each non-lead member of JV member must have satisfactorily completed or substantially completed during the last 07 (seven) years, ending last day of month previous to the one in which tender is invited, one similar single work for a minimum of 10% of advertised value of the tender.

(b) For works with composite components

The technical eligibility for <u>major component</u> of work as per para 10.1 above, shall be satisfied by either the ‘JV in its own name & style’ or ‘Lead member of the JV’ and technical eligibility for <u>other component(s)</u> of work as per para 10.1 above, shall be satisfied by either the ‘JV in its own name & style’ or ‘any member of the JV’.

Each other (non-lead)member(s) of JV, who is/ are not satisfying the technical eligibility for any component of the work as per para 10.1 above, shall have technical capacity of minimum 10% of the cost of any component of work mentioned in technical eligibility criteria. i.e., each other (non-lead) member of must have satisfactorily completed or substantially completed during the last 07 (seven) years, ending last day of month previous to the one in which tender is invited, one similar single work for a minimum of 10% of cost of any component of work mentioned in technical eligibility criteria.

Note for Para 17.15.1:

a) The *Major component of the work for this purpose shall be the component of work having highest value. In cases where value of two or more component of work is same, any one work can be classified as Major component of work.*

b) Value *of a completed work done by a Member in an earlier JV shall be reckoned only to the extent of the concerned member's share in that JV for the purpose of satisfying his/her compliance to the above mentioned technical eligibility criteria in the tender under consideration.*

17.15.2 FINANCIAL ELIGIBILITY CRITERIA:

The JV shall satisfy the requirement of "Financial Eligibility" mentioned at para 10.2 above. The "financial capacity" of the lead member of JV shall not be less than 51% of the financial eligibility criteria mentioned at para 10.2 above.

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

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

17.15.3 Bid Capacity

The JV shall satisfy the requirement of "Bid Capacity" requirement mentioned at para 10.3 above. The arithmetic sum of individual "Bid capacity" of all the members shall be taken as JV's "Bid capacity" to satisfy this requirement.

18. PARTICIPATION OF PARTNERSHIP FIRMS IN WORKS TENDERS:

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

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

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

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

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

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

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

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

18.8 On issue of Letter of Acceptance (LOA), contract agreement with partnership firm shall be executed in the name of the firm only and not in the name of any individual partner.

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

(a)Joint and several liabilities:

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

thereof.

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

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

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

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

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

(i) A notarized copy of the Partnership Deed or a copy of the Partnership deed registered with the Registrar.

(ii) A notarized or registered copy of Power of Attorney in favour of the individual to tender for the work, sign the agreement etc. and create liability against the firm.

(iii) An undertaking by all partners of the partnership firm that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of submission of bids, either in their individual capacity or in any firm/LLP in which they were / are partners/members. Any Concealment / wrong information in regard to above shall make the bid ineligible or the contract shall be determined under Clause 62 of the Standard General Conditions of Contract.

(iv) All other documents in terms of Para 10 of the Tender Form (Second Sheet) above.

18.11 **Evaluation of eligibility of a partnership firm:**

Technical and financial eligibility of the firm shall be adjudged based on satisfactory fulfillment of the eligibility criteria laid down in Para 10 of the Tender Form (Second Sheet) above.

19.0 Advances to Contractor –

If specifically provided in Tender Documents of tender having advertised value more than Rs 50 Crores, Railway shall make payment, as an Interest bearing advances, as per Contractor's request. These advances shall carry a simple interest _____ as indicated in the Tender documents. The payment and recovery of such advances shall be made as per manners prescribed in Clause 46.4 of the Standard General Conditions of Contract.

(Signature)
(Designation)

Signature of Tenderer(s) _____Railway Date _____
Date _____

CHAPTER- 2:
INSTRUCTIONS TO TENDERERS

2.1	**GENERAL INSTRUCTIONS:** For and on behalf of the President of India, **Dy Chief Signal & Telecom Engineer, Construction, Vadodara** invites sealed tenders for the work of **"**Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under Dy. CSTE Construction, Vadodara, Gujarat (Western Railway) A) The materials and installation required, tendering procedure and terms & conditions are prescribed in the Tender Documents. The Tender Document includes "Tender Notice & Tender Form", "Instructions to Tenderers (I.T.T.)" "General Conditions of Contract in addition to and/or in part supersession up to latest correction slips" (GCC), "Special Conditions of Contract (SCC)", "Technical Specifications & Requirements", "Schedule of Work & Supplies" and all Annexure & forms together with any addendum and corrigendum thereto prior to the tender opening. B) All offers are required to be submitted as per details indicated in the Tender Notice. All the information in the offer must be in English. Information in any other language shall be accompanied by its authenticated translation in English. Failure to comply with this may render the offer liable to be rejected. In the event of any discrepancy between the offer in a language other than English and its English translation, the English translation will prevail. C) Any additional information regarding the tender, if required by any tenderer may be obtained from the office of Dy.Chief Signal & Telecom Engineer, Construction, Pratap nagar Vadodara.
2.2	**NAME OF WORK** Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under Dy. CSTE Construction, Vadodara, Gujarat (Western Railway))
2.3	**A) SYSTEM OF TENDERING:** The tender shall be submitted tender online at IREPS under a TWO packet system- a) Packet I- Technical Bid b) Packet -II Financial Bid **B)** Tender Document/Schedule can be seen/submitted up to as per tender notice on E- tender portal www.ireps.gov.in. The Tender Document Cost (non-refundable &non- transferable), in respect of e-tendering, shall be paid through net banking or payment gateway only facility provided on IREPS website. The tender will be opened as per tender notice on website **www.ireps.gov.in.** 1) Tenders must be submitted online, manual offers are not allowed against this tender, and any such manual offer received shall be ignored.

	2) Non-Compliance with any of the conditions set here forth in above is liable to result in the tender being rejected. 3) No offer will be accepted after the Date & Time specified on the IREPS website. 4) Any corrigendum to the NIT/ tender document will be done only during the advertising period as an exception only and the same will be posted on the IREPS website also. No corrigendum is permitted during the offer submission period. If any corrigendum is required during the offer submission period the work shall be retendered. Hence, accordingly the Tender NIT period is split as under: 5) It will be the responsibility of the tenderers to check corrigendum about tender between Advertisement Period & Offer Submission Period if any and submit their offer accordingly. **Advertisement period** : Time during which all information pertaining to tender shall be available but offers cannot be submitted. **Offer submission period** : Fifteen days prior to opening of tender, during which tenderers can submit their offer. 6) Execution of Contract Document: The successful tenderer(s) shall be required to execute an agreement with the President of India acting through the Dy Chief Signal & Telecom Engineer, Construction, Pratapnagar Vadodara for carrying out the work according to "General Conditions of Contract, Special conditions /Specifications annexed to this tender, and Specification for work and materials as laid down in the " Works Hand Book Part III " and Sanitary Works Hand Book of Western Railway as amended /corrected with correction slip mentioned in the tender form (First Sheet). 7) Tender Form: Tender Forms shall embody the contents of the contract documents either directly or by reference and shall be as per specimen form, Annexure-I. e-Tender Forms shall be issued free of cost to all tenderers. 8) Omissions & Discrepancies: Should a tenderer find discrepancies in or omissions from the drawings or any of the Tender Forms or should he be in doubt as to their meaning, he should at once notify the authority inviting tenders. The tender inviting authority may, if deemed necessary, clarify the same to all tenderers. It shall be understood that every endeavour has been made to avoid any error which can materially affect the basis of tender and successful tenderer shall take upon himself and provide for the risk of any error which may subsequently be discovered and shall make no subsequent claim on account thereof.
2.4	**DOWNLOADING OF TENDER DOCUMENT AND INSTRUCTIONS THEREON:** a) Offer for the Tenderis to be submitted online through E-Tender Portal www.ireps.gov.in and details are to be entered by the tenderer online. It is advisable to download and study the tender document before submitting their offers. Submission of Physical copy of the offers or tender document is prohibited. b) This tender is required to be submitted as per the tender conditions through online portal **www.ireps.gov.in** before the date and time stipulated in the tender document. The tender details are available on E-Tender portal www.ireps.gov.in and the same can be used while submitting the offer. c) The tenderer/bidders must have Class-III Digital Signature Certificate & must be registered on IREPS portal. Only registered tenderer/bidders can participate in e-

	Tendering. All relevant papers must be uploaded at the time of participating in e-Tendering. Manual submission of offers is not allowed against this tender and any such manual offer received shall be ignored. d) Tenderers are advised to register their agency well in advance on E-Tender portal of www.ireps.gov.in and submit their offer through E-Tender before the stipulated time. It is the responsibility of the tenderer to check any correction or any modifications published subsequently in the Website and the same shall be taken into account while submitting the tender online. Tenderer shall download corrigendum (if any), print it out, sign and upload it with the main tender document. **Tender document not accompanied by published corrigendum/s is liable to be rejected**. The Railway will not be responsible for any delay in submitting through online portal www.ireps.gov.in e) Tenderer/s are free to download tender documents at their own risk and cost, for the purpose of perusal and accustom themselves regarding instructions, scope and location of work, Technical and Non-Technical special conditions, etc. stipulated in the tender document. After award of work, an agreement will be prepared based on the master copy of a tender document available in the office. f) If any change/addition/deletion is made by the Tenderer/Contractor and the same is detected at any stage even after the award of the tender, full Bid security will be forfeited and the contract will be terminated at his/their all dues. The tenderer is also liable to be banned from doing business with Railways and/or prosecuted. g) The tenderers will be considered to have agreed the following declaration while submitting their offer: i) I/We have submitted the tender form on the Internet site www.ireps.gov.in. In case, any discrepancy is found, I/We understand that my/our tender will be summarily rejected and full Bid security will be forfeited and I/We am/are liable to be banned from doing business with Railways and/or prosecuted.
2.5	**BRIEF SCOPE OF WORK: This tender invited for GC work for Dabhoi-Samlaya-Lotna. This schedule include 5 station namely Dabhoi, Waghodia, Jarod, Samlaya and Lotna station** **1. Samlaya and Lotna station is situated on Main line Delhi-Mumbai route.** **2. El Altetation (Indoor and outdoor) is to be carried out at Samlaya and Dabhoi station in connection of GC work.** **3. 3 new station Waghodia, Jarod and Lotna.** **4. At new station Indoor and outdoor signaling syatem as per SIP is to be done.**
2.6	**COMPLETION PERIOD:** The entire work shall be completed within the completion time as mentioned in the NIT from the date of issue of LOA of the tender. Extension of completion period shall be granted by the competent authority on a mutually agreed basis as per GCC clauses.
2.7	**BID SECURITY:** (1) (a) The tenderer shall be required to submit the Bid Security {as mentioned in NIT} with the tender for the due performance with the stipulation to keep the offer open till such date as specified in the tender, under the conditions of tender. (b) It shall be understood that the tender documents have been issued to the tenderer and the tenderer is permitted to tender in consideration of stipulation on his part, that after submitting his tender he will not resile from his offer or modify the terms and

conditions thereof in a manner not acceptable to the Engineer. Should the tenderer fail to observe or comply with the said stipulation, the aforesaid amount shall be liable to be forfeited to the Railway.

(c) If his tender is accepted, this Bid Security mentioned in sub para (a) above will be retained as part security for the due and faithful fulfillment of the contract in terms of Clause 16 of the Standard General Conditions of Contract. The Bid Security of other Tenderers shall, save as herein before provided, be returned to them, but the Railway shall not be responsible for any loss or depreciation that may happen thereto while in their possession, nor be liable to pay interest thereon.

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

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

Note:

(i) The Bid Security shall be rounded offto the nearest t100. This Bid Security shall be applicable for all modes of tendering.

(ii) Any firm recognized by Department ol Industrial Policy and Promotion (DIPP) as 'Startups' shall be exempted from payment o1 Bid Security detailed above.

(iii) Labour Cooperative Societies shall submit only 50o/o of above Bid Security detailed above.

(2) The Bid Security shall be deposited either in cash through e-payment gateway or submitted as Bank Guarantee bond from a scheduled commercial bank of India or as mentioned in tender documents. The Bank Guarantee bond shall be as per Annexure-VI(A) and shall be valid for a period of 90 days beyond the bid validity period.

(3) In case, submission of Bid Security in the form of Bank Guarantee, following shall be ensured:

i. A scanned copy of the Bank Guarantee shall be uploaded on e-Procurement Portal (IREPS) while applying to the tender.

ii. The original Bank Guarantee should be delivered in person to the official nominated as indicated in the tender document before the closing date for the deadline of submission of bids (i.e. excluding the last date of submission of bids).

iii. Non submission of scanned copy of Bank Guarantee with the bid on e-tendering portal (IREPS) and/or non submission of original Bank Guarantee within the specified period shall lead to summary rejection of bid.

iv. The Tender Security shall remain valid for a period of 90 days beyond the validity period for the Tender.

v. The details of the BG, physically submitted should match with the details available in the scanned copy and the data entered during bid submission time, failing which the bid will be rejected

vi. The Bank Guarantee shall be placed in an envelope, which shall be sealed. The envelope shall clearly bear the identification “Bid for the ***** Project” and shall clearly indicate the name and address of the Bidder. In addition, the Bid Due Date should be indicated on the right hand top corner of the envelope.

	vii. The envelope shall be addressed to the officer and address as mentioned in the tender document. viii. If the envelope is not sealed and marked as instructed above, the Authority assumes no responsibility for the misplacement or premature opening of the contents of the Bid submitted and consequent losses, if any, suffered by the Bidder.
2.8	**QUALIFYING AND ELIGIBILITY CRITERIA:** A) The tenderer shall necessarily satisfy the eligibility conditions listed below:- a) **Technical Eligibility criteria**: As per Clause no. 10 of Tender Form (Second Sheet) **Work of Similar Nature would mean**: "Any RI or EI or CLS or ABS or IBS involving Indoor & Outdoor works (Cable laying & termination)." b) **Financial Eligibility Criteria:** As per Clause no. 10 of Tender Form (Second Sheet) i) The total value of similar nature of works completed during the qualifying period and not the payment received within the qualifying period alone should be considered. In case, the final bill of similar nature of work has not been passed and final measurements have not been recorded, the paid amount including statutory deduction is to be considered. If final measurements have been recorded and work has been completed with negative variation, then also paid amount including statuary deduction is to be considered. ii) However, if final measurements have been recorded and work has been completed with positive variation but variation has not been sanctioned, the original agreement value or sanctioned agreement value, whichever is lower, should be considered for judging eligibility. **iii) Note: The offer of tenderers who do not meet the technical eligibility criteria as mentioned above will not be considered.** B) Bid Capacity The tender/technical bid will be evaluated based on the bid capacity formula detailed as Annexure-VI. C) (i)Tenderer must submit OEM/its RDSO approved Indian Partner's authorized break up of Numbers of each cards/module and other accessories and works as separate annexure in terms of RB's letter No. 2013/signal/01/(pt) Dup dated 17.02.2022. **The successful bidder shall submit an undertaking from RDSO-approved EI OEM, within 21 days from issue of LoA or at last with submission of PG, to confirm compliance with extant RDSO guidelines and to meet specific requirements and to provide after-sales support required during the warranty period and beyond the warranty period, failing which the contract is liable to be terminated.**
2.9	**GUIDELINES FOR PARTICIPATION OF JOINT VENTURE FIRMS:(Applicable in this tender.)** a) Guidelines and terms & condition has been already given vide para 17 (including all sub paras) of tender Form Second sheet in tender document or pl. refer GCC

	para 17 of Tender form second sheet. b) The letter, letter no. 2002/CE-I/CT/37 JV Pt-VIII dated 14-12-2012 as per Railway Board's shall be referred (Applicable for works costing more than Rs. 10 Cr., as per Railway Board's).
2.10	**STUDY OF LOCAL CONDITIONS:** 1) It will be imperative on each tenderer to fully acquaint him with all the local conditions and factors, which would have any effect on the performance of the contract and cost of the work. The purchaser shall not entertain any request for clarifications from the tenderer regarding such local conditions. No request for change of price or time schedule of completion will be entertained after the offer is accepted by the purchaser on account of any local condition or factor. The tenderer(s) shall inspect the proposed site of work and acquaint himself/themselves with the site conditions, working hours, layout of land, trees and shrubs that he/they will have to cut, type of strata likely to be met within the borrow pits, stacking space for materials, approach roads, path ways available etc.and all relevant items connected with the execution of the work. 2) The intending tenderer is advised to study the Tender Document carefully. Any submission of an offer by the tenderer shall be deemed to have been done after a careful study and examination of this tender document with full understanding of the implication thereof. It will be understood that the tenderer has/have got himself / themselves clarified on all the points and interpretation by proper authorities of the Railway Administration. These conditions and specifications shall be deemed to have been accepted unless otherwise, specifically commented upon by the Tenderer in his offer. Failure to adhere to anyone or all these instructions may render his offer liable to be ignored without any reference. 3) The scope of work to be executed by the contractor has been specified in Special Conditions of Contract and Schedule of Works & Supplies which may be studied. It will be imperative for the tenderer to fully acquaint himself with all the local conditions, Signalling and telecom practices adopted and other factors which would have any effect on the performance of the contract and cost of the stores. No request for the change of rate, or time schedule of delivery of stores / Execution of work shall be entertained after the offer is accepted by the Railway on account of any local condition or factors. No claim shall be entertained for the contractor(s) making his/their own arrangements for approaches/approach road and contractor(s) will bear entire expenses such as road taxes, payment for right of way, etc. to outsiders and for construction of approaches/approach roads, etc. 4) The tenderer may undertake study/survey of signalling and telecom systems/practices used in Western Railway and make his own assessment of the work. Any equipment/design/component needed to make the entire system successful/functional shall be supplied by the tenderer without any extra cost. Tenderer(s), if desired may undertake inspection of the proposed site of work to acquaint himself/themselves. In the event of the tenderer desiring to have a field visit before furnishing his offer, he may apply to Dy Chief Signal & Telecom Engineer (Construction) PratapNagar Vadodara in this regard. Such permission shall be granted by the Railway but the expenses in this regard shall be borne by the tenderer completely.
2.11	**RULES & GENERAL INFORMATION TO TENDERER:** **1)** The Tender shall be signed by individual or individuals legally authorized to enter into commitments on behalf of the Tenderer. Any individual or individuals signing the Tender Documents or other documents connected therewith should specify

whether he is signing.

a) As a Sole Proprietor of the firm or Attorney of the Sole Proprietor.
b) As a Partner or Partners of the firm.
c) As a Director, Manager or Secretary or official with Power of Attorney as per memorandum /article of association in a Limited Company.
d) As a duly constituent attorney of authorized members of the JV, in case of JV.

2) Every Tenderer shall state in the Tender his postal address fully and clearly. 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. He shall also give telephone and fax-number for communication. Important documents shall be sent by Registered post. Railways shall not be responsible for any failure of dispatch of letters by the Postal Department. In case of incomplete address given by the tenderer where Postal Department is not accepting such address or not accepting postage packet at the given address, the offer submitted by the tenderer shall be treated as invalid andRailway reserves the right to reject the tender

3) Incomplete and Conditional tenders will generally not be considered and are liable to be rejected. Railway however reserves the right to reject such tenders summarily without assigning any reasons whatsoever. The Railway also reserves the right to reject any special conditions stipulated by the Tenderer as considered unacceptable to the Railway.

4) 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” as per Form enclosed (Form-4) and not elsewhere in the tender document.If it is found at any stage of the finalization of the tender or during actual execution the work that the information furnished in this tender including clarifications, is incorrect, the tenders are likely to be rejected. The submission of the Tender shall be deemed to have been done after careful study and examination of the Tender Document with full understanding of the implications thereof. Any clarification required by a Tenderer shall be obtained from the Office of the Tender Inviting Authority on any working day during office hours.

5) Declaration as per Format-13 that I / We have no relative / employee in the Gazetted / non-gazetted capacity in the Western Railways. Also give a Certificate of Information regarding Employment / Partnership etc. of Retired Railway Employees with the tenderer as per Format-14.

6) The Tenderer should read the conditions carefully and also see the schedule of works, technical specification etc. before submitting the offer and also ascertain site conditions and the magnitude of works involved.

7) 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 Railway reserves the right to reject such tender at any stage.

b) If it is found at any stage of the finalization of the tender or during actual execution the work that the information furnished in this tender including clarifications, is incorrect, the tenders are likely to be rejected. The Railway reserves the right to reject the tender without assigning any reason.

c) If any terms and condition of tender is changed/ added/ deleted with

	malafide intention by the Tenderer/Contractor and the same is detected at any stage even after award of the Tender, all necessary action including banning of business, would be taken. In addition, the tenderer is also liable to be prosecuted as per the law. d) The railway reserves the right to verify all statements, information and documents submitted by the bidder in his offer, and the bidder shall, when so required by the railway, make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification by the railway shall not relieve the bidder of its obligations or liabilities hereunder nor will it affect any rights of the railway thereunder. e) The Railway reserves the right to cancel the tender without assigning any reason. f) All the relevant documents shall be attached along with tender form as per terms and conditions of tender. 8) Tender offer without requisite bid security in prescribed form will be summarily rejected. 9) All the relevant documents shall be attached along with tender form as per terms and condition of tender. 10) All offers shall be neatly legible and in English. Each page of the offer must be numbered consecutively, should bear the tender number and each page of the tender document including technical brochures, manuals etc. should be signed by the Tenderer & should bear the seal of the firm. A reference to the total no. of pages comprising the offer must be made at the top right hand corner of the first page. 11) Photocopies of all the certificates etc. submitted by Tenderer should be attested by tenderer as true copies, unless required to be attested by Notary public by other conditions of tender. 12) No scribbling is permissible in the tender documents. Tender offers containing erasures and alterations in the tender documents are liable to be rejected. Any correction made by the tenderer / tenderers in his/their entries must be attested by him/them. 13) 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 mis- interpretation 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 Railway who may send a written clarification to all Tenderers.
2.12	**SUBMISSION OF OFFERS:** **1)** The e-tender shall be submitted online at IREPS website under Two packet System. 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.

	2) Along with all bids, the tenderer will upload the scanned copies of documents (in PDF) as per tender document while submitting their offer. **3)** The payment of Bid Security & Tender Document Cost as per tender documents (non- refundable & non-transferable), in respect of e-tendering, shall be paid through net banking or payment gateway facility provided on IREPS only. **failing which the tender will not be considered.** Any firm recognized by Department of Industrial Policy and Promotion (DIPP) as 'Startups' shall be exempted from payment of Earnest Money on submission of Registration Certificate issued by appropriate authority. Note: Fixed Deposit Receipt (FDR) will not be accepted as Bid security/EMD for tenders invited on IREPS (e-Tender portal). (Authority: Railway Board letter No. 2015/CE-I/CT/5/1 dated 31.08 2016.) or latest. 4) The tenderer is required to submit his offer online till 15:00 hours of the date of opening and the offer will open online at specified time as mentioned in NIT Header.
2.13	**TENDER OFFER:** The Tenderer (s) shall invariably be accompanied with the following documents, failing which the offer can be treated as incomplete and liable to be rejected without any correspondence with the firm. Hence, the Tenderers are advised to ensure that these documents are submitted, duly signed at all pages, with their offer. The tender document shall be submitted with the following: a) Offer letter complete, relevant paper/documents must be uploaded at the time of participating in e-Tendering. **Schedule of Works & Supplies with quoted rates at the percentage above / below/at par the Railways estimated grand total on IREPS.** Separate percentage may be quoted for (SOR) Schedule and Non SOR schedule & other schedules as per NIT. Covering Letter & Tender papers shall be signed& complete in all respects. b) **The required cost of** tender document fee & Bid Security in prescribed and acceptable form of prescribed amount as instructed on www.ireps.gov.in**must be submitted along with the Bid documents.** c) **Documents** in support of qualifying eligibility criteria as per clause 2.8 above (on **Format-5** &**Format-6** along with all supportive documents d) **List** of works completed in the last three financial years & current year giving description of work, organization for whom executed, approx. value of contract at the time of award, date of award and date of scheduled completion of work. Date of actual start, actual completion and final value of contract should also be given. **(Format-7).** e) **List** of similar types of work on hand indicating description of work, contract value date of award of contract. **(Format-8).** f) List of Personnel, Organization available on hand and proposed to be engaged for the subject work.Certified copy of Memorandum of Understanding (MoU) duly executed by JV members on a stamp paper (Annexure-I) in case of JV (Clause 14 of Tender Form Second Sheet of GCC) g) Power of Attorney, (if any), in acceptable form duly stamped and authenticated by a Notary publicor Magistrate as per GCC clause 16. h) Documentary evidence necessary to establish that tender possesses the requisite skill, technical expertise, technical and skilled manpower and necessary equipment to execute complete work covered in the schedule with stipulated specifications/details. i) List of Plant & Machinery available on hand (own) and proposed to be inducted (own and hired to be given separately) for maintenance support of the system. j) Details of set up/technical know-how available with the Tenderer for execution of

	work and testing/ trouble shooting/ repairing of equipments under warranty period. If the Tenderer is OEM, furnish complete details of repairing center setup within the country (India) i.e. location, Machinery available, Engineers engaged for repairing center. k) Certified copy of JV agreement (MoU) in case of JV in enclosed format, Certified copy of Partnership deed in case of partnership firms as per clause 15 of (second sheet) of GCC, Memorandum of Articles of Association of the firm, extract of Board of Directors' meeting authorizing signatory to submit the offer to the Railways. In other cases Memorandum and Articles of association. l) Tenderer should provide details of bank account for payment through NEFT/RTGS on **FORMAT -9**. m) Last audit report from registered Chartered Accountant. n) The tenderer shall also enclose in his offer that they accept all the terms and conditions of Railways. The tenderer shall indicate paragraph by paragraph for each section and each clause and sub-clause of the entire tender document that either his tender complies in every respect with the requirements of each clause and sub-clause or if not, precisely how they differ from the requirements of the tender. In the latter case, the tenderer shall enclose a separate **"Statement of Deviations"** as per **Format-4** given, indicating only the deviations for any clause or sub- clause of General Conditions of Contract, Special Conditions of Contract, Instructions to tenderers, technical requirement & specification and Schedule of works & supplies etc. , which he proposes with "detailed justifications for deviations proposed". The purchaser, reserves the right to accept or reject these deviations and the Railway's decision thereon shall be final. o) If the tenderer has no exceptions, the **"Statement of Deviations"** shall be submitted with a "Nil" statement. If the tenderer does not include this with the tender it shall be conclusive evidence that all conditions of contract are entirely acceptable to the Tenderer. p) The Time schedule of work including BAR/PERT charts. q) Any other information desired to be submitted by the tenderer r) Any other documents the tenderer may like to submit in support of his credentials. NOTE: 1. If the tenderer does not submit any proof for meeting with the eligibility criteria as laid down in the NIT and tender conditions, the offer will be considered as incomplete and will be summarily rejected. The Tenderer shall submit attested copies of the supportive documents / certificates from organizations with which they have worked/are working, otherwise the offer will be liable to be rejected. 2. There shall be no back reference to confirm the credentials except for the purpose of verifying the attested copies of documents already submitted with the offer. 3. Certificate/Credentials issued by private individuals / organizations will not be accepted as per letter No. W 118/0 Vol.VII(W-6) dtd. 11.12.2014 issued by CE (Works) CCG. 4. All the documents including technical brochures, manuals etc. should be signed by the Tenderer.
2.14	**CARE IN SUBMISSION OF TENDERS:** **(a)** (i) Before submitting a tender, the tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the works, that all conditions liable to be encountered during the execution of the works are

taken into account and that the rates he enters in the tender forms are adequate and all inclusive to accord with the provisions in Clause-37 of the Standard General Conditions of Contract for the completion of works to the entire satisfaction of the Engineer.

(ii) The Tenderer 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, 2017 (SGST) also,as notified by Central/State Govt. & as amended from time to time and applicable taxes before bidding. Tenderer will ensure that full benefit of input tax credit (ITC) likely to be availed by them is duly considered while quoting rates.

(iii) The successful tenderer who is liable to be registered under CGST/IGST/UTGST/SGST Act shall submit GSTIN along withother details required under CGST/IGST/UTGST/SGST Act to railway immediately after award of contract, without which no payment shall be released to contractor. The contractor shall be responsible for deposition of applicable GST to the concerned authority.

(iv) In case the successful tenderer is not liable to be registered under CGST/IGST/UTGST/SGST Act, the railway shall deduct the applicable GST from his/their bills under reverse charge mechanism (RCM) and deposit the same to the concerned authority.

(v) Contractor shall be liable to pay/refund the amount collected as GST to the Indian Railways along with interest and penalties, if any imposed by the authorities, in case GST input tax credit of Indian Railways is denied/rejected by the tax authorities due to reasons mentioned below but not limited to: Wrong/incorrect invoice s is sued by Contractor ; No-filing of GST returns; Non-payment of GST collected from Indian Railways to the authorities;Any other non-compliance done by Contractor;

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

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

(Reference Rly Bd's letter no. 2017/CE-I/CT/4/GST dtd 23-06-2017.)

(d) When work is tendered for by a firm or company of contractors, the tender shall be signed by the individual legally authorized to enter into commitments on their behalf.

(e) 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. **(f)** 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-II. In addition to Annexure-II, in case of other than Company/Proprietary firm, Annexure-II (A) shall also be submitted by each member of Partnership Firm/ Joint Venture (JV)/ Hindu Undivided Family (HUF)/ Limited Liability Partnership (LLP) etc. As the case may be. Non submission of above certificate(s) by the bidder shall result in summarily rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested/digitally signed by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document. **{RB's Advance correction slip vide letter 2022/CE-I/CT/GCC-2022/Policy Dtd:-13.12.2022}** **(g)** A copy of certificate stating that they are not liable to be disqualified and all their statements/documents submitted along with the bid are true and factual. The standard format of the certificate to be submitted by the bidder is enclosed as Annexure-V. In addition to Annexure-II, in case of other than Company/Proprietary firm, Annexure-II(A) of chapter1. shall also be submitted by each member of Partnership Firm/ Joint Venture (JV)/ Hindu Undivided Family (HUF)/ Limited Liability Partnership (LLP) etc. As the case may be. Non submission of a copy of certificate by the bidder shall result in summarily rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested / digitally signed by which they/he are/is qualifying the Qualifying Criteria mentioned in the Tender Document. **{RB's Advance correction slip vide letter 2022/CE-I/CT/GCC-2022/Policy Dtd:-13.12.2022}**
2.15	**TECHNICAL COMPLIANCE AND DEVIATIONS, IF ANY:** a) Tenderer should note that the S&T work offered should be complete and compatible with the existing equipment installed / operating on the Mumbai division of Western Railway. Any equipment/work required to make the interface equipments match with indoor equipment is the responsibility of the Tenderer. Railway shall not bear any extra cost on account of changes/addition required for ensuring compatibility of interface devices with existing S&T equipments. b) The tenderer shall certify that the system being offered by him fully meets RDSO Specifications with latest amendments and technical requirements mentioned in chapter 5 of tender document and attachments in the tender documents. The compliance statement should be unambiguous.. The clauses which are being compiled by the tenderer should be written as 'complied'.The clauses where the tenderer is unable to comply, deviation should be clearly brought out. Details of variations from the drawings and specifications, if any, should be clearly indicated in the offer. c) The Railway reserves the right to accept or reject these deviations and Railway's decision thereon shall be final. The deviation quoted by the tenderer shall become part of contract agreement only to the extent to which they are specifically mentioned and as accepted in the letter of acceptance.

2.16	**RATES:** Financial Bid (Packet-II)-Tenderers are requested to quote their rates in terms of percentage above or below the estimated total cost of the Railways. Rates in the offer should be in **Indian rupees** only. Offers in foreign currency will not be accepted. The Tenderer should quote rates in figures and in words. Wherever there is difference between the rates quoted in figures and in words, the rates quoted in words will be taken as correct. All rates and other information like discounts etc. having bearing on the rates shall be written both in figures and words in the prescribed offer form. The quoted rates shall include all duties, Taxes, charges etc. Tenderers if quoting any other rates anywhere other than the Schedule of material & Works, shall not be considered. **Offer received for only part of schedule will not be considered and shall be rejected.** **a)** The entire work is mentioned in schedule of material and works b) Against each item in Schedule, the estimated rates of Railways are mentioned and The Estimated grand total for Schedule is drawn. **Tenderer is requested to quote the percentage above / below the Railways estimated grand total at which he offers to do the work covered under schedule.** **TENDERERS WHILE QUOTING MAY SPECIFICALLY NOTE THE FOLLOWING:** a) The rates quoted in the offer by the tenderer shall be inclusive of basic cost and all taxes / duties as applicable after introduction of GST. b) Octroi not applicable after introduction of GST. **Road Permit letter will not be issued.** c) Concession forms for statutory taxes shall be supplied by Railways on demand if applicable. d) Railways will affect recovery of Taxes on work contract at source at the rate decided by the Government, where the work is being executed. e) Railways shall affect recovery of income tax at source at the rates in vogue. f) The rates quoted by tenderer and accepted by Railway Administration shall hold good till the Completion of the work and no additional individual claim will be admissible on account of fluctuation in market rates, increase in taxes/any other levies/toll etc. g) Further, no cognizance will be given for any sort of fluctuations in taxes and other market conditions etc. for any individual items for the purpose of making adjustments in payments. Note: Rates of materials and works are to be quoted according to the pro forma and "Schedule of Work and Supplies "(Chapter - 6)
2.17	**VALIDITY OF OFFER:** **1)** The tenderer shall keep the offer open for a minimum period as per NIT header/Tender Notice from the date of opening of tender. Within that period, the tenderer cannot withdraw his offer subject to the period being extended further if required by mutual agreement from time to time. Any contravention of the above condition will make the tenderer liable for forfeiture of his Bid Security. 2) It is understood that the tender document has been sold/issued to the Tenderer(s) and the Tenderer(s) is / are permitted to tender in consideration of

	the stipulation on his/their part that after submitting his / their tender subject to the period being extended further if required by mutual agreement from time to time, he will not resile from his offer or modify the terms and conditions thereof in a manner not acceptable to Western Railway. Should the Tenderer fail to observe or comply with the foregoing stipulation, the amount deposited, as Bid Security for the due performance of the above stipulation shall be forfeited by the Railways
2.18	**OPENING OF TENDERS:** a) Bid of all the tenderers will be opened at IREPS site on date mentioned in Tender notice or corrigendum if any **after 15:00** hrs. in the office of the **Dy Chief Signal & Telecom Engineer (Construction) PratapNagar Vadodara.** in the presence accounts officials. In the event of the specified date of Bid opening being declared a holiday for the Railway, the Bids shall be opened at the same time and location on the next working day. b) For two packet systems, after the Technical evaluation of the tenders, the Financial Bids of all the eligible and technically suitable tenderers will be opened **"on a date and time notified on IREPS site"** for final evaluation of the Bids. The Financial Bids of the tenderers considered technically unresponsive/unacceptable will not be opened. **c) The tenderer whose rates are found lowest at the time of opening of tender shall in any case not mean that the concerned tenderer is a valid lowest tenderer. The valid lowest tenderer shall be decided by the Tender Committee in its due proceedings.**
2.19	**RIGHTS OF RAILWAYS TO DEAL WITH TENDERS:** a) The authority for the acceptance of the tenderer will rest with the Railway administration for and on behalf of the President of India, who shall not be bound to accept the lowest or any tender or to assign any reason for declining to consider, non-acceptance or rejection of a tender. The Railway administration reserves the right to accept any tender in respect of the whole or any portion of the work specified in the tender document or to reduce the work or to accept any tender for less than the tendered quantities without assigning any reason whatsoever. b) Railway administration also reserves the right to cancel any or all tenders at any stage. The cost of the tender document will not be refunded in such a case. c) The Railway reserves the right to accept or reject the deviations proposed by the tenderer and Railway's decision thereon shall be final. The deviations quoted by the tenderer will become part of Contract Agreement only to the extent to which they are specifically mentioned as accepted in Letter of Acceptance. d) The Railway reserves the right of not to invite tenders for any of Railway work or works or to invite open or limited tenders and when tenders are called to accept a tender in whole or in part or reject any tender or all tenders without assigning reasons for any such action. In case if tender is accepted in part by Railway administration, Letter of Acceptance shall be issued as counter offer to the Tenderer, which shall be subject to acceptance by the Tenderer. e) **A.Two Packets System of Tendering:** With a view to assess the tenders technically without being influenced by the financial bids, 'Two Packets System of tendering' shall be adopted wherein tender documents provide for the same.

	B. Pre Bid Conference:NA **C. Make in India Policy:** Provisions of Make in India Policy 2017 issued by Govt. of India, as amended from time to time, shall be followed for consideration of tenders. D. **Permission to Bid for a bidder from a country which shares Land boundary with India:** Any bidder from the countries sharing a land border with India will be eligible to bid in any procurement of works (including turnkey projects) only if the bidder is registered with the Competent Authority. The Competent Authority for registration will be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT), Government of India. For interpretation of this para, Department of Expenditure, Ministry of Finance, Government of India letter F.No.6/18/2019-PPD dated 23/07/2020 shall be referred. **E. Clarification of Bids:** To assist in the examination, evaluation & comparison and pre-qualification of the Tender, the Railway may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Railway shall not be entertained or considered. The Railway request for clarification and the response of the bidder in this regard shall be in writing. However, if a Bidder does not provide clarification of its bid by the date and time communicated in the Railway request for clarification, the bid shall be evaluated as per the documents submitted along with the bid.
2.20	**RATES DURING NEGOTIATION:** The Tenderer/s shall not increase his/their quoted rates in case the Railway Administration decides to negotiate for reduction of rates. Such a negotiation shall not amount to cancellation or withdrawal of the original offer and the rates originally quoted will be binding on the Tenderer/s.
2.21	**ACCEPTANCE OF TENDER:** A letter of acceptance (LOA) of the offer shall be issued by the Railway Administration to the successful Tenderer that his offer has been accepted, on receipt of which he shall submit a Performance Bank Guarantee (PBG) bond of to **5%** of cost of work within 21 days of receipt of LOA and shall execute a formal Contract Agreement with the President of India acting through the **Office of Dy Chief Signal & Telecom Engineer (Construction) 2nd Floor, Annex. II, DRM Office Compound, Pratapnagar,Vadodara, Gujarat** or his authorized representative for carrying out the work according to terms and conditions of this tender including "General Conditions of Contract" of Indian Railway and Special Conditions / Specifications of this tender. Upon issuing of LOA the contract for the work shall be deemed to have been awarded to the tenderer and accordingly the completion period will be reckoned from the date of issue of LOA irrespective of the date of signing of contract agreement subsequently.
2.22	**EXECUTION OF CONTRACT DOCUMENT:** The Tenderer whose tender is accepted shall be required to appear in person at the office of General Manager/General Manager (Construction), Chief Administrative Officer (Construction), Divisional Railway Manager or concerned Engineer, as the case may be, or if tenderer is a firm or corporation, a duly authorized representative shall appear and execute the contract agreement within seven days of notice from Railways that the Contract Agreement is ready. The Contract Agreement shall be entered into by Railway only after submission of valid

	Performance Guarantee by the Contractor. Failure to do so shall constitute a breach of the agreement affected by the acceptance of the tender. In such cases the Railway may determine that such tenderer has abandoned the contract and there upon his tender and acceptance thereof shall be treated as cancelled and the Railway shall be entitled to forfeit the full amount of the Earnest Money and other dues payable to the Contractor under this contract. The failed Contractor shall be debarred from participating in the re-tender for that work. **Note: Pl refer GCC for other conditions.**
2.23	**SIGNING OF AGREEMENT:** The tenderer whose offer is accepted will be required to present himself or his duly authorized representative at the **Office of Dy Chief Signal & Telecom Engineer, Construction, 2nd Floor, Annex. II, DRM Office Compound, Pratapnagar, Vadodara, Gujarat** , to execute the contract document within seven days of receipt of notice that the contract documents are ready. Failure to do so shall constitute breach of the agreement affected by the acceptance of the tender in which case the bid security accompanying the tender shall be forfeited as liquidated damages for such default, without prejudice to any other right or remedies open to the Railway.
2.24	**COMMENCEMENT OF WORK:** The successful tenderer upon receipt of LOA shall commence the work by way of submitting a detailed time schedule in terms of Clause No. 4.19 of Chapter - 4, Special Conditions of Contract, for completion of work within the stipulated completion period.

CHAPTER – 3: GENERAL CONDITIONS OF CONTRACT

3.1 GENERAL CONDITIONS OF CONTRACT

"General Conditions of Contract" (GCC) of Western Railway in addition to and/or in part super-session up to latest correction slips" will be applicable.

Booklet of **Indian Railway Standard General Conditions of Contract (GCC) Works Hand Book Parts I & II July 2022** edition/latest edition (with latest amendments), may be purchased by Tenderer(s) from Engineering Deptt. of Western Railway at their own cost.

3.2. **"Shramikkalyan Portal** – Transparency in payment of Minimum Wages & other Statutory Benefits to Contract Labour.

As per latest Railway board letter D.O.No.2018/CE-I/CT/4 dated 27th Feb,2019, all railway contractors should fill up the required details in **" Shramikkalyan Portal" 'website- www.shramikkalyan.indinarailways.gov.in' regarding data of contract labour, wages paid to them, etc.**

DyCSTE/C/ Vadodara W.R.
2nd Floor, Annex. II, DRM Office Compound, Pratapnagar, Vadodara, Gujarat
For and on behalf of the President of India

CHAPTER: 4
SPECIAL CONDITIONS OF CONTRACT

4.1 GENERAL:

(i) These Special Conditions of Contract (SCC), "Schedule of Material & Works" and Technical Requirement & Specification and provision of tender document shall govern the works to be executed under this contract in addition to and/or in part super cession of the General Conditions of Contract (GCC) with latest amendment / Correction Slips and Standard Specifications as laid down in the Western Railway Works Hand Book, Part III as amended up to latest correction slips.

(ii) Where there is any conflict between these Special Conditions of Contract on one hand and Standard Specifications and General Conditions of Contract of Western Railway on the other hand, the former (SCC) shall prevail.

(iii) Any deviations from these Special Conditions of Contract, Technical Requirement & Specifications, Schedule of Material & Supplies and/or any condition of tender document, if any, stated by the tenderer in his tender or subsequently introduced by the Railway shall be a part of the Contract only to such extent as have been explicitly accepted by the Railway and incorporated in the contract.

(iv) These specifications/documents describe the material to be supplied, work to be performed and the method of construction for the complete installation in strict accordance with the drawings and specifications mentioned herein and such instructions as may from time to time be given by the Railway. The contractor shall quote for work giving all information after close scrutiny of the plans and site survey.

(v) Unless specifically provided otherwise in the tender, any and all exception, which the tenderer may have to any of the clauses of the special conditions of contract or, technical requirement & specification as included in the tender shall be clearly stated. Such exceptions shall be listed in **"Statement of Deviation" (Format – 4)**. If the tenderer has no exceptions, the annexure shall be submitted with a "Nil" statement. If the tenderer does not include the annexure with the tender it shall be conclusive evidence that the special conditions of contract and technical requirement & specification and all conditions of contract are entirely acceptable to the Tenderer.

Any deviations from these special conditions of contract, technical requirement & specifications if any, stated by the tenderer in his tender or subsequently introduced by the Railway shall be a part of the Contract only to such extent as have been explicitly accepted by the Railway and incorporated in the contract.

(vi) "The tenderer for carrying out any construction work in_____ (name of the State) must get themselves registered from the Registering Officer under Section – 7 of the Building and Other Construction Workers Act, 1996 and rules made thereto by the

_____(Name of the State) Govt. and submit certificate of Registration issued from the Registering Officer of the _____(Name of the State) Govt. (Labour Deptt.). 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 material shall be outside the purview of cess, when supplied under a separate schedule item."

4.2	**NAME OF WORK:** "Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under Dy. CSTE Construction, Vadodara, Gujarat (Western Railway)
4.3	**SCOPE OF WORK:**

Sr. NO.	Items	
I	**GENERAL**	
1.	"Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under .	
2.	The work envisages providing BG line between the Dabhoi-Samlaya section and one new station Lotan.	

Sr. No.	Name of Station	PI/RRI/EI
1.	Dabhoi	Alteration in Existing Electronic Interlocking (Distributed EI with OC)
2.	Waghodia	Provision of new Electronic Interlocking
3.	Jarod	Provision of new Electronic Interlocking
4.	Samlya	Alteration in Existing Electronic Interlocking (Distributed EI with one OC)
5.	Lotna	Provision of new Electronic Interlocking

3	It includes shifting of existing signalling gears coming in the infringement of the proposed line, indoor alterations to existing EI and also provision of new Electronic interlocking and outdoor work for all these installations. The list of stations requiring signalling works involving alterations and new EI provision is as follows	

Detailed Scope of work .

SCOPE OF WORK:- STATION WISE PROPOSED WORK ARE AS UNDER : INDOOR

SN	Name of Station	Modification in Relay interlocking/ New Electronic Interlocking	Power Supply IPS based
1	Dabhoi	Alteration in EI according to upcoming lines	Selected supply is provided by Electrical dept. for S&T. IPS is provided at center and OC
2	Waghodia	New EI to be provide	IPS to be provide at Centre building
3	Jarod	New EI to be provide	IPS to be provide at Centre building
4	Samlaya	Alteration in EI according to upcoming lines	Selected supply available. If load increase then IPS to be provide.
5	Lotna	New EI to be provide	IPS to be provide at Centre building

SCOPE OF WORK:- STATION WISE PROPOSED WORK ARE AS UNDER : OUTDOOR		
SR. NO.	NAME OF THE STATION	OUTDOOR WORK DESCRIPTION
1	Dabhoi	1. S&T Utility shifting work in connection with infringement removal for path of upcoming. 2. Cable laying and trenching
2	Waghodia	
3	Jarod	
4	Samlaya	3. S&T Utility shifting work in connection with infringement removal for path of upcoming. Cable laying and trenching
5	Lotna	

1) The tenderer(s) shall inspect the proposed site of work and acquaint himself/themselves with the site conditions, distances of gears, compatibility / interfacing, voltages / currents requirements of various existing gears and of equipment to be installed with their system and any other specific requirements etc. The tenderer shall undertake study / survey of signaling systems / practices used in Western Railway /Division and make his own arrangement of the interlocking work involved in integration of the indoor equipment with existing indoor & outdoor equipment to be installed so as to make the entire system successful / functional.

2) During testing and commissioning of the installation, the contractor's engineers will be available at site for testing and commissioning and also for doing any wiring alterations which will be required during testing and commissioning.

3) Supply of technical documentation & drawings as per Para **4.6** of SCC.

4) Scope of work is detailed in "Schedule of Materials and Works" and as per "Technical requirement & specification". Work is to be carried out in strict compliance to the tender conditions and specifications. Work will be carried out in accordance with the technical Specification & Requirements of the Tender Document. Wherever Specifications are not indicated, work will be carried out as per standard practice on this Railway and instructions of Engineer in charge.

THE CONTRACTOR SHALL:

1. Supply of material as per schedule of materials and works.
2. Transportation of all types of materials required for commissioning of works from the Railway's stores at contractors own cost and releases the scrap material at respective section in-charge SSE offices.
3. Work will be carried out in accordance with the technical requirements of the Tender. Wherever Specifications are not indicated, work will be carried out as per standard practice on Western Railway and instructions of Engineer in charge.
4. Indoor wiring & other work as per technical requirement mentioned in the tender documents and approved scheme by Railway authority.

	5. Proving Electronic interlocking at Waghodia, Jarod and Lotna & alteration in Dabhoi and Samlaya stations as per specifications mentioned in tender documents. 6. Excavation of Trenches in soft soil, asphalted areas and platform cutting etc ,Digging of trench from rail flange/road level and back filling after placing of DWC/RCC/GI pipe with protection at work site if passenger movement in nearby area. 7. Laying of half round after laying the cables in the trenches. 8. Placing of DWC/GI/RCC pipe in trench for track / road crossing protruding equally outside the rail/road edge on either side. 9. Laying of cables with suitable cable protection, Meggaring of cables, Termination of cables and painting details. 10. Excavation and Casting of Apparatus Case foundation with contractor's own materials including cement and anchor bolts of standard size. Installation of Apparatus Cases with miniature 'E' type lock on CC foundation. This includes filling of location foundations with river bed sand and plastering on top of the sand. Fabrication and fixing of phenolic laminated sheet by providing all fixtures as per Railway Drawing including fixing of PVC coated string rods at the back side for cable support with contractor's own materials. 11. Fixing of ARA Terminals /Screw less connectors and fuse blocks on phenolic laminated sheets/Sheets supplied against the schedule and fixing by stainless steel/brass nuts & bolts. 12. Lettering / Numbering Termination particulars, equipments names etc., legibly and neatly inside location boxes. This includes supply of paints of Asian Paints/ Nerolac / Dulux / Berger make. 13. Providing brick masonry in ratio 1:6 cement and mortar including plastering with 1:4 cement and sand mixture both sides, 20 mm thick each with contractor's owned class II bricks, including excavation, curing, grouting, bolting etc. wherever required. Bricks sand and cement to be supplied by the contractor. 14. Cement concrete work for miscellaneous items in the ratio 1 : 3 : 6 . Item includes excavation, ramming, curing and plastering with cement & sand mixture (aggregate not exceeding 3.8 cm.) (Aggregate cement & sand to be supplied by the contractor). 15. Installation of Maintenance free Earth Electrode. Providing Earth connections and Earthing of cables as per the manual and RDSO guidelines. Exothermic welding is to be arranged for the same for earth connection 16. Removing Muck, ballast and debris from Railway premises released to cutting of platforms & excavation of trenches by trucks to the nearest municipal site. 17. The contractor shall submit a tentative scheme as to how the tendered work will be executed by him in the time frame. 18. All work shall be compatible with the existing indoor & outdoor signaling system 19. Any other activity defined by Officer In Charge of the work mutually agreed by the contractor.
4.4	**WORKS REQUIRED TO BE DONE BY THE CONTRACTOR:** The brief scope of works to be undertaken by contractor under this tender has been given in **Para 4.3 of SCC**. In addition to this contractor has to also carry out following works: **(i)** Supply of material as per schedule of works & other miscellaneous items required for completion of work. **(ii)** Supply of technical documentation & drawing as per Para 4.6 of SCC. (iii) Execution of work as mentioned in the schedule of work. **(iv)** Warranty period will be one year from the date of commissioning. Any defect noticed during

	this period will have to be rectified by the contractor promptly at his own cost. **(v)** The contractor shall do no work that may interfere with train traffic until adequate protection has been arranged as per the instruction of the Engineer in charge. **(vi)** Prompt repair/replacement /design change in various system/sub system/modules/cards during the warranty period. **(vii)** To ensure long term availability of system/sub system/ modules/cards of the equipment supplied as per stipulation in tender document and as per life cycle span of the system. **(viii)** Order/procurement of Materials to be placed only after getting the approval from Railway Competent authority for deciding the make & model of the materials/machines/axle counters, etc to solve the problems of compatibility with existing railway's equipments/systems. **(ix)** All the items to be supplied and / or installed shall be conforming to the relevant RDSO Specification with latest amendment or unless otherwise stated in this chapter. Generally RDSO specification material should be procured from the RDSO approved firm only. **(x)** Technical Specification(s) for the relevant supply item(s) are as per the tender schedule/tender document. The Railway system is required to work for 365 X 7 X 24 Hrs & hence all hardware, accessories & software should withstand such a continuous working. (xi) During the execution of work, in case of any dispute, the decision of the Officer in charge shall be final **NOTE**: Any other work not indicated in "Works to be done by Railways" heading as per statement given above shall be carried out by the Tenderer himself for which no extra payment will be made, so as to achieve the final objective of commissioning of the system as per technical specifications and as per tender requirement.
4.5	**WORK TO BE DONE BY THE RAILWAYS:** Following works shall be done by Railways (i) Provision of suitable space for installation of equipments. (ii) Statutory Testing of installation/equipments (**as per Signal and Telecom manual**) shall be done under supervision of Railway officials or by Railway officials themselves, once the contractor offers installation is ready commissioning in all respects. The electric supply for this purpose will be provided by the Railways. However, for any installation activities like drilling, soldering etc., contractor if so desires, to use tools / machines, electric power supply (230V) can be arranged by Railways as per extant procedure. (iii) Supply of cables, IPS, DAC, AFTCs& other materials which are expressively mentioned in tender documents to be supplied by Railways for execution of works will be supplied by Railways. (iv) Provision of communication channel on existing communication network. (v) Testing of installation/equipment shall be done under supervision of railway officials or any representative deputed by engineer in charge. However, for any installation activities like drilling, soldering etc., contractor if so desires, to use tools / machines, electric power supply (230V) can be arranged by Railways as per extant procedure/rules.
4.6	**TECHNICAL DOCUMENTS TO BE PROVIDED:** **A**. Six sets of documents for each station containing system details, site installation details / drawings, maintenance manual, operation procedure etc. in bound book and in soft copy as per practice of railways .In this case , cable route plan to be prepared if given in schedule. **Note**: The original tracings are to be prepared by the contractor on reproduction film and required prints are to be taken. Diagrams including tracings will be handed over to Railways. One set of drawings in soft copy on Auto Cad format may be given in a CD. All drawings will be approved by Railway, wiring diagram, and other standard diagrams as per WR practice as prevalent in the Railway where work is to be executed and other connected indoor/outdoor

work details shall be prepared by contractor and submitted to Railways for approval. After execution of the work, Six (6) sets of all such plans/Drawings shall be prepared by the Contractor and given duly bound along with CDs with required supporting software as per Para above. The diagrams in soft copy should be in required format as per Western Railway drawing office practice.

All the drawings shall be supplied in a good quality folder for each station. During installation, a folder containing all the drawings, testing procedures, commissioning procedures shall be kept at the stations.

Following Installation Documents to be Submitted Before and During Installation:

1. SIP
2. TOC
3. Logic Circuit
4. Interface Circuit

Following Outdoor Installation Documents to be Submitted Before and During Installation:

1. Cable Route Plan
2. Cable Chart
3. Cable Core Chart
4. Junction Box Details.
5. Location Box details.
6. **CT Rack Details**
7. **DP Plan Etc.**

Following test reports made available after testing of the Signalling Installation before commissioning of the system :

For Outdoor :

1. Cable Test Reports of Main Cable/ tail cable.
2. Earth Test Record.Etc**.**

Other Documents:

1. SWR & SWRD Etc**.**

4.7 **COMPLETION PERIOD:**

The entire work shall be completed within completion period as mentioned in NIT header/Notice on the progressive basis from the date of issue of Letter of Acceptance

The tenderer shall submit along with his tender document a tentative scheme as to how the tendered work will be executed by him in the time frame.

Time for the execution of the work is the essence of the contract. With a view to complete the work within the completion **period** of entire sections/stations, the contractor is required to observe the timely supply of indoor & outdoor materials and submit a detailed schedule (along with PERT/Bar chart etc) within a month from date of issue of LoA. This has to be approved by **Dy.CSTE/C/BRC**-in charge of work. The progress shall be monitored periodically by **Engineer In-charge and Consignee**. The materials shall be supplied in a phased manner as work progresses. The contractor is required to ensure that work progresses as per submitted time schedule at entire sections/stations at a time.

The contractor should depute skilled technicians, supervisors and engineers as per provisions of this tender document.

4.8	**CONSIGNEE:** (a) The consignee for the signalling work will be **Senior Section Engineer (Signal)/ Const. / BRCY** Or as per decided by competent authority.
4.9	**TRAINING:** The contractor shall arrange training programme for Railway Engineer/Supervisor in different aspects of the various systems, equipments, its functioning, field installation, testing, commissioning, maintenance and repairs etc. at Manufacturer's/ RDSO approved manufacturer's premises and at Field/Divisional/ Zonal Head Quarter, where required. (a) The training should be comprehensive for transfer of complete know- how, so as to impart full knowledge and confidence to independently and successfully execute the installation, testing, commissioning, maintenance and repairs of the complete system and equipments. (b) Training should be comprehensive in all aspects of software and hardware, its architecture, equipment design, functioning, field installation, testing, commissioning, operation maintenance and repair covering both hardware and software. (c) The venue of the training shall be finalized in consultation with the Engineer-In charge. (d) Expenses on travel and other incidental expenditure on training of Railway personnel, deputed for training will be borne by the Railways. (e) To impart training, the contractor shall make arrangements for appropriate venues of training (in case it is not Railway premises). He has to also arrange Projector, Slides, Equipments /instruments, training materials /documents at his own cost. (f) The detailed training programme indicating the topics to be covered, practical / demonstrations to be conducted during training shall be approved by the Engineer-In charge prior to commencement of training. (g) The Engineer In-charge will take adequate measures to ensure that Railway Officials are trained properly. To judge the same, he may conduct necessary training feedback from trainees for adequacy of training. (h) In addition, contractors shall impart onsite training to Railway staff associated with work for installation and maintenance of the system. (i) A set of documents related to training in adequate quantity shall be provided.
4.10	**SPARES :** The Tenderer shall include in his tender the details of essential spares, their quantity as per schedule of requirements. Details are to be given to confirm the quantity of spares for each station as per requirement of this clause. The tenderer shall give a detailed list of processor, cards/modules, interface relay, plug in units, connectors, fuses etc of each type.
4.11	**LONG TERM AVAILABILITY OF SPARES AND SYSTEM SUPPORT:** (a) The Contractor / manufacturer shall ensure the availability of all components/ sub-systems, if required by the Railways from time-to-time on mutually agreed terms and conditions after warranty is over. (b) The manufacturer shall guarantee that spare parts for the system shall be available for a minimum of ten years after expiry of the warranty period and thereafter at least two years notice shall be given to the Railways before any equipment or components are discontinued or phased out from the manufacturing plans. This will enable the Railways to assess the lifetime requirement of spares needed and order in sufficient quantity prior to stoppage of the manufacture. (c) The successful tenderer shall further guarantee that if OEM goes out of production, he shall

	supply the specifications of materials at no cost to the Railways, if and when required in connection with the equipment to enable the Railways to fabricate or procure from other sources. (d) The contractor shall undertake to supply on payment of all maintenance spares and tools required for the equipment during lifetime. He shall also undertake to supply additional equipment required for replacement or expansion of the network; that may become necessary due to additional traffic requirements. The price variation formula adopted in pricing such maintenance spares and additional supply that may be ordered in future shall be provided by mutual discussion.
4.12	**ROYALTIES AND PATENTS RIGHTS:** i. The Contractor is forbidden to use any patents or registered drawings, processes or patterns in fulfilling his contract without the previous consent in writing of the owner of such patentsdrawings, patterns or trademarks, except where these are specified by the purchaser himself. Royalties where payable for the use of such patented processes, registered drawings or patterns shall be borne exclusively by the Contractor. The Contractor shall advise the purchaser of any proprietary rights that may exist on such processes, drawings or patterns which he may use of his own accord. ii. The contractor shall defray the cost of all Royalties fees and other payment in respect of patents, patent rights and licenses which may be payable to patentee, licenser or other person or corporation and shall obtain all necessary licenses. In case of any breach (whether willfully or inadvertently) by the contractor on this provision, the contractor shall indemnify the Railway and their officers, servant and representative against all claims, proceeding, damages, cost charges, expenses , loss and liability which they or any of them may sustain, incur or be put to, by reason or in consequence, directly or indirectly of any such breach and against payment of any royalties, damages or other moneys, which the Railway may have to make, to any person or holder entitled to patent rights in respect of the users of any machine, instruments, process, article, matter or thing, constructed, manufacturing supplied or delivered by the contractor or to his order under this contract. The tenderer is deemed to have accepted this clause, in regard to indemnifying the railway as stated above, when his tender has been submitted to the Railway. iii. In the case of patents taken out by the Contractor of the drawings or patterns registered by him, or of those patents, drawings or patterns for which he holds a license, the signing of the contract automatically gives the Purchaser the right to repair by himself the purchased articles covered by the patent or any person or body chosen by him and to obtain from any sources he desires the component parts required by him for carrying out the repair work. In the event of infringement of any patent rights due to above action of the purchaser, he shall be entitled to claim damages from the contractor on the grounds of any loss of any nature which he may suffer.
4.13	**FOREIGN EXCHANGE AND IMPORT LICENSE:** Any foreign exchange or Import License, if required, for supply of goods and service under the contract will have to be arranged by the contractor at his cost. Railways shall make all payment due, under the contract, in Indian Rupees only.
4.14	**CHANGE IN ADDRESS** Any change in the address of the contractor shall be forthwith intimated in writing to the Railway. The Railway will not be responsible for any loss/ inconvenience suffered by the Contractor on account of his failure to comply with this.
4.15	**1) SECURITY DEPOSIT:** The Security Deposit shall be 5% of the contract value. The Bid Security submitted by the Contractor with his tender will be retained/encashed by the Railways as part of security for the due and faithful fulfillment of the contract by the Contractor. Provided further that, if Contractor submits the Cash or Term Deposit Receipt(s) issued from a Scheduled commercial bank

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

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

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

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

2i) REFUND OF SECURITY DEPOSIT: Security Deposit mentioned in sub clause (1) above shall be returned to the Contractor along with or after, the following::

(a) Final Payment of the Contract as per clause 51.(1) of GCC **and**

(b) Execution/signature of Final Supplementary Agreement or Certification by Engineer that Railway has No Claim on Contractor **and**

(c) Maintenance Certificate issued, on expiry of the maintenance period as per clause 50.(1) of GCC, in case applicable.

2ii) FORFEITURE OF SECURITY DEPOSIT: Whenever the contract is rescinded as a whole under clause 62 (1) of GCC, the Security Deposit already with railways under the contract shall be forfeited. However, in case the contract is rescinded in part or parts under clause 62 (1) of GCC, the Security Deposit shall not be forfeited.

3) No interest shall be payable upon the Bid security and Security Deposit or amounts payable to the Contractor under the Contract. but Government Securities deposited in terms of Sub-Clause 16.4 (b) of this clause will be payable with interest accrued thereon.

4.16 **PERFORMANCE GUARANTEE:**

The procedure for obtaining Performance Guarantee is outlined below:

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

In all other cases, if the Contractor fails to submit the requisite PG even after 60 days from

the date of issue of LOA, the contract is liable to be terminated. In case the contract is terminated, the railway shall be entitled to forfeit Bid security and other dues payable against that contract. In case a tenderer has not submitted Bid security on the strength of their registration as a Startup recognized by Department of Industrial Policy and Promotion (DIPP) under Ministry of Commerce and Industry, DIPP shall be informed to this effect.

The failed Contractor shall be debarred from participating in re-tender for that work.

(b) The successful bidder shall submit the Performance Guarantee (PG) in any of the following forms, amounting to 5% of the original contract value and **Additional Performance Gaurantee** as per 4.16 b (b1) in any of the following forms:-
i) A deposit of Cash;
ii) Irrevocable Bank Guarantee;
(iii) Insurance Surety Bond as per Annexure-XVII.
Note
In case of extension of Date of Comletion selected bidder needs to submit extended insurance Surety Bond/Fresh Insurance surety Bond/fresh Performance Security, in any form as given above, before expiry of existing Insurance Surety Bond.

(iv) Government Securities including State Loan Bonds at 5% below the market value;
(v) Pay Orders and Demand Drafts tendered by any Scheduled Commercial Bank of India;
(vi) Guarantee Bonds executed or Deposits Receipts tendered by any Scheduled Commercial Bank of India;
(vii) Deposit in the Post Office Saving Bank;
(viii) Deposit in the National Savings Certificates;
(ix) Twelve years National Defence Certificates;
(x) Ten years Defence Deposits;
(xi) National Defence Bonds and
(xii) Unit Trust Certificates at 5% below market value or at the face value whichever is less. Also, FDR in favour of PFA/FA&CAO(free from any encumbrance) may be accepted.

(b1) If a tender is accePted on the quoted rates of bidder which is below the advertise tender value, an additional performance security shall be submitted by the bidder as below

Bid quoted in % of advertise cost	Additional Performance Gaurantee(%)
Below 0-5%	Nil
Below 5%	5%

(c) The Performance Guarantee shall be submitted by the successful bidder after the Letter of Acceptance (LOA) has been issued, but before signing of the contract agreement. This P.G. shall be initially valid upto the stipulated date of completion plus 60 days beyond that. In case, the time for completion of work gets extended, the Contractor shall get the validity of P.G. extended to cover such extended time for completion of work plus 60 days.

(d) The value of PG to be submitted by the Contractor is based on original contract value and shall not change due to subsequent variation(s) in the original contact value.

(e) The Performance Guarantee (PG) shall be released after physical completion of the work based on 'Completion Certificate' issued by the competent authority stating that the Contractor has completed the work in all respects satisfactorily.

(f) Whenever the contract is rescinded, the Performance Guarantee already submitted for the contract shall be encashed

(g) The Engineer shall not make a claim under the Performance Guarantee except for amounts to which the President of India is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

	(i) Failure by the Contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer may claim the full amount of the Performance Guarantee. (ii) Failure by the Contractor to pay the President of India any amount due, either as agreed by the Contractor or determined under any of the Clauses/Conditions of the Agreement, within 30 days of the service of notice to this effect by Engineer. (iii) The Contract being determined or rescinded under clause 62 of the GCC **Return the value of Performance bank Guarantee:** **As per railway Boards letter no 2020/CE-I/C7/3E/GCC/Policy Dtd:- 15.05.2020, Railway may return the value of Performance guarantee to the Contractor / Supplier as is proportional to the supplied made / Contract work completed to the total contract value under the circumstances mentioned in MOF's OM no. F18/4/2020-PPD dtd:- 13.05.2020**
4.17	**FORCE MAJEURE CLAUSE:** **Force Majeure Clause:** If at any time, during the continuance of this contract, the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, serious loss or damage by fire, explosions, epidemics/pandemics, strikes, lockouts or acts of God (hereinafter, referred to events) provided, notice of the happening of any such event is given by either party to the other within 30 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance, and works under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the Engineer as to whether the works have been so resumed or not shall be final and conclusive, PROVIDED FURTHER that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 120 days, either party may at its option terminate the contract by giving notice to the other party. A) **EXTENSION OF TIME IN CONTRACTS:** Subject to any requirement in the contract as to completion of any portion or portions of the works before completion of the whole, the Contractor shall fully and finally complete the whole of the works comprised in the contract (with such modifications as may be directed under conditions of this contract) by the date entered in the contract or extended date in terms of the following clauses: **EXTENSION DUE TO MODIFICATION:** If any modifications have been ordered which in the opinion of the Engineer have materially increased the magnitude of the work, then such extension of the contracted date of completion may be granted as shall appear to the Engineer to be reasonable in the circumstances, provided moreover that the Contractor shall be responsible for requesting such extension of the date as may be considered necessary as soon as the cause thereof shall arise and in any case not less than one month before the expiry of the date fixed for completion of the works. **EXTENSION FOR DELAY NOT DUE TO RAILWAY OR CONTRACTOR:** If in the opinion of the Engineer, the progress of work has any time been delayed by any act or neglect of Railway's employees or by other Contractor employed by the Railway under Sub-Clause (4) of Clause 20 of these Conditions or in executing the work not forming part of the contract but on which Contractor's performance necessarily depends or by reason of proceeding taken or threatened by or dispute with adjoining or to neighbouring owners or public authority arising otherwise through the Contractor's own default etc. or by the delay authorized by the Engineer pending arbitration or in consequences of the Contractor not having received in due time necessary instructions from the Railway for which he shall have specially applied in writing to the Engineer or his authorized representative then upon happening of any such event causing

delay, the Contractor shall immediately give notice thereof in writing to the Engineer within 15 days of such happening, but shall nevertheless make constantly his best endeavours to bring down or make good the delay and shall do all that may be reasonably required of him to the satisfaction of the Engineer to proceed with the works. The Contractor may also indicate the period for which the work is likely to be delayed and shall be bound to ask for necessary extension of time. The Engineer on receipt of such request from the Contractor shall consider the same and shall grant such extension of time as in his opinion is reasonable having regard to the nature and period of delay and the type and quantum of work affected thereby. No other compensation shall be payable for works carried forward to the extended period of time; the same rates, terms and conditions of contract being applicable as if such extended period of time was originally provided in the original contract itself.

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

B) ***EXTENSION OF TIME FOR DELAY DUE TO CONTRACTOR:***

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

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

S.No.	Duration of extension of time under Clause- para 6.28.2	Rate of Penalty
(i)	Up to Twenty Five percent of original period of completion including period of extension of time granted under Section 17A(i) / 3.28.1	As decided by Engineer, between 0.01% to 0.05% of contract value for each week or part of the week
(ii)	Above Twenty Five percent but upto Fifty percent of original period of completion including period of extension of time granted under Section 17A(i) /3.28.1	0.10 % of contract value for each week or part of the week
(iii)	Above Fifty percent of original period of completion including period of extension of time granted under Section 17A(i) 3.28.1	0.30 % of contract value for each week or part of the week

Provided further, that if the Railway is not satisfied that the works can be completed by the Contractor and in the event of failure on the part of the contractor to complete the work within

	further extension of time allowed as aforesaid, the Railway shall be entitled without prejudice to any other right or remedy available in that behalf, to appropriate the contractor's Security Deposit and rescind the contract under Clause 62 of GCC, whether or not actual damage is caused by such default. NOTE:In a contract, where extension(s) of time have been allowed once under clause 17B, further request(s) for extension of time under clause 17A can also be considered under exceptional circumstances. Such extension(s) of time under clause 17A shall be without any Liquidated damages, but the Liquidated damages already recovered during extension(s) of time granted previously under clause 17B shall not be waived. However, Price variation during such extension(s) shall be dealt as applicable for extension(s) of time under clause 17B. C) **BONUS FOR EARLY COMPLETION OF WORK:** In open tenders having advertised value more than Rs 50 crore and original period of completion 12 months or more, when there is no reduction in original scope of work by more than 10%, and no extension granted on either railway or Contractor's account, Contractor shall be entitled for a bonus of 1% for each 30 days early completion of work. The period of less than 30 days shall be ignored while working out the bonus. The maximum bonus shall be limited to 5% of original contract value. The completion date shall be reckoned as the date of issuance of completion certificate by engineer. D) **PLEA OF CUSTOM The plea of custom prevailing will not on any account be permitted as an excuse for any infringement of any of the conditions of the contract and/ or special conditions**
4.18	**PARTNERSHIP DEEDS, POWER OF ATTORNEY:** a) Railway will not be bound by Power of Attorney granted by the tenderer or by the changes in the composition of the firm made subsequent to the execution of the contract. It may, however, recognize such powers of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contractor. These charges have been fixed at Rs. 100/- payable by the tenderer at the time of submitting the power of attorney for scrutiny and legal advice. b) If the power of attorney is not accepted, otherwise than for legal defect, the charges will be refunded. If the Power of attorney is returned on account of legal defect for correction, separate charges of Rs.50/-(Rupees Fifty only) for scrutiny of corrected power of attorney will be payable by the tenderer while resubmitting power of attorney. c) The same charges will be recoverable for scrutiny of all such documents. d) No power of attorney in favour of any individual person will be acceptable if it is irrevocable except when it is in favour of the bank. e) In cases where the power of attorney/partnership deed has not been executed in Hindi or English, the true and authenticated copies of the translation of the same by advocate, authorized translators of Courts and Licensed petition writers should be supplied by the contractor (s) while tendering for the work.
4.19	**EXECUTION OF WORKS:** **It shall be as per GCC clause. Please refer para 19(1) to 21 of GCC.** a) All the work shall be executed in strict conformity to the provisions of the contract document; and with such explanatory detailed drawings, specifications and instructions as may be approved from time to time by the Railways, based on detailed design and engineering carried out by the contractor in line with requirements as per contract document. The contractor shall be responsible for ensuring that the work throughout is executed in the most substantial, proper and workmanlike manner with the quality of material and workmanship in strict accordance with the specifications and as per sound industrial practices and to the entire satisfaction of the Railways.

	b) All the materials and workmanship used in this work shall be of extremely good quality and high class in every respect and is expected to give trouble free service. c) The personnel deputed for soldering should have adequate soldering skills and competency certificates issued by ITIs / reputed institutions. d) The Contractor is expected to commence the work Within 15 days of the date of issue of the "Letter of Acceptance", e) Railway reserves the right to modify the activity schedule at any stage during execution if the situation warrants.
4.20	**PROGRESS REPORTING:** The Contractor shall submit the periodic progress reports at regular intervals regarding the state and progress of work to the Railways. The details and Performa of the report will mutually be agreed after award of the contract. Such reports shall be for daily manpower, equipment and plant development, weekly work progress and monthly progress review reports. All actions as directed by Railways, pursuant to such reports shall be promptly attended to by Contractor.
4.21	**INSPECTION OF MATERIAL:** (i) The Inspecting authority of the equipment / materials to be supplied against this work will be RDSO /RITES. If due to any reason, inspections of contracted items are not undertaken by RDSO / RITES, then inspection will be carried out by Railway representatives to be specifically nominated by respective Engineer-in-Charges. No material shall be dispatched from the manufacturer's premises/assembling unit prior to inspection/ approval by the Railways. (ii) The Railway may also inspect the material again at the Consignee depot. The Railway shall also have the right for stage inspection of material to satisfy itself that the materials are in accordance with the specification and approved drawings/design. (iii) The Contractor shall give sufficient notice of time to RDSO / RITES / Railway's representative when the material is ready for testing / inspection. All facilities as may be necessary shall be provided for carrying out the tests at the place of manufacture. (iv) Whenever materials are inspected by Authorized Representatives of the Railways / Consignee, the Contractor will be required to furnish manufacturers/supplier's Guarantee Certificate (along with test report) and performance guarantee for such items. The contractor has to also furnish proof of purchase / dispatch from the manufacturer. (v) The Railway shall have full power to reject any material that it may consider to be defective or inferior in quality, workmanship, or otherwise not in accordance with the Specification and the Railway's decision shall be final, even though they might have been inspected by RDSO/RITES. The Tenderer shall remove forthwith any such material rejected and replace them promptly at his own cost. (vi) Standard RDSO Drawing referred to in this schedule & technical specification may be collected on payment from RDSO, Lucknow by the tenderer if required. **INSPECTION CHARGES:** The inspection charges for the inspection service rendered to the S&T contractors executing signaling works shall be borne by the Railway.
4.22	**MATERIALS AND WORKMANSHIP:** (i) The Electrical/Electronic Telecom materials, to be supplied by the Tenderer as per RDSO's Specification / Drawing will have to be procured from RDSO approved firms only. (ii) Materials/ Equipments for which RDSO approved sources exist should be taken from RDSO approved Part-I sources only. The Equipment / Materials from Part-II RDSO approved sources should be taken only if there are no Part-I sources approved for the same. Any relaxation with respect to procurement / inspection shall be with the prior approval of the competent authority. The Railways' decision shall be final and binding on the contractor. (iii) Material should not be procured from any sources banned for business dealing with Railways under any circumstances.

	(iv) All the IRS / RDSO approved items shall be procured from RDSO approved firms to IRS/RDSO specifications and shall be inspected by RDSO. Safety critical items shall be inspected by RDSO only irrespective of value as per letter number. - In case the total value of a particular item(except in above reference letter) is less than **Rs. 5 (Five) Lakhs**, the same shall be inspected by RITES/Consignee, subject to supplies being from sources approved by RDSO. (v) Material shall be in accordance with specifications and drawings specified or approved by the Railway with latest amendments. (vi) Further items which do not have RDSO specification for which RDSO has not approved any suppliers, inspection shall be carried out by RITES/authorized Railway representatives (In this case material shall be accepted against the firm's guarantee certificate). (vii) Material for which no detailed specification/ drawing is given in tender document should be procured from reputed manufacturer / authorized agents and proof of purchase/dispatch shall be furnished to consignee. (viii) Material should be in properly packed condition and the consignee reserves the right to reject the material even though it was passed by RDSO. (ix) All the materials and workmanship used in this work shall be of extremely good quality and high class in every respect and is expected to give trouble free service. (x) The personnel deputed for soldering should have adequate soldering skills and competency certificates issued by ITIs / reputed institutions. (xi) For inspection of other items including telecom items, latest policy and guidelines shall be followed. (xii) Railway Board's Letter No. 2006/Tele/TC/1 dated - 17/04/2006 and dated – 09/01/2008 stipulates following guidelines for inspection of Telecommunication items:- i. The materials, which are procured from RDSO approved firms with RDSO specification and if the cost of the material is over Rs. **5 lakhs**, the inspection shall be carried out by RDSO. ii. All the materials with TEC/BSNL specification and procured from TEC/BSNL approved firms (approved for bulk supply and not as interface approval) shall also be inspected by RDSO provided the cost of the material is more than **Rs 5 lakhs**. iii. All the materials with TEC/BSNL specification and procured from sources not approved by TEC/BSNL (including firms having only interface approval) shall also be inspected by RDSO provided the cost of the material is over **Rs. 5 lakhs**. However, in such cases RDSO shall carry out prototype approval before taking up regular inspection. iv. Sophisticated telecom items as an exception can also be taken up for inspection by RDSO as per Railway's specification. The approved acceptance test format shall have to be supplied by Railways duly approved by the concerned CSTE. v. RDSO shall not inspect "Test and Measuring "equipments, Electronic exchanges / intercom, auto telephones and spare parts of all telecom equipment. The same may be inspected by Railway's representative as nominated by zonal railways. vi Guideline for inspection of SDH equipments will be as under:- a) The acceptance testing of such equipments may be done by RDSO for which tender /contract specific approval has been accorded by TEC /BSNL till the generic approval of TEC/BSNL or prototype approval by RDSO is given. b) If TEC/BSNL continues to issue only tender/contract specific approvals and no generic approvals are given to any firm in future, than RDSO may undertake prototype approval as per TEC specification and en list the firms in the RDSO approved list to avoid problem of supply SDH equipments to Railways.
4.23	**STORES - RECEIPT & ACCOUNTAL:** (i) Exchange of proper requisition and receipt shall be done on a suitable Proforma between the Contractor and the Railway's authorized representative. (ii) The Contractor shall issue a receipt along with the demand slip for material he requires for the work and obtain receipt when any material is returned to stores. These transactions shall be done with the consignee.

	(iii) All stores drawn by the contractor shall be accounted for either as installed as per site measurements recorded or as per surplus stores returned to the respective Consignee (stores).
4.24	**LOADING / UNLOADING & TRANSPORTATION OF MATERIAL:** The material shall be delivered by the Contractor at the Depot of Consignee. Material supplied by Railways for execution of the work and the material delivered by the Contractor will be transported from the Stores of the nominated Consignee to site by the Contractor with his own labour and transport. This includes loading and unloading of materials at consignee depot and at site by contractor at his own cost. Alternatively, if the site of work is ready and work is in progress, physically, the materials can be brought to the site directly and supplied with prior approval of Engineer in-charge ***after appropriate accountal by consignee***. Materials required to carry out this work if supplied by the Railways will be issued at the nominated Depots. The contractor will have to load, transport these materials to the site of work and unload at his own cost. Empty cable drums and balance materials after completion of work, if any, should be returned back at the nominated Depot of the nominated Senior Section Engineer by contractor at his own cost. The Contractor will have to furnish an Indemnity Bond for the Security of the Railway material issued to him. Indemnity Bond will be released after commissioning of work and when all balance material is returned by the contractor. The security of the material brought to the site of work will remain with the Contractor, till commissioning of the complete structure and same in handed over to Railway's nominated representative of Engineer-in-charge. The cost of transit insurance if required will be borne by the contractor. **INDEMNITY BOND:** The Contractor will have to furnish an Indemnity Bond for all the value of materials (as per attached Format-2) for the Security of the Railway material issued to him. Indemnity Bond will be released after commissioning of work and when all balance material is returned by contractor; i.e. after signing the final material statement for closing the contract. The security of the material brought to the site of work will remain with the Contractor, till commissioning of the complete structure and same in handed over to Railway's nominated representative of Engineer-in-charge. **INTRODUCTION OF NEW SOR ITEMS IN CONTRACT FOR WORKS :** 1.) The items of work proposed for inclusion should be relevant to the main scope of work. 2.) Revision to contract value shall be proposed by way of variation statement. 3.) The variation shall be governed as per notes Para 4.46 of this chapter-4. **INTRODUCTION OF NEW NON-SCHEDULE ITEMS IN CONTRACT FOR WORKS:** 1.) It should be ensured that the rates sanctioned for such non- schedule items, are comparable to the rates for similar works executed in the area. 2.) Rates should be derived from Last Accepted rates of SOR/NS items of similar conditions and where new items cannot be derived from such SOR/NS items, market rates should be taken. Rates of such NS items accepted without finance concurrence cannot be quoted as Last accepted rate (LAR) for justifying similar rates in future tenders. 3.) The variation shall be governed as per notes of Para 4.46 of this chapter-4. **Rates for Extra Item(s) of Works:** as per GCC-22 clause 39 a) Standard Schedule of Rates (SSOR) Items: Any item of work carried out by the Contractor on the instructions of the Engineer which is not included in the accepted Bill(s) of Quantities but

	figures in the Standard Schedule of Rates (SSOR), shall be executed at the rates set forth in the "Standard Schedule of Rates (SSOR)" modified by the tender percentage as accepted in the contract for that chapter of Standard Schedule of Rates (SSOR). b) For item(s) not covered in this sub clause, the rate shall be decided as agreed upon between the Engineer and the Contractor before the execution of such items of work as per sub clause (b). Other Items: For any item of work to be carried out by the Contractor but not included in the accepted Bill(s) of Quantities and also not covered under sub clause (a) above, the Contractor shall be bound to notify the Engineer at least seven days before the necessity arises for the execution of such items of works that the accepted Bill(s) of Quantities does not include rate or rates for such extra work involved. The rates payable for such items shall be decided at the meeting to be held between the Engineer and Contractor, in as short a period as possible after the need for the special item has come to the notice. In case the Contractor fails to attend the meeting after being notified to do so or in the event of no settlement being arrived at, the Railway shall be entitled to execute the extra works by other means and the Contractor shall have no claim for loss or damage that may result from such procedure. The assessment of rates for extra item(s) shall be arrived at based on the prevailing market rates of labour, machinery & materials and by taking guidance from the following documents in order of priority: i. Analysis of Rates for "Unified Standard Schedule of Rates of Indian Railways (USSOR)" ii. Analysis of Rates for "Delhi Schedule of Rates issued by CPWD (DSR)" iii. Market Analysis
4.25	**SECURITY OF MATERIAL:** Once the material is handed over to the contractor, the contractor shall be responsible for the security of material irrespective of the fact that the material is kept in Railway premises. The contractor shall make adequate arrangements at site as deemed necessary for guarding the same from the thefts or damage of any sort. In the event of any loss the contractor shall be responsible to that effect and shall execute an indemnity bond for the materials, which has been supplied by the Railway and will remain in his custody.The cost of stores lost / damaged shall be realized by the Railway out of any payments due to the contractor in this contract or from any other contract executed by Govt. of India. The material issued to the contractor if found defective / unserviceable after transporting at site, the same shall be transported & handed over to the Consignee Depot by the contractor without any extra cost.
4.26	**RETURN OF SURPLUS STORES:** The Contractor with his own staff shall return the stores found to be surplus to Consignee. The contractor shall account for all material that is issued to him. A register shall be maintained at site, which shall be signed by the Contractor as a token of receipt of material. All the issued material shall either be used in the installation or returned to Consignee.
4.27	**RETURN OF RELEASED STORES:** Released material shall be handed over to Consignee in systematic manner. Proper care should be taken while releasing & transporting the stores. This clause is specifically applicable only for outdoor works and for indoor only those items are covered which are released before commissioning of indoor work.
4.28	**PACKING AND FORWARDING:** (i) The contractor shall pack at his own cost the stores sufficiently and properly for transit by

	rail/road, air and/or sea as provided in the contract so as to ensure their being free from loss or damage on arrival at their destination. (ii) All containers (including packing cases, boxes, tins drums and wrappings) in which the stores are supplied by the contractor shall be considered as non-returnable and their cost as deemed to have been included in the contractor price. (iii) Each packing delivered under the contract shall be marked by the contractor at his own expenses. Such marking shall be distinct (all previous irrelevant marking being carefully obliterated and shall clearly indicate the description and quantity of stores, the name and address of the Contractor with a distinctive number of marks sufficient for the purpose of identification. All marking shall be carried out with such material as may be found satisfactory by the inspecting officer as regard quickness of drying, fastness and indelibility. Materials and Equipment meant for each station shall be separately packed in separate boxes and marked with name of station, consignee and railway.
4.29	**FREIGHT AND INSURANCE:** The freight and insurance cost for the material to the site of work shall be borne by the contractor.
4.30	**CONSIGNEE'S RIGHT OF REJECTION:** (i) Notwithstanding any approval which the Inspecting Officer may have given in respect of the stores or any materials or the work or workmanship involved in the performance of the contract (whether with or without any test carried out by the Contractor or the Inspecting Officer) and notwithstanding delivery of the stores where so provided to the interim consignee, it shall be lawful for the consignee, on behalf of the purchaser, to reject the stores or any part, portion of consignment thereof within a reasonable time after actual delivery thereof to him at the place or destination specified in the contract if such stores or part, portion of consignment thereof is not in all respects in conformity with the terms and conditions of the contract whether on account of any loss, deterioration or damage before dispatch or delivery or during transit or otherwise howsoever. (ii) The Railway shall have full right to reject any material that the Railway may consider to be defective or inferior in quality of material, workmanship, and design or otherwise, not in accordance with the specifications and drawings specified by the Railway and the Railway's decision shall be final, even though they might have been inspected by RDSO/RITES. The contractor shall remove forthwith any such material rejected and replace them promptly at his own cost.
4.31	**CONSEQUENCES OF REJECTION (Rejected stores).** When any store delivery at the consignee's depots is rejected, the contractor shall remove this within 15 days from the date of rejection. Consignee will issue rejection advice to contractor for rejected store.Such rejected stores shall lie at the contractor's risk from the date of rejection. If the Contractor does not remove the stores within this period, the Railway or his nominee shall have the right to dispose of such stores, as thought fit, at the contractor's risk and account. The Railway shall also be entitled to recover from the contractor, handling and ground rent / demurrage and any other charges for the period during which the rejected stores are not removed after the period aforementioned.
4.32	**WORK SPECIFICATIONS, DRAWINGS: It shall be as per para 22(1) to 22(5) of GCC.** 1) Adherence to Specifications and Drawings: The site and the detailed drawings shall be made available to the contractor commensurate with the accepted programme of work submitted under clause 19(3). The whole of the works shall be executed in perfect conformity with the

	specifications and drawings of the contract. If Contractor performs any works in a manner contrary to the specifications or drawings or any of them and without such reference to the Engineer, he shall bear all the costs arising or ensuing therefrom and shall be responsible for all loss to the Railway. (2) Drawings and Specifications of the Works: The Contractor shall keep one copy of Drawings and Specifications at the site, in good order, and such contract documents as may be necessary, available to the Engineer or the Engineer's Representative. (3) Ownership of Drawings and Specifications: All Drawings and Specifications and copies thereof furnished by the Railway to the Contractor are deemed to be the property of the Railway. They shall not be used on other works and with the exception of the signed contract set, shall be returned by the Contractor to the Railway on completion of the work or termination of the Contract. (4) Compliance with Contractor's Request for Details: The Engineer shall furnish with reasonable promptness, after receipt by him of the Contractor's request, additional instructions by means of drawings or otherwise, necessary for the proper execution of the works or any part thereof. All such drawings and instructions shall be consistent with the Contract Documents and reasonably inferable therefrom. (5) Meaning and Intent of Specification and Drawings: If any ambiguity arises as to the meaning and intent of any portion of the Specifications and Drawings or as to execution or quality of any work or material, or as to the measurements of the works the decision of the Engineer thereon shall be final subject to the appeal (within 7 days of such decision being intimated to the Contractor) to the Chief Engineer who shall have the power to correct any errors, omissions, or discrepancies in aforementioned items and whose decision in the matter in dispute or doubt shall be final and conclusive. The contractor shall be solely responsible for ensuring that the requirements of safety are incorporated in all designs /drawings / works and the drawings furnished by him, although these may have been approved by the Railway. Specifications, drawings, requisites and requirements referred to in the body of this specification form an essential part thereof. The sources of the drawings & specifications referred to in this Tender, can be obtained from Engineer-in-charge. Installation shall comply with the requirements to the following manuals/ books and Western Railway practices in vogue- **Indian Railways Signal Engineering Manual (latest edition).** **Telecom Manual** **Indian Railways Engineering code** **Indian Railways P-Way manual.** **Indian Railways Works Manual Indian** **Railways AC traction Manual** **General & Subsidiary Rules with latest correction slip. Schedule** **of dimensions.** These books are available in the office of **Dy.Chief Signal & Telecom Engineer, Construction, PratapNagar Vadodara.** **Also SIPs and drawings may be seen by the contractor in the above office.**
4.33	**SUPERVISION & LABOUR:** (i) Tenderer shall keep sufficient and competent staff as per G.C.C. Clause no.26 at the work site. The work shall be carried out as per Railway's extant practice. (ii) During the execution of the works, the contractor or his representative shall not leave the site where the works are being carried out. At the site of work, the contractor shall always make

available one representative who shall be approved by the Railway Administration and who shall be invested with adequate powers by the Contractor so that orders or instruction given to the said representative by the Railway Administration in writing could be considered as duly given or conveyed to the Contractor himself. Representatives of the Railway will check up the work from time to time. Supervision and Erection of indoor work will be done by the contractors with their own labour, till completion and testing of the work.

(iii) The field Supervisor shall receive instructions from the Engineer-in-charge of the work or his representative at site and comply with the instructions. The Contractor shall be responsible for the compliance of such instructions.

(iv) If the supervisor acting on behalf of the Contractor disregards the instructions of the Railway's supervisor / representative and does not execute the work to the satisfaction of this Railway supervisor, the Railway's Engineer, in consultation with superior will have the authority to order stoppage of work and/or ask for the replacement of the supervisor, which it shall be binding on the contractor.

(v) The contractor shall make his own arrangement for accommodation, for his staff during installation, testing & commissioning. Water for drinking purposes if available at the station location will be given. However, Railways take no guarantee for this facility.

(vi) **COMPLIANCE OF LABOUR LAWS:**

- Contractor is to abide by the provisions of various labour laws in terms of clause 54, 55 of the Standard General Conditions of Contract.
- Contractor shall abide by the Rules and Regulations of the Contract Labour (Regulation & Abolition) Act 1970 with Contract Labour (Regulation & Abolition) Central Rules 1975 as amended from time –to-time up-to-date. The contractor should obtain a proper valid license for the concerned work from the concerned Assistant Labour Commissioner or Licensing Officer of the area and the photo copy of the labour license may be submitted to the Railway for records. Failure to do so will attract legal action against the tenderer.
- All the provisions of relevant labour laws shall be strictly observed by the contractor. Non-observance of any such provisions or denial of rights and benefits to which they are normally entitled shall be viewed seriously and action shall be taken against the defaulting contractor. Contractor shall not undertake or execute any work through contract labour except undertake and in accordance with the license issued under the said Act in that behalf by authorized licensing officer.
- After approval of LoA by Engineer, contractor shall fill the salient details of contract laborers engaged in the contract and ensure updating of each wage payment to them on shramikkalyan portal on monthly basis.

Labour employment & their medical fitness: Please refer GCC para 60(1) to 60(4)

Provisions of Employees Provident Fund and Miscellaneous Provisions Act, 1952 (as per GCC-22 clause 55-B)**:**The Contractor shall comply with the provisions of Para 30 & 36-B of the Employees Provident Fund Scheme, 1952; Para 3 & 4 of Employees' Pension Scheme, 1995; and Para 7 & 8 of Employees Deposit Linked Insurance Scheme, 1976; as modified from time to time through enactment of "Employees Provident Fund & Miscellaneous Provisions Act, 1952", wherever applicable and shall also indemnify the Railway from and against any claims under the aforesaid Act and the Rules.

{Authority : Railway Board's letter no. 2012/CE-I/CT/O/22, Dated 14.12.2012}

SPECIAL CONDITIONS OF CONTRACT FOR MANDATORY UPDATION OF LABOUR DATA ON RAILWAY'S SHRAMIKKALYAN PORTAL BY CONTRACTOR.

(As per Railway Board Letter No. 2018/CE-I/CT/4 dated 17.10.2018)

(i) 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 the public domain. The Registration/ updation of Portal shall be done as under: **(as per GCC-22 clause 55-C)** (vii) 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. The engineer shall approve the contractor's registration in the portal within 7 days of receipt of such request. (viii) Contractor once approved by any Engineer, can create a password with login ID (PAN No.) for subsequent use of the portal for all LoAs issued in his favour. (ix) The contractor once registered on the portal, shall provide details of his Letter of Acceptances (LoA) / Contract Agreements on shramikkalyan portal within 15 days of issue of any LoA for approval of the concerned engineer. The engineer shall update (if required) and approve the details of LoA filled by contractor within 7 days of receipt of such request. (x) After approval of LoA by Engineer, contractor shall fill the salient details of contract laborers engaged in the contract and ensure updating of each wage payment to them on shramikkalyan portal on monthly basis. (xi) It shall be mandatory upon the contractor to ensure correct and prompt uploading of all salient details of engaged contractual labour & payments made thereof after each wage period. (ii) While processing payment of any 'On Account bill' or 'Final bill' or release of 'Advances' or 'Performance Guarantee / Security deposit', contractor shall submit a certificate to the Engineer or Engineer's representatives that "I have uploaded the correct details of contract labours engaged in connection with this contract and payments made to them during the wage period in Railway's Shramikkalyan portal at 'www.shramikkalyan.indianrailways.gov.in' till Month, Year." **POLICE VERIFICATION OF CONTRACTUAL LABOURERS:** Police Verification of Contractual Labourers deployed for execution of this work is compulsory and it will be the responsibility of the contractor to get this verification done.
4.34	**Provisions of "The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996" and "The Building and Other Construction Workers' Welfare Cess Act, 1996":** The tenderers, for carrying out any construction work, shall get themselves registered with the Registering Officer under Section-7 of the Building and Other Construction Workers Act, 1996 and rules made thereto by the concerned State Govt., and submit certificate of Registration issued from the Registering Officer of the concerned State Govt. (Labour Dept.). The Cess shall be deducted from contractor's bills as per provisions of the Act.
4.35	**SAFETY OF WORK , TRAINS & PERSONNEL:** (i) The contractor should abide by all the Railway regulations and also ensure that the same are followed by his representatives, agents, servants or workmen. He is therefore bound under these clauses to give notice to them about the provision of this clause and the consequent liability of the contractor under the agreement. The contractor shall conform to all the Railway Rules relating to safety of personnel and operation of signals and points. In the A.C. electrified areas the special precautions as laid down in R.E. Manual shall be followed. (ii) No petroleum spirit within the meaning of the Indian Petroleum Act shall be stored at site or adjacent land until the approval of the Railway and necessary license under the Act has been obtained by the contractor. The tenderer shall also ensure that approval of the Engineer has been obtained for storing any other inflammable material well in advance.

(iii) The contractor's employees and workers shall not for any reason operate any appliances or installations of the Railway concerning the safety of train movements, but they should whenever necessary notify the qualified Railway staff who will then take necessary steps. The contractor shall also be responsible for any damage that may cause due to the carelessness of his workmen and will bear the consequences in this regard.

(iv) The work must be carried out most carefully in such a way that they do not hinder the Railway operation except as agreed to by the Railway. The Contractor shall do no work that may interfere with traffic until protection has been provided by the Railway and under supervision of Railway's representative. When the work is required to be carried out on the track itself or as close to the track as may pose a hazard to rail traffic, the work shall be carried out under the supervision of an authorized Railway representative Junior Engineer/Senior Engineer/ Senior Section Engineer (JE/SSE).

Whenever track side work are undertaken by the contractors, areas for unloading of bulk materials should be clearly demarcated and barricades provided if necessary with the consent of the (JE/SSE) Signal/Telecom, in-charge of the work. Suitable steps shall also be taken to prevent transport vehicles and such other machinery gaining access so near the track as to threaten the safety of running trains. That, whenever it becomes inescapable to allow transport vehicles or mobile machinery to operate in close proximity to the running lines the maximum moving dimensions for the said lines shall be adequately protected by fencing or such other suitable measures. No vehicle will normally be permitted to ply adjacent to the running lines. The contractor will be responsible for the safety of hired trucks and men etc. Working at the site. He will also be responsible for any damage caused to the Railway property, staff and passengers travelling on the line on account of his truck/vehicles having been allowed to ply on the bank.

(v) The contractor shall take all precautionary measures in order to ensure protection of his own personnel moving about or working on the Railway premises and shall have to conform to the Rules and Regulations of the Railway.

(vi) Suitable ladders for climbing the post and slings for supporting men on the post shall be used. Ropes as required shall be used for erection of the poles. The size of the rope shall be adequate. The contractor shall take necessary precaution for working near the power lines. If at any time the Railway finds the safety arrangements are inadequate or insufficient, the contractor shall take immediate corrective action as directed by the Railway's representative at site. However, it is not obligatory on the part of the Railway's to give such directions. The issue or non-issue of any direction in the matter by the Railway shall in no way absolve the contractor of his sole responsibility to adopt safe working methods. The stone-breakers, if employed shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals. Necessary personal safety equipment as considered adequate by the Engineer-in –Charge should be kept available by the contractor for the use of the persons employed on the site and maintained in condition suitable for immediate use and the contractor should take adequate steps, to ensure proper use of equipment by these concerned. When not in use,electrical apparatus shall be switched off. No paint containing lead or lead products shall be used except in the form of paste or ready mixed paints. Suitable face masks should be supplied by the contractor for use by the workers when paint is applied in the form of spray.

(vii) Within the station premises and especially on passenger platforms, the contractor shall ensure sufficient free space for movement of passenger traffic. He must cover and protect the excavations carried out in such areas with a view to avoid any accidents.

(viii) In case of an accident of any nature, the contractor will indemnify the Railway for any losses caused by him as a result of the accident.

(ix) The contractor will not be entitled to any compensation for any damage or loss sustained by him during execution of the work, for any idle labour our transport or any loss or deterioration of the material or tools.

	(x) During testing and commissioning signal aspects shall be displayed or changed and slot given to adjoining cabin/ground frame only as authorized by Railway. During testing and commissioning, point setting shall be changed only as authorized by the Railway. The contractor shall do no work that may interfere with traffic until protections has been provided by the Railway and under the supervision of Railway's representative. While testing and commissioning of the Panel, the contractor shall not work without authorization from the Railways' Engineer in-charge of the work. (xi) The contractor shall also be responsible for any damage that he may cause due to the carelessness of his workmen and will bear the consequences in this regard. (xii) If contractor/agent/labour/staff meets with any injury or loss or death due to any reason during the course their work mentioned in the contract, the Railway will not be liable for the same. (xiii) **SAFETY OF PUBLIC:** The Contractor shall be responsible to take all precautions to ensure the safety of the public whether on public or railway property and shall post such look out men as may, in the opinion of the Engineer, be required to comply with regulations appertaining to the work. Contractor shall ensure placement of barricading / partitions at the place of work to ensure safety of habitants of adjacent area, failing which Engineer may advise stoppage of work as per his discretion. (xiv) **DISPLAY BOARD:** The Contractor shall be responsible for displaying the details of works i.e. name of work, approximate cost, expected date of completion, name and address of the Contractor and address of Engineer on a proper steel Board of size not less than 1m x 1m.
4.36	**PLYING OF ROAD VEHICLES IN RAILWAY LAND ADJOINING TO RUNNING LINES** The Contractor shall not allow any road vehicle belonging to him or his suppliers etc. to ply in railway land next to the running line. If for execution of certain works viz. earthwork for parallel railway line and supply of ballast for new or existing rail line, gauge conversion etc., road vehicles are necessary to be used in railway land next to the railway line, the contractor shall apply to the site–in–charge for permission giving the type and no. of individual vehicles, names and license particulars of the drivers, location, duration and timings for such work/movement. The site-in-charge or his authorized representative will personally counsel, examine and certify, the road vehicle drivers, Contractor's flagmen and supervisor to be deployed on the work, location, period and timing of the work. This permission will be subject to the following obligatory conditions: i) The road vehicles will ply only between sunrise and sunset. ii) Nominated vehicles and drivers will be utilized for work in the presence of at least one flagman and one supervisor certified for such work. iii) The vehicles shall ply 6m clear of track. Any movement/work at less than 6m and up to minimum 3.5m clear of track centre shall be done only in the presence of Railway employee authorized by the Engineer-in-charge. No part of the road vehicle will be allowed at less than 3.5m from the track centre. The cost of such Railway employees shall be borne by the Railway. iv)The Contractor shall remain fully responsible for ensuring safety and in case of any accident, shall bear, cost of all damages to his equipment and men and also damages to railway and its passengers. v) The vehicles and equipment of contractors can be drafted by Railway administration in case of accidents / natural calamities involving human lives. Engineer-in-charge may impose any other condition necessary for a particular work or site.
4.37	**EMERGENCY WORKS:** In the event of any accident or failure occurring in or about the work or arising out of or in connection with the construction, completion or maintenance of the works which in the opinion of the Engineer requires immediate attention, the Railway may bring its own workmen or other agency to execute or partly execute the necessary work or carry out repairs if the Engineer considers that the contractor/s is/are not in a position to do so in time and charge the cost thereof to the contractor, as

	to be determined by the **Dy.Chief Signal & Telecommunication Engineer**.
4.38	**NIGHT WORKS:** The Contractor shall carry out any work between sun-set and sun-rise with the prior permission of the Engineer/Consignee. The contractor at his own cost shall make all adequate lighting arrangements and shall take precautions to avoid any mishap during night. As the work is to be done in the Suburban section, most of the work will be carried out during night hours in block/disconnection period.
4.39	**MAINS POWER SUPPLY:** Testing of installation / equipment shall be done under supervision of Railway officials or by Railway officials themselves, from the electric supply to be provided by the Railways. However, for any installation activity, like drilling, soldering etc., contractor, if so desires, to use tools / machines for prolonged duration, electric power supply (230V), if available, can be arranged by the Railways on usual payment, as per extant procedure. Non-availability of Mains Power will not be a reason for the slow progress of work. If Electric Supply is not available, the contractor shall make his own arrangement for Gen set / electric power.
4.40	**OBLIGATION TO CARRY OUT ENGINEER'S INSTRUCTIONS:** The contractor shall also satisfy the Engineer that adequate provision has been made:- To carry out his instructions fully and with promptitude. To ensure that parts required to be inspected before use are not used before inspections; and To prevent rejected parts being used in error. Where parts rejected by the inspector have been rectified or altered, such parts shall be segregated for separate inspection and approval before being used in the work.
4.41	**INSPECTION OF WORKS:** (i) The Engineer or his representative may inspect and test the various portions of the work and shall have full power to reject all or any portion of the work that he may consider to be defective or inferior in quality of materials and workmanship of design in comparison to what is called for in the specification. In the event of rejection of any work already executed and not in accordance with specification as in this tender and/or as determined by the Engineer or which the Contractor has been apprised, the Contractor shall carry out alterations/replacements to such works to the satisfaction of the Engineer for which no additional expenses will be borne by the Railway. (ii) The responsibility of providing facilities for inspection lies with the contractor. He shall be responsible for providing required facilities i.e. tools, equipments for inspection at the place of work, for which no additional payments shall be made.The contractor will also provide facilities for carrying Railways supervisors to the site of work and back when convenient train is not available. For the purpose of inspection, the contractor shall make a written request for inspection of sites to be done the next day. (iii) The completed installation at all stages shall be subjected to checks and tests as decided by Railways and the contractor shall be liable to remedy such defects as discovered during these checks and tests and make good all deficiencies brought out. However, complete installation will be taken over finally on completion of the full system. It will be the responsibility of the contractor to rectify any discrepancy noticed within a reasonable period from the date the complete system is taken over. For the purpose of taking over, joint inspection will be carried out by **DSTE / ADSTE and Section Engineer/Jr. Engineer (S&T)**. The contractor should make himself or his representative available at the time of joint inspection. The decision of the Engineer –in Charge

	shall be final in the matter. (iv) The contractor will be called upon to pay all the expenses incurred by the Railway in respect of any work found to be defective or of inferior quality, adulterated or otherwise unacceptable. (v) During the execution of the contract, samples may be taken for the purpose of test and/or analysis under the conditions laid down in specification, such samples to be prepared for testing and forwarded free of all cost to the Railway. (vi) **SITE ORDER BOOK/FAILURE & MAINTENANCE REGISTER:** An Inspection Register/ Site Order book shall be maintained at the site of work by the contractor, wherein the Engineer in-charge of the work or his executive subordinate shall record instructions regarding the working etc. It is expected that the Contractor or his representative at the site shall note such instructions whenever asked upon to do so and take action accordingly. His non-noting the logbook entries shall not be considered sufficient grounds for non-compliance of the instructions. This register shall have entries on a day-to-day basis regarding the progress of work. Records should also be kept with joint signature of Railways &firms representative for all release material. This should be produced during the inspection & check of the Railway engineer in-charge. Date & time of failure occurrence & its restoration shall be recorded in this register by Railway representative and contractor or his representative respectively, with signature. Date & time of restoration entered by the contractor needs to be verified and counter signed by the Railway representative. (vii) **QUALITY AUDIT OF INSTALLATION** The Contractor shall arrange for a quality audit of installation by an authorized representative of RDSO approved equipment manufacturer, who will certify that the installation has been done as per OEM's specification, standard practices.
4.42	**TEST & MEASURING INSTRUMENTS, SPECIAL TOOLS AND INSTALLATION MATERIAL:** (a) All Test and measuring instruments and other arrangements required for all the acceptance tests shall be made available by the contractor free of cost for conducting the tests. (b) Special tools required for installation and maintenance of all the equipments shall be arranged by the contractor in adequate quantities. The contractor shall provide all installation material for complete commissioning of the system.
4.43	**MODIFICATIONS:** The contractor shall be responsible for and supply any additional equipment without extra cost for any alterations of the works due to any discrepancies, errors or omissions in the drawings or other particulars supplied by him, whether such drawings or particulars have been approved by the Railway or not due to inaccurate information or particulars furnished to the Contractor on behalf of the Railway. If any dimensions/figures upon the drawings or plans differ from those obtained by scaling the drawings or plans shall be taken as correct. Any minor modifications required during the course of work shall be done without extra charges and the Railway's decision as to whether the modifications are minor or not shall be final. Where modifications are not minor and the Railway is satisfied that the modifications are essential, they shall be carried out at extra charges to be approved by the Railway.
4.44	**APPROVAL & MEASUREMENT OF WORK:** (a) The contractor will obtain written approval of the supervisor / engineer-in-charge after completion of the various sub-items of each work mentioned in the Schedule. (b) The contractor should ensure that measurement has been made for such work, which is not

	possible to measure subsequently and shall remain hidden. For example: after trenching is done After RCC trunking/PVC duct/channel is placed in the trench and properly aligned. after the above is laid properly after the earth is filled after brick/slab/capping is laid (c) The contractor shall sign the measurement as a token of acceptance of the measurement entered by the supervisor in-charge of the work (wherever applicable). (d) **MEANING AND INTERPRETATION BY RAILWAY TO BE FINAL** All measurements, method of measurement, meaning and intent of specifications and interpretation of Special Conditions of Contract, given and made by the Purchaser or by the Purchaser's Engineer shall be final and binding and shall be considered "excepted matter" in terms of conditions laid down in the General Conditions of Contract. (e) **RIGHT OF RAILWAYS TO KEEP BACK FROM THE CONTRACT ANY PORTION OF WORK** The successful tenderer will however, have no claim or right in the execution of work which in the opinion of the of the Engineer should be carried out departmentally or otherwise and the Railway Reserves the right to keep back from the contract and carry out the work or any portion of work through any other agency, it may think without assigning any reason, any time after the acceptance of the tender. No claim for compensation/loss or whatsoever on this account will be entertained by the Railway.
4.45	**CLEARANCE OF SITE:** Contractor at his own expenses clean the site, set out all works and provide all necessary labours, pets, string, steel to enable the Railways or any of his representatives to check all setting out and the contractor will correct all errors at his own expenses. At the end of the work in each section the contractor shall as a part of his contractual obligation leave the area completely cleared of rubbish and obstruction of all kinds according to the instructions of the Railway's representatives. Besides, he shall take 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 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 given to the Contractor. **HANDING OVER OF WORKS: as per GCC-22 clause 40** 1) The Contractor shall be bound to hand over the works executed under the contract to the Railway complete in all respects to the satisfaction of the Engineer. The Engineer shall determine the date on which the work is considered to have been completed, in support of which his certificate shall be regarded as sufficient evidence for all purposes. The Engineer shall determine from time to time, the date on which any particular section of the work shall have been completed, and the Contractor shall be bound to observe any such determination of the Engineer. 2) Clearance of Site on Completion: On completion of the works, the Contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and works clean and in a workman like condition to the satisfaction of the Engineer. No final payment in settlement of the accounts for the works shall be paid, held to be due or shall be made to the, Contractor till, in addition to any other condition necessary for final payment, site clearance shall have been affected by him, and such clearance may be made by the Engineer at the expense of the Contractor in the event of his failure to comply with this provision within 7 days after receiving notice to that effect. Should it become necessary for the Engineer to have the site cleared at the expenses of the Contractor, the Railway shall not be held liable for any loss or damage to such of the Contractor's property as may be on the site and due to such removal there from which removal

	may be affected by means of public sales of such materials and property or in such a way as deemed fit and convenient to the Engineer **A) OFFLOADING OF PART(S) OF WORK:** At the final stage of completion / commissioning of work, in case the contractor fails to complete the final part(s) of the work and the value of such part(s) of the work is limited to 5% of the original contract value, the Engineer may allow/decide for offloading of such part(s) of works, either after the Contractor's request in writing to do so or after serving a 14 (Fourteen) days suo-moto notice (as per annexure provided by Rly), if the Engineer is of the opinion that :- i) Such Offloading of works (up to 5% of original contract value) would enable successful completion of contract/work, ii) Termination/ Part termination of the contract at this stage is not be in the interest of the Railway/work;, and iii) The anticipated additional cost for execution of such works through other mode would not be substantial and can be recovered from the pending dues of the contractor; The Contractor shall be informed, in due course, by the Engineer of the mode and cost of execution of such offloaded work through other agency(ies) (as per annexure provided by Rly). The extra expenditure so incurred in execution of the offloaded work, shall be recovered from subsequent Bill(s) or any other dues of the Contractor, but not exceeding the value of Performance Guarantee available in the contract. There shall be no other repercussion of such offloading on execution of the balance contract. The Contractor shall have no claim on account of above mentioned offloading of works.
4.46	**MAINTENANCE OF WORKS:** (a) The contractor shall be responsible at all times during the progress, continuance of the works till commencement of the warranty period as specified in the tender document. (b) He should maintain the system effectively in sound and perfect condition. The contractor shall be responsible and liable to compensate all losses, damages, costs and expenses that may incur by reason or in consequence of the operations of the contractor or his failure in any respect. (c) The contractor has to depute sufficient (Technical and Non-Technical staff) for maintaining the entire system till commencement of the warranty period. (d) During the maintenance period If the contractor fails to rectify the failure of the system, penalty will be applicable as per warranty clause.
4.47	**WARRANTY:** (i) This warranty shall be for 12 months from the date of commissioning of stations/section and brief details of Warranty are given in annexure-A attached. Any defect noticed during this period will have to be rectified by the contractor promptly at his own cost. (ii) During the Warranty period the contractor should make availability of qualified service engineers. No separate charges shall be paid for visits of engineers for attending to faults and repairs or towards the supply of spare parts. (iii) The contractor shall inform names of qualified Service Engineers deputed at the location approved by Railway's Engineer and their contact numbers, so that they can be contacted during failure. The failure is to be attended and rectified within least possible time from the time of reporting of failure. (iv) The contractor shall warrant that everything to be furnished here under shall be free from all defects and faults in material, workmanship and manufacture and shall be the highest grade and consistent with the established and generally accepted standards for materials of the type ordered in full conformity with the contract specifications, drawings, or samples, if any and shall if operable, operate properly. (v) The Contractor shall, if required, replace or repair the goods or such portion thereof as is rejected by the Railway free of cost at the ultimate destination or at the option of the Railway and contractor shall pay to the Railway value thereof at the contract price and such other

expenditure and damages as may arise by reasons of the breach of the condition herein, specified.

(vi) All replacement and repairs that Railway shall call upon the contractor to deliver or perform under this warranty shall be delivered and performed by the contractor promptly and satisfactorily, if the contractor so desires the replaced parts can be taken over by him, or his representative in India for disposal as he deems fit within a period of three months from the date of replacement of goods / parts. At the expiry of this period, no claim whatsoever shall lie on the Railway.

If the replacement or renewals are of such a character as may affect the efficiency of the system, the purchaser shall have the right to give the contractor within one month from such replacement or renewal notice in writing that test on completion will be carried out at his cost. Should such tests show that the plant sustains the guarantee in the contract; the cost of the tests shall be borne by the purchaser. Should the guarantees not be sustained, the cost of the tests shall be borne by the contractor.

Until the final certificate shall have been issued, the contractor shall have the right to entry with permission of Railways, at his own risk and 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 plant 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.

(vii) The decision of the **Railway Authority i**n regard to Contractor's liability and the amount, if any payable under this warranty shall be final and conclusive.

4.48 **ANNUAL MAINTENANCE CONTRACT PERIOD - Not applicable for this tender**

4.49 **MODIFICATION TO CONTRACT QUANTITIES [please refer GCC42(1) to 42(3)]**

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

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

(2)(i) Unless otherwise specified in the special conditions of the contract, the accepted variation in quantity of each individual item of the contract would be upto 25% of the quantity originally contracted, except in case of foundation work.

(ii) The Contractor shall be bound to carry out the work at the agreed rates and shall not be entitled to any claim or any compensation whatsoever upto the limit of 25% variation in quantity of individual item of works.

(iii) In case an increase in quantity of an individual item by more than 25% of the agreement quantity is considered unavoidable, then same shall be executed at following rates

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

	(b) Quantities operated in excess of 140% but upto 150% of the agreement quantity of the concerned item shall be paid at 96% of the rate awarded for that item in that particular tender; (c) Variation in quantities of individual items beyond 150% will be avoided and would be permitted only in exceptional unavoidable circumstances and shall be paid at 96% of the rate awarded for that item in that particular tender. (d) Variation to quantities of Minor Value Item: The limit for varying quantities for minor value items shall be 100% (as against 25% prescribed for other items). A minor value item for this purpose is defined as an item whose original agreement value is less than 1 % of the total original agreement value. (i) Quantities operated upto and including 100% of the agreement quantity of the concerned minor value item, shall be paid at the rate awarded for that item in that particular tender; (ii) Quantities operated in excess of 100% but upto 200% of the agreement quantity of the concerned minor value item, shall be paid at 98% of the rate awarded for that item in that particular tender; (iii) Variation in quantities of individual minor value items beyond 200% will be avoided and would be permitted only in exceptional unavoidable circumstances and shall be paid at 96% of the rate awarded for that item in that particular tender.
4.50	**EXTENSION OF COMPLETION PERIOD:** Subject to any requirement in the contract as to completion of any portion or portions of the work before completion of the whole, the contractor shall fully and finally complete the whole of the work comprised, in the contract by the date entered in the contract, provided that if any modifications have occurred which, in the opinion of the Railway's Engineer, have materially increased the magnitude of the work, such extension of the contracted date of completion may be granted as shall appear to the Railway's Engineer to be reasonable in the circumstances provided. Moreover, the contractor shall be responsible for requesting such extension of the date as he may consider necessary as soon as a cause thereof arises and shall in any case not less than one month before the expiry of the original date fixed for completion of the work. The terms and condition of the original contract will remain operative during the extended period. **EXTENSION OF TIME ON RAILWAY ACCOUNT**: (a) In the event of any failure or delay by the Railway to hand over site / signalling plans to the contractor necessary for the execution of the works or to provide the necessary drawings or instructions or any other delay caused by the Railway due to any other cause whatsoever, then such failure or delay shall in no way affect or vitiate the contract or alter the character or entitle the contractor to damage or compensation thereof but in any such case, the Railway may grant such extension of the completion date as may be considered reasonable. (b) If the progress of the work be delayed at any time in the progress of the work by any act of neglect of the Railway's employee or by any other contractor employed by the Railway or by strike, lockouts, fire, unusual delay in transportation, unavoidable casualties or any cause beyond the contractor's control, or any delay authorized by the Railway Engineer, the time of completion of the work may be extended for such reasonable time as the Railway administration may decide. **LIQUIDATED DAMAGES & RAILWAY'S RIGHTS**: The time for completion of the work by the date or extended date fixed for completion shall be deemed to be the essence of the contract and if the contractor shall fail to complete the work within the time prescribed, action will be taken as per Clause 17-B of GCC. If the Railway is not satisfied that the work can be completed by the contractor to within the further extension of time allowed as aforesaid, the Railway shall be entitled without prejudice to award any other contract under Clause 62 of General Conditions of the contract whether or not actual damage is caused by such default.

	The Contractor shall indicate the period for which the work is likely to be delayed and shall seek extension of time as may be considered necessary under clause 17A(i) or/and 17A(ii) or/ and 17A(iii) above, as soon as the cause thereof shall arise and, in any case, not less than 15 days before the expiry of the date fixed for completion of the works. The Engineer shall consider the same and shall grant and communicate such extension of time as in his opinion is reasonable having regard to the nature and period of delay and the type and quantum of work affected thereby. No other compensation shall be payable for works carried forward to the extended period of time; the same rates, terms and conditions of contract being applicable, as if such extended period of time was originally provided in the original contract itself. The non-submission of request for extension or submission of request within less than 15 days before the expiry of the date fixed for completion of the works, shall make him ineligible for extension under these sub clauses, subject to final decision of Engineer.
4.51	**STORES TO BE SUPPLIED BY CONTRACTOR:** (i) All materials mentioned in the schedule of material and works required for the execution of the contract, shall be arranged and supplied by the Contractor as to realize the end objective. (ii) The material mentioned in the schedule shall be supplied in the stores of the Consignee's site as per instruction of Engineer In charge. (iii) The material required for work at site will be issued to the contractor by Consignee. The transportation of material from stores of Consignee's to the site of work will be the responsibility of the contractor. (iv) The contractor will be responsible for the safety of the material at site from the date of issue to the date of commissioning of the system. (v) Consignee will keep record of material on day-to-day basis in summarized form and shall convey monthly position of material (supplied and installed by the contractor) to the engineer in charge of the work.
4.52	**TECHNICAL DOCUMENTS TO BE PROVIDED:** Detailed technical description and design of the systems offered along with manuals. Detailed Operating Instructions of the systems offered, along with manuals. Details of test accessories, test and measuring instruments required. Test facilities required for the installation, testing & commissioning maintenance of the system along with a write-up of testing and troubleshooting procedures. Location & Connectivity diagram of each station/location, showing all equipment.
4.53	**DETERMINATION OF CONTRACT** **Please refer para 61 to 62(2) of GCC (Upto latest Correction Slips).** The Contractor shall execute the work with due diligence and expedition, keeping to the approved time schedule. Should he refuse or neglect to comply with any reasonable order given to him in writing by the Purchaser's Engineers in connection with the work lags persistently behind the time schedule due to his neglect, the Railway shall at liberty to give seven days notice in writing to the Contractor requiring him to make good the neglect or contravention complained of and should the contractor fail to comply with the requisitions made in the notice within seven days from the receipt thereof, it shall be lawful for the purchaser to take action as per clause 62 of GCC and to take the work wholly or in part out of the Contractor's hands without any further reference and get the work or any part thereof, as the case may be, completed by other agencies at the expense of the contractor without prejudice to any other right or remedy of the Purchaser.

RIGHT OF RAILWAY TO DETERMINE THE CONTRACT: The Railway shall be entitled to determine and terminate the contract at any time should, in the Railway's opinion, the cessation of work becomes necessary owing to paucity of funds or from any other cause whatever, in which case the value of approved materials at site and of work done to date by the Contractor will be paid for in full at the rate specified in the contract. Notice in writing from the Railway of such determination and the reasons therefore shall be conclusive evidence thereof.

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

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

DETERMINATION OF CONTRACT OWING TO DEFAULT OF CONTRACTOR:

If the Contractor should:

(i) Becomes bankrupt or insolvent, or

(ii) Make an arrangement for assignment in favour of his creditors, or agree to carry out the contract under a Committee of Inspection of his creditors, or

(iii) Being a Company or Corporation, go into liquidation (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or

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

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

(vi) Abandon the contract, or

(vii) Persistently disregard the instructions of the Engineer, or contravene any provision of the contract, or

(viii) Fail to adhere to the agreed programme of work by a margin of 10% of the stipulated period, or

(ix) Fail to Execute the contract documents in terms of Para 8 of the Instructions to Tenderers.

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

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

(xii) Fail to take steps to employ competent or additional staff and labour as required under Clause 26 of these Conditions, or

(xiii) Fail to afford the Engineer or Engineer's representative proper facilities for inspecting the works or any part thereof as required under Clause 28 of these Conditions, or

(xiv) Promise, offer or give any bribe, commission, gift or advantage either himself or through his partner, agent or servant to any officer or employee of the Railway or to any person on his or on their behalf in relation to the execution of this or any other contract with this Railway.

(xv) Fail to adhere to the provisions of Para 16 of Tender Form (Second Sheet) of Annexure I of the Instructions to Tenderers, or provision Clause 59(9) of these Conditions.

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

Then and in any of the **said Clause**, the Engineer on behalf of the Railway may serve the Contractor with a notice (Proforma at Annexure-IX) in writing to that effect and if the Contractor does not within

seven days after the delivery to him of such notice proceed to make good his default in so far as the same is capable of being made good and carry on the work or comply with such directions as aforesaid of the entire satisfaction of the Engineer, the Railway shall be entitled after giving 48 hours' notice (Proforma at Annexure-X or XII, as the case may be) in writing under the hand of the Engineer to rescind the contract as a whole or in part or parts (as may be specified in such notice) and after expiry of 48 hours' notice, a final termination notice (Proforma at Annexure-XI or XIII, as the case may be) should be issued.

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

62.(2) RIGHT OF RAILWAY AFTER RESCISSION OF CONTRACT OWING TO DEFAULT OF CONTRACTOR: In the event of any or several of the courses, referred to in Sub-Clause (1) of this Clause, being adopted:

(a) The Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any commitments or made any advances on account of or with a view to the execution of the works or the performance of the contract and Contractor shall not be entitled to recover or be paid any sum for any work thereto for actually performed under the contract unless and until the Engineer shall have certified the performance of such work and the value payable in respect thereof and the Contractor shall only be entitled to be paid the value so certified.

(b) In the contract which has been rescinded as a whole, the Security Deposit already with railways under the contract shall be encashed/ forfeited and the Performance Guarantee already submitted for the contract shall be encashed. The balance work shall be got done independently without risk & cost of the failed Contractor. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV /partnership firm.

Further the authorized representative of failed Contractor cannot be accepted as authorized representative in the new contract.

(c) In the contract rescinded in part or parts,

(i) The full Performance Guarantee available for the contract shall be recovered. No additional Performance Guarantee shall be required for balance of work being executed through the part terminated contract. The contract value of the part terminated contract stands reduced to the balance value of work under the contract.

(ii) The Security Deposit of part terminated contract shall be dealt as per clause 16(2) of these Conditions.

(iii) The defaulting Contractor shall not be issued any completion certificate for the contract.

(iv) The balance work shall be done independently without risk & cost of the failed Contractor. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV /partnership firm.

(v) Further the authorized representative of failed Contractor will not be accepted as authorized representative in the new contract.

(d) The Engineer or the Engineer's Representative shall be entitled to take possession of any materials, tools, implements, machinery and buildings on the works or on the property on which these are being or ought to have been executed, and to retain and employ the same in the further execution

	of the works or any part thereof until the completion of the works without the Contractor being entitled to any compensation for the use and employment thereof or for wear and tear or destruction thereof. (e) The Engineer shall as soon as may be practicable after removal of the Contractor fix and determine ex-parte or by or after reference to the parties or after such investigation or enquiries as he may consider fit to make or institute and shall certify what amount (if any) had at the time of rescission of the contract been reasonably earned by or would reasonably accrue to the Contractor in respect of the work then actually done by him under the contract and what was the value of any unused, or partially used materials, any constructional plant and any temporary works upon the site. The legitimate amount due to the Contractor after making necessary deductions and certified by the Engineer should be released expeditiously.
4.54	**LOSS SUSTAINED DUE TO DEFAULT AND DELAY:** In the event of any loss to the Railways on account of execution and/or delay in completion of the work or any part thereof by agencies other than the contractor, the contractor shall be liable to reimburse the loss to Railways without prejudice to the other rights and remedies of the purchaser, and the reimbursement in full or in part as the case may be, shall be met, at the option of the Railways from out of all or any of the following sources viz: i) Any amount due and payable to the contractor by the purchaser on any account whatsoever; ii) The Contractor's security deposit in hands of the purchaser as far as available, and any other assets whatsoever of the contractor; In the event of reimbursement from out of sources (i) and/or (ii) above mentioned, the Railway shall have the right of appropriation suo-moto.
4.55	**CONTRACTORS LIABILITIES FOR COSTS AND DAMAGES WITHHOLDING AND LIEN IN RESPECT OF SUMS CLAIMED:** **1) a)** Whenever any claim or claims for payment of a sum of money arises out of under the contract against the contractor, the Purchaser shall be entitled to withhold and also have lien to retain such sum or sums in whole or in part from the security, if any, deposited by the contractor and for the purpose aforesaid the purchaser shall be entitled to withhold the said cash security deposit or the security, if any, furnished as the case may be and also have lien over the sum pending finalization or adjudication of any such claim. b) In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the Contractor, the purchaser shall be entitled to withhold and have lien to retain to the extent of such claim amount or amounts referred to spura, from any sum or sums found payable or which at any time thereafter may become payable to the Contractor under the same contract or any other department of the Central Government pending finalization or adjudication of any such claims. c) It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to by the purchaser till the claim arising out of or under the contract is determined by the Arbitrator. (If the contract is governed by the Arbitration clause) or by the competent court as the case may be and that the contractor will have no claim for interest of damages whatsoever on any account in respect of such withholding or retention under the lien referred to spura and duly noted as such to the Contractor. d) For the purpose of this clause, where contractor is a partnership firm or a limited company, the purchaser shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company, as the case may be, whether in his individual company or otherwise. **2) LIEN IN RESPECT OF OTHER CONTRACTS:** **i)** Any sum of money due and payable to the Contractor (including the Security Deposit returnable to him) under the contract may be withheld or retained by way of lien by the Railway, against any claim of this or any other Railway or any other Department of the Central Government in respect of payment of a sum of money arising out of or under any other contract made by the Contractor with this or any other Department of the Central Government.

	ii) However, recovery of claims of Railway in regard to terminated contracts may be made from the Final Bills, Security Deposits and Performance Guarantees of other contracts or contracts, executed by the Contractor. The Performance Guarantees submitted by the Contractor against other contracts, if required, may be withheld and encashed. In addition, 10% of each subsequent 'on-account bill' may be withheld, if required, for recovery of Railway's dues against the terminated contract. iii) It is an agreed term of the contract that the sum of money so withheld or retained under this Clause by the Railway will be kept withheld or retained as such by the Railway till the claim arising out of or under any other contract is either mutually settled or determined by arbitration, if the other contract is governed by Arbitration Clause or by the competent court as the case may be and Contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this Clause and duly notified as such to the Contractor.
4.56	**PAYMENT TERMS:** Subject to any deduction which the Railway will be authorised to make under the terms of contract that may be applicable while accepting the tender, the contractor shall be entitled for payment as follows: The payment can be released after the compliance of clause pertaining to indemnity bond. **A) FOR SUPPLY ITEMS:** a) 80% of the accepted cost of the supply items of the Schedule will be paid on receipt of the material / equipment by the Consignee duly inspected by the nominated Inspecting Authority and on receipt of inspection certificate issued by inspecting authority (RDSO/RITES) in case material is inspected by RDSO/RITES. b) If any item is inspected by a representative of Railways in lieu of RDSO/RITES. The payment will be released after submission of the manufacturer's test report / guarantee/warranty certificate / proof of purchase from the manufacturer as desired by the inspecting official. c) 10% of the accepted cost of supply (in addition to the 80% mentioned above) shall be paid after installation / erection of that particular material / equipment. d) The balance 10% of each Supply item will be paid after commissioning of the system / station. e) 100% of the accepted cost will be paid for spares & for the items, which are not required to be erected by the contractor on receipt of the equipment and no loss certificate by consignee. **B) FOR EXECUTION ITEMS:** a) 90% on account payment will be made on the basis of measurements recorded. b) The balance 10% will be paid after commissioning of each system/station. **C) For Item including Supply and Execution/Installation** 70% payment will be made on supply of the materials. Further 20% payment will be made on installation of the materials at site and the balance 10% will be paid after successful commissioning of the complete system**.** II) The contractor shall be paid the final payment in terms of the clause No. 51 of the General Condition of Contract. III) Implementation of outstation payment in Railway through RTGS / NEFT: Unlessotherwise specified payments to the Contractor will be transferred electronically to his bank account. The tenderer(s) should submit their bank details. D) The balance payment may be released against Bank Guarantee of an equal amount onthe discretion of the competent authority, if commissioning is held up on Railway'saccount for a period of more than three months after the installation is tested by the contractor to the full satisfaction of Railways and kept ready for commissioning. However, if rates of existing GST or cess on GST for Works Contract is increased or any new tax /cess on Works Contract is imposed by Statute after the date of opening of tender

	but within the original date of completion/date of completion extended under clause 17 & 17A and the Contractor thereupon properly pays such taxes/cess, the Contractor shall be reimbursed the amount so paid. Further, if rates of existing GST or cess on GST for Works Contract is decreased or any tax/cess on Works Contract is decreased / removed by Statute after the date of opening of tender, the reduction in tax amount shall be recovered from Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India.
4.57	**1) NOTE- AS PER RAILWAY BOARD LETTER 2018/CE-I/CT/9 DATED 04.06.2018.** There is an option for the contractor to take payment from Railways through a letter of credit (LC) arrangement 2) The condition for same are as follows :- i. For all the tenders having advertised cost of Rs 10 lakh or above, the contractor shall have the option to take payment from Railways through a letter of credit (LC) arrangement. 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 tenders 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.* a) The LC shall be a sight LC b) The contractor shall select his Advising/Negotiating bank for LC. The incidental cont towards issue of LC and its operation thereof shall be borne by the contractor. c) 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 issued under this arrangement. The Bank shall remain the 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. d) The LC shall be opened initially for a duration of 180 to 365 days in consultation with the 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 finalized by the engineer in consultation with the contractor on the basis of expected progress of work. e) The LC terms and conditions shall inter-alia indemnify and save harmless the Railway from and against all losses, claims and demands of every nature and description brought or recovered against the 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 the contractor. f) The LC terms and conditions shall inter-alia provide that Railways will issue a Document of Authorization (format enclosed as Annexure-2 of above said RB's letter after passing the bill for completed work, to enable the contractor to claim the authorized amount from their bank.

g) The acceptable, agreed upon document for payments to be released under the LC shall be the Document of Authorization.

h) The Document of Authorization shall be issued by the Railway Accounts Office against each bill passed by Railway.

i) On issuance of Document of Authorization, a copy of Document of Authorization shall be posted on IREPS for download by the contractor. A digitally signed copy of Document of Authorization shall also be sent by Railway Accounts Office to Railway's bank (Local SBI Branch).

j) The contractor shall take print out of the Document of Authorization 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 Authorization, bill of exchange and Bill.

k) The payment against LC shall be subject to verification from Railways Bank (Local SBI Branch)

l) The Contractor's bank (advising bank) shall submit the documents to the Railways Bank (Local SBI Branch)

m) The Railway bank (issuing bank) shall, after verifying the claim so received w.r.t. the digital signed document of Authorization received from Railway Account Office, release the payment to contractor's bank (advising bank) for crediting the same to contractor's account.

n) 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.

o) The LC shall be closed after the release of final payment including PVC amount , if any to the contractor.

p) The release of performance guarantee or security deposit shall be dealt directly by railway with the contractor i.e. not through LC.

execution of contract.

vi. ***IN CASE TENDERER OPTS FOR 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 cont towards issue of LC and its operation thereof shall be borne by the contractor.

c)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 issued under this arrangement. The Bank shall remain same for this tender till completion of contract. The incidental cost @0.15 % per annum of LC value, towards issue of LC and operation thereof shall be borne by the contractor and shall be recovered from his bills.

d) 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 finalized by the engineer in consultation with the contractor on the basis of expected progress of work.

e) The LC terms and conditions shall inter-alia indemnify and save harmless the Railway from and against all losses, claims and demands of every nature and description brought or recovered against the 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

	payable7borne by Railways on this account shall be considered as reasonable compensation and paid by contractor. f) The LC terms and conditions shall inter-alia provide that Railways will issue a Document of Authorization (format enclosed as Annexure-2 of above said RB's letter after passing the bill for completed work, to enable contractor to claim the authorized amount from their bank. g) The acceptable, agreed upon document for payments to be released under the LC shall be the Document of Authorization. h) The Document of Authorization shall be issued by Railway Accounts Office against each bill passed by Railway. i) On issuance of Document of Authorization, a copy of Document of Authorization shall be posted on IREPS for download by the contractor. A digitally signed copy of Document of Authorization shall also be sent by Railway Accounts Office to Railway's bank (Local SBI Branch). j) The contractor shall lake print out of the Document of Authorization 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 Authorization, bill of exchange and Bill. k)The payment against LC shall be subject to verification from Railways Bank (Local SBI Branch) l) The Contractor's bank (advising bank) shall submit the documents to the Railways Bank (Local SBI Branch) m) The Railway bank (issuing bank) shall, after verifying the claim so received w.r.t. the digital signed document of Authorization received from Railway Account Office, release the payment to contractor's bank (advising bank) for crediting the same to contractor's account. n) 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. o) The LC shall be closed after the release of final payment including PVC amount , if any to the contractor. p) The release of performance guarantee or security deposit shall be dealt directly by railway with the contractor i.e. not through LC.
4.58	**PROVISIONAL ACCEPTANCE TEST:** As soon as the Contractor informs the Railway and the Railway's Engineer determines that the works are completed from end to end, Railways shall carry out all tests as per the acceptance test schedule. Any component, modules, sub-assemblies or equipment failing during the commissioning test shall be replaced/repaired free of cost by the Tenderer. When all the tests are successfully completed end to end, the provisional test report will be jointly prepared. **OBSERVATION PERIOD :** After the completion of provisional acceptance test, system shall be put under observation for period of 30 days. During this period, Railways may at their discretion connect the user equipment and observe the performance from the end user point of view. If any defects or failures are noticed during this period the contractor will replace or rectify such modules and additional test or repetition of some of the tests will be carried out to make sure that all parameters are within specified values. **PROVISIONAL ACCEPTANCE CERTIFICATE AS PER GCC-22 CLAUSE 48:** After completion of provisional acceptance test and if no problems are noticed during observation period, Purchaser's Engineer shall issue a Provisional Acceptance Certificate for successfully commission of whole system covering all materials and services included in the Schedule of works, after the acceptance test and as per the approved test procedure have been completed and the

	performance has been found to meet the specifications. Railway's decision in this respect shall be final. The date of issue of the Provisional Acceptance Certificate will be treated as start of warranty.
4.59	**COMPLETION CERTIFICATE:** (a) The work shall not be considered to have been completed in accordance with the terms of contract until the engineer in-charge shall have issued a certificate in writing to this effect. No approvals of material or workmanship or approval of part of the work during the programme of execution shall bind the engineer in-charge of in any way prevent him from even rejecting the work which is claimed to be completed and to suspend the issue of his certificate of completion until such alterations and modifications of reconstruction have been effected at the cost of the contractors as shall enable him to certify that the work has been completed to his satisfaction. After the work is completed, the contractors shall give notice of such completion to the engineer in-charge and within 30 days of receipt of such notice the engineer in-charge/ site- engineer nominated by engineer-in-charge shall inspect the work and if there is no defect in the works shall furnish the contractor with a certificate indicating the date of completion. However if there are any defects which are in the opinion of the engineer in-charge are rectifiable he shall inform the contractors the defects noticed. The contractor after rectification of such defects shall notify the engineer in-charge and then the engineer in-charge shall inspect the work and issue the necessary completion certificate within three days if the defects are rectified to his satisfaction and if not shall inform the contractor indicating defects yet to be rectified. The time cycle as above shall continue. **FINAL ACCEPTANCE:** (i) The final acceptance of the entire equipment installed at the station shall take effect from the date of expiry of the Annual Maintenance Contract (AMC) period & after testing and certification of the engineer in charge. (ii) The contract shall not be considered as completed until the issue of Final Acceptance Certificate by the Railways. (iii) The Railways shall not be liable to the contractor for any matter arising out of or in connection with the contract or execution of the work unless the Contractor shall have made a claim in writing in respect thereof before the issue of Final Acceptance Certificate under this clause. (iv) Notwithstanding the issue of Final Acceptance Certificate, the contractor and the Railways (subject to sub clause as above) shall remain liable for fulfillment of any obligation incurred under the provision of the contract prior to the issue of Final Acceptance Certificate which remains unperformed at the time such certificate is issued and for determining the nature and extent of such obligation the contract shall be deemed to remain in force between the parties here to. **CERTIFICATE OF COMPLETION OF WORKS:** as per GCC-22 clause 48 As soon as in the opinion of the Engineer, the work has been completed and has satisfactorily passed any final test or tests that may be prescribed, the Engineer shall issue a certificate of completion duly indicating the date of completion in respect of the work and the period of maintenance of the work shall commence from the date of completion mentioned in such certificate. The certificate, inter alia, should mention that the work has been completed in all respects and that all the contractual obligations have been fulfilled by the Contractor and that there is no due from the Contractor to Railways against the contract concerned. The Engineer may also issue such a certificate indicating date of completion with respect to any part of the work (before the completion of the whole of work), which has been both completed to the satisfaction of the Engineer and occupied or used by the Railway. When any such certificate is given in respect of part of a work, such part shall be considered as completed and the period of maintenance of such part shall commence from the date of completion mentioned in the completion certificate issued for that part of the work. **PART COMMISSIONING:**

	If the works are not completed as per the programme of work and there is deviation from the milestones to be achieved Railways will be free to make use of the partially commissioned work. Making such use of partially commissioned work will not be deemed as provisional acceptance from the Railways.
4.60	**PLACING IN SERVICE AND MAINTENANCE:** After the equipment has been commissioned and placed in service, the contractor shall be responsible for proper maintenance of the equipment for a period mentioned. The date of commissioning. For this purpose he shall prepare a maintenance plan and make available the services of qualified maintenance engineers. Service engineers for maintenance shall normally be out of those engineers associated with the execution of the work. Changes, if any, on special cases shall be with the specific approval of railways. Details of the Service Personnel/Engineers (Bio-data and experience) proposed to be associated with maintenance, shall be furnished by the Contractor to the Railways, well in advance of the commencement of the maintenance period. Railway maintenance staff shall be fully associated with the maintenance work under the guidance/supervision of service engineers. If any lacuna is noticed in the functioning as a result of any defect in design or manufacture, the same will be rectified by the contractor free of cost. During such rectification if any faulty equipment/modules need replacement or repair, they shall be provided by the contractor from the set of equipment or modules that the contractor should bring to the site of installation in addition to all the materials to be supplied against this contract. Use of spare modules covered under the schedule of material of this tender shall not be permitted to be used during installation, commissioning and during the period of maintenance/supervision. During this maintenance period the contractor will be liable to pay penalty for outage as per penalty clause. **Maintenance** a) The Vendor shall provide System maintenance and repair of system or workmanship defects during the Maintenance period (parts and labour) b) Service or maintenance personnel shall be able to receive 24 Hour Help Desk Technical support provided by the system manufacturer.
4.61	**DEDUCTION FROM ON ACCOUNT BILLS:** All costs, damages or expenses, which Railways may have paid or incurred, which under the provisions of contract are Contractor's obligations will be deducted by Railways from progressive payment Bills/Invoice of Contractor, as and when it is understood that such expenses has been incurred or paid for. All such claims of Railways shall, however, be duly supported by appropriate and Certified vouchers, receipts or explanations as are available to enable the Contractor to identify such claims.
4.62	**DEDUCTION OF TAXES:** Railways will deduct Sales Tax, Income Tax, surcharge on Income Tax, education cess and commercial tax as per rates applicable at the time of making payments. Wherever the law makes it statutory for the purchaser to deduct any amount towards sales tax on works contract, the same will be deducted and remitted to the concerned authority. The Contractor and all personnel employed by him shall pay such taxes like Income Tax as are payable under statutory laws of India and the Railways will not accept any liability for the same. In terms of provisions of finance act and income tax act enforce deduction of income tax, surcharge & cess at source shall be made from the contractor / sub-contractor and the amount so deducted may be credited to the central government. All other statutory deductions, such as labour, GST, works contract tax etc., at the rates as applicable at the time of payment, shall be made both from on account bills as well as final bills as per rules in force.

	Deduction of cess as per provisions of Building and Other Construction Workers Act, 1996 as given in Para 4.34 of Special Condition of Contract as applicable. **DEDUCTION FROM ON ACCOUNT BILLS: clearance** **(a)** All costs, damages or expenses, which Railways may have paid or incurred, which under the provisions of contract are Contractor's obligations will be deducted by Railways from progressive payment Bills/Invoice of Contractor, as and when it is understood that such expenses has been incurred or paid for. (b) All such claims of Railways shall, however, be duly supported by appropriate and certified vouchers, receipts or explanations as are available to enable the Contractor to identify such claims.
4.63	**INSURANCE OF MATERIALS & INSTALLATIONS:** The contractor shall take out and keep in force a policy or policies of Insurance for all materials including Railway supply materials equipment irrespective of whether used up in the portion of work already done or kept for the use in the balance portion of the work until such works are handed over to the Railways. The Contractor shall not be liable for losses/damages to the materials either used up in the portion of work done or his material kept for use at site, in consequence of mutiny, or other similar causes over which the Contractor has no control and which cannot be insured. Such losses or damages shall be the liability of the Railways and if required by the Railways, be made good by the contractor, at the cost of the Railways. The Contractor should, however, insure the stores brought to site, against risks in consequence of war and invasion, as required under the Emergency Risk (Goods) Insurance Act in force from time to time. It may be noted that the beneficiary of the insurance policy should be Railways or the policies should be pledged in favour of Railway. The contractor shall keep the policy/policies current till the installations are handed over to the Purchaser. It may also be noted that in the event of contractor's failure to keep the policy current and alive, renewal of the policy will be done by the Railways for which the cost of the premium plus 20% of premium shall be recovered from the contractor. For purpose of enabling the contractor to take the insurance cover in connection with this contract, the purchaser's engineer will advise the approximate price of all the Railway s supply materials to the contractor.
4.64	**PROVISION OF EFFICIENT AND COMPETENT STAFF AT WORK SITES BY THE CONTRACTOR:** **(i)** The contractor shall place and keep on the works at all times efficient and competent staff to give the necessary directions to his workmen and to see that they execute their work in sound and 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 trade. (ii) The contractor shall at once remove from the works any agents, permitted sub-contractor, supervisor, workman, or labourer who shall be objected to by the Engineer and if and whenever required by the Engineer, he shall submit a correct return showing the names of all staff and workmen employed by him. (iii) In the event of the Engineer being of the opinion that the contractor is not employing on the works a sufficient number of staff and 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 GCC. **CLAUSE 26A OF GCC:** **DEPLOYMENT OF QUALIFIED ENGINEERS AT WORK SITES BY THE CONTRACTOR:** i. The contractor shall also employ Qualified Graduate Engineer(s) or equivalent, or Qualified Diploma Holder Engineer(s), as prescribed in tender documents. ii. In case the contractor fails to employ the Engineer, as aforesaid in para (i), he shall be liable to pay liquidated damages at the rates, as prescribed in tender documents.

	ii. No. of qualified engineers required to be deployed by the contractor for various activities contained in the works contract shall be specified in the tender documents as 'special condition of the contract'. v. Accordingly in terms of provision of clause (i) above, contractor shall also employ following qualified Engineers during the execution of allotted work i. One qualified Graduate Engineer when the cost of work to be executed is Rs.200 lakh and above, and ii. One qualified Diploma Holder Engineer when the cost of work to be executed is more than Rs.25 lakh but less than Rs.200 lakh. iii. Further ,in case the contractor fails to employ the qualified Engineer, as aforesaid in para (iv) above ,he in terms of provision of clause (ii) above ,shall be liable to pay an amount of Rs.40,000/-and Rs.25,000/-for each month or part thereof for the default period for the provision ,as contained in para [iv (i)] and [iv (ii)] above respectively.
4.65	**IMPLICATION OF MODVAT RULES:** The liability of the purchaser to reimburse excise duty is limited to such sum as may be found legally due and payable in respect of contract goods after availing the full credit on all the inputs used in the manufacture of the finished products irrespective of whether the contractor has in fact availed of the said credit or not".
4.66	**EXCEPTED MATTERS:** All measurements, method of measurement, meaning and intent of specifications and interpretation of special conditions of contract, given and also made by the Railway or by the Engineer on behalf of the Railway shall be final and binding and shall be considered "Excepted Matters" in terms of condition No.63 of the General Conditions of Contract and will Strictly stay outside purview of any arbitrations limit and will not be arbitrable.
4.67	**PENALTY:** 1) For the new EI, the protocols for direct interfacing with future technologies of KAVACH, CTC/TMS and Data loggers shall be shared by EI suppliers whenever required. Failing to provide this protocol with Railways will result in a penalty of Rs 10 lakh per EI supply against said project.
4.68	**SETTLEMENT OF DISPUTES: Please refer para 63 to 64(8) of GCC (Upto latest Correction Slips).** **1) JURISDICTION OF COURTS** The court of the place from where the Letter of Acceptance has been issued shall have the jurisdiction in respect of this contract. For this tender the Jurisdiction of court will be **Mumbai.**
4.69	**ENGAGEMENT OF QUALIFIED ENGINEER: please refer para 26 to 26A(3)**
4.70	**PRICE VARIATION CLAUSE: Applicability:** Price Variation Clause (PVC) shall be applicable only in tender having advertised value above Rs. 2 Crores**. (Applicable for this Tender).** **As per GCC-2022 clause 46A to 46A(10) or up to latest correction slips.**
4.71	**ILLEGAL GRATIFICATION:** Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the Contractor or his partner or agent or servant or anyone on his behalf, to any officer or employee of the Railway or to any person on his behalf in relation to obtaining or execution of this or any other contract with the Railway shall, in addition to any criminal liability which he may incur, subject Contractor to the rescission of the contract and all other contracts with the Railway and to the payment of any loss or damage resulting from such decision and the Railway shall be entitled to deduct the amounts so payable from the Contractor's bills/Security Deposit or any other dues of Contractor with the Government of India.

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

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APPENDIX TO SPECIAL CONDITIONS OF TENDER

(i) The decision of Engineer-in-Charge will be final, in order to Improve Quality and Safety of work for incorporating Policy Circulars of HQ & Railway Board, Signal Engineering Manual and Telecom Engineering Manual of Indian Railway.

(ii) **Dy.FA&CAO/C/CCG** will be Associated Accounts Officer for Bill Paying.

(iii) The engineer in-charge of the work will nominate the field officer (site Engineer/ supervisor for the work.

(iv) The custodian of contract shall be **Dy.CSTE/C/F/BRC**, regarding completion of work for and obtaining necessary approval from competent authority prior to release of Performance Guarantee & Security Deposit.

(v) **Dy.CSTE/C/F/BRC** shall issue a final completion certificate to contractor.

CHAPTER - 5:

TECHNICAL REQUIREMENTS & SPECIFICATIONS.

TECHNICAL SPECIFICATION AS PER ATTACHED ANNEXURE-A ON THE DOCUMENTS ON IREPS WEBSITE:

NOTE:-

1. **Tenderers are requested to *inspect the site* before quoting the rates.**
2. For Drawing &**RDSO** specifications refer to the latest issue.
3. The cost of supply of minor materials and accessories other than specification &condition but necessary for Installation, should be included while quoting the rates.
4. Rates quoted by the Tender should include all Taxes/GST& duties.
5. If any deviation is noticed in the certificate endorsed below, the Railway Authority decision shall be final.
6. Railway reserves the right to accept or alter/delete the quantity under schedule items.
7. The tenderer should submit certified copies of documents along with Tender in support of his credential so as to ascertain the ability to carry out the work.
8. **The inspection authority will be RDSO/RITES/Consignee.**

5.1	TECHNICALSPECIFICATIONofELECTRONICINTERLOCKING
	i. The EIsystem should be as per **RDSO Spec. RDSO/SPN/192/2019 Ver. 2** or latest (with latest amendment). ii. The architecture to be deployed shall be as per para 7.1 of **RDSO Spec. RDSO/SPN/192/2019 Ver. 2.** In addition, hot standby processor(s) / system shall be provided with the facility of automatic changeover. The train operation shall not be affected and there shall be no unsafe occurrence due to switching over from main system to standby system. It should also be ensured that the fault, which affected the main processor / system, does not affect the hot standby processor / system iii. EI shall be designed with CENTRALISED arrangement. iv. It shall be ensured that Signaling and interlocking arrangements of the yard are in accordance with the approved Signaling plan and ToC approved by Western Railway headquarter. The Electronic Interlocking system with the latest amendment issued by RDSO to this specification has to be supplied by the contractor against this tender. In addition to specification, the Electronic Interlocking system supplied against this tender should incorporate all the extant instructions/ guidelines issued by RDSO prior to the date of tender opening. Note: TheEIoffered bythe tenderer should have RDSO approval on the date of opening of tender. All the EI systems being supplied against this contract should be procured from one RDSO approved manufacturer as per RDSO specification of EI system. v. The EI supplier shall share protocol for direct interfacing with future technology ofKavach, CTC/TMS & Data logger, whenever required. Failing to provide this protocolwith Railways will result in a penalty of Rs. 10 lakhs per EI supplied against said project. vi. In case of any field input/output failure, it is to be ensured that the station interlocking is made available continuously after the changeover and train movements are not hampered by any single input/output module failure. vii. The Fields gears shall be either directly driven or driven by Interface Relay of approved type as per W. Rly standard practice viii. At these outdoor installations the point operation is working on 110 V DC with independent detection ix. At these outdoor installations, colour light signals with LED lighting should be workable on 110V AC supply from relay room and with ECRs x. Track repeater relays /slot relays /Gate controls relays/ siding control relays/repeater relay shall be of approved type as per W.Rly standard practice xi. The conductors in the cables outside building shall be 1.5 sq. mm (copper) conforming to IRS: S-63/2007 with latest Amd xii. ThespecificationforWorkstationforDataInput&Configurationisgiven inAnnexure xiii. Earth Pit chamber shall be made up of preferably FRP material, with locking arrangement and hinges shall be used for earth pits. Drawing of earth pit attached as Annexure

xiv. The System Configuration, Route Control Table, Route Release Table, Square/Cross Sheet, all required interlocking/Logic diagrams and other documents required for designing of the System shall be prepared by the contractor on the template of Western Railway and shall be got approved by Railways

xv. The Electronic Interlocking systems to be offered against this tender shall be from RDSO Approved sources only on the date of tender opening.

xvi. **Both track detections in caseof dual detection, shall betaken as vital inputstotheEI system. The logic of paralleling will be done in the EI system.**

xvii. **Technical advisory note no. STS/E/TAN/3012 Ver 3.0 dt: 28.06.21 and Correction in Technical Advisory Note (TAN) No. 3012 Ver 3.0 dated 11.07.2022 to be further referred.**

xviii. Railway Board's letter No. 2022/Sig/36/Sig Drg. dated 29.03.2022 for Implantation of Standard Signaling Typical circuits & Drawings to be further referred.

xix. At least 15% spare bit in each card and overall to be provisioned during initial installation. The system shall have provision for accommodating an additional 15 % of I/O in future

5.1.1

1. The EI system should be as per RDSO Spec. RDSO/SPN/192/2019 Ver. 2 or latest (with latest amendment).
2. Table of Control (TOC) will be designed by the contractor on the basis of approved SIP, which will be provided by the railway. After approval of TOC by Railways, application logic circuits, interface circuits and VDU layout (based on approved SIP) will be designed by the contractor and submitted to the Railways for approval.
3. Table of Control (ToC) and application logic circuits are required to be independently checked, verified and approved by IRSE / IRSTELO licence holders before submission to Railways for approval. IRSE / IRSTELO licence holders as Principle Signal Designer and Verifier should certify about correctness of the logic circuits. If error in design is found, then action will be initiated as per IRSE / IRSTELO conditions for cancellation of licence. Dy. CSTE (D&D) CCG shall be deciding authority in this.
4. Both track detections in case of dual detection, shall be taken as vital inputs to the EI system.The logic of paralleling will be done in the EI system.
5. Power supplyshall beextended as per theTANissuedfrom RDSO.
6. EI shall have user-friendly graphic based design tools to generate station specific application software to carry out future yard modifications. All the software tools required for yard modification shall be provided by the supplier. It shall be possible for Railway to carryout yard modifications without the help of firm and the training shall be imparted by the supplier to Railways signaling staff for the same as per agreement with Railways.
7. The earthing arrangement required for the EI system and all other indoor signalling equipment (IPS, data-loggers, UFSBI etc.) shall be done by Contractor as perrecommended value of earth resistance specified by the manufacturer/RDSO. The earthing shall be done as perl attest RDSO specification (With latest amendment) for“ Code of

Practice for Earthing and Bonding System for Signalling Equipments) and as per Western Railway Practice.

8. Training of Railway's staff/officers in all aspects of software & hardware to enable understanding and maintenance of the EI system. As maintenance spares are to be usedonly after the end of warranty period, supply of these items may be made after the

9. While designing the circuit it shall be kept in mind until and otherwise advised by the Railways engineer in charge, one front contact of each and every relay shall be kept spare for data logger purposes.

10. Forthe EIsystem thecircuit shallbe designedconsideringtheinterfacingrelaysin mind.

11. The internal circuits shall be suitably protected and electrically isolated from external circuits.
12. Signal circuits shall be so designed as to prevent display of signal aspect less restrictive than intended and also prevent setting up of unsafe conditions when signaling supply voltage or Frequency fluctuates or the supply is restored following a failure of normal supply.
13. Cross-over betweentracksanddiamondcrossings shall beprovidedwithprotection that will eliminate the possibility of a train, engine or wagon occupying the cross-over or diamond and signal on either track displaying other than the most restrictive indication
14. Relays controlling yellow, double yellow and green aspects of signals shall have arrangements of Cutting in relays similar to track repeater relay, where such relays are fed from outside locations.
15. Both track detections in case of dual detection, shall be taken as vital inputs to the EI system. The logic of paralleling will be done in the EI system. It shall be possible to generate an Exception report form Data Logger to know failure of individual DAC track in dual arrangement.

16. Manual resetting of MSDAC tracks shall be as per clause no 5.4 of RDSO/SPN/176/2013 ver 3.0. Industrial grade VDU based manual resetting system shall be used.

17. All spare I/O ports of EI need to be wired and extended up to the termination rack. The CPU of Operator VDU should be fixed in such a waythat all its ports are easilyaccessible.

18. With reference to Para 4.3.6 of IRS:S-36-87, Emergency full route / sub-route cancellation in case of track circuit failures with sealing facility and emergency operation for throwing signal to danger, shall be provided along with non-re-settable counters for recording the operation. It shall be ensured that the counter shall record the operation, just before the operation is affected. Emergencysub- route cancellation facilityas referred in Para 4.3.6 of IRS: S-36-87 shall be provided. Also facility for Emergency operation of points (under track relay down condition) shall be provided which shall be counted with counters.

19. The circuit shall be so made that the vital operation of throwing back the cleared signal to the least restrictive aspect shall be possible and the circuits shall be so prepared to effectthe operation, even if its original supply fuse is blown off.

20. The lamp lighting circuit for all lamps including shunt signals shall be on double cutting principle.
21. Care should be taken during design of circuits and installation, so as to contain repercussions of any failure to the minimum possible gears and equipment. The contractor shall be bound to amend his design, if the Railways suggest another design for achieving the above.
22. Initiationandcancellationcircuitsshouldbedrawnaspergeographicallayoutofthe yard.
23. Flasher, Timerif requiredduringwork ofcommissioningto bearranged bythe firm.

5.1.2 Interlocking of Crank Handles:

The grouping of crank handles for point operation is as detailed in the Signaling plan.There shall be two common controlling buttons for each group for releasing control /taking back control.

5.1.3 Cross Protection:

For all external circuits, cross protection with double cutting shall be provided to prevent unsafe
Operation due to a cross, break or both.

5.1.4 Video Display Unit Control or VDU Control Terminal (Dual)

The following minimum requirements shall be catered Forthe both VDU Control Terminal / maintenance terminals (but it is not limited to) :

1. It shall have a minimum of two serial ports. The serial ports shall have inbuilt isolation or external isolation shall be provided
2. Embedded Industrial grade fan less PC with latest PC configuration shall be provided and suitable Compact Flash Disc memoryspace shall be **catered for the backup requirements and inbuilt power backup**
3. Shall have Ethernet/OFC communication with the CIU either on copper cable or OFC, with suitable isolators.
4. Itshallhavekeyboard/mouse operation.
5. It shall be possible to disable the menus in case of emergency. It shall have a required level of security features & access control i.e. logging (the ports & applications provided on the unit shall be password protected) for the operator/maintainer.
6. It shall synchronise the counters/clocks all the time and particularly when resuming from a failure.
7. Shallsupportbuzzers/alarmsasinCCIP.
8. **The VDU monitor shall be of 4 K resolution; the size of monitor shall be 55 inches minimum with stand having height, tilt and pivot adjustments. If it is not possible to accommodate station interlocking in one screen then VDU with higher size to be provided or** more than one monitor of thin edge type/bezel type to be provided to display the full yard as per instruction of engineer in charge.
9. **A typical VDU layout (Drg. No. CSTE/6273) and a list of standard commands for gear operation in Electronic Interlocking may be obtained from Railway on demand.**
10. **Design of the VDU table is attached as Annexure-. A VDU table shall be provided asper this design.**
11. A flashing indication shall be provided on the VDU to indicate the healthy condition of the main System communication channel.
12. The current position/ status of various field equipment and track circuits shall be displayed on the VDU using different colours/ symbols.
13. Three dot markers in Red, Blue & Green colours respectively shall also be displayed prominentlyatconspicuouslocationsontheVDUterminaltoindicatethatthecolou

monitor is healthy and all the three colours (Red, Blue & Green) are present in right proportion.

14. The control terminal shall work with 230V ± 10%, 50Hz AC power supply, for which an UPS of adequate capacity shall be supplied along with the system.
15. VDUinverterwithauto changeover andDC-DC converteras perTANshallbeprovidedby the contractor
16. If VDU and CIU are in separate buildings (which is generally the case), then they shall be interfaced using **FOM (Fiber Optic Modem**) to protect against lightning and surges. Railways shall allow only underground OFC for its use if the CIU and VDU are in different rooms. Patch-cords shall be allowed only in cases where both are in the same room.
17. Operationofsignal gear shallnotbepossiblesimultaneouslythroughboth VDUs. Incaseof VDU's used in Hot standby, VDU switch over is required in the following conditions:
    1. VDU to EIcommunication failure.
    2. VDUcomputerfailure.
    3. VDUmonitorsfailure.
    4. OneVDU is not controllable dueto mousefailure.
18. To circumvent any unauthorised operation inadvertently, **logic equivalent to Stop collar function of Panel system** to be incorporated through software.
19. As per WR's policy, **Separate Key cum counter box** with 2 VDUs in E.I to be provided in SM office. Key cum counter box shall be framed as per CSTE drg No. 6229 and comprises SM & RRBU keys, Eight electromechanical counter (ERRB, EBPU, RRBU, UOS,COGGB, COCYZ, ECHYZ,AXLE COUNTER RESET KEY), one spare and ammeter with bypass switch. **Inputs to be incorporated in EI.**
20. MT consisting of a standard PC with printer from a reputed manufacturer (as perinstructions of Railway's engineer in-charge) shall be provided for following Operations: - Display of the current status of points, signals, controls etc. of the yard. ii) Storage of minimum one-month data or 10,00,000 events. iii) Display of recorded events and iv) Data transfer to floppy, CD, flash memory or any other storage media. v) Transfer of recorded events to external data logger.

5.1.5 DetailsBreakupofItemNo.1ofSchedule“A2”for“SupplyofMaterialsofElectronic Interlocking”tobe givenbysuccessfultenderer.

SN.	Descriptionofitems	Units	Qty.	BaseRate	Total Amount
A	Main EISystem				
(i)					
(ii)					
B	Supplyof10%Essentialspareof the EIequipments				
(i)					
(ii)					
	TotalAmount(Awardedcost)				

NOTE:1)Thetotalamount mustbe equalto the awardedcost ofitemno 1of EIsupply, 2)SpareofEIshallbesuppliedaftercompleteinstallationofEIsystemandinstructionof engineerin charge.

5.1.6 Following test reports made available after testing of the Signaling Installation before commissioning of the system :

ForIndoor:
OneWire/TwoWireTestrecord.

	ContactbreaktestRecord[InWDaftersoldering(applicabletoMetaltoMetal)] Simulation test Record for : Locking Test (as per Locking Table) Selection Test (as per Selection Table) Sub- routerelease(Shorttrain/LongTrain) Back Locking Test ApproachLockingTest(asperSelectionTable) Track Locking of Points. IndicationLockingofPoints. EmergencyOperationofPointswithcontrollingtrackCircuitsfailed. Square Sheet test Record. CascadingofSignalAspect. AspectControltest(asperControlChartinSignalingPlan) Red Lamp Protection. Compliancecertificateoftechnicaladvisorynoteas perRDSO/HQ"sformat **ForOutdoor:** CableTestReportsofMainCable/tailcable. Earth Test Record. AXLECOUNTERTrackParameters. OperatingparametersofPointsandCorrespondenceTest. Cable Test reports of Tail Cable . **ForPowerEquipments:** Load/NoLoadCurrentsandVoltagesofPowerEquipmentandallitsmodules. Battery History records.
5.2	**Supply of documents (Manuals for Installation, Testing, commissioning and maintenance of the system):** (Oneset consistsof 6sets offollowingdrawingsper Station). (i) Manualforinstallation,Testing,Commissioningandmaintenanceofthesystemfor Technicians / Jr. Engineers. (Installation & Maintenance level) (ii) Functioningandsystemoverview(Highermanagementlevel). (iii) Completiondocumentsasperspecialconditionsof contract. (iv) Design&Supplyofcircuitsandplanstosuitlayoutgiveninthesignallingplanforhot Standby Architecture Electronic Interlocking (EI) system. All plans and wiring diagrams shall be prepared on Auto cad Drawing and supplied with CD/PENDRIVE. This will include supply of VDU diagram, Square Sheet, WiringDiagrams (Application Logic and Interface Circuit), Fuse Analysis, Contact Analysis, Tag BlockAnalysis, Power Supply Distribution / Power equipment arrangement (with program switch) Diagram, Auto Changeover diagram and all other relevant drawings given in tender document. Six sets of documents for each station containing system details, site installation details / drawings, maintenance manual, operation procedure etc. in bound book and in soft copy as per practice ofrailways. This shall also include. i. Tableof Control. ii. RouteRelease Table iii. Square/CrossSheet iv. WiringDiagrams. v. Floorplan,powersupplyarrangement,interfacediagram,Earthingplanetc. vi. ApplicationProgramListing. vii. Relay/CableTerminationparticulars.

viii. Input/outputassignmentdetails.
ix. Relaylayoutandcontactanalysischart.
x. SWRdiagram.
xi. Control(Domino)panel/VDUdiagram.
xii. Troubleshootingcharts.
xiii. Signalingcableroute plan
xiv. FuseanalysisandFACS,wiringdetails.
xv. Junction/locationboxdetailplan,CableRoutePlan,CableChart,CableCoreChart
xvi. CTrackdetaildiagram
xvii. Anyother drawingasrequiredbytheRailway.

The contactor shall initially supply 1 set of documents (Paper Prints) for approval of Railways. He shall ensure that each sheet has a block for signature of Railway official as well as a block for signature of firm, duly signed bythe authorised signatoryof the firm. The name of the work as given by Railways shall be written on every sheet under the work column. All the drawings shall be supplied in a good quality folder for each station. After approval of documents by Railways, the contractor will make copies of the approved documents and return the approved document toRailways. Thecontractorwill thenmakenecessarycorrection to ApplicationLogic software duly incorporating Railways' alterations/ corrections/ comments, if any. After Complete Testing / Commissioning of the station, tracings of completion documents as mentioned above will be submitted to Railways for approval. Along with the Completion application logic, a different report (showing addition & deletion in different colours) as compared to earlier approved application logic should also be submitted. After approval of completion application logic by Railways, 5 sets of copies of completion tracings will be submitted to Railways.

All the drawings shall be supplied in a good quality folder for each station. During installation, a folder containing all the drawings, testing procedures, commissioning procedures shall be kept at the stations.

Note:- He shall ensure that each sheet has a block for signature of railway official as well as a block for signature of firm, dulysigned bythe authorised signatoryof the firm. The name of the workasgivenbyRailwaysshallbewrittenoneverysheetundertheworkcolumn.**Allthe drawings shall be supplied in a good quality folder with plastic sheet for each sheet for station copy.**

5.3 SPECIFICATIONFORPortableWorkStationforDataInput&Configuration: Laptop

ReputedmakewiththeapprovalofEngineerincharge.Thehigherversionofthesystemsmay beacceptedwiththeapprovalof Engineer-in-Charge.

1.3	**SPECIFICATIONFORPortableWorkStationforDataInput& Configuration: Laptop**	
(a)	CPU	IntelCorei7or latest
(b)	Memo	Minimum8GBDDR4orLatestRAMExpandableto 16GB.
(c)	Hard DiskDrive	1TBHDDorHigher Capacity
(d)	Screen	15.6”LED
(e)	Keyboard	Wirelesskeyboard.
(f)	Mouse	WithWireless OpticalMouseandmousepad
(g)	Ports	2 USBPorts, 1 HDMIPort, etc.

(h)	Operating System	Windows10Preloadedwith Media.	
(i)	NetWorking facility	Integrated10/100/1000 GbE LAN	
(j)	Warranty	12 months.	
(k)	Software	MSOffice2010StandardorLatest,AntivirusforThreeyears.	
(l)	Printer	ReputedmakeLaserBlack&WhitePrintercumScanner cum copier loaded with 1 Set of toner. (Model to be approved byEngineer-In-Charge prior to supply)	
(m)	ExternalHard Disk Drive	PortableSSDhavingcapacity1TBorHigherwith USB 3.1 withbackupS/W	
(o)	Furniture for Operator	Computer cum printer table top size 1200 mm x 750 mm x 750 mm, 2 keyboards pull out tray, Drawer & Shelf, Computer Chairas suggested bythe Engineer– in – charge.	
(p)	UPS	Oneno. ofonlineUPSwith 1 hourbackup.	

5.4 SPECIFICATIONFORInstrumentsandToolKitsrequiredforTroubleshootingand repairof hardwareandsoftwareforEI

Itshouldbesupplied for stationsasper scheduleitem1 above.
(This includes tools required for EI maintenance, sorts of crimping, insertion, removal, general purpose tools like screwdrivers, spanners, PCB extractor, temp. controlled soldering iron, wire cutter, nose pliers etc. & measuring instruments with carrying case/ holders/ cabinet for technicians/ J.E. for testing, Maintenance and repair at site). Each set comprises of the
following:-
* Crimpingtool foralltypes ofspecialcableassemblyusedin EIsystems.
* Insertion tool for all types ofspecial cableassemblyusedin EIsystems. *Removal tool forall types of special cable assembly used in EI systems.
* Digitalmultimeter(Fluke111or better)
* Steel cabinet/ Almira, Size: 1980mm height, 915 mm width and 485 mm depth (Godrej Make/Jalaram) of good quality to store tools, spare cards and documents.
* Steel Book rack Size: 1850mm height, 900 mm width and 316 mm depth for keeping documents. (Godrej Make/Jalaram)
* ClampEarthTester.
* ClampCurrent Metre.

5.5 GeneralRequirementsandSpecificationsforinstallationofEIsystem:

1. Thedesign of theEIsystem shall beas pertheSignalingplan issued to thecontractor.
2. RailwaysshallprovideapproveddiagramslikeSIP,TableofControl.
3. Any alteration in the interlocking plan to be done during the course of execution, shallbe carried out by the contractor expeditiously without any extra cost.
4. Thesystemshallbecommissionedwith100%HOTSTANDBYconfigurationofall levels as approved by RDSO.
5. The EI system shall be commissioned with the dual VDU for the operation of signaling gears.
6. All the execution/wiring of the system shall be carried out as per the standards definedby RDSO.
7. AlltheterminationsontheRacksor back-plane,shallbe taggedbothwaysi.e.theorigin

anddestination ofthe wirecan beunderstood.

8. The signal flow diagram for diagnostic purposes shall also be supplied along with the execution.
9. The earthing shall be provided as per the latest standards of RDSO as mentioned in tender documents. Parametric earth bond as per drawing TAN / 3006 shall be providedas far as possible for better protection of E.I installation.
10. All the cables connected to the EI system, O.C. (if any) shall be properly laced and described.
11. The optical fibre connecting the different subsystems shall be connected throughFDMS. All these connections shall be housed in required telecom racks which are protected against interference and dust.
12. Thecontractor shall supplythe AS MADE DOCUMENTS as pertender document
13. Pre-commissioning checklist shall be jointly signed by the Railway's and OEM's representative.
14. Thecontractor shall inform names ofqualified ServiceEngineers deputed at the location approved by Railway's Engineer and their contact numbers, so that they can becontacted during failure. The failure is to be attended and rectified within least possible time from the time of reporting of failure
15. All replacement and repairs that Railway shall call upon the contractor to deliver or perform under this warrantyshall be delivered and performed bythe contractor promptly and satisfactorily, if the contractor so desires the replaced parts can be taken over byhim, or his representative in India for disposal as he deems fit within a period of three months from the date of replacement of goods / parts. At the expiry of this period, no claim whatsoever shall lie on the Railway.
16. Necessary spares, consumables, tools & instruments shall preferably be supplied by the contractor at least two weeks in advance of commissioning of the particular station.
17. Alltheconsumablesandsundryinstallationmaterialsrequiredforexecutionofthiswork like Nut and Bolts, Welding Rods, Sleeves, Lugs etc., and not listed as per the detailed schedule will have to be brought by the Tenderer at his own cost
18. Cement & Steel for use of the work should be procured by the tenderer at their own cost from the main producers / their authorised dealers / authorised stock-yards which should conform to IS specification. Individual rates quoted by the Tenderer should be inclusive of cost of Cement / Steel wherever applicable.
19. All the wires, fuses/MCB, required for installation of indoor equipment shall be marked properly with the label identification tag. The wires, fuses/MCB required for installation ofindoor &outdoor equipmentshallbe asperOEMspecificationunlessspecifiedbythe Railways. All the materials in this connection shall be supplied by the contractor.
20. Details of Equipments shall be neatlywritten on indoor & outdoor equipment preferably by using stencils for outdoor & aluminium etched labels/letter writing machine forindoor
21. All installation work shall be subject to inspection by the Railway to ensure that thework is done in accordance with specifications, approved designs and drawings and is of the best quality suitable for the purpose
22. Before offering the installation for commissioning, Contractor shall ensure thefollowing:
    - Allpreparatoryinstallation workhas beencompleted .
    - Simulatedtests havebeen conducted andtest results submitted
    - Requiredapproveddrawingsareavailableatsite
    - ShallcertifythatalltechnicalparametersofEIsystemsareasperRDSOStandard& Western Railway Practice and records submitted

- Tools, InstrumentsandSparesareavailableatsite
- Installation & Maintenance Manuals, Fault Diagnostic Charts & Troubleshooting Procedures are available at site

23. Contractor shall involve Site Engineers / Supervisors during system installation & commissioning. Contractor shall involve them in all aspects of Design, Programming, Installation & Commissioning at site to enable them in learning all aspects & stages of design, installation, testing & commissioning of EI System

Note:-**QUALITY AUDIT OFINSTALLATIONS:**

The Contractor shall arrange for a quality audit of installation by authorised representative of manufacturer for Electronic Equipments like Electronic Interlocking (EI), AXLE COUNTERS, AFTC, UFSBI, MUX, Data-logger etc. who will certify that the installation has been done asper OEM's specification & standard practices and pre-commissioning check list / guidelines issued by RDSO from time to time. The Contractor should also submit a certificate issued by OEM Stating “That quality and integrity of the installation (Electronic Interlocking System) remainthecompleteresponsibilityoftheOEM,Anydeficiencypointedoutlatershouldbe rectifiedfreeof cost byOEM.

The entire installation shall be tested by the contractor and after satisfying himself, the railway shall jointly test along with the contractor. Any alteration during testing shall be carried out at free of cost as required by Railways before commissioning. All „As made' documents have tobe submitted before commissioning. Each installation shall be tested in the presence of the supervisoryofficials deputed bythe Railways as soon as the particular installation/equipment is installed and unless the working of the equipment is actually ensured, it will not mean that the workhasbeencompletedtothesatisfactionoftherailway.Thisworkinvolvestestingand commissioningof theentire installation

Before testing and commissioning of the entire installation, eight copies of final `as made' details as hereunder shall have to be supplied duly incorporating all particulars for the station. Circuit diagrams prepared in AutoCAD 2000 will be supplied by Railways in compact discs.All „As made' shall be prepared by the contractor in Auto-cad 2000 and submitted in compact discs in duplicate. All ` As made' documents/plans shall be made bythe contractor as per Western Railway practice only as laid down in the Special Condition of Contract and shall be handed over to the Railways, duly signed.

a) `Asmade'circuitdiagram
b) `Asmade'powersupplylayoutdiagram
c) `Asmade'contactanalysischart
d) `Asmade'relaydispositionchart
e) `Asmade'Terminationparticularsofalllocations&FTOT
f) Anyotherdocumentrequired as perWR practice/Engineer-in-Charge.

Any correction made during testing shall be incorporated before submitting `FINAL' `As made' plan.

The contractor is required to supply the 15 numbers of bound registers of 200 pages with good quality papers for following purpose:

1. Cablemeggeringregister
2. RelayRegister,
3. BlockJoint Register,
1. RouteTestRegister,
5. LampReplacement Register,
6. RelayRoomKeyRegister,
7Battery Register,

8 RouteCancellationRegisterand
9 Earthresistanceregisters oras persite requirement.

5.6	**GeneralRequirementsandSpecificationsforEarthingof E.IEquipment:**
	Earthing of EI equipment, relay racks and Power equipment etc. to be done along with the supply of all requisite materials. Earthing shall be in the form of Ring Earth conforming to RDSO specification no. RDSO/SPN/197/2008 (with a min. of 6 earth electrodes) & RDSO Drawing issued under Railway Board letter No. 2010/Sig./SGF/EI (Ansaldo) Dated 22.06.11, made using copper rings with earth resistance less than 1 ohm. The earthing shall be maintenance free & earth enhancement compound should be used. The ring earth shall be connected to a copper flat of size 25 x 3 mm in the relay room and IPS room. This copper flat shall be fixed on the wall to the entire breadth of the Relay room and IPS room as an earth bus bar and all earth connections shall be taken from it. A, B, C, & D class protection shall be provided for all EI equipment. Counter for Class A type is to be provided. Earth Pit chambers shall be made up of preferably FRP material, with locking arrangement and hinges shall be used for earth pits. Drawingof earth pit attached as Annexure Note:- This will also cover the earthing & necessary protection of EI equipment as per details given in the scope of work of Special Condition of Contract and other requirements given in technical specification & Pre commissioning check list of EI system.
5.7	**SpecificationsandRequirementsforData logger:**

1. Data logger shall be supplied as per RDSO specifications IRS: S-99/2006 (Amendment 3) or latest with latest amendments.
2. Dataloggershallbesuppliedfor1024Digitalinputsand32analoginputsasmentioned in the schedule of materials.
3. Dataloggershallbesuppliedfor1024Digitalinputsand32analoginputsasmentioned in the schedule of materials.
4. While supplying the data logger it shall be kept in mind that only those data loggershall be supplied which can be programmed to be a part of network of the existing data loggers
5. Dataloggers shall besupplied alongwiththeonlineUPS.
6. Data loggers shall be supplied with the Fault diagnostic software and Failure analysissystem as per the requirements issued by the HQ from time to time.
7. Data logger shall be supplied along-with the printer as mentioned below. The suitable connecting cable shall also be supplied for connecting the data logger with the printer
8. The Front end Processor shall be supplied along with the Data Logger IFF specifically has been asked in the schedule of materials.
9. **Specifications and Requirements for the Printers:**following are the minimum specifications, however actual should be confirmed before the supply from Officer in Charge.The printer shall be heavy duty printer with laser Black and White printing.
10. **Specifications and Requirements for the UPS:** The UPS system for the servers and Failure analysis system should be online UPS of reputed make.The UPS system for the Data Logger system should be able to supply minimum 6 Hrs. back-up.
11. **Specifications and Requirements OF FAULT DIAGNOSISSOFTWARE:**Logic for Report generation are defined by RDSO & as per Western Railway Practice.
12. **Specificationfordesktoptypecentral monitoringunit/Failureanalysissystem:**

CONFIGURATION: Reputed make with the approval of Engineer in charge. The higher version of the systems may be accepted with the prior approval of Engineer-in- Charge

(a)	**CPU**	**IntelCorei7or superior**
(b)	**Memo**	**8GBorLatestRAMExpandableto 16GB.**
(c)	**Hard Disk Drive**	**1TB HDD orHigherCapacity**
(d)	**Screen**	**Minimum24" LED**
(e)	**Keyboard**	**Wireless keyboard**
(f)	**Mouse**	**WirelessOpticalMousewithmousepad**
(g)	**Ports**	**Minimum2 USBPorts,1HDMI Port**
(h)	**Operating System**	**Windows 10 with genuine licence Preloaded with Media.**
(i)	**NetWorking facility**	**Integrated10/100/1000 GbELAN**
(j)	**Warranty**	**12 months.**
(k)	**Software**	**MS Office 2010 Standard or Latest, Antivirus for Three years and softwareto view yard simulation and report including fault reports particular to station**
(l)	**Printer**	**Reputed make Laser Black & White Printer cum Scanner cum copier loaded with 1 Set of toner. (Model to be approved by Engineer-In-Charge prior to supply)**
(m)	**Furniture for Operator**	**Computer cum printer table top size1200 mm x 750 mm x 750 mm, 2 keyboards pull out tray, Drawer & Shelf, Computer Chair as suggested by Engineer– in – charge.**
(o)	**Pendrive**	**Minimum128GBpen drive**

13.**DualCardE1toSerialPortConverterfornetworkingof Data Logger**

SuitabletoinsertintheexistingDataLogger/FEPEurorack. Features:

- DTESIDE:Asynchronous(RS232).
- DCESIDE:4wireE1communications(G.703) Linespeed2.048MBPS.
- 2No'sDTEPortsand2No'sDCEPorts.
- LineImpedance:120Ohm(Balanced)
- LEDIndications:Power, E1Sync,Test,Error,TD,RDandHealth.
- In-builtBERT tester.
- Supportsfollowingloopbacktestsfordiagnostic purpose.
- Remoteloopbacktest.
- Localloopback test.

E1 interface

- StandardsCompliance:ITU-TG.703.

	● E1Transceiverchipset shouldcomplywithITU-T G.736and G.823. ● Interfacerate:2.048Mbps±50ppm. ● LineCoding:HDB3. ● LineIsolation:1500V(RMS). **RS-232port** ● StandardsCompliance:EIA RS-232C ● InterfaceTypes:RS-232 ● Signal:TXD,RXD,GND ● BaudRate: Upto57600 bps (autobaud) ● Asynchronousserial **Electrical&Mechanical:** ● InputVoltage:5VDC ● PowerConsumption:lessthan2W ● OperatingTemperature:-10^{0}C to+70^{0}C ● StorageTemperature:-10^{0}Cto+70^{0}C ● Eurorack insertable.
5.8	**SpecificationsandRequirementsofModified KLCR**
	Modified Key Lock Relay working with 24 V DC ACI INTEGRA Make with Different wordcombinationsContactconfiguration4F/4Bwithmanual pushbutton.Sample tobe getapproved beforesupplyof material(inspection byConsignee)
5.9	**SpecificationsandRequirementsofTagBlocks:-**
	160/200WayTagBlockswithPVCcoveraspertherequirementasper(IRS:S-77/2006rev.1) orlatest and drawingno.SA-24751 &52.
5.10	**SpecificationsandRequirementsforRelay/CT Racks:**
	The racks shall be supplied as per the CSTE's drawings. The drawings to be followed are: **CSTE- 6028 for relay rack, CSTE-5004, 5005, 5006 for CT rack.** In addition to the drawing parameters following shall also be compiled. 1. Until and unless it is specifically mentioned, all the racks shall be supplied with IDF arrangements. 2. TheScaffoldingshould include 20%extra(withminimum 2 RelayRackpositions). 3. All the cables shall be guided on proper ladders. All these ladders shall be supplied bythe contractor. 4. The cable supporting L-angles on the back side of the RelayRacks shall be of sufficient length (minimum 250 mm) to cover all the cables. 5. For all the relayracks each row shall be supplied with one string rod (properly insulated by sleeves) for the cable dressings. 6. The CT Racks shall also be supplied with proper size string rods to support cables at the back side..
5.11	**SpecificationsandRequirementsforDisconnectTerminalBlock:-**
	Disconnect Terminal Block, Screw less type, as per RDSO Spec. No. RDSO/SPN/189/2001 With latest amendments.(i) Disconnect Terminal Block, Screw less type, 4- wire front entry (Twoin-put &Two output)ThecolourwillbedecidedbyEngineer -in- Charge.(PreferablyIn Blue, Red & Grey Colors in the ratio of 1:2:3) (ii)Supply of End plate for above item (I) 2.5mm/0.091 in thick as per site requirement. (iii)SupplyofEndStopperforaboveitem(I)10mm/0.0394inwidthaspersiterequirement. (iv) Supply of Carrier Rails for above 35mm x 7.5mm, 1mm/0.039 in thickness un-slotted type as per site requirement.
5.12	**SpecificationsandRequirementsforMulti-coreindoorcable:-**
	PVCinsulatedRailwaySignalingmulti-coreIndoorCable1x60x0.6mmdiaconformingto

IRS:76/89(Amd3)or latest.
PVC insulated Railway Signaling multi-core Indoor Cable 1 x 40 x 0.6 mm dia conforming to IRS:76/89 (Amd3) or latest.
PVCinsulatedRailwaySignalingmulti-coreIndoorCable1x24x1mmdiaconformingto IRS:76/89 (Amd3) or latest.

5.13 **SpecificationsandRequirementsforSignalingIndoorSinglecorewire:-**

PVC insulated Railway Signaling Indoor Single core wire conforming to IRS 76/89 (Amd3) or latest. Of size 1 x 0.6 mm & 1 x 1 mm
Note:-WireColors shall bedecided byengineer-in -Charge

5.14 **SpecificationsandRequirementsforPowerwire:-**

Flexible cable (Power wire), multi-strand copper conductors cross section 1x6 Sq.mm.(85 conductoreach diameter 0.30 +/-0.01)as per IS 694/1990 with insulation thickness of0.80 mm nominal conductor resistance 3.30 ohms/km and test parameters are as per IRS (S)76/89.
Flexible cable (Power wire), multi-strand copper conductors cross section (1x16Sq.mm).101 Conductors each diameter 0.45 + 0.01 as per IS 694/2010 with insulation thickness of 1.2mm nominal conductor resistance 1.127 Ohms/Km and test parameters as per IRS(S) 76/89.
All the power wires shall be supplied as per IS specification no. IS 2465/1984 & IS 694/1990 with test parameters as per IRS (S) 76/89.

Sr No	Areain Sq mm	Total no.of conductors	Dia of each conductor in mm(+/_0.01)	Insulation thickness in mm	Nominal conductor resistance in Ohm/Km	Current rating
1	6	85	0.3	0.8	3.3	35
2	10	141	0.3	0.8	1.91	45
3	16	226	0.3	1.0	1.21	62
	16	126	0.4	1.0	1.21	62
4	25	354	0.3	1.2	0.78	80
		196	0.4	1.2	0.78	80
5	35	495	0.3	1.2	0.554	102
		276	0.4	1.2	0.554	102

5.15 **SpecificationsandRequirementsforFuses:-**

IndicatingtypelowvoltagenondeteriorratingfuselinkasperIRSS-80/92.0.6Amp
IndicatingtypelowvoltagenonderioratingfuselinkasperIRSS-80/92.1.6Amp
Indicating type low voltage non-deteriorating fuse link as per IRS S-80/92. 6 AmpIndicative type Fuse base/ holder with cap, suitable to G type fuse of capacity0.63A - 3.0A. 0.6 Amp
Indicative type Fuse base/ holder with cap, suitable to G type fuse of capacity0.63A - 3.0A. 1.6 Amp
Indicative type Fuse base/ holder with cap, suitable to G type fuse of capacity 0.63A - 3.0A. 6 Amp
TheGtypefusebaseandlinksinthefusestripsshallbeofanyofthefollowingmake
MALNAD or RAPID or SYSTEM ENGINEERING WORKS. Approval of railway's Engineer In Charge may be taken before supply of material

5.16 SpecificationsandRequirementsforFuseautochangeoversystem:-

Thisspecificationfor FuseAutoChangeoverSystemforuseinRailwaySignalingis RDSO/SPN/209/2012 Rev.2

Supply, Installation, Testing and Commissioning of Automatic Fuse Changeover & Fuse'Blown Off' Indication system in some of the Signaling Installations for Improvement to system Reliability.

This specification lays down the requirements and tests of Fuse Monitoring & Automatic Changeover System for Railway S&T Installations.

The changeover system covered in this specification is suitable for changing over to the spare fuse automatically when the main fuse in the signaling system is blown.At every changeover Auto/Visual indication will appear

The system covered under this system shall work on 110V AC.Alternatively supply of 24V DC can also be provided if required.

The system shall be modular by design and each module of the system shall have capacity for monitoring either of the following

TYPE-I: 32 nos. of external Non Deteriorating Type or „G' type fuses from 0.6 Amp to 4 Amp capacities which are in signaling circuits. System shall have 8 cards with monitoring arrangement of 4 fuses in one card.

TYPE II: 24 no. of external Non Deteriorating Type or „G' type fuses from 4 A to 10 Amp capacities generally used for point operation circuits. Such a system shall have 6 cards with monitoring of 4 fuses in one card.

All fuses being monitored by one card will be of the same supply having common ground. It should be possible to combine more than one such system for monitoring of more no. of such fuses in the entire installation

The system shall be capable of monitoring fuses with system voltage of the fuse circuit as 12V, 24V, 60V or 110V DC/AC.

Standby fuse shall come in circuit only after blowing off the main fuse and should be out of circuit when RESET switch is pressed after replacement of main fuse.

WARRANTEE:

The supplier shall give a warranty of 24 months from the date of supply for the equipment supplied under this specification.

SCOPEOFSUPPLY

The system shall be supplied along with all standby fuses placed in the system. In addition to it, spare quantities of 100% fuses of each type shall also be supplied along with the system. Extenderfixing platesasperclause1.1ofRDSOspecificationshallalsobesupplied incasethe systemis to beinstalled inexistingrelayrack instead ofastandard 19inchrack

5.17 SpecificationsandRequirementsforAutochangeoverPowerPanelsuitabletochange overbetweenthreeincomingThreephase230V:-

- AutochangeoverPowerPanelsuitabletochangeoverbetweenthreeincomingThreephase 230V supplies with signaling supply distribution arrangement, voltage sensing relays, MCB's, fuses & contactor Unit as per Drawing No. DRM/SG/743 or drawings issued bythe Officer in charge of the work
- First of all load calculations shall be done and get it verified from Railway officials; accordingly designing of power panel shall be planned.
- Allthecontactorrelays shallbeof SIEMENSorreputed make.
- All the MCBs if used shall be of SIEMENS or LA GRAN. These MCBs shall be of self- restoring type i.e. restoring to initial position after normalisation of current to its normal value.
- Allthefuses shallbeDtypefuses
- Fora4-6linestationallthewiringsshallbecarriedoutbymin25sq-mmmulti-strand

	flexible copper wire. The neutral shall be wired by 25 sq mm multi-strand flexible copper wire. In addition to this off load requirements justify higher grade wiring, contractor shall be bound to provide as per the drawing issued to him at the time of supply. ● All the wires shall be terminated with proper copper lugs on WAGO type terminals of proper size. Note:- i). Items include supply of 10 spare fuses of each type, 1 contactor relayof each type & 1 MCB of each type used in the panel. ii).Programswitches&wiretobesuppliedbasedoncurrentrequirement. iii).ThecabinetofAutochangeover shallbepowdercoated &as compactin sizeas possible.
5.18	**SpecificationsandRequirementsforProgramswitches:-**
	Programswitches,snapaction,basemountingtypealong**withacryliccover**andmounting bracket,63A, 9poles,and3positionsmakeSiemens/ThakurorSimilar..
5.19	**Specifications and Requirements for Conventional Power supply equipments & AutomaticChangeoverunit:-**
	Transformer/ Rectifier as per IRS S-91/93 (Amdt-1) or latest for Points 230V AC/ 120V DC/40A. Transformer Rectifier set with output voltage 140-160V shall be provided for operation of points as per revise policy dtd 06.03.2023 for Point operation Transformer/ Rectifier as per IRS S-91/93 (Amdt-1) or latest for Relay Internal 230V AC/ 60V DC/ 60A BatteryCharger ForRailwayS&T InstallationsIRS:S-86/2000(Amd.4)orlatest. SITEL'PrimaryCells(Dry,LachlancheType)ForRailwayS&TInstallationsIRS:S-95/96 (Amd. 1) LowMaintenanceLeadAcidStationarySecondaryCellsForS&T InstallationsIRS:S-88/2001. TRANSFORMER 230v/110 V 1KVA to 5KVA IRS:S-72/88 (Amd.2) DC-DCConverterForRailwayS&TInstallationsIRS:S–96/2000. Inverter For RailwaySignaling Installations For „On- Line' Applications IRS:S-82/92 (Amd. 2) Ferro Resonant Type Automatic AC Voltage Regulator For Railway signalling Installations IRS:S-74/89 (Amd. 6) or Latest amendment shall be applicable.
5.20	**SpecificationsandRequirementsforEarthLeakage Detector:**
	EarthLeakageDetector asperRDSO/SPN/256/2002withlatestamendments. The basic detector unit shall comprise of 12 channels, for use on signalling circuits of 110V AC/DC and/or 60V/24V/12V DC as ordered by purchaser. If the detector is required for a smaller number of channels, dummy plates shall be provided. For additional requirements, an add-on /expendable cabinet may be used. The voltage specified shall be provided with +25% and - 10% tolerance. Audio alarm circuit of the detector shall be common to all the detecting circuits. Individual visual indication e.g., red light on the plug in units, shall be provided for each detecting circuit. The leakage detecting relay shall be individual for all detecting circuits. ● Switches, knobs, push buttons, lamp indicators, metres terminals, resistances, capacitors, counters and other components shall be of industrial grade, LCSO/DOT approved to the extent feasible. ● Mounting of these components shall be elegant and easy for operation, adjustment and maintenance. ● All components and wirings shall be easily accessible for maintenance but no electrical conducting part shall be accessible externally. ● Arrangementsforproper ventilationofall heatradiatingcomponentsshallbeprovided. ● Thetransformersusedinthedetectorshallconformto IS:6297. ● Thecabinetof basic4 channelELDshallbesuitable formountingin19”rack

5.21 SpecificationsandRequirementsfor Furniture:

Model / Make and drawing if anymaybe got approved from RailwayEngineer Incharge before supply of material

- OfficeChairmakes GodrejCH-7Borsimilarof reputed brand.
- Office table with laminate 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 or Similar of reputed brand.
- Steel Plain Almirah with 4 adjustable slaves Size: 1980mm height, 915 mm width and 485 mm depth. Make: Godrej Storewell Plain Large or Similar of reputed brand.
- INDUSTRIAL LOCKER SIZE 78"H X 36"W X 19"D WITH 12 LOCKERS .LOCKER SIZE: 455MM H X 305MM D.
- OfficeRevolvingChairGodrejMakeModel No.9u02rBravoOrSimilar ofreputed brand.

5.22 SpecificationsandRequirementsforFireextinguisher:

BIS listed a semi automatic stainless steel fire extinguisher with UL./BIS approved clean gas with auto manual reverse stainless steel valve NASA 400 MAR having capacity 4Kg and made ofstainlesssteel304gradewithIndianrailwaylogooneachunitasperspecificationattached. MakeNASAorsimilar. AcceptedMake "NASA"or similar

Sr.No.	ITEM	DETAILS
01	Certification	BIS Approved (CM/L- 7200017592) IS 15683:2018
02	Main container	SS-304 GRADE Cylinder with 1.2mm thickness
03	Valve Body	PressureDie-CastedCF8 (StainlessSteel 304)
04	DischargeMechanism	LeakProofAutoShut Off Mechanism
05	ExtinguishingAgent	ULlisted HFC-236 fa
06	DeliveryMethod	Nozzlewithflexiblehosepipe
07	DeliveryMechanism	SS-304GRADEconvergentnozzle
08	Usage	Multipletimes use,tillthelastdrop
09	Pressure gauge	Diaphragm/Bourdontype
10	CylinderPressure	14 bar
11	SafetyLockpin	SS-304GRADE
12	TestPressure	35 bar
13	Range	3-4metres
14	OperatingTemperatureRange	-30°CTO60° C
15	Capacity	4 Kgs
16	ISIRating	2A 34 B
17	Tests	AsperBIS standards
18	Conductivity	Non– conductiveup to 100 kv
19	Warranty	10years*oruntil tamper-sealis broken
20	DischargeTime	Minimum 13 Seconds
21	Accessories	Heavydutywallmounting bracket
22	Averagedischarge percentage	≥98%
23	Totalwei ght	7.3kg Aprox.
24	Empty	3.3 kgApprox.

	nderweight	
25	ProductDimensions(HXWXD)	525X335X160mm
26	CleanGasShelf Life	10 Years
27	MAKE	MAKEININDIA

5.23 Specifications and Requirements for MSDAC with MSDAC installation, Transportation,Testing and Commissioning

5.23.1 Multi section digital Axle Counter (MSDAC) system shall comprise of Axle detectors, DAC field unit, mushroom housing for track side electronics, Central evaluator, MSDAC VDU as Reset unit, track clearance relay– unit for each track section, event logger, diagnostic terminal and line verification box confirming to RDSO specification no. RDSO/SPN/176/2013, Ver.3 or latest (Inspection by RDSO).

5.23.2 For ease of maintenance, only one uniform make of MSDAC is to be supplied and installed in this Project. The vendor should be in the RDSO approved list of vendors. DetailsBreakupofItemb“SupplyofMaterialsofMSDAC”tobegivenbysuccessfultenderer.

Sr. No.	Descriptionofitems	Units	Qty.	BaseRate	Total Amount
A	Main EISystem				
(i)					
(ii)					
B	Supplyof10%Essential spare of the MSDAC equipments				
(i)					
(ii)					
	TotalAmount(Awarded cost)				

NOTE:1)Thetotalamountmustbeequaltotheawardedcostof MSDACsupply, 2)SpareofMSDACshallbesuppliedaftercompleteinstallationofMSDACsystemand instructionofengineerincharge.

5.23.3 MSDACevaluatortoevaluatorconnectivityshallbecapabletoworkonbothQuadand OFCasperavailabilityofcommunication linkprovidedbythe railways

5.23.4 OEM supplied / certified Pre-fabricated Rack with power supply arrangement for Evaluator (inspection byRDSO) which is to be supplied alongwith the system as per RDSO specification no.RDSO/SPN/176/2013Ver.3orlatest.**HousingofEvaluatorstobesuppliedasper station/autohutspecific requirementas perRDSO specification.**

5.23.5 ManualresettingofMSDACtracksshallbeasperclauseno5.4ofRDSO/SPN/176/2013ver 3.0.IndustrialgradeVDUbasedmanualresettingsystemshallbeused.VDUshallgivea number of counts of manual resetting of MSDAC track sections.
Alternatively, in extreme conditions, use of reset boxes can be permitted with specific approval of PCSTE. All reset boxes shall be provided in 19” standard 42U or suitable size rack of Rittel orsimilarmake. Sizeofreset boxes can bemodified to suit local requirements ofavailabilityof spaceinexistingrooms.Inthismethod,theelectromechanicalnon-resettablecounteronreset box shallindicatethemanualresetof axlecountertracksection.

5.23.6 OEMsuppliedLineVerificationBoxesasperdrawingno.RDSO/S/20002.(Inspectionby RDSO).AdequatenooflineverificationboxestobeprovidedasperSIPandgeographical

	groupingoftracksections basedonoperationandvisibility.
5.23.7	OneeventloggershallbeprovidedtogivenocountsofAutoandmanualresettingcommands ofMSDAC foreach track section.
5.23.8	OEM supplied/ certified Mushroom cover/ Half apparatus case(s) (If required for installation) fortrack-sideequipment/each detectionpointhousing(InspectionbyRDSOforOEM supplied/ certified Mushroom cover; consignee for half apparatus case). Quantity of the Mushroom Cover/Half apparatus case shall be the same as that of detection points. However, if RDSO declines, it will be inspected by an authorised representative of the Railway's Engineer.**Housing of track side electronics shall be as per RDSO specification. Due to space constraintsbetweenlines,tracksideelectronicsshallnotbemountedinconventional location boxes used byRailwaysforcable terminations.**
5.23.9	OEMrecommendedlightningandsurgeprotectiondevicesforallsub-systemsasperRDSO specificationnoRDSO/SPN/144/2006.(InspectionbyRDSO).
5.23.10	HousingofEvaluators,Connectors,DC-DCconverters,fixtures,Ethernetswitches,surge protectiondevice,Timer,QseriesRelays,allnecessarycableandclampsetc.andallother material required for VR relay pick up to be provided by the OEM.
5.23.11	Evaluatorsaretobe keptat thestationrelayroom.
5.23.12	**<u>SupplyofEventlogger(In-Built)&diagnosticterminalwithmonitoring software</u>** EventloggerDiagnosticPC(Inspectionbyconsignee)- asperfollowingspecification: o Processor: IntelCorei3,3.1GHzProcessoror Higher o RAM: 8 GBRAM o HDD:512 GBSSD (Minimum) o Ports-2 USB-3.0,2 PCI slot o Screen: 21" 1920x1080LEDorbetter.Networkinterface: Integrated 10/100/1000 GbE LAN o Wireless:802.11a/b/g/nWi-FiandBluetooth o Keyboard&Opticalmouse o RS-232Compatiblein-builtModem o OS:Windows10/11withAntivirusforthreeyears,withsparecopytocatersystem breakdown. o **Warranty**:2years'OEMwarranty <u>NOTE:NMSsoftwareforMSDACshallbeprovidedforremotemonitoringatCONTROLROOM.</u> **Above mentioned is the basic minimumrequirement; however, the systemshall be as per actual requirement stated and approved by engineer in-charge prior to supply.**
5.23.13	**10%spareequipment's**i.e.cards/modules/evaluatormodule/backplane/relays/TXRx coils/track side junctionbox etc. shallbe suppliedfor each station / auto section. (Fraction to be rounded off to the higher whole number)
5.23.14	Materials,whicharenotinthelistofRDSO,shallbeinspectedbythe Consignee.
5.23.15	Thewarrantyof the equipment shouldbe12 months aftercommissioningthe system.
5.23.16	Railwaywill supplythe details oftrack sections and location oftheevaluator(s)to thesupplier. The supplier will submit the following documents along with the offer. a. 6quadcable lyingplan b. Cablelengthofeachtrackdeviceshallbe5metres/10metresintheratioof50:50(as per requirement at field).

5.23.17 SupplyofOEMtoolkit(Threesetstobesupplied)

Thetoolkitshouldbesupplied/certifiedbytheOEMconfirmingtoRDSOspecificationno. RDSO/SPN/176/2013 Ver.3 or latest.

Note: 1.

a. One set consists of Digital multimeter, dummy wheel, sensor mounting tool, spanner, screwDriverset,alltoolsformountingandadjustmentoftrackequipment,MarkingJig and dummy wheel with each 30 DPs and any other specialised tools and measuring instruments required for safe and reliable adjustment and all types of maintenance of equipment as suggested by the OEM.

b. Thelist of tool kits shallbesubmitted bythe OEM alongwith the offer.

5.23.18	Supplyofdocuments: Twocopies ofthefollowingshall be supplied: a. InstructionManual. b. Installation&maintenancemanualincludingDos &Don'ts. c. Mechanicaldrawingsofeachsub-system/rack. d. Schematicblockdiagramshowingmountingarrangementofvariouscomponents& details of each type of assembled PCB. e. Troubleshootingproceduresalongwithtestvoltagesandwaveformsatvarioustest points in the PCBs. f. Pre-commissioningchecklist. **g.** OEMauditinspectioncertificate.
5.23.19	In addition to the documents supplied above following documents shall be submitted in Hard copy and soft copy in PDF format by the agency to the field unit for approval before commencement of actual work. a. Quadallocation plan. b. DPplanandrackwisecentralevaluatorallotmentplanbasedonSIPprovidedbyRailways. c. Evaluatorsummary,DPsummaryand evaluatorcommunication summary. d. Wiring Diagram. e. MSDACDPconnectionbetweenCTRs. f. ResettingarrangementthroughMSDACVDU. g. Foreachtracksection,relaydriveevaluator,directDPandindirectDPconnectedtothe evaluator to be shown in a tabular format. Pre-commissioningchecklist,OEMauditinspectioncertificateandothertechnical information regarding MSDAC supplied (One copy for each evaluator)
5.23.20	**<u>TrainingRequirement:</u>** a. Trainingoninstallations,maintenance&troubleshootingshallbeimpartedto Railway Personnel at site or at OEM's premises (10 man-days for 30 DPs or part thereof). b. Training shall be organised for OL and Project staff & officers through the OEM/agency before commencement of work and proper record shall be maintained. c. Duringprogramming,testingandcommissioningonemoreroundoftraining shallbe organisedfortheOLstafftohave a betterunderstandingoftheproduct goingtobe commissioned. Duringthetrainingeach oftheattendee shall be givenacopyofthetrainingmanual and copies of the approved document without any exception.
	MSDACTransportation,Installation,TestingandCommissioning
5.23.21	TheinstallationofthesuppliedMSDACequipmenthastobecarriedoutasperRDSO specifications,approvedDPPlansandrequirementsoftheRailways.TheRailways

	requirementregardingtheinstallationactivityis as follows:
5.23.22	Transportation,Installation,Testing&CommissioningMultisectiondigitalAxleCounter (MSDAC)asperapprovedSIPwithResetunit,Relayunit,Evaluator(s),lineverification boxes,Powersupply,eventloggers,diagnosticterminals,programmingetcwithsupplyof allnecessarycable,connectors,fixture,clamps. Allinstallationequipmenttobetransported safelyin packed cover with sub components nameand quantitymentioned on the cover.
5.23.23	InstallationoftrackdevicetthemarkingsprovidedbytheOEMrepresentativealongwith siteengineer asperthe approvedDP plan.
5.23.24	Forlaying of transmitter and receiver cable, digging of trench, track crossing, laying of anti – rodent, anti – oxidant and non – flame propagating type Double Walled Corrugated (DWC) pipeof38mminnerdiaand50mmouterdia,andallotheraccessoriesaspersiterequirement. All materials to besupplied bytheOEM.
5.23.25	Cable connected to the Counting Head shall be suitably clamped with rail with sturdy clampfor protection against vibrations. Material of the clamp shall be suitable so as to protect against environmentalhazards.Nutsandboltsshallbeprovidedwithlocksealstoavoidthemgetting loose.
5.23.26	Cable termination at the DP mushroom / location box/ EJB, as the case may be, to be done by theContractorbothsides,tracksideaswellasrelayroomside,withContractor'sown materialsincludingterminals,ifrequired.
5.23.27	Deflectorplates tobeinstalledon bothsides forprotection ofsensors.
5.23.28	NopowercableshallbeprovidedbytheRailways.TheRailwayswillprovideQuadcable between the proposed DP marking and the relay room CT rack, with Quad cable terminated on the terminals on the CT rack.
5.23.29	Itshallbecapableoftransmissionofaxlecounts,healthstatusandotherinformation betweenfield units &central evaluator on a transmissionlink. The transmission link, in case ofcoppercable,shallbe½quadtelecomcableor1pairinPIJFcableoruse2pairsofcableto reducethetracksideelectronicsorone2-wirevoicechannelincaseofOFC.Therateof transmissionshould beaminimum 1200 baud.
5.23.30	Thedesignofinstallationshouldstrivetoachievemaximumavailabilityofsignalingfortrain operation.Asfaraspossible,linewiseevaluationtobethenormfordesign,exceptin unavoidable situations. However evaluators of system 1 and system 2 must be separate.
5.23.31	Contractor has to do installation of Central Evaluator in the relayroom at ,wiring from CT rack to Central Evaluator, installation and wiring of the MSDAC VDU,LV box (at stations, if required)andassociatedpowersupplywiring.Allwiringmaterialincludingforpowersupply to be supplied bytheContractor.
5.23.32	Wiring from CT rack to evaluator rack to be done with shielded cable of minimum 0.9 sq mm dia, all supplied by the Contractor. Indoor wiring from Evaluator to the K rack / CT rack to be donenormallyonladders,channelsorinanyothermannerdeterminedbytheAuthority's Engineer. The cables shall be neatlytied / laced. Thecable supports shall be so spaced to avoid sagging.
5.23.33	PowersupplycablefromPowerDistributionBoardtotheCentralEvaluatorshouldnotbeless than16 Sq mm PVCwire
5.23.34	For each installation /location oftheevaluator the supplier should give following informationregardingpowerrequirement.

S N	Supplyvoltagenominalwithrange	Loadrequirementinampere
.		

5.23.35	orMSDAC,Maintenancefreeearthingshallbeprovidedateach EJB/DPirrespectiveof uestionofitsrequirementbyOEMsofMSDAC.Armouringofquadcableshallbeearthed

	withthismaintenancefreeearth. Thisincludessupply&installationofmaintenancefreeearth materials and exothermic bonding and other connecting cable etc. as per Railway practice (Asper RDSO Spec no: RDSO/SPN/197 ver. 1 or Latest).
5.23.36	Trackclearancerelaytobepickedup foreachtrack section.
5.23.37	InstallationofEventlogger&diagnosticterminalwithmonitoringsoftwareatMaintainers roomand connectivityfrom evaluatorto Diagnostic terminal
5.23.38	InstallationofEventlogger&diagnosticterminalwithmonitoringsoftwareatMaintainers roomand connectivityfromevaluatorto Diagnostic terminal
5.23.39	Allemptyslots inthecard-file shallhavedummycardsfitted to prevententryof lizards,etc
5.23.40	All resettingto be preparatorytypeonly.
5.23.41	ManualResetthroughseparateMSDACVDUwith Lineverification. IncaseoffailureofAuto RESET,manualresettinghas tobe carried out,whichresets the failedtracksectionsintheyard under consideration. Line verification (LV) box at station to be provided as per geographicalgrouping of track sections.
5.23.42	PaintingandletteringofalltheDPs/Mushrooms/EJBs,Evaluators,ResetBoxes,LVboxes etcinstalledintheProject.Safeguardingoftheequipmenttilltheissueof Provisional Certificate shall be the Contractor's responsibility.
5.23.43	Painting and lettering of all the DPs / Mushrooms / EJBs, Evaluators, Reset Boxes, LV boxes etcinstalledintheProject.Safeguardingoftheequipmenttilltheissueof Provisional CertificateshallbetheContractor'sresponsibility.
5.23.44	SafeguardingoftheequipmenttilltheissueofProvisionalCertificateshallbetheContractor's responsibility.
5.23.45	**QUALITYAUDIT OFINSTALLATIONS:** **The Contractor shall arrange for a quality audit of installation by authorised representative of manufacturer for Electronic Equipments AXLE COUNTERS, MUX, Data-logger , ELD etc. who will certify that the installation has been done as per OEM's specification&standardpracticesandpre-commissioningchecklist/guidelinesissuedby RDSO from time to time. The Contractor should also submit a certificate issued by OEM Stating "That quality and integrity of the installation (Electronic Interlocking System) remain the complete responsibility of the OEM, Any deficiency pointed out later should be rectified free of cost by OEM."**
5.24	**<u>SpecificationsandRequirementsforElectricpoint machine:</u>**
5.24.1	Electric point machine,nontrailabletypeconformingtoRDSOSpecno.IRS.S.24/2002 amendment no.1 or later with the following parts:- (a) 220mmthrowwith interlocking foroperationofthepointasperRDSO Drg.no.S-11000 with AC immunity of 160 volt (RMS),50HZ. (b) Clamp point lock 60kgfor BGas per RDSO Drg no.S-3395A. (c) Switch extension Bracket(p brkt) and insulation plates as per RDSO Drg.no S-3591,3592 & 3593. (d) Detectorrods(long&short)as perRDSO drgno.S-3594-95,Lock rods(long &short)as per RDSO drg no.S-3596-97. (e) Droplug as perRDSOdrgno S-3598 includingallinsulation and accessories. NOTE:- ● The point machine shall be supplied with one junction box and two no. of telescopic pipes for each machine. ● Oneset ofmachine toolkits shall besupplied withevery8 no ofmachines. The point machines shall be supplied after receiving the Confirmation about the type of machines to be used in the section from the Officer in Charge of the work. It shall be kept in mindthatthemachineshallbesosuppliedthatitshouldnotrequirechangingthetrackside

	arrangementsin theholes andotherassembliesofthe point.
5.21.2	PointinsulationCompletesetasperRDSOspecificationIRS:S-40/84forswitchbracket,Split Stretcherbar &Gaugetieplate(52 Kg/ 60 KG as persiterequirement)
5.21.3	Gauge Tie plate nylon insulation as per RDSO drg no. T-10372 Alt 2 T-10368 T 10371 Alt 2,T-15083/88/Alt-2&T-11690/Alt-2andtothespecIRS:S-40/84withlatestamendmentsas applicable
5.21.4	Ground connections, complete set suitable for IRS type / approved point Machine for ordinary turnoutwithtongueattachmentinsulationandotherinsulationasperRDSODrg.S/3361@47>47@63 (for IRS type point machine) or RDSO Drg No.SA-9151/52 (for Siemens pointmachine)withlatestamendments.Howeverthegroundconnectionshallbeprocuredonly afterconfirmationfrom Railwayengineerasper sitecondition/typeofmachine/turnout.
5.25	**SpecificationsandRequirementsforLaminatedhylamSheet:-**
	Phenoliclaminated Sheet,gradeP3 instandard sizeof1220X 1220x10mm as perspec.NoIS 2036of1995 orlatest. Test report ofmanufacture to be supplied.
5.26	**SpecificationsandRequirementsforColourLightSignalComplete.:-**
	Thesignal post shall be supplied as per the specifications IRS: S6 &RDSO Drg. No. SA-24625 (Advance). The drawing for Signal base (140mm Tube) shall be As per IRS S-10 & RDSO Drg. No. 2011/M with latest assembly and the drawing for the Anchor bolts shall be SA-116A/M. LadderAssembly,asperRDSODrg.No.SA-23156 In addition to the drawing the maintenance Platform shall also be supplied at the time of installation. All the MS structures like maintenance platform, bracket, ladder etc shall be of MS with thickness not less than 5mm. Signal Front Staging Complete Assembly for CLS Unit.(6). Signal back staging as per extent WR Practice Note: Height of the Post shall be 5.5 Mtr. Long Galvanizationisprovidingthisitembeforesupply.
5.27	**SpecificationsandRequirementsforOffset Bracket.:-**
	Offset brackets for Main Signal, made of tubular steel, outer diameter 140 mm, thickness ofpipe 1.5 mm. horizontal length of pipe 545 mm & vertical length of pipe 324 mm with fixing arrangement on Main Signal post as per Drawing No SW/554/G/R Offsetbracketsfor ShuntSignal,madeof tubularsteel,outerdiameter 89mm,thicknessofpipe 1.5 mm. Galvanizationisprovidingthisitembeforesupply.
5.28	**SpecificationsandRequirementsforSignalUnits:-**
	The signal units shall be supplied as per the RDSO specifications /drawing no. IRS: S-26-61. or DRM/SG/1021(I) latest with latest amendments. The RDSO drawings for the signal units are a. FouraspectunitSA23001(withSINGLEdoor) b. Twoaspect unitSA 23003. 2 Asp.LED Signal housing made of SS-304 (1.5mm thick) duly powder coated in black with background plates, prewiring for LED signals, terminal strip, reflective strips on rear side, ventilation and pole mounting attachment the design shall be confirm to IP -54 4 Asp.LED Signal housing made of SS-304 (1.5mm thick) duly powder coated in black with background plates, prewiring for LED signals, terminal strip, reflective strips on rear side, ventilation and pole mounting attachment the design shall be confirm to IP -54
5.29	**SpecificationsandRequirementsforRouteIndicators::-**
	All the Route Indicators shall be supplied as per the Specifications IRS (S) 66/84 (Amendment 1) AND AS PER THE FOLLOWING DRAWING or latest with latest amendments. 1WAYRoute Indicator-Drawingno.CSTE 6238 2WAYRoute Indicator-Drawingno.CSTE 6238

	3 WAYRoute Indicator- Drawingno.SA 23403 4 WAYRoute Indicator- Drawingno.SA 23404 5 Multilamp Route Indicator as perdrawingno. SA 23761 Modificationofrouteindicatorfornopivot lamparrangementshallbethere beforesupply. Any discrepancies in drawing and specification, decision of Railways Engineer in charges will be final
5.32	**SpecificationsandRequirementsforCOUnit/A-sign Unit:**
	ThematerialshallbesuppliedaspertheRDSOdrawingno.SA-23840orlatestwithlatest amendments.
5.33	**SpecificationsandRequirementsforShuntSignal Unit:**
	Theshuntsignalunit,whetherwithCIbase/HoodorwithOffsetbracketshallbeprovidedas pertheRDSO drawingno.SA-23840 orlatest with latestamendments.
5.34	**SpecificationsandRequirementsforARA Terminals:**
	Thematerialshallbesuppliedasperdrawingno.23741AltIVAsperspecificationsno. IRS.S.75/2006(Rev.2)orlatestwithlatestamendments
5.35	**SpecificationsandRequirementsforLocationBoxes:**
	NERlyTypeSSlocationboxes(Full)ofSplGradeSS304ofsizesperdrg.No.DRM/SG/948 dt.26.01.2011
5.36	**SpecificationsandRequirementsforEarth Electrode:**
	ThenormalEarthelectrodeshallbesuppliedasperthedrawingno.CSTE-6091orlatestwith latestamendments
	TheMaintenancefreeearthelectrodeandBondingPractices,associatedcompoundsshallbe suppliedandexecutedaspertheRDSOspecificationsno.RDSO/SPN/197/2008.Allother materialsforMaintenancefreeearthshallbeprovidedasperRDSO/SPN/197/2008.Earthpit shall be made preferably of FRP material.
5.37	**SpecificationsandRequirementsforHalfroundRCC:**
	TheRCCpipealongwiththecollarshallbesuppliedasperISNo.458/2003ofNPtype.The tenderer shall submit an inspection/test report before supply for prior approval by the Engineer in charge.
5.38	**SpecificationsandRequirementsforCableJointingMaterial:**
	The cable jointing material for copper cable shall be supplied as Per the RDSO specificationsIRS.STC77/2012(rev3)orlatestwithlatestAmendments;andthecablejointin gmaterialfor OFCshallbeSuppliedwithspecificationIRS.S.TC81/2000orlatestwithlatestAmendments.
5.39	**SpecificationsandRequirementsforPowerDistribution Board:**
	Specifications and Requirements for Power Distribution Board: Fabrication, supply, installation and wiring of power supply of board in IPS room/relay room as per instruction of site engineer and extension of the power supply from IPS to power supply board and from power supplyboard to MDF board. This includes fixing of ARA terminals, fuse bases, switches etc and termination of power wire/cables. This includes supply of all wiring and termination materialexcepttermination&fuses,power& UGcable/wire.Whereveroutdoor U/G cablesare tobelaidthatiscoveredseparately.Inspection:Site Engineer
	The10 mm Hylam boardshallbe supplied bythecontractor.
	This board shall befixed on arack supplied bytheRailway.
	Rackshallbeerectedbythecontractor.Thiserectionshallnotbecountedintheerectionof relay/CTrack items.
	Thefuseswithbaseandcopperlugsofsizes(mayvaryfrom6-35sqmm)shallbesuppliedby the contractor.
	Allthefusesshallbeof D-type/Wagotype.
	Allother typesof linksexcept theARAterminals shallbesuppliedbythecontractor.

Theminimum materialwhich hasto besupplied inthis itemis as:

1. One10 mm thickP-IIIgradehylam board as per3.77-B above.
2. 6-16sq mmlugs,quantity100 no.
3. 25-35 sq mm lugs, quantity100 no.
4. D-type/Wagofuseswithbase2-25 A,quantity75in no.
5. D-type/Wagofuses withbase36-63A,quantity45in no.
6. 230VACpower supplyissuitableprotection fromtheAcrylicsheet
7. Anyothermiscellaneousmaterial.Finalquantityofaboveitemsshallbeaspersite incharge.

5.40 SpecificationsandRequirementsforDWCPipes

ThematerialshallbesuppliedaspertheRDSOSpecificationNo.RDSO/SPN/204/2011or latest

Double Walled Corrugated (DWC) HDPE Pipe with associated collars etc.anti-rodent & anti- oxidant and non flame propagating type in 6 metres straight length and of size 120 mm outer die,& 103.5 mm inner dia.(The manufacturers, suppliers must produce a valid IS licence and should be certified under ISO 9000 and shall submit a copyof certificate). One of the following coupling arrangements should also be supplied with each pipe as per the site requirement.

1) Suitablesnapfitcouplerwithrubber'O-Ring
2) Spacers
3) Tees
4) Bend,
5) End-cap

DWCpipeshallbemarkedatevery1mtrlengthinsuchawaythatmanufacturer'sname, vendernameandyearofmanufacturecanbeeasilyidentified.

5.41 **TechnicalSpecificationsof ToolKit:**

SN	Description	Qty	Make
1	Insulatedflatplier150mm	2	Gedore/Jhalani/Taparia
2	Insulatedsidecuttingplier 200mm	2	-do -
3	Combinationplier200mm(Insulated)	2	-do -
4	Insulatedstrippingplier 150mm	2	-do -
5	Insulatednose-plier150mm	2	-do -
6	Screwdriver150x3mm	1	-do -
7	Screwdriver150x4mm	1	-do -
8	Screwdriver150x5mm)Insulated	1	-do -
9	Screwdriver150x 6mm)	1	-do -
10	Screwdriver150x 8mm)	1	-do -
11	Screwdriver250x 8mm)	1	-do -
12	Screwdriver250x 10mm)	1	-do -
13	Hammerwithhandle500 gms	1	Std.Makeavailable
14	Cableknife4”	1	Std.Makeavailable
15	Brassbrush	1	Std.Makeavailable
16	Nylonbrush	1	-do -
17	Steelmeasuringtape5M	1	Freeman
18	Adjustablescrewwrench6”	1	Gedore/Jhalani/Taparia
19	Adjustablescrewwrench8"	1	-do -
20	Adjustablescrewwinch10"	1	-do -
21	SolderingIron220V,50W	1	Soldron

		22	Elementforabove	2	-do -	
		23	Bitsfor above	2	-do -	
		24	Solderingiron220V,25W	2	do -	
		25	Solderwire60/40,18 Swg,400gms	4 rolls	Bharti	
		26	Boxspanner5mm	1	Gedore/Jhalani/Taparia	
		27	Boxspanner6mm	1	-do -	
		28	Boxspanner7mm	1	-do -	
		29	Boxspanner8mm	1	-do -	
		30	Boxspanner9mm	1	-do -	
		31	Boxspanner10mm	1	-do -	
		32	ContinuityBuzzer	2	Std.Makeavailable	
		33	Screwdriversetconsistingof:-			
			Screwdriver Bits square head 10pcs.Conforming to IS 12168 Part II 1987:25mmand50mmsingleheadTypeSBP250,251,252,253, 500,501,502,503.oneNo.eachasapprovedbytheEngineerin-charge.			
			Flat head screwdriver bits conforming to IS 12168 Part I: 25mm SBF 253, 254,255,256,258,and50mm503,504,505,506,508.oneNo. eachas approvedbyEngineer in-charge.			
			BitDriver8.0x125mmBD125=2No.asapprovedbyEngineerin-charge.			

5.42	**TechnicalSpecificationsof RDPMS-NA**
5.43	**<u>SpecificationsandRequirementsfor LEDSignalLighting unit:</u>**
	LEDSignal LightingunitshouldbeasperRDSOSPN153/2011withlatestAmd RED YELLOW/GREENSignalLightingunitformainsignalasperdrg.SA:23002:S23024/M LEDSignalLightingunitforRouteindicatorasperdrgno.SA:23401withlatestAmdand drg:S 23407 LEDSignalLightingunitforCallingONsignalasperdrg.SA:24352:S23463. LEDSignal LightingunitforPositionlightshuntsignalasperdrg.SA:23840:S 23841
5.44	**<u>SpecificationsandRequirementsfortheInstallationofDataLogger System:</u>**
A	Thedata loggersystem shall beinstalled at aplaceasdecided bytheOfficer in charge.
B	Allthewiresshallbeterminatedinsidethedataloggerandatthedataloggertagblockat IDF bythecontractor ofthe data logger.
C	TheRailwayshallterminatethedataloggercontactwirings(i.e.wiringsofpotentialfree contacts)up-tothedatalogger tagblockattheIDF rack.
D	Allthesubsystemsandinterfacesrequiredtomonitorthedigitalandanaloginputsshallbe supplied bythecontractor.
E	Thecontractorshallalsovalidateallthecontactsofdigitalinputsandalltheanalogsupplies beforethesigning ofRDSO'schecklistwiththeOEM.
F	AllthenecessaryOperatingandApplicationsoftwareshallbeloadedinFailureAnalysis systemand Servers.
G	Pre-commissioning checklist shall be jointly signed bythe Railway's and OEM's representative.
5.45	**<u>Specificationsandrequirementsfortheerectionofrelayrackandcabletermination rack:</u>**
A	Alltherelayracksshallbeinstalledaspertheschemeapprovedbytheengineerincharge.All theerectionfittings shallbesupplied bythecontractorasa partofinstallation.
B	Itistobeensuredthatallthemajorgroupsshallbeinstalledwithproperguideplates.These

	guideplates shall besupplied bythe contractor of its own.
C	Fullhylamboardshallbeusedforthecableterminationrackstofixthemulti-wayisolating blocks/wagoterminals.
D	Outdoor Cable supportingrack shall be supplied (in numbers) and erected in such a manner that allthecablesshallbeterminatedpreferablyinonelayer.Theterminationcanbedoneina maximum of twolayers.
E	Allthecablesterminatedwiththecable supportingracks shallhavearmouryearthed.
F	The armoury shall be made exposed at a point and a copper flexible twisted wire (total area 1.5 sqmm)shallbewrappedaroundthearmouryatoneendandtotheGI/copperrodattheother end.
G	Allthearmories,whethersteelwiresorGIsheets,shallbebentattheendwherecableis extractedso that it maynot damagethe cable conductors in thelongrun.
H	Atthecablearmouryendthecopperwireshallbesolderedinsuchamannersuchthatitistied tightlyand is not loose.
I	Attheother endalsoalltheseearthwires shallbesolderedon thecopper/GIrod.
J	Allthesecopper/GIrodsshallbefinallyconnectedtotheearthingterminalthrough25/16sq mmcopperwirethroughanARAterminal.
K	The25/16 sq mm copperwireshall be arranged bythe Railway.
L	Theearthingandlacingofallthecablesshallbedoneinsuchawaythateachandeverycable earth shall beseparatelyidentifiable.
M	Theareawhereallearthlingsofcablesareterminated(i.e.areabehindtheCTrack)shallbe filledwithsandatthecableentrypoint.Thesandshallbefilledjustuptobottomofcable terminations.Allthe earthingterminations shallbeoutsidethesand andshall beclearlyvisible.
N	Fullhylamboardsshallbefixedonthefrontsideof theCTrack.Thehylamboardsarecovered intheschedule of supply.Onthehylamboardtheholesshallbedonetosuitthefixingof wago/other terminals.
O	On the back side of the hylam board the cable conductors shall be supported by the string rodonwhichinsulationsleeveshavebeenprovided.Thestringrodswithinsulationsleevesshall notbecoveredinsupplyitemsseparately. Thestringrodswithinsulationsleevesshallbe supplied by the contractor as a part of installation of CT rack.
P	Sufficientspaceaspersitein-chargeshallbeleftbetweentworowsofcableterminationsso thatdescription-writingworkcanbefurnished.
Q	Allthetagblocks shall befixed on theRacks.
R	Normally20%spacein therelayrackand CTR should bekept freeforfutureexpansion.
5.46	**SpecificationsandrequirementsofRunningofIndoorcables,Jumpering,installationand testingandcommissioning:**
A	Bydefault (if notadvisedbytheRailways otherwise) thewiringshall be IDFbasedrackwiring.
B	Allthecables (60/40 core) shallbeneatlylaid from therelayrack to theIDF rack.
C	Thecablesupportinganglesshouldbeofsufficientlength(min250mm)tosupportthecables suchthat thereis no pressureon the cablesduetothe short lengthof theangles.
D	Thetagblocks shallbeinstalledas perthe instructions of sitein-charge.
E	Thewiringonthebusbarshallbedoneinsuchamanner(inloopingway)thatafterbreakage from one side thesupplyshall beextended from theother side.
F	Allthecablesshallbedressedproperlyandtiedwiththedressingthreadsonly.Itistobe mentionedthat cable wiresshall not in anycasebeusedforthedressingofcables.
G	Thecapacitors shall be of RESCONmadewith longlife features.
H	Beforestartingthe jumpering, jumpersheets shallbeprepared.
I	Allthejumper wiresshallbe dressedwiththe dressingthreads only.
J	Onthebusbarthepowerwiresfromthepowerroomshallbeterminatedwiththeproperlugs with soldering.

K	AllthepowerwiresshallbedressedabovetheBusbarterminalsonL-shapeangleswith insulationsleeves.
L	Thesolderingmaterialshallbeofasperclause3.80ofchapter-III.Howeverthesoldering materialshall beapproved fromtheengineerin-chargebeforestartingthesoldering.
5.47	**SpecificationsandrequirementsofRunningofSupply,Installationandcommissioningof UniversalfailsafeBlockinterface:** Supply, Installation and commissioning of Universal fail safe Block interface as per RDSO Spec. IRS-S 104/2012 ver.0 with latest amdt, suitable to work on OFC-1/Quad cable as 16 input-16outputmultiplexersforsignalingincluding68Nos.ofQN1(8F/8B)relaysforsystem commissioning.
	ThecommissioningshouldbedonebyOEMasper Pre-commissioning checklist
5.48	**SPECIFICATIONOF19''9U RACK:** The Rack shall be a standalone type of good quality9U Rack and of D-Link, Val rack or WQ make or similar. a. Wallmounted Rack shall beof Size-42 U b. The19"Rack structureshould be madeof 1.6 mm thick Mild Steel. c. Rack should have 1-No Front- Glass- Door of 4 mm thick covering the entire length ofthe rack that should be fitted / pasted to Front –Door- Frame byusing silicon sealant. The material thickness of the Front & Rear -Door Frame should not be less than 0.9 mm witha capability of opening up to 180 degree approximately with locking arrangement, detachable & interchangeable hinges. Front & Rear Door should have Poly Urithane Gasketing. Racks should have Locks on all sides, which can beunlocked and opened bya single key. d. Thethickness ofTop-Cover& Bottom- Basematerial should beat least 1.2 mm. TheTop Cover should have Cable –Entry holes of size 40 mm in diameter with Rubber Rings and suitable Gland Closure Plates. e. TheSidePanels of theRack should be detachable having ventilated fines flush fittedwith Air filters up to 1/3 rd height to avoid dust entry. f. Installation of the rack is to be done as per instructions of the Engineer & Supervisor incharge.
5.49	SpecificationsandRequirements fortheCrank HandleRelayBox:
	a. The crank handle Relay shall be fixed in a 15U rack and shall be fixed inside the ASM office. b. Thecrank handle Relayboxshall be madeof plywood ofthicknessnot less than 15mm. c. Theboxshallbeprovidedwithvinegar cover. d. All the CH relays shall be fixed inside the box as per the instructions of the engineer in charge. The necessary angles required to fix the box on the wall shall also be suppliedby the contractor. These shall be of MS and of thickness not less than 5mm. e. One RED colour LED of 11 mm diameter shall be provided for each relay on the CH box. This LED shall also be supplied by the contractor. f. Thepressingbuttonshallalsobesuppliedbythecontractor.Thepressingbuttonshallb e of L&T make. g. Thesupportingangles of MS shall be fixed on the wall and the wall shall be re-masoned with proper mixture of cement. h. All the contacts of CH relay shall be made parallel with spare contacts as per standard practice.
5.50	**SpecificationsandRequirementsforthePanel cumBlockInstrumenttable:**
	1. The block tables shall be provided as per the drawings and specifications of the concerned engineer in-charge. 2. Theblocktableshallbemadeof15mmplywood.Theplywoodshallbewaterproofand

	termite proof. Theblocktableshallbeprovidedwithacoverofsunmicasheetorveneersheetasperthe approval of the engineer in charge. 3.Hinges of Doors shall be of standard make with proper locking facility. All the cable entrypoints shall be properly sealed with sealant before commissioning of work.
5.51	**SpecificationsandRequirementsforthefixingandwiringofQNA1relaysforcutting-In purposes:**
	a. Therelays shallbefixedin thelocations inthe TOP rows. b. The relays shall be fixed in a manner that there should be a gap of one relay after every two relays. c. The relays shall be fixed on square bars which shall be supplied by the contractor as apart of this item. d. Forthewiringtheflexiblewires(16/0.2)shallbesuppliedbythecontractori.e.the contractor shall carry out the wiring with his own wires. e. Allthecontactsusedshall bemadeparallelwith oneadditional contact. f. Thefixingmaterial like squarebars, nut/bolts etcshall be supplied bythecontractor.
5.52	**Supply, Erection, Testing and Commissionin of Automatic fire alarm system (AFDS) as per RDSO Specification RDSO/SPN/NEW/2010 Version 3**
5.52.1	Supply, installation, testing and commissioning of UL/FM/VDS/LPCB approved Microprocessorbasednetworkableanalogueaddressableandmodulartypeof Firealarmcontrol panel with display, in-built charging facilities and provision of GSM module suitable to send SMS to configured mobile no. The panel should be equipped with sufficient nos. of loops and provision of expandability as per RDSO specification no. RDSO/SPN/217/2021 or latest. The Control panel shall be the central processing unit of the system, receiving and analysing signals fromprobetypebimetallicheatdetectors,UV IRflamedetectors,heatandsmokemultisensors, LHS/LHSD interface and manual call points, providing audible and visual information to the user. The panel shall have provision of connectivity of TCP IP suitable for programming and remote monitoring. The panel shall have dedicated RS 232 serial port for direct PC or MODEM connection, for interfacing withexisting data logger, optional remote printer As per RDSO specificationno.RDSO/SPN/217/2018ver2.0orlatest**Note:-Sparetobesuppliedasper RDSO/SPN/217/2021Ver3.0ininclude in thisscope.**
5.52.2	Supply, Installation, Testing & Commissioning of Analogue Addressable Multisensor Detector with multiple sensitivity(adjustable at site) levels , programmable for timed automatic sensitivity selection with base, and other accessories as required and Detectors shall be VdS listed.TheDetectorsshallcomplywiththeRDSO/SPN/217/2019Ver.3ororlater.(Inspection byRDSO)
5.52.3	Supply,Installation, Testing & Commissioning of Manual call points, Push type & resettablewithkey,withIn-builtisolator.ShallbeVDScompliantandshallcomplywiththe RDSO/SPN/217/2021orlater.(Inspection byRDSO)
5.52.4	Supply,Installation,Testing&CommissioningofResettable,AnalogueTypeLinearHeat Sensing(LHS)CablecomplyingtoRDSO/SPN/217/2019Ver.3ororlater.(Inspectionby RDSO). As it is the latest UL or FM or VDS or LPCB approved / listed.
5.52.5	Supply, Installation, Testing & Commissioning of LHS Interface Module with all accessories complyingto RDSO/SPN/217/2019 Ver.3orlater.(Inspection byRDSO). Asitis thelatest UL or FM or VDS or LPCB approved / listed. **Linear Heat Sensing (LHS) cable or Linear Heat DetectionSystemwill beessentially deployed alongwith its interfacemodule in cable trays andvitalcablebunchesasperinstructionsof engineerin charge.**
5.52.6	Supply,Installation,Testing&CommissioningofAnalogueAddressableloopPoweredControl Modulecomplyingto RDSO/SPN/217/2021 Ver.3 or later.
5.52.7	Supply,Testing&CommissioningofHootercumStrobecomplyingtotheRDSO

	/SPN/217/2021 Ver.3 or later.
5.52.8	Supply,Testing&Commissioningof2C1.5sqmmtwistedshieldedarmouredcoppercable (PerMeter)withaccessoriesas perRDSO/SPN/217/2021Ver.3or later.
5.52.9	Supply,Testing&CommissioningofIsolatorDevicetoisolatethecircuitincaseofshort circuit,complyingto the RDSO/SPN/217/2021 Ver.3or later.
5.52.10	Supply, Testing and CommissioningofAuto TelephoneDialler (GSM)to send thepre-recorded message to multiple mobile numbers, programmed earlier, complying to the RDSO/SPN/217/2021Ver.3orlater.
5.52.11	SupplyofAspiration(AirSamplingType)DetectionUnitwithallaccessoriescomplyingto RDSO/SPN/217/2019Ver.3orlater.AsitisthelatestULorFMorVDSorLPCBapproved/ listed.
5.52.12	Supply, Installation, Testing & Commissioning of CPVC Pipe for Aspiration Detection System asperRDSO/SPN/217/2019Ver.3orlater.andshallbeaslisted/approvedbyULorFMor Vdsor LPCBortestedwithappropriateequivalentstandard.
5.52.13	Addressablesystemswithcontrolpanelandheat&smokemultisensorswithproperaddress shallbeshownon thecentralpanel .
5.52.14	NA
5.52.15	TypicalCablelayingplan, placementofsensors planshallbeprovided.
5.53	**<u>SpecificationsandRequirementsfortheInstallationofPowersupplyequipments:</u>**
5.53.1	TheIPSand otherpower equipment alongwithbatteries shallbetransported tothesite.
5.53.2	Installation shall be done by OEM if specified by the purchaser. However, commissioning of IPS shall be done by the OEM only. OEM shall issue a certificate of fitness of installationbeforecommissioning.Forthis,ZonalRailwaysandOEMshallensurethecomplia ncetoPre-commissioningchecklistissuedbyRDSO.
5.53.3	FromtheIPSthepowerwiresshallbedroppedonladdersorothercasing/protection arrangements.Thepowerwiresshallbesuppliedbythecontractor.Theladderorcasingshall besupplied bythe contractor as apart ofinstallation.
5.53.4	AllthepowerwiresshallbeterminatedintheIPSthroughproperlugs.Thelugsshallbe suppliedbythe contractor asa part ofwiring.
5.53.5	All the power equipment including the ELDs shall be terminated by the contractor on proper lugs. The lugs shall be supplied by the contractor as a part of wiring. If the base stand is not providedbytheOEMofELD,thenthisshallbearrangedatsite.Theclampsshallbesupplied bythecontractor andtheHylam boardfor thebase shall besupplied bytheRailway.
5.53.6	Thewiringshall be terminated as perthewiringscheme approved bytheRailways.
5.53.7	Thepowerwirefor theterminationshall besupplied bythe contractor.
5.53.8	Necessarytermination detailsshall bepainted onall the equipment.
5.53.9	Allthemasonryworkrequiredatsiteshallbedonebythecontractorwithhisownmaterialasa partofinstallation.
5.53.10	Theearthingofpowersupplyequipmentshallbeconnectedtothesystem.Theearthingwire (preferable6/16 sq mm) shallbeprovided bythecontractor.
5.53.11	Laddersasdecidedbysite inchargeshallbemountedtotake supplytovariousboards /program switches.
5.53.12	TheIPSandother power equipmentalongwithbatteriesshallbe transportedtothesite.
5.53.13	TheIPSshall beinstalled bythe IPSsupplier, ifnotcovered separatelyin schedule.
5.53.14	FromtheIPSthepowerwiresshallbedroppedonladdersorothercasing/protection arrangements. The power wires shall be supplied by the contractor. The ladder or casing shall be supplied by the contractor as a part of installation.
5.53.15	AllthepowerwiresshallbeterminatedintheIPSthroughproperlugs.Thelugsshallbe suppliedbythe contractor asa part ofwiring.
5.53.16	AllthepowerequipmentincludingtheELDsshallbeterminatedbythecontractoronproper

	lugs. The lugs shall be supplied by the contractor as a part of wiring. If the base stand is notprovided bythe OEM of ELD, then this shall be arranged at site. The clamps shall be supplied by the contractor and the Hylam board for the base shall be supplied by the Railway.
5.54	**SpecificationsandRequirementsfortheInstallationofFusechangeover system:**
	Installation wiring testing and commissioning of Fuse change over system (FACS). This includes provision of common Buzzer & indication at ASM Room & ESM Duty Room and painting of fuse details. Installation of wiring diagram and validation report shall be submitted in proper template as similar with other documents. This also includes fabrication of frames for installation of FACS at Station/ LC gate where installation of relay racks is not feasible.
5.55	**SpecificationsandrequirementsforDiggingofTrenchesintheSoftSoils,Asphaltedarea and Track Crossings: (refer drawing no. CSTE-3644 (1-11)**
5.55.1	Alllocationsshall beerectedwith onecoat ofpaintbeforetrenchingand layingofcables.
5.55.2	Thecontractorshalldeputeproperandcompetentsupervisorfortrenchingandcablelaying work.
5.55.3	Beforestartingthetrenchingfootbyfootsurveyshallbedonealong-withtheRailway's representative.
5.55.4	Thecableroutesshallbejointlyfinalisedby thecontractor'sandRailway'srepresentatives.
5.55.5	TheproposedcableroutepplanshallbesubmittedtotheRailwaysanditshallbeapproved(also bythe engineeringandelectricalbranches).
5.55.6	Inadditiontothemaincableplan,atrackcrossingplanshallalsobeapprovedbeforestarting the work.
5.55.7	The cableshallbelaidattheRailway'sboundary (onemetreinsidetheoutermostboundary).
5.55.8	Whiletrenchingitshallbekeptinmindthedepthofthetrench**shallbe1metre**untiland otherwisespecifiedbytheengineerin charge. All thepayments shall be madein cubicmetres accordingly.
5.55.9	Whiletrenchingthecontractorshallclearthetemporaryobstructionslikerootsoftreeifany, somefoundationifany.Ifitisnotfeasibletoclearthereroutetherouteshallbediverted accordingly with the prior permission of the engineer in-charge.
5.55.10	Allexcavatedearthshallbestakedbythecontractorawayfromthetrackandnotonballastor shoulders.
5.55.11	In case digging is to be done in between tracks the excavated earth shall be carried manually beyond theadjacenttrack/tracksandstackedcompletelyoutside.Incasethetrenchgetsfilled up with water from the surrounding area due to rain etc, the Contractor shall have to make his own arrangement to pump it out without any extra charges payable for the same.
5.55.12	If during the trenching, any cable markers, obstruction such as pipes or cables or any bricksor warning covers which appear to be deliberately placed in the location is noticed, the digging should be stopped immediately and the Railway Supervisor should be called. Further excavationwill bedone in his presenceverycarefullywith thehelp ofwireclaws anddigging canbefurther resumedonlywith thepermissionoftheEngineer/Supervisor-in-charge.
5.55.13	Wherethecablerouteisonunevenground,areasonablylongsectionofconsistentgrounding shall bedug,ratherthan followingeveryundulation of theground.
5.55.14	Beforestartingthetrenchingintheasphaltedareathecontractorshallgetpriorapprovalof competent authority.
5.55.15	Duringthetrenchingandcablingworkintheasphaltedareasthecontractorshallcordonoffthe areawith proper means of barricadingand warningboard fortheuserof that area.
5.55.16	Afterthecablingorthelayingofsuitablepipesorductstheasphaltedareashallberestored backto its earlierstate of surfacebyproper means.

5.55.17	Whilerestoringbackthecontractorshalltakecarethatthelevelofthisareamustmatchwith the nearbyareas.
5.55.18	Beforethetrackcrossingitshallbeensuredthatacommencementnoticeshallbegiventothe P-waysupervisor.
5.55.19	Duringtrenchingthemuckintheformofsoilorballastshallbefilledingunnybagsandkept awayfrom the trackarea.
5.55.20	Afterthetrackcrossingisdoneandthetrenchisrefilled,theleftovermuckshallbetakenfar fromthetrackarea.
5.55.21	Nomuck in anyform likesoilshall beleft in the track areas.
5.55.22	Thecontractorshallkeeponeadditionalmantolookforthetrainswhilethetrenchingand cablingworkisbeingdoneintrackareas.Thedutiesofthispersonshallbetolookforthe trainsandwarnthelabourswork inginthetrackareas.Railwayshallinanycasenotbe responsible for any mis-happening on the track areas.
5.55.23	Thecontractorshall ensurethat allsafetyfeatureshavebeenarrangedforits labour.
5.55.24	The contractorshallalsoapplyforandissuetheIDcardforitslaboursupervisorandassociated labour.
5.55.25	Railwayshall not be responsible forthe stayingfacilityof thelabour duringthe work.
\5.55.26	Incaseofanyconfusionbetweenthedrawingandinstructionsofbetweenanytwoclausesof thetenderdocument,the decisionoftheEngineer-in-Chargeshallbe final.
5.55.27	Allsignalling,quadcablescanbelaidinonetrenchforspeedyexecutionandOFCshallbelaid in2differentpaths.SignalcablesandOFC ductscanbelaidinthesametrench.
5.55.28	**In the cases where digging of trench up to the depth and width as mentioned in tender schedule is not possible, the depth can be reduced as per site conditions and directions of the Authority Engineer of the work. For trench depth less than 1 meter due to unavoidable site conditions, prior approval of authority to be taken. In this case, the lesserdepthportionofthetrenchshallbeconcreteduptomin300mmoverthe RCC/DWCpipeforprotectionof thecable.**
5.55.29	**Guidelines issuedby RailwayBoard videletterno 2021/Tele/5(2)/3-Part(1)(3425647)Dtd 12.06.2023 for undertaking digging work in the vicinity of signalling, Electrical and Telecommunication cables, need to be followed during digging/trenching work in the vicinityofRailwaytracks.Damagetotheexistingcablewillattractapenaltyas mentionedinguidelines.**
5.56	**<u>SpecificationsandRequirementsforplacingofvariouspipes/RCCductsintrenches(refer</u> drawing no. CSTE-3644 (1-11):**
5.56.1	Allthepipes/ductstobeplacedinthetrenchesforlayingofcablesshallbetransportedtosite bythecontractor byitsownmeans.
5.56.2	Allthetrenches shall beproperlyandthoroughlycleaned beforelayingthepipes/ducts.
5.56.3	Whilelayingofductsitshallbeutterlycaredthatthereisnodamagetotheductdueto mishandling.
5.56.4	Ifmorethanonepipeorductistobelaidinthesametrenchthenbothshouldbelaidsideby side.
5.56.5	RCCpipe/halfroundRCCpipewithcollarstobelaidafterlayingofcablesintrenchesasper schedule.
5.57	Firstallthebridgesshallbesurveyedbeforecommencingthisitem.
5.57.1	AftersurveyingitshallbejointlyfinalisedbytheRailway'sandcontractor'srepresentativeas towhatarethe feasiblespotswhereanglesandchannelscanbeprovided.
5.57.2	ThefixingofGI/RCC./PVCpipe(withcontractorsonclamp)onculvertsshallbeasper Drg.No.CSTE/3644Pg.6.
5.57.3	As perscheduleitemalltheconcernedmaterialthatistheanglesandchannelsrequiredshallbe suppliedbythecontractors alongwith GIfittingbolts and nuts.

5.57.4	Alltheanglesandchannels shallnot be ofmaterial (MS)havingthicknesslessthan 5 mm.
5.57.5	TheshapeandsizeoftheanglesandchannelsshallbejointlyfinalisedbytheRailway'sand contractor'srepresentatives.
5.57.6	Itshouldbekeptinconsiderationwhilefinalisingthesizeofanglesandchannelsthatthere shouldbesufficient spaceextraafter providingthepipes.
5.57.7	Theplansanddrawing,tofitthechannelsandanglesonthebridge,shallalsobeapprovedby thebridgeorganisationoftheconcernedjurisdiction.
5.57.8	Whilelayingthecablesinthepipe/troughingthecornersofthebridgesshallbecoveredwith solidconcretingtoprevent anyaccess ofthe cablesto theunwanted outsiders.
5.57.9	Allthe pipesshall beproperlycoupledthroughcouplers.
5.57.10	Introughingthe Bitumen compoundshall befilled asperproper procedures.
5.57.11	Incaseofanyconfusionbetweenthedrawingandinstructionsofbetweenanytwoclausesof thetenderdocument,thedecisionofthe Engineer-in-Chargeshallbe final.
5.58	**<u>Specifications and Requirements for laying of Cables (refer drawing no. CSTE-3644 (1-11):</u>**
	Allthecables shallbetransported to the sitebythecontractorbyits ownmeans.
	Thecablesatsiteshallbestoredproperly,fullyprotectedagainstharshenvironmental conditionslikerainsetc.
	Allthecables shallbemeggeredbefore layingofthecablesandaproperrecordshallbehanded overtotheRailway'sengineerincharge.
	Cable drums mounted on Jackscrew stand shall be used for cable laying to avoid any kinks orpressureonthecableduringcablelaying.Sufficientmanpowershouldbearrangedbythe contractorto laythecable manuallyso that it doesnot rub on the ground.
	shallbe laidwithduecautionso asnot tocause anydamageduetorough handling.
	layingthecable, precautionsshall be taken toavoid anykind ofpressureonthe cable.
	TheCabledrumshouldbemountedonajackscrewstandandthecableshouldbepulled whilelaying.Duringthiscaremustbetakentosupportthecablemanuallysothatitdoesnot rubon the groundandalsoto avoidanytwist inthecable.
	Afterlayingofthecablesbeforetheterminationsinthelocationboxesitshallbeensuredthat allthecables arecoveredwith theinsulatingtape attheir ends.
	Allthecablesshall betaken insidethelocation boxesmarked forthe concerned cables.
	Whileenteringthelocationboxesitshallbeensuredthatthepitnearthelocationboxisof sufficient size such that after burying the cable, the uppermost portion (top) of the cables is atleast 0.8 metre below the surface level.
	Asamatterofpractice,untilandotherwisespecified,notmorethan1-2metresofcoilsareleft forallthe cablesasa loopafter consideringthelengthrequired forthe termination.
	Beforethebackfillingisdone,thecablemarkerswillbeprovidedinsuchawayastokeepthe topportionvisibleafter filling.
	Themarkershouldbesoplacedastobeclearlyvisibleandshallnotprojectaboveraillevelof thenearesttrackand shallnotbemorethan200mm fromthetop surfaceof groundlevel.
	There will be one cable route marker at every thirty metres interval in addition to additional cablemarkersto beprovided at bends and at such otherlocations which will beindicatedbythe supervisor-in-charge.TheRCCbasedcablemarkersshallbesuppliedaspertheRCILdrawing no4014/00/CC4 orlatestwithlatest Amendments.
	Onecableroutemarker shall beplacedat thepoint of divergence.
	Onecablemarkerateitherendshallbeplacedateachtrack crossing.
	Onecablemarkerateachsideoftheculvert/bridgeetc.
	WhenSignalingandMainTelecomcablesarelaidinthesametrench,adistanceof100mmis tobe maintainedbetween them.

	WhenSignalingandL.T.orH.T.powercablesareplacedinthesametrench,theymustbe
	separatedbyarow ofbricks (anypipe RCC/DWC) between them. In case several cables of different Categories are laid in the same trench, they should be placed in the following order starting from the main track end, so that in case of accidents the maintenance staff may easily recognize the damaged cables from sight. 1st MainTelecom cable. 2nd SignallingCable. 3rd L.T.Powercable. 4th H.T.Powercable.
	Incaseofanyconfusionbetweenthedrawingandinstructionsorbetweenanytwoclausesof thetenderdocument, the decisionoftheEngineer-in-Chargeshallbe final.
5.59	**SpecificationsandRequirementsforCableLayingandFixingofPipesandTroughing BridgesandCulverts(ISSpecshouldbefollowedforsupplying&fixingofTroughing, channel).**
	First all the bridges shall be surveyed before commencing this item. After surveying it shall be jointly finalised by the Railway's and contractor's representative as to what are the feasiblespots where angles and channels can be provided. The fixing of GI/RCC./DWC pipe (with contractors on clamp) on culverts shall be as per Drg.No.CSTE/3644 Pg.6. Cable shall be laid on culverts inside G.I. pipes suitably clamped on the sleepers/pathways. Where necessary G.I. pipes shall be joined by means of G.I. collars or suitable G.I. Bend pipes (contractor's own). The G.I. pipes shall be secured on sleepers/pathways by means of clamps(to be provided by the contractor as approved by the Railway's Supervisor). Holes in the sleepers/pathways for fixing clamps shall be drilled by the contractor. Cablesshallbelaidin troughingon bridges. As per schedule item all the concerned material i.e. angles and channels required shall be supplied by the contractor along with GI fitting bolts and nuts. All theanglesand channels shall bemadeMS havingthickness not less than 5 mm(It should be as per IS spec). The shape and size of the clamps, angles and channels shall be jointly finalised by the Railway's and contractor's representatives. It should be kept in consideration while finalising the size of angles and channels that there should be sufficient space extra after providing the pipes. The plans and drawing, to fit the channels and angles on the bridge, shall also be approved by the bridge organisation of the concerned jurisdiction. While laying the cables in the pipe/troughing the corners of the bridges shall be covered with solidconcretingtopreventanyaccessofthecablestotheunwantedoutsiders.Allthepipes shall be properly coupled through couplers. In troughing the bitumen compound shall be filled as per proper procedures.
5.60	**SpecificationsandRequirementsforTerminationoftheCables:**
	Asapracticeuntilandotherwisespecifiedbytheengineerincharge,inalocationnotmore than20-25cables shallbeterminated.
	If thenumberof cablesismorethan25,prior approvaloftheofficerinchargeshallbetaken.
	AllthecablesshallbeterminatedontheScrewlessterminal/ARAterminalsasperengineerin charge
	Whileterminatingthecablesitshallbeensuredthatthecablesincomingtothelocationfrom onesideshallbetakenanddressedinoneside(i.e.LHSorRHS)inthebacksideofthe location.
	Thecables goingoutof thelocationsshallbe takenanddressedinthe opposite side totheupper onein theback sideof the location.

	Allthecables shall beneatlydressed and terminated with help ofpropersupport.
	Itshallbeensuredthatthecableconductorsshallbesupportedbystringrodsateachrowofthe cablesin theback side.
	Thestring rods fortheaboveshall be supplied bythe contractor along-withinsulation sleeves.
	Alltheconductorsofthe cables shallbedressedbythreads also.
	Atthebottomofthelocationbox,allthecablesshallbedressedinonerowonly.Nojumbleof cableis allowedto beformed.Each andeverycable shouldbe separatelyidentifiable.
	Atthebottomsidethearmouryofallthecablesshallberemovedandbentoutwardssothatno sharpedgeofthearmouryisin directcontactof thecable.
	Atthefoldedportionofthearmouryatwistedcopperwire(1.5sqmm)shallbeturnedaround andsoldered (bybrazing) to connectit tothe earth points.
	AllthesetwistedcopperwiresshallbeconnectedtotheGI(bonding)wireattheotherendand solderedthereproperlyforearthconnections.
	From that GIwire a min 6 sq mm copper flexible wireshall be connected and at the other end it shallbeterminatedonScrewlessterminal/ARAterminals.TheflexiblewireandtheARA terminalshall besupplied bythe Railways.
	TheseScrewlessterminal/ARAterminalsshallbeconnectedtotheexternalearththrougha 12/6coresignalingcable.Thesignalingcable pieces shall be supplied bytheRailways.
	Afterthis thebottom portion ofthelocation shall befilled with sandandalayer of PCC shall be doneto prevent entryof rodents andreptiles.
	Allthecablecoresshallbemeggeredatthetimeofterminations.Areportshallbesubmittedto theRailwaysinproperformatofRailways.
	Atthe front side ofthelocation, asufficient gap shouldbe left between two rows.
	Inthegap,thedetailsofthecablesshallbepainted,whichisaseparatelycovereditemin schedule.
	All the records about the cable laying and meggering shall be prepared and submitted as per CSTE-DRAWING NO. CSTE-3644 (1-11).
5.61	**<u>SpecificationsandRequirementsforthefoundationforthesignalpost:</u>**
	Thefoundationsshallbemadeasperthestandarddrawingissuedtothecontractor.The drawingsforreferenceareasFoundationforMainSignal-CSTE-3122.FoundationforShunt Signal-CSTE/6090
	Beforestartingthediggingworkforfoundationthelocationofthefoundationshallbejointly verifiedand signedbytherepresentatives ofRailways andContractor.
	Whilefinalisingthelocationoffoundationitmustbetakencarethattheschedule ofdimensions is strictlyadhered to.
	Itmustbetakencarethatthefoundationofsignalshallnotbeinanycaseonthebankingofthe terrain.
	Ifitisnotfeasibleatsiteforthefoundationtobeonthebankportion,thesignalfoundation shouldbeshifted ontheRHS oftheconcerned track.
	WhileshiftingthesignalfoundationtotheRHSoftheconcernedtrack,thescheduleof dimensionsmustbestrictlyadheredto.Theoutermostportion/partofthecompletesignalshall beminimum 2.36 metreawayfrom thecentreof tracks of both sides.
	Whileerectingthesignal foundationthe GIbolts ofproper sizeshould begrouted.
	Itemincludescuringandplasteringwith1:4cement-sandmixture(Aggregatenotexceeding3: 8cm).
	Aggregate, cement,sandandholdingdownbolts,nutsshall besupplied bythe contractor.
	Due to local conditions in very special circumstances if the size of the foundation for all the above items required to be increased / decreased, the extra payment /deduction for variation of theCCworkshallbecalculatedonvolumetricbasisandpaidtothecontractorfromthe scheduleofcementconcreting.

5.62	**SpecificationsandRequirementsforInstallationofSignalPost&CLSUnit.**
	The item includes erection of colour light signal post with CI base, LED based colour light signal unit (CLS units suitable for LED Signal Lamps will be supplied by Railway), ladder with its base, ladder guards, platform and MS supporting bracket in the middle of the ladder, hoods, protective screens front staging for maintenance Platform, expanded metal cover on front.Also includes fixing of LED lighting units along with all accessories and arrangement ofextraaccessoriesforpinnacles,offsetbrackets.Junctiontyperouteindicators(ifany) –5or 3 or 4 or 2 or 1 way etc.LED units & LED Signal Units will be supplied by Railways. The item also includes termination of cable and wiring inside the signal unit as per standard practice. The cable shall be inserted in such a way that it is not bent sharply. The armoury of thecableshallbepeeled offatthebaseof thesignalunit.Afterthatalltheconductorsshallbe terminated on the ARA terminals/Disconnecting terminal blocksconnectors. From these terminals the colour coded flexible wires shall be taken to the respective LED unit/signal lamp. The flexible wire shall be provided by the Railways. Itemalsoincludessupplyofnumberplates withphotoluminescent paint/strips. Wire mesh covering Red and Yellow aspect as per standard practice on this railway and wherever if required the screen shall also be provided on the side of signal post /signal unit adjacent to the centenary. The fixing of the screen and its connection to the earth shall be done as per RE area standard. Height ofthepost 3.5 mtr.For loop linestarters,advancestarters,distance signals, 4.5 mtr for mainline starters and Home 5 mtr. for Home signal on curves.Decision of site in charge regarding height of posts as required by site in charge and fixing of CLS units on the existing posts with or without offset as required bySite In charge. (I) 2/3/4 aspect signal unit mounted directly on the signal postor with an offset bracket. `X'armstobeprovidedbythecontractortillthesignalsareintroduced. Item includes supply and fixing of arrow on signal units for signals placed on the wrong side and blanking of ladder if so required by site in charge. All the clamps and angles shall be as per the drawings or as advised bythe engineer in charge The ladder should be grouted in the ground properly. Supply of colour light signal post tubular 140 mm dia complete with CIbase, ladder with base, ladder guard platform, MS supporting bracket to support ladder, pinnacle with offset bracket etc. shall be IRS Specification no. S-6/81 (latest) and RDSO diagram No. SA-24625 (Advance) is covered under Schedule “A”.
5.63	**SpecificationsandRequirementsfortheInstallationofalltypesofapparatusCase:**
	Theapparatuscaseshallbefirstrubbedtoremovetherustinacompletewaybothinside, outsideandalltheinteriorsand corners.
	Thenonecoatofredoxideshallbepaintedonthecompletebodyoftheapparatuscase includingthe basearea.
	Theapparatus caseshallbefixed properlycarefullywithout damagingit.
	Angles(drawingismentionedinclause5.24-D)shallbeproperlyfixedforcompletelengthof theapparatuscase withthehelpofangles andclamps.

	Onecoatofsilverpaintontheoutersideofthewallsoftheapparatuscaseandonecoatof white/silverpaint onthe interior sidesshall bepainted beforefixingthe hylam board/strips.
	BothE-typelocks shallbefitted beforethe painting.
	Theholder andlocationlightingswitch shallbesuppliedandfixedonapieceofhylamsheetby thecontractor.This piece of hylamsheetshall besupplied bythe Railways.
5.64	**SpecificationsandRequirementsfortheCastingofCCfoundationforapparatuscase.**
	The foundations shall be made as per the standard drawing issued to the contractor. Before starting the digging work for foundation the location of the foundation shall be jointly verified and signed by the representatives of Railways and Contractor. While finalising the location of foundation it must be taken care that the schedule of dimensions and other provisions of SEM are strictly adhered to. The distance of the apparatus case with the door fullyopened should be a minimum 2.36 metre from the centre of tracks on all sides. The foundation of the apparatus case shall not be on the banking of the terrain. If the foundation on the bank is unavoidable (only in exceptional circumstances) due to site conditions, necessary supports should be providedas approved by Engineer-in Charge. The pit aroundtheapparatus caseshall bedugso that the top of the cable is minimum 0.5 metre below the ground surface level i.e the depth of the pit near the apparatus case shall be increased as per the site requirement. Once cables are put inside the location boxes, the bottom portion of the location shall be filled with sand and a layer of PCC shall be done to prevent entry of rodents and reptiles. In addition to this if the required depth is not available, then as per approved scheme by Engineer-in Charge; the contractor shall make a brick chamber like structure and fill the chamber with sand. The whole pit shall be covered with concreting.For this activity the concreting and brick work shall be paid by Railways as actual from the scheduled quantity of items. Foundation bolt of size 22 mm dia., 450 mm long with 2 flat spring washers & one nut is to be used.
5.65	**Supply,Fabricationandfixing ofPhenoliclaminatedsheet:-**
	Fabrication and fixing of phenolic laminated sheet of size 10mm thick in location box by providingall fixtures as per RailwayDrawingincludingfixingof PVC coated stringrods at the back side for cable support with contractor's own materials. The work shall be done as per drg and arrangement similar to SK 783-1/2. with latest alterations & as per instructions of the Railway engineer at site. Note:- Earthworks around apparatus case or other location as per instruction of Engineer in charge.
5.66	**SpecificationsandRequirementsforDiggingofcablepit:**
	Thecable pit shallbedugnear totheroom where allthe cables areenteringthe CT rack room.
	Thecablepitshallbeofdimensions(minimum2x2x1metre)asperscheduleofmaterialand works.
	Beforeconcretingthecablepit shallbefilledwith sand.
	Itshallbekeptinconsiderationthatthetopofthecablecoilsshallbeminimumonemetre belowthe top ofthe concreting.
	Thecables shall becoiled approximatelyfivemetres per cable.
5.67	**SpecificationsandRequirementsforthevariousBoards/MarkersandNumberPlates:**
	Alltheboards,numberplatesandmarkerplates/boardsshallbesuppliedasperthedrawings andshallbefixedasperthedrawinginstructionsandsiteincharge.Variousdrawings pertainingto thisareas:
	ForGood'swarningboardthereferreddrawingshallbeRDSODRGSA2380(adv)orlatest withlatest amendments.
	Thereferencedrawingfor Amarker is CSTE-6180.
	Thereferencedrawingfor theAGmarker is CSTE-6181.

Thereferencedrawingfor theP marker is CSTE-6182.
Thereferencedrawingfor theARROW marker isCSTE-6183.
Thereferencedrawingfor theG marker is CSTE-6181.
Thereferencedrawingfor theC marker is CSTE-6185.
Thereferencedrawingfor SIGNALNO. PLATE isCSTE-6185.

5.68 SpecificationsandRequirementsfortheInstallationofthePointMachines:

Fixing of Electrical Point Machine on the extended sleepers at points as per std. practice and as per RDSO Drg No. SA 91 51-52 or 9710 or 9161 as per section of rails used.Items include fixing switch extension brackets, providing insulation for switch extension brackets, fixing ground connection, adjusting opening of the switches and adjusting the point machine with a crank handle.

Theitem alsoincludes :

A.Complete material for installation like ground-connections, switch extension brackets,point insulation material, I pipes, wiring materials, various fixing nuts & bolts including castle nuts, spring washers.

B.All smithy & fitting works required at site for complete installation.

C.Installationof gaugetieplate &providinginsulationfor gaugetie plate.

D.Wiring inside the point machine, insertion and termination of tail cable in point machine and junction boxes / location box /cable hut as per extent practice on WR and the instruction of Railway Engineer at site.

E Supply and fixing of suitable size GI pipes with flange for taking cable into point machine.

Note;PriordrawingandpermissionshouldbetakenfromtheRailwaysabouttheGround Connection,ME-34boxmodifiedPbracketandotheritems.ElectricalPointMachineandM-6 /Screw lessterminals willbesuppliedbyRailways /coveredin Scheduleseparately

5.69 SpecificationsandRequirementsfortheInstallationof circuits:NA

5.70 SpecificationsandRequirementsfortheWiringofDCtrackcircuits:NA

5.71 SpecificationsrequirementsforGItroughingandchannels

1. Alldimensions arein millimetres
2. Troughtobefabricatedoutofgalvanisedsteelsheettois:277-1985withfollowing stipulations thickness : minimum 1.6 mm grade of zinc coating : 200
3. Noweldingshallbedone on anycomponent forfabrications.
1. Cabletrough tobefitted telescopically.
5.Aftertighteningnuts forfixingthe strap the thread of thebolt maybeburied to prevent theft.

SLNO	Description	No Required
1	TROUGH 2.05 METRESLONG.	1
2	COVER2.0 METRESLONG	1
3	STRAP	2
4	BOLTHEX. HEAD6 MMDia. x32 MM.	4
5	NUTFORABOVE	4
6	LUCK NUT FOR SL4	4
7	DISHWASHERFORSL5	4
8	PLAINWASHERFOR SL5	4

5.72 SpecificationsandRequirementsforcompletePainting,Varnishingandwritingworks

Alltheequipmentwhichneedpaintingshallbefixed/installedwithcoatingofRedOxidei.e. RedOxideshouldbecoatedbeforefixing/installation.Afterfixing/installationsonecoatof

	paint shall be applied on all the location boxes, signal units, signal posts etc. The final coat of paint shall be applied just before the commissioning. The description writing work shall be carried out before the commissioning of the station. This description writing work includes writing the details in the Relay Room and Location boxes. All thelocation boxes and thesignal posts shall bepainted with thedistanceofinstallation from the centre of the track. The colour & painting scheme as per provisions of SEM and Western Railway practice should be adopted. Lettering/ NumberingTermination particularsin Full &HalfApparatus case, equipment names etc., legibly and neatly inside location boxes. This includes supply of paints of Asian Paints/ Nerolac / Dulux / Berger make. NOTE:- The paint and primer should be from Asian Paints/ Nerolac / Dulux / Berger. The primer / enamel paints (Aluminum synthetic, black enamel, brilliant white and yellow) will beas per (IS 5660 of 1970) / (IS 2932 of 1974).'' (vii)Point Machine with ground connections complete (Point Machine with Black enamel only outside and ground connections with Red Oxide)" Note:-Guidelines regardingSignallingGears Description Writing 1. Identification marker (Ferrules with printed letters / PVC sleeve with printed details of the core/Signallingfunction)tobeprovidedoneachcableconductorwithYellowsleeveandblackdescription 2. The Row of Screwless Disconnect Terminal / M6 Terminal / ARA Terminal shall be serially numberedasA,B,C,D.fromtopandineachrow,terminalsshallalsobeseriallynumbered startingfrom 1. 3. After every cable terminated in a row, there should be a gap equivalent to 1-2 ARA terminal or minimum 06 Screwless Disconnect Terminals. 1. The Cable Termination Details of Location Box (Location Termination Particulars) shall be prepared in AutoCAD/ any suitable software. One copy of Cable Termination details shall be fixed in the respective location box duly printed on a board and another copy may also be kept in laminated sheet. 5. Inside the Location Box, minimum clearance of the bottom most terminal shall be 300mm from the base of the location box. The Centre to Centre Distance between two rows ofScrewless Disconnect Terminal / ARA Terminal shall be 18 cm to 20cm. 6. Location Box shall be numbered from its front side as well as Back side and functions shall be written on the door with yellow on black background. 7. The cable armours and the Location Box shall be earthed using GI flat as shown in installation photographs given in IRSEM Appendix-II. 8. The Cables terminated on Location Box shall be identified by punched labels / Cable Identification Tag tied on each cable.

Policy Circular No.02/2024

Function description & and writing work for signalling installation.

It is extremely important to write clear and accurate descriptions of the functions on outdoor location boxes and termination racks (CTR) in relay rooms, relay huts, and Goomties. This is necessary for the purposes of maintenance, testing, and attending to failures. Currently, both indoor and outdoor writing work is mostly done through manual painting. However, it has been observed that updating the writing or painting is difficult when transferring functions from defective cable conductors due to a lack of painters. Although updating function details on CTR and location boxes must be done permanently through manual painting for legibility, there is a need to implement better writing practices throughout the Western Railway to ensure accuracy, efficiency, and safety.

A. Indoor:

1. Colour Coding for Function:

Function identification marker to be provided on each cable conductor. The coloured scheme for Ferrule and laminated tape for stickers/cable flaps at CTR and LOC boxes is as under:

SN	Name of function	Color coding of sticker/ Ferrule	Color of Writing	Sample
1.	Signal (RG & ICC)	Red	White	S-5 RG, RECPR
2.	Signal (HG/ HHG & ICC)	Yellow	Black	S-5 HG, HHG, HPR, HHECR, HECR
3.	Signal (DG & ICC)	Green	Black	S-5 DG, DPR &DECR
3.	Route, Co,"A" Sign & its ICC,LC , CH, slot &other circuit	White	Black	Co-46 or S46 a "UG" or SH-44 PG
4.	Point	Dark Navy blue for Operation Light Blue for Detection	Operation - White Detection - black	PT 101/102 NW/RW/CW for Q series & W1,W2,W3,W4 for siemens PT 101/102 NKR/RKR or RWKR/NWKR

SN	Name of function	Color coding of sticker/ Ferrule	Color of Writing	Sample
5.	Track/Axle counter (TPR &	Light orange	Black	101 TPR 110BX Track

3.1.2 Each row of Wago/ARA terminals should be numbered sequentially in capital letters i.e. A, B, C, D, and so on from top to bottom.

3.1.3 Each wago terminal in the block of 12 terminals (as clarified in para 3.1.3) shall be numbered as 1 to 12 from left to right, After no 12, adequate space shall be provided, and the next block shall be numbered from 13 to 24 and so on.

3.2 The Centre-to-Centre distance between two rows of wago/ARA terminals should be adequate. After each cable termination in a row, there should be a minimum gap equivalent to one terminal or two spacers/dummy terminals.

3.3 Screwless Disconnection Terminal or any other RDSO-approved terminal shall be used for cable termination.

3.4 The cables terminated on the CT rack shall be identified by punched labels or cable identification tags tied on each end of the cable for correct identification.

3.5 As per para 15.1.2. (c) of IRSEM, cables shall be provided line-wise and function-wise.

3.6 The minimum clearance of the bottommost terminal in the CT rack shall be normally 300mm from the ground.

3.7 CT Racks Particulars (i.e. Function wiring and termination details) shall be provided in a convenient way as per the number of K racks and availability of space on the wall. It shall be fixed in such a way that signal staff can refer to the same to view the CT rack in case of urgency. Some of the suggestions are given below,

- May be made in A3 size either using Vinyl Printing or Flex Printing on 300 GSM PVC banner roll. The same can be fixed on the wall through a suitable wooden/metallic frame (CT Board) adjacent to the CT rack. In case two sheets are to be displayed simultaneously, a sliding frame mechanism & multiple leaf mechanism can be utilized where two sheets can be displayed in the front and the remaining can be available in the back. Sheets in the back may be viewed by sliding the front frame.
- K-Rack details may be printed and laminated on separate A3 sheets and kept in a single U-Channel slot fixed on the nearest wall.

4. The process of shifting a defective cable core:

Please follow the instructions below to shift a defective cable core:

4.1 First, refer to the K-rack chart and locate row K, column A, S/12 RG core no. 7 and 8 of cable no. 1278 which is defective and shows low insulation.

4.2 Next, remove the defective conductor and attach a "Defective Tag" Ferrule on it.

4.3 Then, take appropriate lengths of jumper cable and attach them between cable no. 1278 and 1279.

4.4 Finally, label the tag with "From cable - 1278 (7,8) to 1279 (7,8)" to indicate the transfer from the defective core of cable no. 1278 to the core no. 7 and 8 of cable no. 1279.

Please make sure to label the function name on the K-Rack before leaving the relay room where the function has been transferred. (**Ref pic- 4, *Please note that the jumpers must be provided behind the CT rack shown in the image**)

4.5 **It is important to conduct a cable test before transferring the cable conductor, even if there is a cable description tag present on it. After the transfer, a correspondence test should also be carried out before making the reconnection.**

5. **Periodical Verification & Validation: -**

5.1 It is essential to conduct regular verification and validation of cable termination before the commencement of the monsoon season, particularly during cable meggering.

5.2 After the monsoon season, the person in charge of the SSE or Signal section should verify and update any changes in cable or wiring termination details. They should also replace or update the description boards accordingly.

This practice should be followed for all future installations and as much as possible in existing installations. This has been issued with the approval of the Board (Member/Infra).

If more than 10 corrections are made in the K-Rack chart, a fresh and updated chart must be provided in the relay room with updating date.

B. Outdoor:

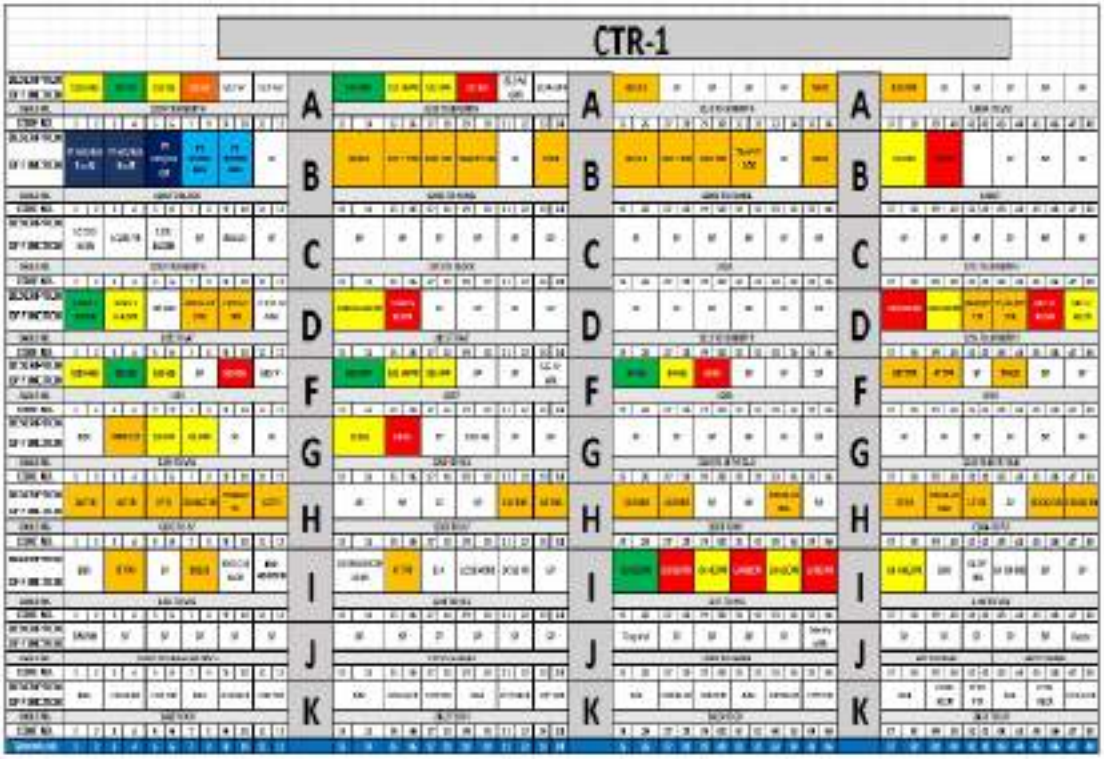
1. Writing descriptions of functions on outdoor location boxes are the same as mentioned in Indoor practices. If possible, like CT rack details, cable details chart kept or mounted in location boxes.
2. In the location boxes, all cable addresses must be tagged by providing a printed flip. The respective location/equipment names between laid cables must be printed on the flip. (Ref pic-5)
3. The cable termination details may be printed in color on suitable paper and kept in a plastic pack inside the location box.
4. The cable termination details are printed on a flex board or any board suitable for local weather conditions and mounted on the location box door with the same color coding as possible.(Ref- Pic-6)
5. To address the issue of cable failures, the conductors shall be transferred to healthy wires. It is recommended that all Sr. DSTEs shall ensure to update the cable core chart on board. If there are 10 or more corrections made to the location chart, a fresh and updated chart should be provided in the location boxes.

Annexure- Refernce pics

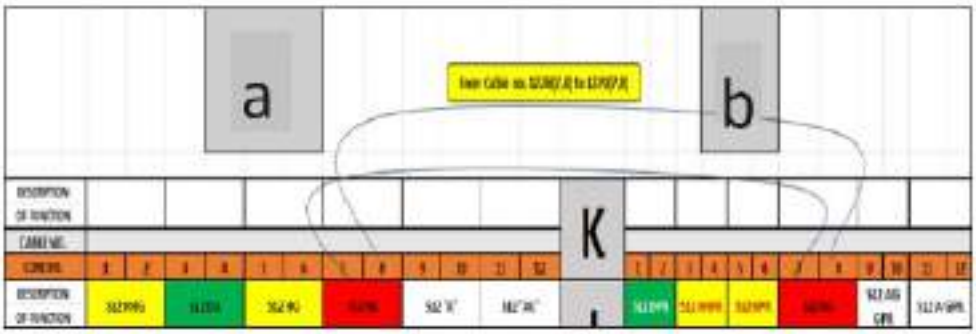
Ref- Pic-1

Ref -Pic-2

Ref- Pic -3



Ref- Pic-4



5

\5.73	**SpecificationsandRequirementsfor**Providingbrickmasonrywork**:** Providingbrickmasonryinratio1:6cementandmortarincludingplasteringwith1:4cement

	andsandmixturebothsides,20mmthickeachwithcontractor'sownedclassIIbricks, includingexcavation,curing,grouting,boltingetc.whereverrequired.Brickssandandcement to be supplied bythecontractor
5.74	**SpecificationsandRequirementsfor**Cementconcrete work**:**
	Cement concrete work for miscellaneous items in the ratio 1 : 3 : 6 . Items include excavation, ramming,curingandplasteringwithcement&sandmixture(aggregatenotexceeding3.8cm.) (Aggregatecement &sand to be supplied bythecontractor
5.75	**SpecificationsandRequirementsfor**Dismantling/ReleasingofexistingSignalingGears work**:**
	Dismantling/ReleasingofexistingSignalingGears.OneSignalling gearwillbeallpartsof one signal (consisting of CLS unit, Signal post along with base) or lever frame (5 levers set), or one point (consisting of all parts of a mechanical point, point machine, ground connections etc.) or one track circuits (consistingof batterybox &otherparts of DC Track circuit / AFTC /DAC) or one Block instruments etc. This includes the cost of transportation of release materials to the storedepotorasdecidedbytheconsigneeincharge.Thisworktobedonebycontactorswith hisown vehicleand labour
5.76	**SpecificationsandRequirementsfor**DismantlingofConcretefoundation/Demolishing RCC/CC/Stoneetcwork**:**
	DismantlingofConcretefoundation/DemolishingRCC/CC/Stonework/CuttingTarcarpenting/ CC Flooring/ Precast concrete slab/ Brick work including leading the debris inside Railway limitoroutsideRailwaylimitasdirectedbysiteincharge.Thisworktobedonebycontactors withhisown vehicleandlabour
5.77	**SpecificationsandRequirementsfor**RemovingMuck,ballastanddebriswork**:**
	RemovingMuck,ballastanddebrisfromRailwaypremisesreleasedtocuttingofplatforms& excavationoftrenchesbytrucksto thenearest municipal site.
5.78	IndependentChecking/Verification/ValidationofLogic-Circuit/wiringDiagrams:

4. A Logic-Circuit diagram for EI is generally supplied by the EI executing contractor. Once these Logic-Circuitdiagrams arereceived,theseshallbesupplied/issuedtothecontractorof this work.
5. The contractor shall study and analyse the Logic-Circuit and wiring diagrams based on the approved SIP and Tables of Controls keeping in mind all the policies issued and practices adopted by the concerned zonal Railway.
6. The Logic-Circuit and wiring Diagrams shall be checked/verified and validated to suit the interlocking requirements by IRSE License Holders.
7. Thesechecked/Verified diagramswillbesubmittedtotheDesignofficeforfinalapproval.
8. Till the time the Logic-Circuit and wiring Diagrams are under finalisation, all the drawings shall be submitted on good quality standard papers.
9. When the Logic-Circuit and wiring Diagrams is provisionally approved by the Design office, the Logic-Circuit and wiring Diagrams shall be submitted on the final tracing.
10. Once the Logic-Circuit and wiring Diagrams are approved bythe Design office, the activity of checking/verification and validation of Logic-Circuit and wiring Diagrams for that particular station/installation is considered to be complete.
11. Logic/Wiring Diagrams should be checked and strived for so as to have near zero mistakes, It is prerogative of concern licence holders to acquaint themselves with latest policycirculars and practices followed by zonal railway. In case of mistakes in logic, per route deduction will be made for each mistake.
12. Logic/Wiring Diagram shall be provided to concern licence holders for two level checks, only after C-FAT has been successfully conducted by OEM.
13. A Matrix of functions and selections therein viz. Point detections, Signals, Track circuits, Controls,CHsettobeformedforeachrelay,circuits.ISAshallsubmitthesechecked circuits as verified duly signed and authenticated with additions, deletions, modifications in the submitted circuits with reasons with the difference report thereof in the physical paper sheets to be submitted to IR. This to be incorporated in the Technical Specificationsof the Tender Documents

5.78.1 **GuidelinesRegardingSignalingGearsDescriptionWriting**

Western Railway HQ policy **No. 02/2024 dated -29/02/2024. to be strictly followed which is attached with the tender document.**

Description Writing in Outdoor Location Boxes and Cable Termination Particulars of CTR in Relay Room / Relay Huts / Goonies plays a very vital role during Maintenance & Testing and during attending failures

1. Identification marker (Ferrules with printed letters / PVC sleeve with printed details of the core / Signalling function) to be provided on each cable conductor with Yellowsleeve and black description.
2. The Rows of Screwless Disconnect Terminal / ARA Terminal shall be seriallynumbered as A, B, C, D.and in each row, terminals shall also be serially numbered starting from 1.
3. The Centre to Centre Distance between two rows of Screwless Disconnect Terminal/ARA Terminal shall be 18 cm to 20cm. After every cable terminated in a row, there should be a gap equivalent to 1 ARA terminal or 02 spacers / dummy Screwless Disconnect Terminals.
4. Screwless Disconnection Terminal/ARA Terminal or any other terminal approved by RDSO shall be used for termination of cables.
5. The Cables terminated on CT rack shall be identified by punched labels/ Cable Identification Tag tied on each cable.
6. Line wise and if necessary, function wise cables shall be provided as per para 15.1.2.(c) of IRSEM
7. Minimumclearanceof bottommostterminal inCT rackshallbe300mmfrom ground.
8. The Cable Armours and CT Rack shall be earthed using GI flat as shown in installation photographs in IRSEM Appendix-II.
9. Busbarpowercablesshallbeterminatedat thetopof theCT rack.
10. CT Racks Particulars (i.e., wiring and termination) made using Vinyl Printing or Flex Printing on 300 GSM PVC banner roll of suitable size and it shall be fixed on wall through suitable wooden/metallic frame (CT Beard) adjacent to CT rack such that signal staff can view both CT rack and CT Board simultaneously.

5.79 **TelecomTECHNICALREQUIREMENTS&SPECIFICATIONS**

The scope of work essentially includes supply and installation of materials and proper installation, trenching, blowing, splicing and testing of OFC cables and proper trenching and laying of quad cables and provision of OFC and quad equipment and associated materials for connectivity.

Installations configuration commission of IP MPLS Routers, Switches and other network devices.

5.79.1 **SPECIFICATIONOF16PORTE1CARDSALONGWITHPATCHPANEL/KRONE MODULEANDWIRINGFORROUTERSWITH ALLACCESSORIES ETC.**

Supplyandinstallationof16PortE1Card(2x8port)fortheLERRoutersalongwithpatch panel/kronemoduleandwiringforRouterswithallaccessoriesetc.asperRDSODocument No. STT/TAN/IP-MPLS/2020 Version 2.0 or latest.

5.79.2 SPECIFICATIONOFSTANDARD19"RACKMOUNTABLELER(LabelEdge Router)

Routershould supportRFC 3107 ofCarryingLabelInformation in BGP-4.
RoutershouldsupportPointtoPointandPointtoMultipointLSPforUnicastandMulticast traffic.
Routershallsupportlayer3andlayer2MPLSVPN,VPLSandEVPN.
TheroutershallsupportInternetGroupManagementProtocol(IGMP)v1,v2andv3.
The router shall support Protocol Independent Multicast - PIM-SM and SSM.
Theswitch/routershallsupportMulticasttroubleshootingtoolslikeMtrace andmfib ping.
IEEE 1588v2 Precision Timing Protocol (PTP) and Synchronous Ethernet support for network synchronisation.

D. Quality Of Service

The switch/router shall provide per-service, per-forwarding class queuing and shaping features.
TheroutershallprovidefollowingQoSfeatures:classificationandhierarchicalscheduling, WRR, strict priority (SP), profiled scheduling and multi-tier policing and shaping.
Router shall support 3 level HQOS on all kinds of Ethernet interface with minimum 8K hardware queues.
SimilarQOS shall besupported foralltypes of interfaceincludingBundledinterfaces.
IP Application Mapping. The list of IP match criteria should include Source IP address and mask, Destination IP address and mask, IP protocol, UDP source port, TCP source port, UDP destination port, TCP destination port.
VLANCoSpreservation: the IEEE802.1pprioritybits.
VLAN CoS differentiation: appropriate service differentiation must be applied according to the 802.1p bits. This will require the mapping of the 802.1p bits to DSCP values and EXP-bits inthe MPLS header when the service is offered over a (partially) MPLS-enabled network.
End-to-enddelaybudgetsarestrictly-enforcedto supportcritical applicationsSCADA,VOICE, Video.

E. Security

Security forms an integral part of a network design to protect both the end-customers and the network infrastructure. The solution that the vendor proposes shall have the necessaryprovisions to implement the necessary security measures.
SupportAccessControlList tofiltertrafficbased onSource&Destination IPSubnet,Source& Destination Port, Protocol Type (IP, UDP, TCP, ICMP etc) and Port Range etc. Should Support SNMPv1/v2/V3.
Blackhole filtering: droppingoftraffic destinedfor aspecificprefixatwire speed.
Ingress and egress packet filtering based on L2-L4 criteria at wire speed. The possibility to log the actions on individual filter rules shall be supported.
Protectionoflocalservices(http,smalludp/tcpservers,dhcp,telnet,ssh)basedonL2-L4 criteria.
AAA support – Accounting, Authorization and Authentication of users and commands.
Support for local authentication, TACACS+ and Radius.
Authenticationofroutingprotocolupdates:IS-IS,OSPF,BGP.
SSH support
Shouldsupporthardware-basedin-build IPsecencryptionandstatefulfirewallfunction natively.

F.Performance

Routershallsupportnon-blockingthroughputcapacityof60Gbpshalfduplex/30Gbpsfull duplex or higher as per site requirement.
Routershallsupport10KIPv4&5kIPv6routesMulticastroutes1K Router shall support 100 multicast groups.

Minimum100MPLSlayer-3VPNs.
Minimum 64 MPLS VPLS.
Minimum 500 MPLS Layer-2
PWs.
Routershall support min64 BFD sessions.

G.Certificatesandenvironment standards

ShouldcomplywithNEBSLevel3specifications./EquivalentTECQM333orlatest specification
Safety:IEC/EN60825-1orIEC/EN60825-2.
Storage: EN300 019-2-1 class 1.2 / GR-63-CORE and GR-1089- CORE / Equivalent TEC QM 333 or latest specification
Transport:EN300019-2-2class2.3/GR-63-COREandGR-1089-CORE/EquivalentTEC QM 333 or latest specification
Inservice:EN300019-2-3class3.2/GR-63-COREandGR-1089-CORE
Relative humidity: 5 to 85% (non-condensing).
Operatingtemperature:-15°Cto+60°C.
Theroutermust beMEF CE 2.0/3.0Compliant.

Specificationof SingleMode10Gbi-directionalSFP+(40km)

SN	Description
1	SFP+modulesshould complywith multi-sourceagreement (MSA)
2	ShouldhaveLCtype connectoror asperfield requirement
3	ShouldbeprovidedinPair(BXU&D).OneRoutershouldhaveBX-Uother should be BX-D
4	Shouldsupportupto40km opticaldistanceasperTelcordia/ITUtarget distance
5	Shouldhave10GigabitEthernet capacitiesonsinglemodesinglefibre
6	ShouldsupportDDM/DOM features
7	Should be RoHS6/6 compliant
8	BX-UshouldsupportTX:1270nm,RX:1330nmwavelengths; BX-D should support TX:1330 nm, RX: 1270 nm wavelengths
9	Shouldcomplytofollowingopticalspecifications: Link Budget (dB) of 21.2 dBm LaunchPower(max)5dBm LaunchPower (min)0dBm Receiver Power (max) -9 dBm ReceiverPower(min)-21.2dBm
10	TheSFPs tobeacceptedbythe RouterOEM.

5.79.3 INSTALLATION,COMMISSIONING&TESTINGOFLER&LSRIPMPLS ROUTERS

Installation, Commissioning & Testing of LER & LSR IP MPLS Routers including supply & Installation of all the accessories like Power cable, Earthing Cable, Optical Patch Cords of 3 m- 6 Nos. for LERs & 10 Nos. for LSRs, Cat 6 Patch Cords of 1 m -4 Nos, one 6A MCB for each LERandLSR,wiring etc.asrequiredforRouter'sinstallation.Allroutersshouldbeconfigured inallrespectsaspersite requirementandsite incharge.

5.79.4 SPECIFICATION FOR LC-SC/SC-SC/LC-LC/FC-LC PATCH CORD 3.0 MTR. LENGTHREPUTEDMAKE

Itshallbeofgoodqualityandofreputedmake.SampleshallbeapprovedfromConsignee/ EngineerInchargebefore supply.

Parameter	Unit	Measurement
Insertionloss(IL)	dB	<=0.2
Returnloss (RL)	dB	>=50
Repeatability	dB	<=0.2
Changeability	dB	<=0.2
Operatingtemperature	°C	-35to +70
Storagetemperature	°C	-35to +70
Fibre type		G657(A1/A2)/G652D
Fibrediameter	um	SM-9

5.79.5 SPECIFICATIONOFLAYER2,24PORTAGGREGATEMANAGEDSWITCH

SupplyanditsstandardinstallationofAggregateswitchasperRDSOspecificationNo. RDSO/SPN/TC/65/2019Rev.5.0orlatest.ItshallbeofreputedMake.Sampleshallbe approvedfromConsignee/Engineer Inchargebefore supply.

5.79.6 TECHNICALSPECIFICATIONSANDREQUIREMENTSOFLAYER-2,24PORT LAYER2, 24 PORT

The switch should be populated and supplied with all the modules (Fully loaded with SFP Modules), connectors, and interfaces etc Non-POE, 24 GE 10/100/1000Base BaseX Ethernet port. The switch should be as per RDSO Specification No. RDSO/SPN/TC/83/2020 Rev 2 or latest.
SwitchesshallbeofreputedTejas,CISCO,Extreme,Juniper,AlliedTelesisorHPorbetter.

Minimum With 03 Years Warranty.

Switch should support Surge Protection on power input and on Ethernet ports as per EN 61000- 4-5 standard and suitable for SP and SSP (25 KV Environment).

SampleshallbeapprovedfromConsignee/EngineerInchargebefore supply.

All Switches to be installed in Racks and configuration and commissioning of switches as to be done as per requirement of site Incharge and Engineer Incharge.

5.79.7 SPECIFICATIONSOF8PORTL2MANAGEABLEPoESWITCH

8portL-2manageableswitch((Fullyloaded02SFPModules)asperRDSOspecificationNo. RDSO/SPN/83/2014, Ver.1.0, Amendment-1 or latest.

ItshallbeofgoodqualitytomakeHFCL,Tejas,CISCO,Extreme,Juniper,AlliedTelesisHP, Netgear or better.

Minimumwith03Years Warranty.

SampleshallbeapprovedfromConsignee/EngineerInchargebefore supply.

All Switches to be installed in Racks and configuration and commissioning of switches as tobe done as per requirement of site In charge and Engineer In charge.

5.79.8 LAYINGOF6COREOFC CABLE

Laying of 6 Core OFC Cable shall be through PVC casing capping /PVC rigid pipes. Fixing/Laying material shall be arranged by the contractor in the offered cost as per site requirement, as per officer incharge and site incharge.

Fixing,terminationandsplicingofOFCcableinLIUandFDMSaspersiterequirementasper Site Engineer incharge and as per Officer incharge.

5.79.9 SPECIFICATIONOF24PORTRACK MOUNTABLELIUALONGWITH ALL ACCESSORIES&ITS INSTALLATION

LIUshallbeof reputed make.

SampleshallbeapprovedfromConsignee/EngineerInchargebeforesupply.

LIU shall be fitted in 19” Rack.

LIUshallhavesufficientnumbersofsplicingTrayandotheraccessoriesasperrequirement Nos. of fibre to be terminated. Minimum 24 fibres.

SplicingandterminationofOFCinLIUboxshouldbedonewithpigtailsof1Metrelength with LC type connectors and required 24 nos. of LC to LC patch cords of 1 mtr. Length for connecting LIU to switch of same make of LIU.

5.79.10 SPECIFICATIONOFFXS GATEWAY(48 PORT)

- Shouldbepossibletomountitonastandard19”rackand600mmx600mm.All mounting hardware for the same shall be supplied.
- Shouldhaveatleast 48FXS ports forconnectinganalogphones.
- ShouldsupportSIPasperRFC3261.
- ShouldsupportT.38FaxPassthroughoverIP.
- Itshouldsupportvoicecodecs:G.711(a-law/p-law),G.723.1,G.729a,G.726.
- Shouldsupport IPv4and IPv6.
- ShouldhaveoneGigabitEthernetport toconnecttoLAN.
- ShouldsupportIEEE802.1qbasedVLAN tagging.
- ShouldsupportcallerIDpresentationontheanalogphoneswhenworkingwiththe SIP server provided.
- Shouldsupportcomfortnoisegenerationforcomfortable telephony.
- Should support SIP registration with at least two SIP servers - primary and secondary and should have the capability to use the secondary SIP server in case primary SIP server is not available.
- Subscribers connected to FXS gateway should be able to dial each other in case connectivity to SIP servers is lost (fall back feature).
- Shouldhaveinbuilt-dialplanner forsimple call routingcapabilities.
- ShouldhaveaTelcoconnectortoterminatetheFXSportsonanIDFforfurther wiring.
- Shouldbe possibleto configurethegatewayusingtelnet/SSH/HTTP.
- ShouldsupportConfigurationBackup/Restore.
- Should support SNMP management.
- Shouldsupportremoteloggingthrough asyslogserver.

	● TheFXSportsshallsupportuptoadistanceof5km(minimum)overPlJFcopper cable of 0.5mm dia. ● Ltshouldwork on230VACPower supply. ● OEMshouldbe ISO9001:20l5andISO14001:2015certified. ● Shouldhaveregulatorycomplianceof UL/FCC/CE/TEC. ● Should have EMC certification from any NABLaccredited lab which is designated by TEC for safety testing of Telecom & IT products.
5.79.11	**SPECIFICATIONOFCONTROLIPTELEPHONESWITHHANDSFREEAND GOOSENECK MIC**
	SupplyandinstallationofcontrolIPtelephoneswithhandsfreeandgooseneckoperationfor waysidestations asper clause11 ofRDSO/SPN/TC/99/2012 rev.2orlatest.
5.79.12	**SPECIFICATIONOF4PORTGATEWAY**
	Supply, installation and commissioning for 4 port Gateway to support 4 port concurrent emergency communication at HQ/Way station to support 4 wire ports/ 4 port Gateway withbuiltin2wiresto4wirehybridconvertortosupport4wireoutputasperclause13of RDSO/SPN/TC/99/2012rev.2or latest.
5.79.13	**SPECIFICATIONOFIP PHONE**
	Itshouldwork onSIP technologyasper RFC3261. ItshouldhaveDualGigabitethernetportwithintegratedPoEsothatthePCcanbeconnected to the SIP phone for normal data service. Option forexternal power supplyshould also beavailable. However,externaladaptorsarenotrequiredtobesuppliedunlessaskedforseparatel y. It should support voice codec's G.711(a-law/p-law),G.723.1,G.729a,G.726. PhoneshouldsupportDTMFinaudio,RFC2833,SIPINFO. Phonesshouldberequiredwithatleasttwolinedisplaysystemssothatinformationlike incoming calls etc.is displayed on the same. Phoneshouldhaveminimum4physicalprogrammablekeystobeusedforspeeddiallingas well as monitor in go for extension status of extension. These LEDshallhavethefollowingbehaviour: Extension idle: OFF Extensionringing:BLINK Extension busy: ON Phoneshould haveat least2 user accounts. Pre-MouldedCat6Ethernetpatchcordofatleast2metreshouldbesuppliedalongwiththe phone. Phoneshould support class ½ PoE forit to be environment friendlyand useless power. Thisisrequiredforensuringthatthephonesarepoweredusingtheexistingswitches.Phones should support VLAN tagging of voice packets so that data and voice packets use different VLANs. PhoneshouldbeIPv4and IPv6compliant. Thephoneshouldsupportauto-provisioningthroughDHCPandHTTPusingnormaltextbasedfiles. The format for this text file shall be provided by the firm. Should support NTP and SNTP for time synchronisation. OEMshouldbeISO9001:2015andISO14001:2015certified . Should have regulatory compliance of UL/FCC/CE/TEC. ShouldhaveEMCcertificationfromanyNABLaccreditedlabwhichisdesignatedbyTECfor safety testing of Telecom & IT products.

	Itshallbeofreputed make. Note:Priorapprovalmust be takenbeforethe supply.
5.79.14	**SPECIFICATIONOFELECTRONICPUSHBUTTONTELEPHONE (CLI)**
	Theelectronicpush button telephoneshouldhavethefollowingmainfeatures. • PulseorTonedialling, temporaryswitch over possible. • Redialbutton. • Lastnumberredial. • Ringervolume adjustable. • Telephoneinstruments shall becompatiblewith theexistingDigital exchanges. • ItshallhaveaCLI(CallerLine Identification)facility. • Electronic Push Button Telephone Instrument should be of Panasonic, Beetel or BPL make or better. Note:Priorapprovalmust be takenbeforethe supply.
5.79.15	**SPECIFICATIONOF1KVAONLINEUPS**
	A.ThisUPS shallbe puresine waveonlineUPSof1KVAcapacitybasedonIGBT based B.switchingdevice. C. D.UPS shall work with the input of normal Indian power supply i.e. Single phase with 160V-270Vat50Hz(40-60Hz).Theoutputshallbesinglephase,50Hz&230VAC. Power factor shall be 0.8. Thereshall be an electromechanical bypass facilityin case of the UPS failure due to any reason. E. F.Protectionslikeovervoltage,shortcircuitandoverloadatUPSoutputterminal,under G.Voltageatthebatteryterminalis a must.Necessarysurgeprotectiondevices need to be H.availableintheUPS. I. J.TheUPS shall be supplied with maintenancefree batteries (Reputed make) to providea back-upofatleast60Mins.atfullloadof1KVA.Chargingsystemofthe UPSshallbe such that in future backup time can be increased by adding more batteries. K. L.The UPS should have a proper LCD display& indications to show voltages, currents, frequencyandvariousstatusofworkingoftheUPS.Minimumindicationsofi)Mains ON ii) Loan on Battery iii) Battery on Charge & iv) Battery Low shall be available. M. N.ItshallbepossibletomonitortheUPSfromaremotelocationthroughtheLANnetwork. O. P.UPSalongwithitsbatteryshallbehousedinasuitableRack.Thisrackshallbe provided by the contractor. Q. R.MakeoftheUPSshallbeAPC/Delta/Emersonororbetter. S. T.Note:Priorapprovalmust be takenbeforethe supply.
5.79.16	**SINGLEPOLEDCMCB6AMPERE**
	SupplyofSinglePoleDCMCB6Ampere'C'Curve.MakeHavells,HPL,L&Torbetterasper InstructionofEngineer Incharge.
5.79.17	**SPECIFICATIONOFCAT-6CABLE**.
	It shall beof reputed makelikeMolex, AMP orD-Link

	Type	UnshieldedTwistedPair, Category6,ANSI/TIA-568-C.2 complied
	Conductors	23AWG solid bare copper
	Insulation	Polyethylene
	Separator	Crossshapedseparatorbetweenpairs.
	Jacket	FlameRetardant PVC- Must forSafetyCompliance
	Approvals	UL Listed
		ETLverified to ANSI/ TIA568-C.2 Cat6
	Packing	Box of305 metres

Note: SupplyofCAT-6enhancedcablewithidentificationmarks/Ferrules etc.as per InstructionofEngineer Incharge.

5.79.18 **SUPPLYOFSIMBASED4GWIRELESSROUTERWITHDONGLE WITH ANTENNA**

Cellular:SupportforStaticorDynamic IPAddresses.
Cellular Network
LTEFDD:B1/B3/B5/B8 LTETDD:B34/B38/B39/B40/B41 WCDMA: B1/B8 GSM: 900/1800MHz
SIMCard
DualSIM.Push -PushSIMcardholderswithSealingfacility
Ethernet Ports:
ConfigurableFour LAN Port-10/100Base-Tper IEEE802.3andOptionalOneWAN Ethernet
NetworkProtocols
ARP,DHCP, IPv4, IPv6,ICMP,TCP,UDP,HTTP,HTTPS,SSH,NTP,BGP, OSPF, IPSec,GRE,OpenVPN, Zerotier,TLS,NAT
Security:
AccessControlRules,Firewalltrafficrules,IPSECVPN,SSH1&2,NAT-T,Port Forwarding, NAT
IPSECFeatureswith IKEV1&V2 Encryption:DES,3DESandAES128,192,256 Authentication:MD5, SHA1, SHA2
Supportfor IPSecVPNMultiplepeers-UptoMinimum2Peersper Tunnel
Shouldbeabletobuild IPSectunnelsdynamically,pointtopointandpointto multipoint.
Theroutershould supportGRE,Open VPN,IPSecVPN,ZeroTier
Management:
CLIConsole, SSH,HTTP, HTTPs,SNMP v1/v2/v3
StatusMonitoring: ICMPtomultipledestinationsforKeep Alive&Self Heal.
RemoteFirmwareUpgradethroughHTTP,SCP,TFTP
ScheduledRebooting-Deviceshouldbecapabletoprogram AutoRebootingasper configured schedule and time
shallprovidecentralisedmanagementsoftwarewithSecuretunnelcommunicationto remote devices (Optional)

	ICMPping&Traceroute
	LED Indications:
	ShallhavesuitableVisualIndicators fordiagnostics andhealthy/unhealthystatus of PortssuchasPWR,SQ,SIM1,SIM2,andLAN/WAN.Alsoshouldindicatestatusof Fast Ethernet LAN Port
	OperatingTemperature-0Cto55C
	Power
	12/24VDCOperation withreversepolarityprotection andExternal Power Supply adapterwith230VAC
	Accessories
	EthernetCable-1No.&Suitable antenna-1 No.
	Certification-IEC
	IEC:61000-4-2
	IEC:61000-4-3
	IEC:61000-4-4
	IEC:61000-4-5
	IEC:61000-4-6
	IEC62368-1:2018
	RegulatoryCompliance
	BiddershallconfirmthatofferedproductisMTCTEApprovedasper(DOT/TEC) DEPARTMENT OF TELECOMMUNICATION, GOVERNMENT OF INDIA
	Biddershallshareandsubmitthe IEC&MTCTE ComplianceCertificate forthe same

5.79.19 **SUPPLYOF5PAIR0.5 MMCOPPER CONDUCTOR:**

It shall be of annealed copper conductor, PVC insulated switchboard telephone cable as per SpecificationNo.G/WIR-06/03Mar2002orlatest.
ItshallbeofgoodqualitytomakeDelton,
Finolex,Ushaorbetter.

5.79.20 **SUPPLYOFHDPE DUCT**

SupplyofHDPEduct40/33mmasperRDSO/SPN/TC/45/2013/Rev2.0withlatest amendments as available.
Foreach Km ofHDPE ductfollowingitems areto besupplied
a) EndPlugs -2 no.
b) Cablesealingplugs- 2 no.
c) Plasticcouplersslipfit/pushfittype-2 no.
d) Endplugs to beprovided alongwith drum-2 nos.

5.79.21 **TRANSPORTATIONANDLAYINGOFHDPEPIPE:**

Transportation and Laying of HDPE pipe as per approved cable route plan in the excavated trench, taking due care while transporting and laying the same in the trenches or otherprotectiveworks.Boththeendoftheductshouldbesealedwithendplugsbeforelayingand should.

5.79.22 **BLOWINGOFOFCTHOUGHHDPEDUCT:**

Blowing of OFC through HDPE duct & protective work. Where it is not feasible to blow OFC duetocurves,road/trackcrossings,bridgesorforanyotherreason,OFCshallbedrawnorlaid manuallyasperthestandardprocedure.Alltheequipmentandmachineryrequiredshallbe arranged by the contractor at his own cost.

5.79.23 **SPECIFICATIONOFSPLICINGOFCCABLEANDMAKINGTHESPLICEJOINT**

SplicingoflaidunderaboveitemsOFCcableandmakingthesplicejointindustfree

	environment with contractor's own equipment and labour, Straight joint enclosure (SJC) is covered under schedule „A' remaining all required materials, tools, plants shall be arranged by the contractor. Splicing shall be started from one end and each splicing shall be monitored after splicing and after closing the enclosure for all the fibres from one central location bycontractor's engineer with his own OTDR and optic Talk set with railwayengineer, trace for the fibres shall be taken and signed jointly, if any fibre splice shows high loss / lossy event, the sameshallberedonebeforecompletionofsplicingwork.Thesplicelossshallbeasperthe policy/ technicalcirculars issued bytherailwayfromtimetotime.
5.79.24	**UPPLYOFOFC JOINTING**
	SupplyofOFCjointingpitssize0.6mX0.8mX1m.Thematerialshallbesuppliedasper engineerIncharge.
5.79.25	**SPECIFICATIONOFSTRAIGHTJOINTENCLOSURE**
	2X24fibreopticfibresplicestraightjointenclosure(SJC)completewithallaccessoriesasper RDSO/SPN/TC/68/2014,Rev.3orlatest specsfor 24fibreOFCcable withlatest amendment.
5.79.26	**LAYINGOFPVCCABLE/CAT6CABLE**
	Laying PVC Cable / CAT6 cable in through casing-capping on wall including laying materiallike 3 way /4 way junction box T-Joint etc. and as per instruction of supervisor in charge.
5.79.27	**SUPPLYOF48V, 50AMPSBATTERYCHARGER**
	Supply, Installation, testing and commissioning of 48 V.50 amps battery charger for telecomuse as per No. RDSO/SPN/TL/23/99 (ver.4) or latest in N+1 configuration i.e. using 3 modules of 25 amps with automatic switching between the modules for two sets of 200 AH battery. It shallbeequippedwithsurgeandlightningprotectionofclass'B'and'C'theconfigurationshall bedecided as persiterequirement.
5.79.28	**SPECIFICATIONOF19”42URACK**
	Floor StandingRack shall be ofSize– 42U.
5.79.29	The19”Rack structurewidth 60mm and depth800mm forhousingshould bemadeof 1.6mm thickMild Steel
	A.Each Rack should have 1-No Front-Glass-Door of 4mm thick covering the entire length of the rack that should be fitted / pasted to Front-Door-Frame by using silicon sealant. Thematerial thickness of theFront&Rear – Door Frameshould not beless than0.9mm with a capability of opening up to 180 degree approximately with locking arrangement, detachable & interchangeable hinges. Front & Rear Door should have Polyurethane Gasketing. Racks should have Locks on all sides, which can be unlocked and opened by asinglekey.Cablemanager,24portRJ45patchpanel(CAT6)andequipmenttraysas persite requirement.
	B.ThethicknessofTop-Cover&Bottom–Basematerialshouldbeatleast1.2mm.The TopCovershouldhaveCable–Entryholesofsize40mmindiameterwithRubber RingsandsuitableGlandClosurePlates.
	C.TheSidePanelsoftheRackshouldbedetachablehavingventilatedfinesflushfitted withAirfiltersup to1/3rdheight toavoiddust entry.
	D.The Power Distribution Channel (AC) should have 4 Nos. in 42U with switch of 5 Pin Type and 5 Amps capacity with common Fuse and Indicator. All the Sockets must be Industrial quality either LEGUARD or CRABTREE or ANCHOR or ZODIAC Make. Suitable capacity Mains 3 Core Cable of 3 Mts. Length with 15 Amp Mains Plug must begivenwiththisbox.Totalquantityforthisitemis2-Nos.perRack.TheSocket shouldbemounted verticallyon aPVC baseat theback sideof the Rack.
	E.EachRackshouldhaveHeavyDutyCastorsexcept42Uconsistingof2-Nos.with Brakeand 2-Nos.without Brake. Thecastors aretobemounted onaseparate Plate.

F.EachRackshouldhave4-Nos.CoolingFansofHicoolMakeorsuperiorof230VAC MainsRatingwith supplyCable and Plug, fitteddirectlyinsidetheTop Cover.

G.PVC CableChannel ofsize45 (H)X800(W)mmoffull rack length, in 42U.OneNoof 19" Cable Manager with 5-Hooks for Power Cable is required with each Rack. Cable Guides,CableTies,tiesHolderscableMarkersshouldbesuppliedforeasy identificationandlacingofCable.

H.1-NoCopperEarthing-Bar/StripwithTinPlatingofCrossSection1"X¼"tobeprovidedhorizontallyontherearsideoftherackfulllengthof19"Widthwithsuitable tappingto be suppliedwith each Rack.

I. TheRackstructureshouldbefullyPowderCoatedwithacombinationofDark&Light Greyshade. Doors-Framesshould bein lightGreyshade.

J. FrontPanelMountingHardware(Onesetconsistingof1NoCupWasher,1-NoCage Nut,and 1-No M6Screw) set, 20-Nos.per Rack is required.

K.MCBPanel(withoutMCB)forhousingofminimum10MCBshallbeavailableatthe topof theRack,with +ve and –vebus bar forprovision ofDCPower Supply.

L.TheRackshould beValrack /Vero president/ Rattleor better.

5.79.30 SPECIFICATIONFORLC-SC/SC-SC/LC-LC/FC-LCOFCPATCHCORD10.0MTR. LENGTH

Itshallbeofgoodqualityandofreputedmake.SampleshallbeapprovedfromConsignee/ EngineerInchargebefore supply.

Parameter	Unit	Measurement
Insertionloss(IL)	dB	<=0.2
Returnloss (RL)	dB	>=50
Repeatability	dB	<=0.2
Changeability	dB	<=0.2
Operatingtemperature	°C	-35to +70
Storagetemperature	°C	-35to +70
Fibre type		G657(A1/A2)/G652D
Fibrediameter	um	SM-9

5.79.31 SPECIFICATIONFORINSTALLATIONOFMATERIALCONSISTINGDCDB,DC DISTRIBUTIONARRANGEMENT

S N	Description	Unit	Qty
1	100 pair IDC (disconnection)typetagblockcompletewith 10 no. of 10 pair disconnection modules with Label holder & Back mount frame, Plug number and dust cover with, drain wires to an earth contact without soldering (similar to model STG2C210PU and69011006-00make3MormodelLSAplusmakeADC Krone)	No.	3
	i. TestCord 2/2, 2 poleopenended with 1 plug2/2 ii. TestCord 2/4, 4poleopen endedwith 1 plug2/4 iii. ConnectionCord2/2 2polewith Plugs iv. TestCord 2/4,4 polewith 4bananaPlugs v. DisconnectionPlug1 pair15No. (red) Make3MormodelLSA plusmakeADC Krone)		
2	DistributionBox(DB-48VDCandDB+48V DC) **DCPower–DistributionArrangement:-Eachcrossconnect** Rack shall be fitted at the top of the Rack with 2 numbers (oneeachfor+veand–veleads)ofDistributionBlockshaving8	No.	2

	outputs for terminating the DC input supply from Power roomand its distribution upto 8 outputs. The outputs shall then be terminatedtoindividualDCMCBsofrequiredratingsforfeeding power to the individual equipment. These MCBs shall also be mounted at the top of the Rack by the side of the Distribution Blocks. Din Rail Mounted Terminal Blocks shall be used for Distribution of 48V DC Supply which are standard modular terminal blocksto sector specific connectingterminal blocks.The Complete unit shall be offered with screw connection / risingcage clamp connection, spring cage technology based standarddin rail terminal blocks, fuse blocks disconnect blocks, panel mountblocks,feedthroughblocks,multi-tierblocksand initiator/actuatorblocks,Rail,EndCovers, Label Blocketc.		
3	i)MCBs6Ampsingle pole (Ratingshall be advised at the time ofsupplybyEngineerIn-charge)	No.	8
	ii) MCBsbox for8 MCBsmakeL&Torsimilar		
4	Battery cable 10 Sq.mm multi strand copper wire conforming to IS694-1990foreachOFCshelterbetweenbatteryloadand charger		
	i) BatterywireRedcolour	Mtr	30
	ii) BatterywireBlackcolour	Mtr	30
	iii) BatterywireYellow colour	Mtr	30
5	Batterycable 6 Sq mm between DCDBto STM-land PDMux		
	i) BatterywireRedcolour	Mtr	10
	ii) BatterywireBlackcolour	Mtr	10
	iii) BatterywireYellow colour	Mtr	10
6	Lugfor 10 Sq mm cable	No.	50
7	Lugfor 6 Sq mm cable	No.	20
8	HRC fuse		
	i) 20Amp HRC fuse cartridge	No.	6
	ii) 20AmpHRCfuse(Male-Femalehousing)	No.	6
	iii) Wooden box2 no.	No.	2
9	4No.of12wayscrewtypeterminalblockssuitableforsingle strandconductorsof(0.4to0.9mmdia)2X6quadcable terminationontermination blocks.	No.	4
10	Rotaryswitch1pole3waymakebeforebreakmakesL&Tat least40Amp.	No.	1
11	BoxforRotaryswitch metallic	No.	1
12	25mmX 6mmX600mm copperearth strip	No.	1
13	Jumperwire(0.5 mm Conductor dia)as per TECspecification no. GR/WR-10/03 Sep.2006	Mtr	200

5.79.33 SPECIFICATIONFORINSTALLATIONOFCLASSB,C&DTYPELIGHTNING PROTECTION

TechnicalSpecificationandrequirementsforSurgeArrester(ClassB&ClassC)asRDSO Specs.RDSO/SPN/TC/98/2011Ver.0orlatestamendment.

Specification	
Parameters	**Limits**

		Lineto Neutral	Neutralto Earth
1	NominalVoltage,Un	230V	230V
2	Maximum Continuous AC Voltage, Uc	>300V	>255V
3	Nominaldischargecurrent8/20 µs. (In)	>3KA	>3A
4	Maximum Discharge Current (8/20) µs) Imax	>5KA	5A
5	VoltageProtection LevelUp	>1.5KA	>1.5KA
6	Operatingtemperature/RH	-10$_o$Cto +60$_o$C/95%	-10$_o$Cto+60$_o$c/95 %
7	Indication	Mandatory	Optional
8	Degreeofprotection	IP20	IP20
9	Housing	Fire Retardantas per UL 94	FireRetardantas perUL94

For protection of power supply port of telecom devices working on 230V AC and kept in users premises like yard masters room, ASM room etc,

1. Thisdeviceshall behoused toprovideMin 3Nosof3pinIndianstyle sockets.
2. Itshallbeprovided withindicationregardingfaulty/healthyconditions.
3. Itshallhavefollowingcharacteristicsandfeatures.

5.79.34SPECIFICATION OF INSTALLATION OF FIBRE DISTRIBUTION MANAGEMENT SYSTEM

Transportation and Installation of Fiber Management System and splicing, and termination 2 X 24 optic fibre cable of the both ends as per site requirements, complete with all required materials, Fittings, and accessories at contractors own cost.

5.79.35150MMWIDTHX50MMDEPTHX1.6MMTHICKSIZEPERFORATEDGICable tray

Supply and Installation of 150mm width x 50mm depth x 1.6mm thick size perforated GI cable tray including horizontal and vertical reducers, tees, cross members and other accessories as required and duly suspended from the ceiling with GI suspenders. All installation work will be completed the instruction of Engineering supervisor of the work

1.81HDPE125 (OD), PN8, PE100 withthickness(7.4MMto 8.2 MM):-

1. High Density Polyethylene) pipesspecification is required for Use with special installation techniques like horizontal directional drilling
2. HDPEpipeisManufacturedasper ISIstandards
3. AVAILABLESIZES,TYPES&PRESSUREClass:-125Outerdiameter,PN8(ForPE 100).
4. Workingtemperaturefrom-40°cto +45°c.
5. Chemicallyinertaswellasexcellentcorrosionandabrasionresistance
6. HighDurabilityandExcellent Service Lifeof morethan25years
7. LeakproofJointand suitablewith differentHDPE joining Methods
8. HighImpactStrength,hightoughnessandexcellentcrushResistance
9. Excellentperformancesinaggressiveclimaticconditionshavingsuperior UVandlow temperature resistance with antimicrobial properties
10. Smoothinnerwallsenhancinghighflowwithlessfrictionlossandsuperiorwaterhammer

resistance

11. HDPE pipe shall be marked at every 1 mtr length in such a way that manufacturer's name, vender name can be easily identified.
12. One of the following coupling arrangements should also be supplied with each pipe as per the site requirement. Suitable snap fit coupler with rubber 'O-Ring/Spacers/Tees/Bend/End- cap
13. Coillengthshall beasper instructionofengineer.

Deputy Chief Signal & Telecom Engineer (Con.)
Western Railway, Vadodara-390004
For and on behalf of the President of India

5852210/2024/O/o Sr DSTE/W/S&T/MMCT/WR

भारत सरकार **Government of India**
रेल मंत्रालय **Ministry of Railways**
(रेलवे बोर्ड **Railway Board)**

आज़ादी का अमृत महोत्सव

Azadi Ka Amrit Mahotsav

No. 2024/CE-I/CAO(C)Workshop/part-2 New Delhi, dated: 03.06.2024

The Principal Chief Engineers
All Indian Railways.

Sub: Instructions for incorporating the JPO, Circular etc. Provisions in the Tender Document for all works requiring digging work close to Railway signaling, telecommunication, electrical etc. Cables. .

Ref: (i) Board's letter No. 2021/Tele/5(2)/3-Part(1)(3425647) dated 12.06.2023

Board vide letter under reference (i) "Telecom Circular No. 09/2023" has issue a Joint Procedure Order (JPO) on the subject 'procedure for undertaking digging work in the vicinity of Signaling, Electrical and Telecommunication cables'. (Copy enclosed)

In regard to lodging FIR with RPF in cases of work being executed by authorised contractors who have been duly permitted to execute the works, Zonal Railways are requested to ensure strict compliance of para 9 containing in Board's letter under reference (i) "Telecom Circular No. 09/2023" which is reiterated as under:-

'Para-9:- Railway will not lodge FIR with RPF in cases of works being executed by authorized contractors of Railways who has been duly permitted to execute the works'.

DA:- As above.

03.06.24

(गौरव)

निदेशक सिविल इंजीनियरिंग(जी)

रेलवे बोर्ड

[Phone: 030-47598(Rly) : 011-23307598(MTNL)]
Email address: dceg@rb.railnet.gov.in;

Signature Not Verified
Digitally signed by YOGESH GUPTA
Date: 2024.06.25 16:43:45 IST
Reason: IRSPS-CRIS
Location: New Delhi

5852210/2024/O/o Sr DSTE/W/S&T/MMCT/WR

आज़ादी का अमृत महोत्सव

भारत सरकार Government of India
रेल मंत्रालय Ministry of Railways
रेलवे बोर्ड (Railway Board)

Telecom Circular No.09/2023

सं.2021/Tele/5(2)/3-Part(1)(3425647) नई दिल्ली, दिनांक: 12.06.2023

The GM/CMD/MD/PCAO/CAO,
All Indian Railways, KRCL, PUs, CORE, COFMOW
(As per standard list)

The DGs/Directors
RDSO, NAIR, All CTIs

Sub.: Procedure for undertaking digging work in the vicinity of Signalling, Electrical and Telecommunication cables

Ref.: JPO issued vide Board's letter No.2003/Tele/RCIL/1Pt.IX dated 24.06.2013 (Telecom Circular No.17/2013)

****

A Joint Procedure Order (JPO) for undertaking digging work in the vicinity of underground Signalling, Electrical and Telecommunication cables was issued last vide Board's letter No.2003/Tele/RCIL/1Pt.IX dated 24.06.2013 (Telecom Circular No.17/2013). Notwithstanding the provisions contained in the JPO for protection of cables, a significant number of cable-cut incidents and practical difficulties in implementation of certain provisions of the said JPO were reported.

Board, therefore, constituted a committee of SAG officers to revisit the JPO. Based on the recommendations of the committee, Board (MI) has approved broad guidelines for procedure to be adopted by Zonal Railways for protection of cables while undertaking digging work in their vicinity (**Annexure**). These guidelines are in supersession of JPO issued vide reference above.

Zonal Railways are requested to issue local instructions/guidelines/JPO implementing these broad guidelines within a month of issue of this letter. Zonal Railways may also ensure that these local instructions/guidelines/JPO are also made part of all tenders for works in the vicinity of cables in accordance with the instructions issued by Civil Engineering Dte of Railway Board vide letter No.2023/CE-I/EDCE(G)/Misc. Dated 18.04.2023.

DA: As above

12/6/23

(राकेश रंजन)
कार्यकारी निदेशक (दूरसंचार विकास)
दूरभाष: 011-47843012, 030-43012
ई.मेल: edtd@rb.railnet.gov.in

Copy to:

1. PSO to M(I) for kind information of Member/Infra
2. ED/SD, EDEE/M, EDCE/G, ED/GS/C-II for information & ensuring implementation of guidelines in letter & spirit
3. PCSTE, PCE & PCEE, All Indian Railways

(Annexure to letter No. 2021/Tele/5(2)/3-Part(1)(3425647) dated 12.06.2023)

Annexure

Guidelines for protection of cables while doing work its vicinity

1. Cable route marking for all types of cable must be made available block section wise on Railnet.
2. Before allowing the contractor to work near the tracks, the work executing agency (like SrDSTE/SrDEN/SrDEE or DyCSTE/DyCEE/DyCE etc.) shall ensure that the permission has been granted by the division to the contractor in accordance with the local instructions / JPO to work in the vicinity of the cables. Zonal railways shall devise suitable mechanism and timelines for the obtaining/granting such permission.
3. In case of works being taken up by the State Government, National Highway Authority etc., zonal railways shall devise mechanism for shifting the cables or for proper protection of cables before granting permission to work.
4. The engineering control shall keep all the information regarding any works being done near the track. S&T and electrical control shall obtain this information from engineering control. These controls shall coordinate among themselves to ensure that no work is done in the vicinity of the track without proper permission.
5. 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 due to their importance in providing communication during accident/emergency.
6. For all new works, cable shifting should be a mandatory part of DPR and estimate. For ongoing works, Zonal Railways may sanction works for cable shifting if necessary through contingency/supplementary/revised estimate where provision does not exist. However, in case zonal railways decide not to shift cables (due to any reason) then protection of cable shall be ensured by the zonal railways during execution of the work.
7. 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

8. Penalty should be levied on the contractor when they work without permission or resort to careless working without making arrangements for protecting cables and other utilities. Based upon the local conditions and practices, zonal railway shall devise its own conditions for examining and levying penalty. For each cable cut, a joint report at the level of supervisors should be prepared on the same day and it should become the basis for levying penalty and fixing responsibility. Joint note should be forwarded by SrDSTE/SrDEE to the executive in-charge of the work. The executive in-charge of the work shoud act and decide on the cable cut case within 15 days under information to SrDSTE/SrDEE as the case may be. There should be provision of appeal by contractors within one month of notice for levying penalty at ADRM level. Decision of ADRM shall be final and binding upon both parties.
9. 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.
10. Zonal Railways shall issue local instructions/JPO for protection of cables while undertaking works in the vicinity of railway tracks in line with this guideline. Zonal Railways shall also ensure that such instructions become part of their tender document within one month of the issue of the local instructions. Suitable action against erring officials shall also be incorporated in these instructions if the same is not adhered to.

पश्चिमरेलवे
प्रमुख मुख्य संकेत एवं दूरसंचार
इंजीनियर का कार्यालय,
5वींमंजिल, स्टेशनभवन, चर्चगेट,
मुंबई-400 020

Western Railway
Office of the
Principal Chief Signal & Telecom
Engineer,
5th Floor, Station Building Churchgate,
Mumbai-400 020.

No. SG 217/9(Computer No- 433074)

Dt: 08.01.2024.

CSTE/C-I, CSTE/C-II
Sr.DSTE/Co-MMCT, BRC, RTM
Sr.DSTE/S/MMCT, Sr.DSTE/N/MMCT, Sr.DSTE/N/BRC, Sr.DSTE/ADI
Sr.DSTE/Sig/ADI, Sr.DSTE/W/RTM, Sr.DSTE-RJT, Sr.DSTE-BVP

(POLICY NO-01/2024)

Sub: - Shifting and Laying of Signal & Telecom Cable in new doubling works

In recent past there have been many cases in various Divisions where doubling works or other activity is going on. There is massive cut of Signaling and Telecom cables during the course of earth work or preparatory works. In the current year total 417 cable cut cases have taken place.

Such cuts lead to heavy detention to train traffic and movement of trains by piloting of PLC for hours together.

Therefore, following policy is to be adopted for construction works to avoid cable cuts:

(i) No work of cable trenching should be carried out without site survey and prior intimation to avoid signal and telecom cable cutting and resulting detention to train traffic.

(ii) For sections which are targeted for commissioning in the present financial year. Adequate planning for identification (Cable route tracing) and rectification should be done in ongoing contracts along with provision of restoration by trenching, cable laying, jointing etc. to be executed through ongoing works or if required by operating NS items in existing contracts. This may be planned by separate works if decided by construction units.

(iii) Objective is to obviate and minimize cable cuts of signal and telecom cable and if despite of efforts cable gets cut to achieve the restoration in shortest possible time.

(iv) For doubling works which are not targeted in the current year S&T Construction Unit should immediately plan works of relocating all the cables in infringement and which are falling under the plan earth work site. In case of

multi tracking, where such relocation is inescapable, the new cable should laid out of all the toe line.

(v) Sufficient provision in existing contract or new contract in schedule items should be made for restoration of damaged cables. Cable trenching, laying and suitable protection (as per policy of Board) etc. to avoid cable cuts and early restoration in case inadvertent happens.

This has the approval of PCSTE/WR.

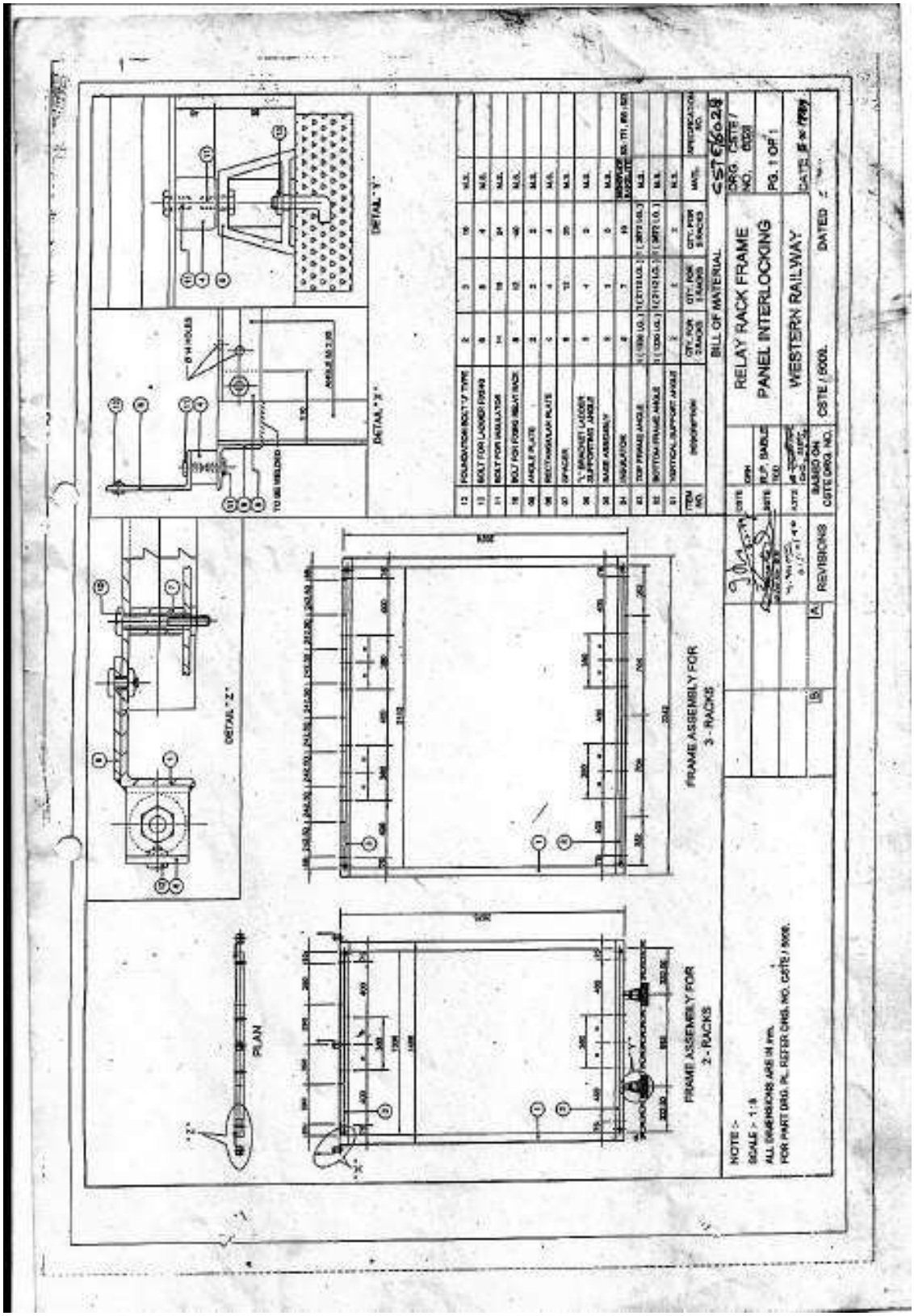
8.01.25.

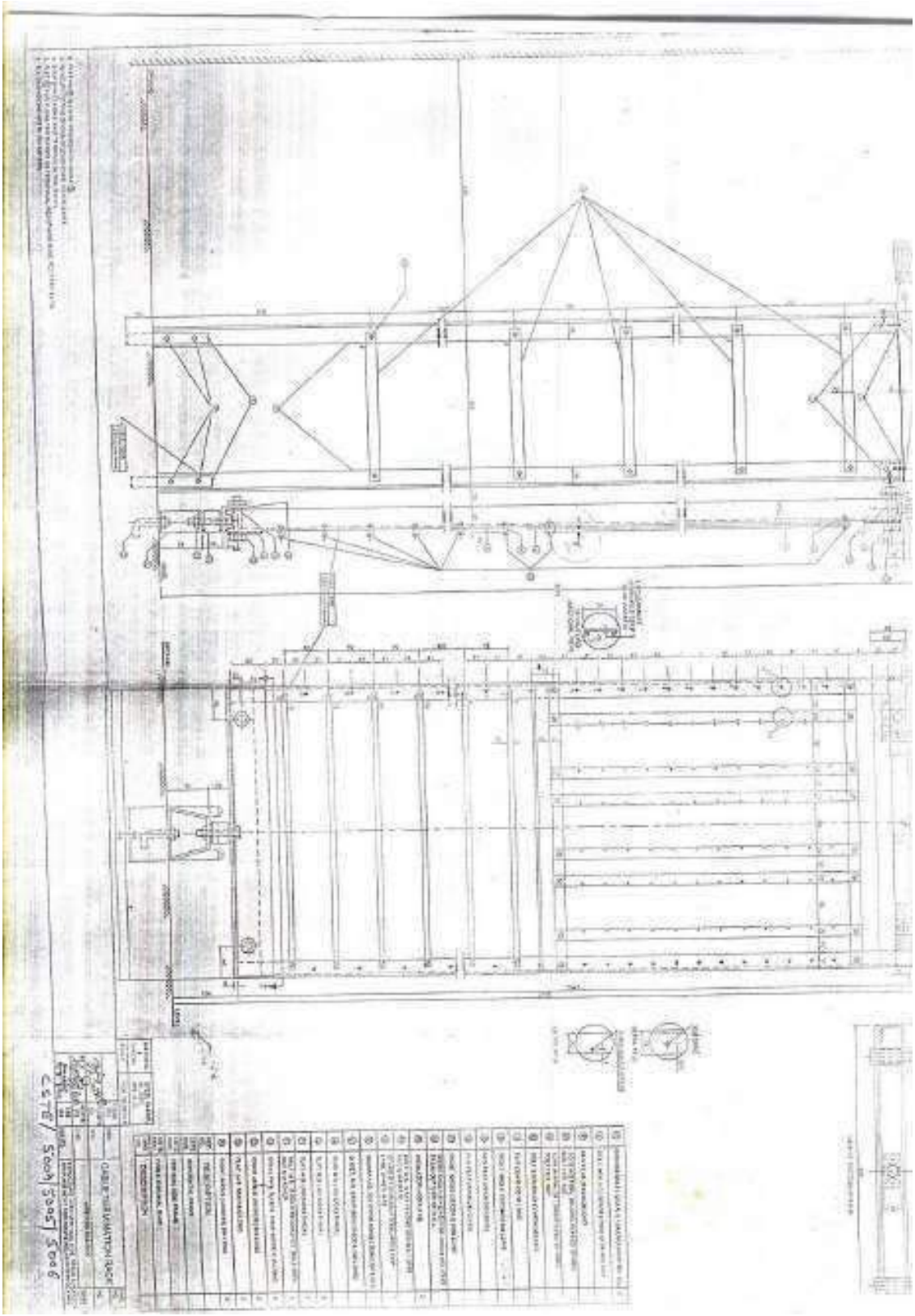
(S. Bandopadhyay)
CSE (HAG)/WR/CCG

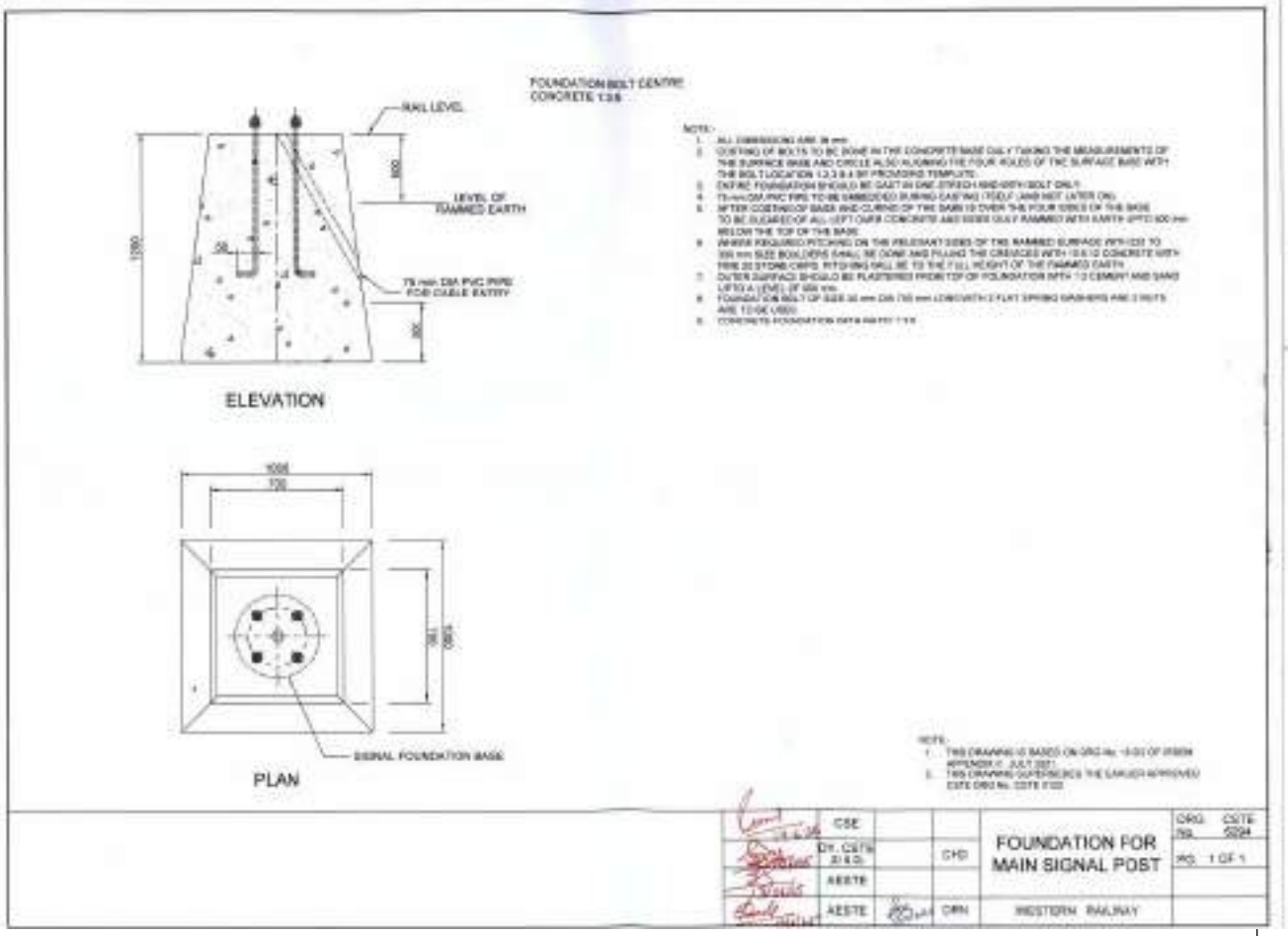
Drawings

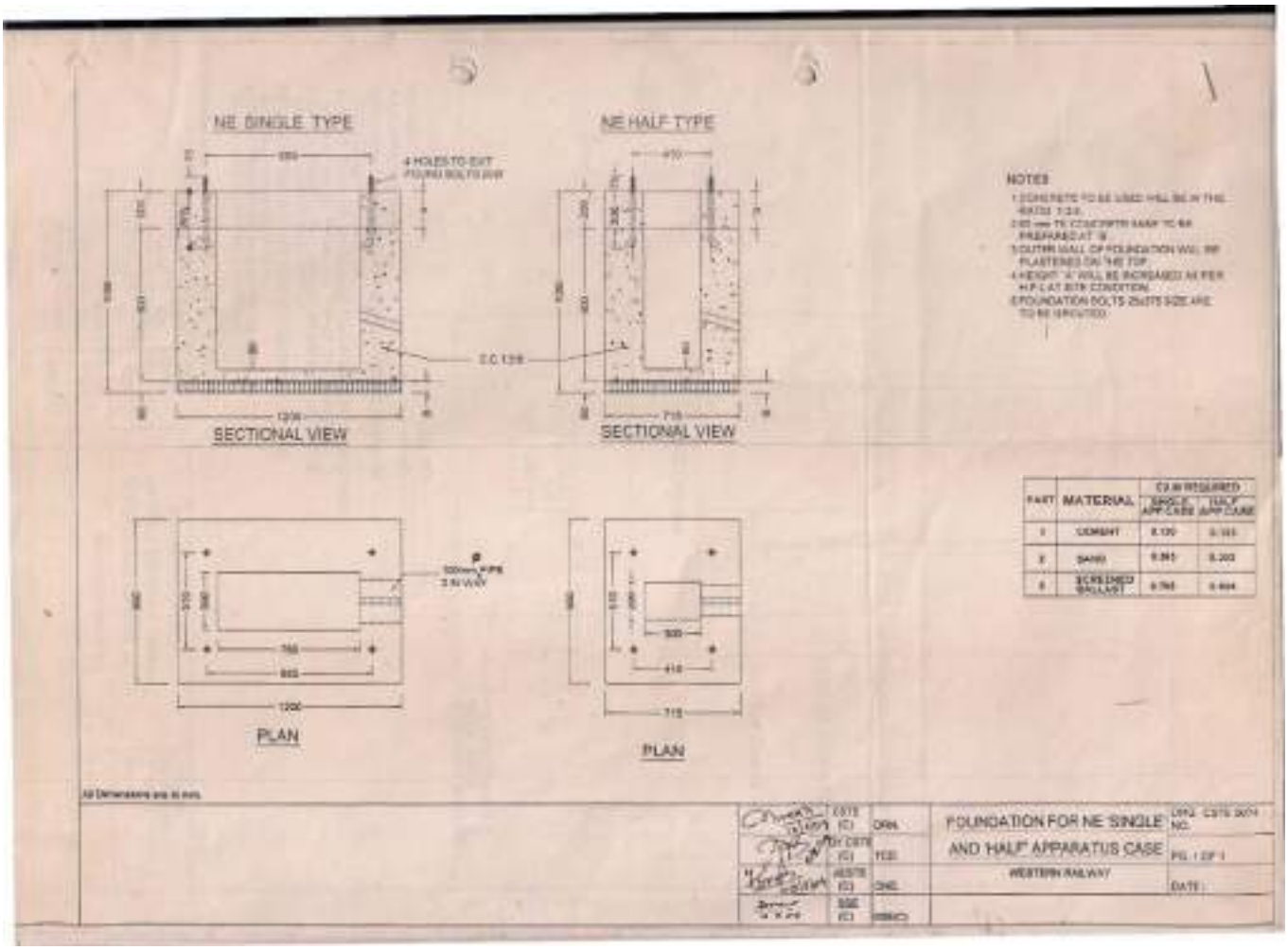
These drawings are given here for reference, although any deviation or amendment may be taken place as per policy guideline or approval of CSTE C-II-CCG.

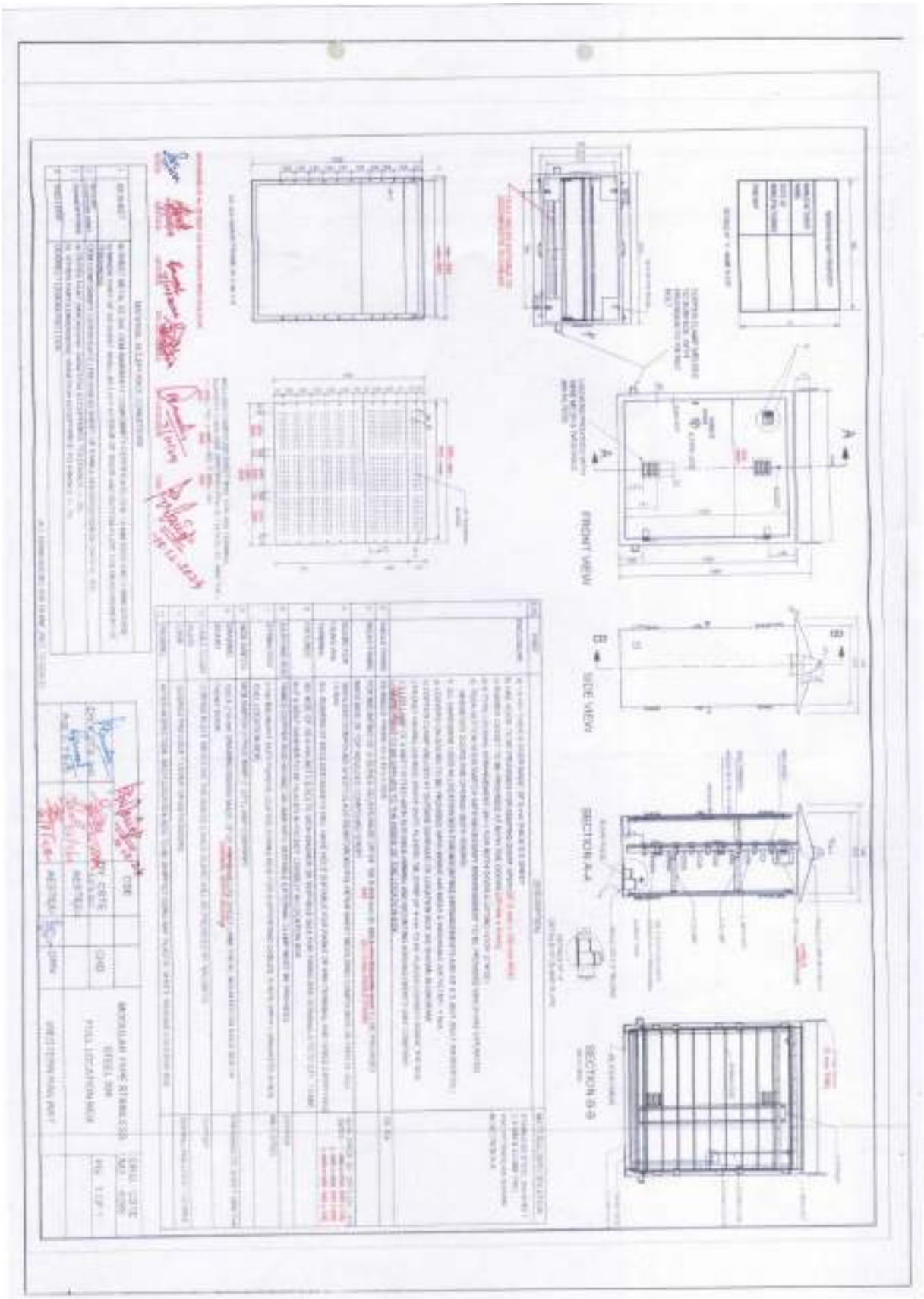
For various standard specifications and drawings pertaining to RDSO, please refer RDSO website.

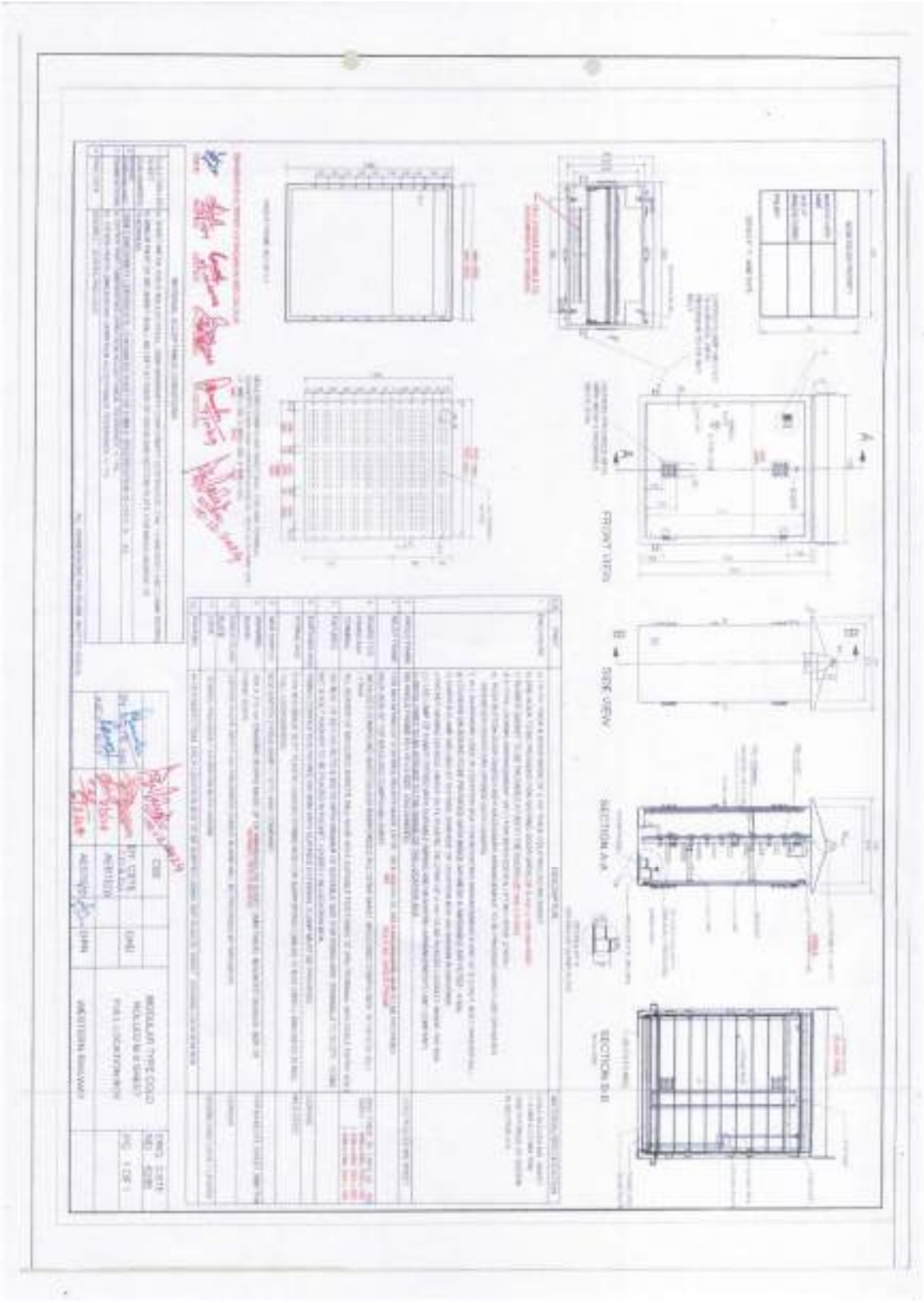

DETAIL "Z"
DETAIL "Y"
DETAIL "X"
PLAN
FRAME ASSEMBLY FOR 3 - RACKS
FRAME ASSEMBLY FOR 2 - RACKS
BILL OF MATERIAL
RELAY RACK FRAME
PANEL INTERLOCKING
WESTERN RAILWAY
REVISIONS
NOTE :-
SCALE :- 1:8
ALL DIMENSIONS ARE IN mm.

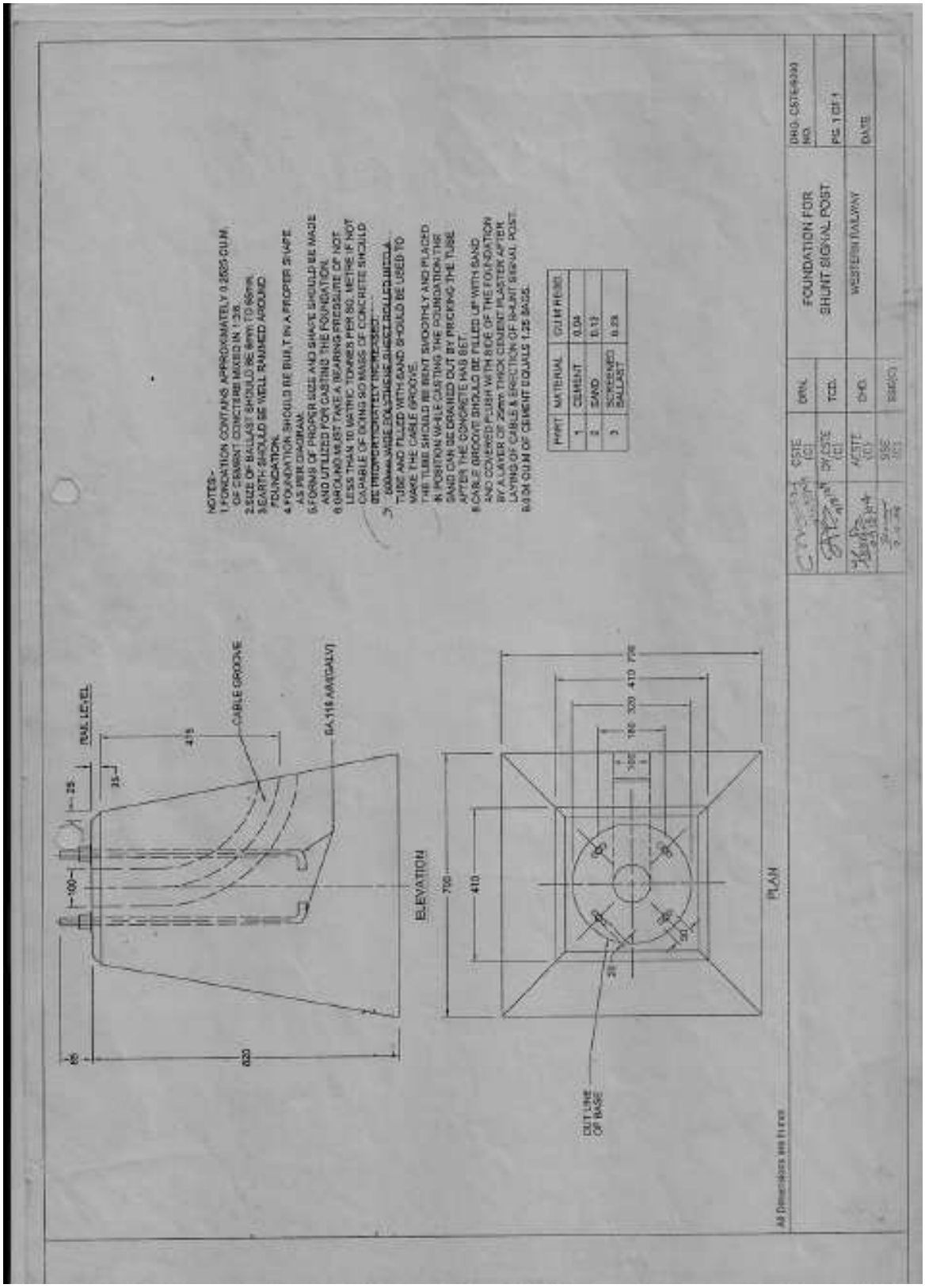


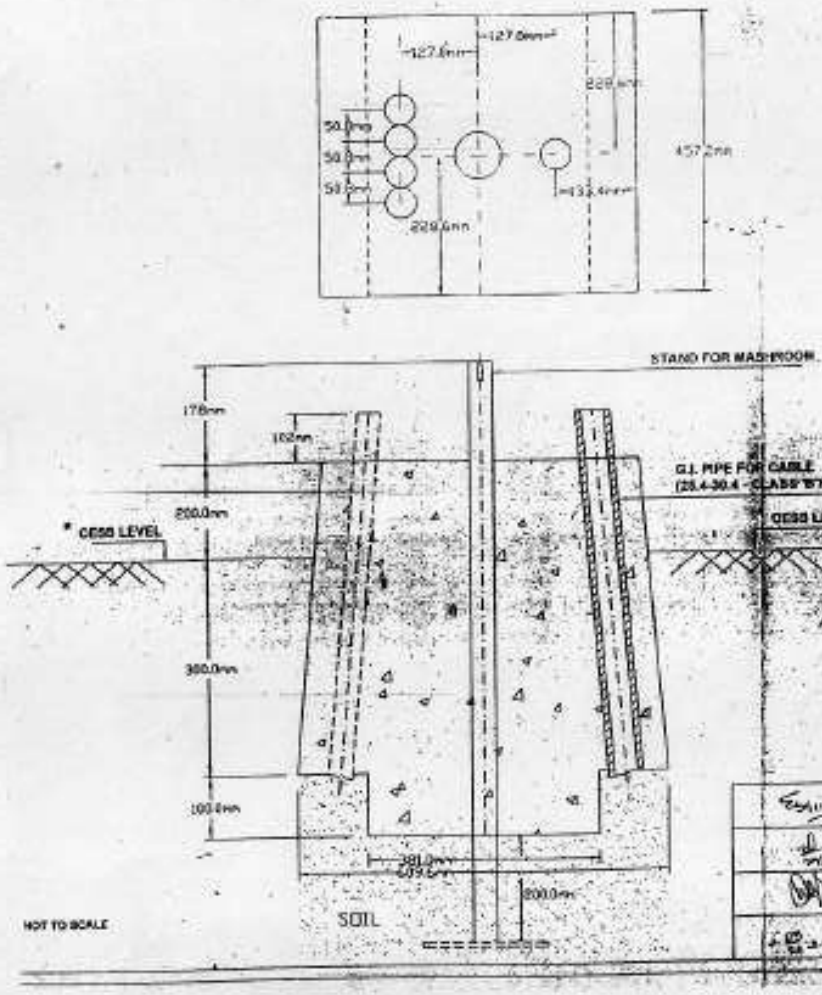

FOUNDATION BOLT CENTRE
CONCRETE 1:3:6
RAIL LEVEL
LEVEL OF
RAMMED EARTH
75 mm DIA PVC PIPE
FOR CABLE ENTRY
ELEVATION
SIGNAL FOUNDATION BASE
PLAN
NOTE:
CSE
Dy. CSTE
AESTE
AESTE
CHD
DRN
FOUNDATION FOR
MAIN SIGNAL POST
WESTERN RAILWAY
DRG. NO.
CSTE
5224
PG. 1 OF 1


NE SINGLE TYPE
NE HALF TYPE
4 HOLES TO EXIT FOUND BOLTS
SECTIONAL VIEW
SECTIONAL VIEW
PLAN
PLAN
NOTES
PART
MATERIAL
SINGLE APP CASE
HALF APP CASE
FOUNDATION FOR NE SINGLE AND HALF APPARATUS CASE
WESTERN RAILWAY


FRONT VIEW
SIDE VIEW
SECTION A-A
SECTION B-B




NOTES:-
1 FOUNDATION CONTAINS APPROXIMATELY 0.2525 CU.M. OF CEMENT CONCRETE MIXED IN 1:3:6.
2 SIZE OF BALLAST SHOULD BE 6mm TO 65mm.
3 EARTH SHOULD BE WELL RAMMED AROUND FOUNDATION.
4 FOUNDATION SHOULD BE BUILT IN A PROPER SHAPE AS PER DIAGRAM.
5 FORMS OF PROPER SIZE AND SHAPE SHOULD BE MADE AND UTILIZED FOR CASTING THE FOUNDATION.
6 GROUND MUST TAKE A BEARING PRESSURE OF NOT LESS THAN 10 METRIC TONNES PER SQ. METRE. IF NOT CAPABLE OF DOING SO MASS OF CONCRETE SHOULD BE PROPORTIONATELY INCREASED.
7 600mm WIDE 50x75mm SHEET ROLLED METAL TUBE AND FILLED WITH SAND SHOULD BE USED TO MAKE THE CABLE GROOVE.
THE TUBE SHOULD BE BENT SMOOTHLY AND PLACED IN POSITION WHILE CASTING THE FOUNDATION. THE SAND CAN BE DRAINED OUT BY PRICKING THE TUBE AFTER THE CONCRETE HAS SET.
8 CABLE GROOVE SHOULD BE FILLED UP WITH SAND AND COVERED FLUSH WITH SIDE OF THE FOUNDATION BY A LAYER OF 20mm THICK CEMENT PLASTER AFTER LAYING OF CABLE & ERECTION OF SHUNT SIGNAL POST.
9 0.04 CU.M OF CEMENT EQUALS 1.25 BAGS.
PART | MATERIAL | QUANTITY
1 | CEMENT | 0.04
2 | SAND | 0.13
3 | SCREENED BALLAST | 0.25
RAIL LEVEL
CABLE GROOVE
BA 115 AMS(ALV)
ELEVATION
PLAN
CUT LINE OF BASE
All Dimensions are in mm
FOUNDATION FOR SHUNT SIGNAL POST
WESTERN RAILWAY
DRG. (STE/630) NO.
PG. 1 OF 1
DATE



NOTES :-

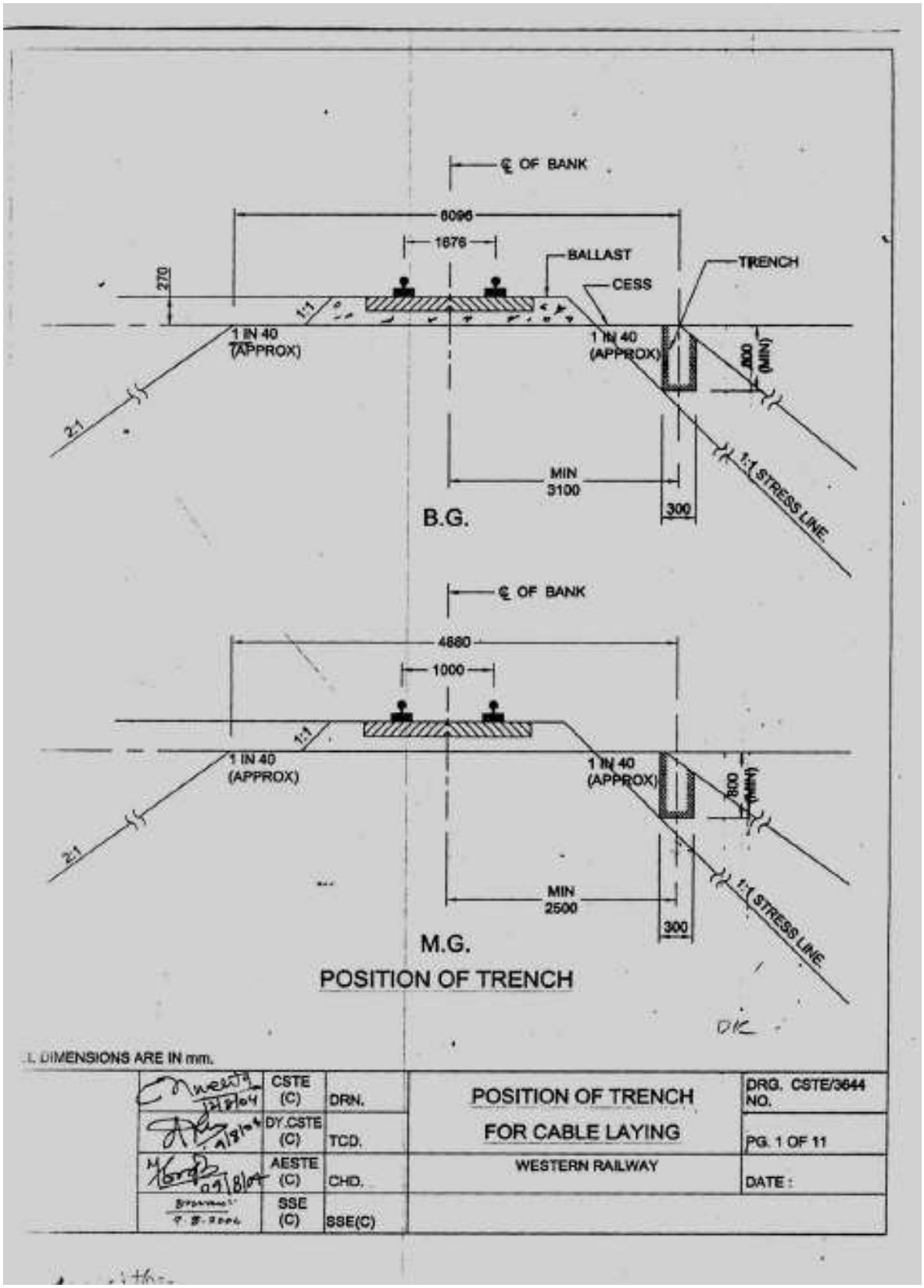
1.) ALL DIMENSIOND ARE IN MILLIMETRES.
2.) FOUNDATION CONTAING CEMENT CONCRET MIXED IN 1:3:6.
3.) SIZE OF BALLAST SHOULD BE 6mm TO 65mm
4.) EARTH SHOULD BE WELL RAMMED AROUND FOUNDATION.
5.) FOUNDATION SHOULD BE BUILT IN A PROPER SHAPE AS PER DIAGRAM.
6.) FIRMA OF PROPER SIZE AND SHAPE SHOULD BE MADE AND UTILIZED FOR CASTING THE FOUNDATION.
7.) ALL MATERIAL EXCEPT WASHROOM STAND SHOULD BE SUPPLIED BY THE CONTRACTOR, AS THE PART OF FOUNDATION.
8.) IF ANY CHANGE IS REQUIRED IN THIS DRAWING TO ADOPT SITE CONDITION THEN SAME NEED TO BE APPROVED BY OFFICER INCHARGE.

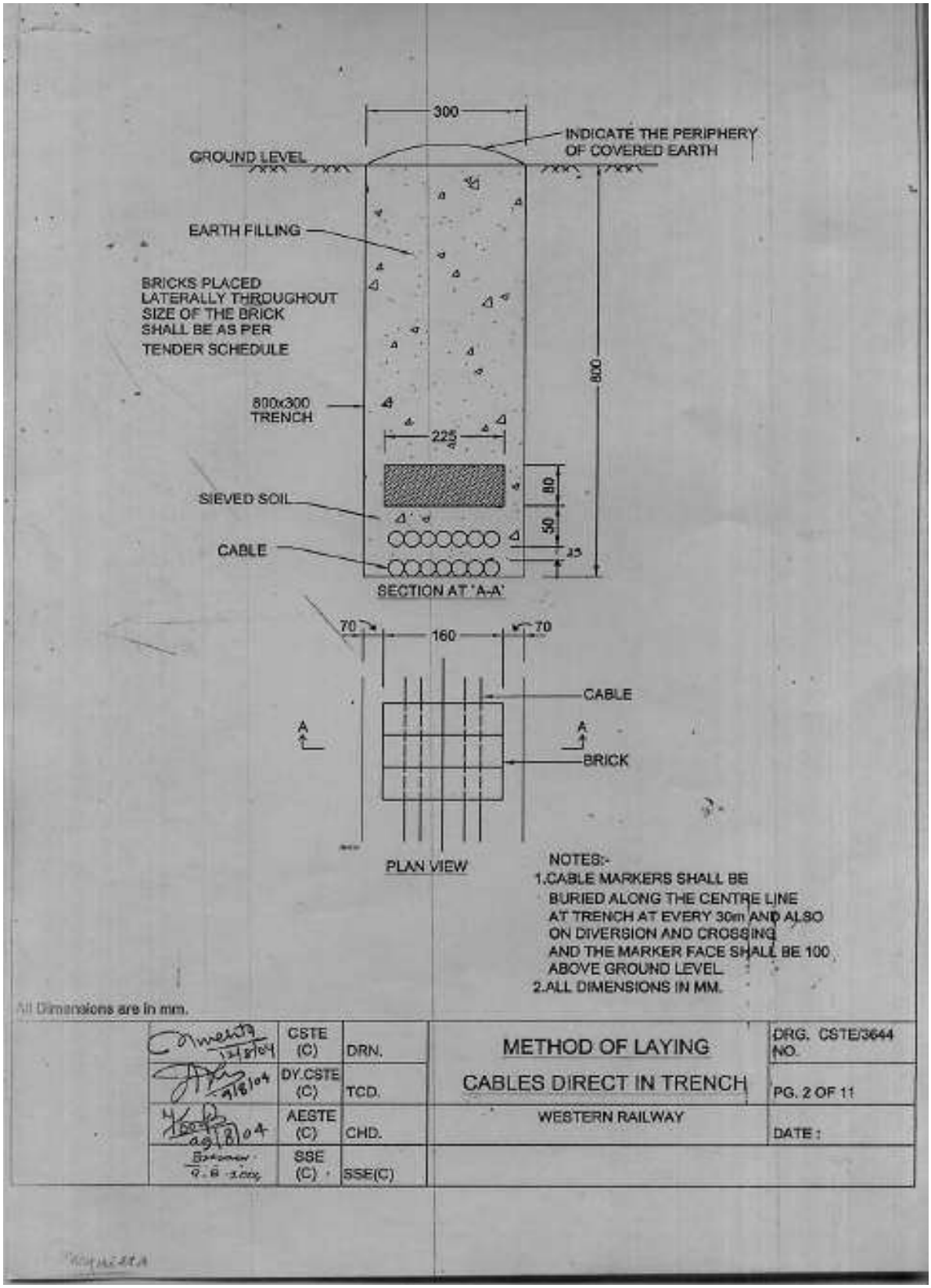
* AT SITE CLEARANCE FROM SOD SHALL BE OF TOP MOST PRIORITY. AS FAR AS POSSIBLE SOD CLEARANCE SHOULD BE STRICTLY ADHERED TO. HOWEVER, TO CLEAR THE INSTALLATION FROM SOD IF FOUNDATION NEEDS TO BE LOWERED MORE IN GROUND IT SHALL BE DONE AT SITE, WITH THE APPROVAL OF OFFICER INCHARGE.

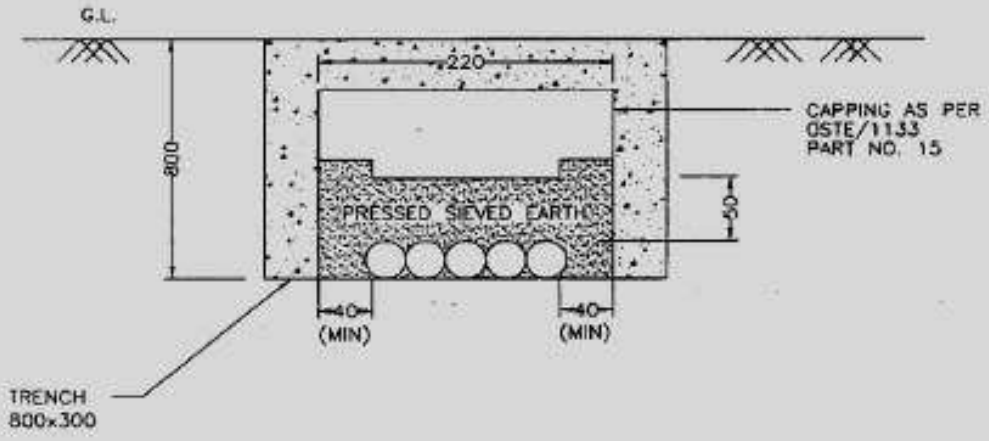
PREVIOUS DRAWING NO.CSTE/6105 FOR FOUNDATION FOR DIGITAL AXLE COUNTER (Ms ELDYNE MAKE) IS TREATED AS CANCELLED.

	CSTE(W)	DRN. T.PRASAD JE (DPW)	FOUNDATION FOR DIGITAL AXLE COUNTER (Ms ELDYNE MAKE)	CSTE/6171 DRG.No.
	DyCSTE(W)	TCD.		PG. -
	ASTE	CHD.	WESTERN RAILWAY	29.02.2012 DATE
	SSE		MUMBAI DIVISION	

OpenE-

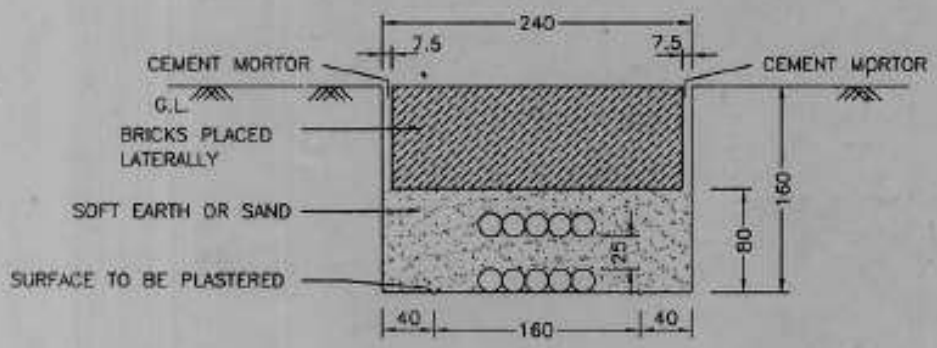

℄ OF BANK
6096
1676
BALLAST
TRENCH
CESS
270
1:1
1 IN 40
(APPROX)
1 IN 40
(APPROX)
800
(MIN)
2:1
1:1 STRESS LINE
MIN
3100
300
B.G.
℄ OF BANK
4880
1000
1:1
1 IN 40
(APPROX)
1 IN 40
(APPROX)
800
(MIN)
2:1
1:1 STRESS LINE
MIN
2500
300
M.G.
POSITION OF TRENCH
OK
1. DIMENSIONS ARE IN mm.
CSTE (C)
DRN.
DY.CSTE (C)
TCD.
AESTE (C)
CHD.
SSE (C)
SSE(C)
POSITION OF TRENCH
FOR CABLE LAYING
WESTERN RAILWAY
DRG. CSTE/3644 NO.
PG. 1 OF 11
DATE :

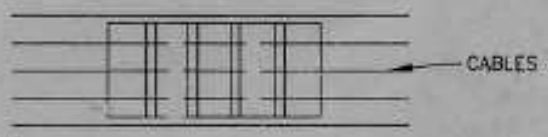

300
INDICATE THE PERIPHERY OF COVERED EARTH
GROUND LEVEL
EARTH FILLING
BRICKS PLACED LATERALLY THROUGHOUT SIZE OF THE BRICK SHALL BE AS PER TENDER SCHEDULE
800x300 TRENCH
800
225
80
50
25
SIEVED SOIL
CABLE
SECTION AT 'A-A'
70
160
70
CABLE
A
A
BRICK
PLAN VIEW
NOTES:-
1.CABLE MARKERS SHALL BE BURIED ALONG THE CENTRE LINE AT TRENCH AT EVERY 30m AND ALSO ON DIVERSION AND CROSSING AND THE MARKER FACE SHALL BE 100 ABOVE GROUND LEVEL.
2.ALL DIMENSIONS IN MM.
All Dimensions are in mm.
CSTE (C)
DRN.
DY.CSTE (C)
TCD.
AESTE (C)
CHD.
SSE (C)
SSE(C)
METHOD OF LAYING
CABLES DIRECT IN TRENCH
WESTERN RAILWAY
DRG. NO. CSTE/3644
PG. 2 OF 11
DATE :



All Dimensions are in mm

	CSTE (C)	DRN.	METHOD OF PLACING CONCRETE COVER SLAB OVER BURIED CABLES	DRG. CSTE/3644 NO.
	DY.CSTE (C)	TCD.		PG. 3 OF 11
	AESTE (C)	CHD.	WESTERN RAILWAY	DATE :
	SSE (C)	SSE(C)	CONCRETE COVER SLAB OVER BURIED CABLES	

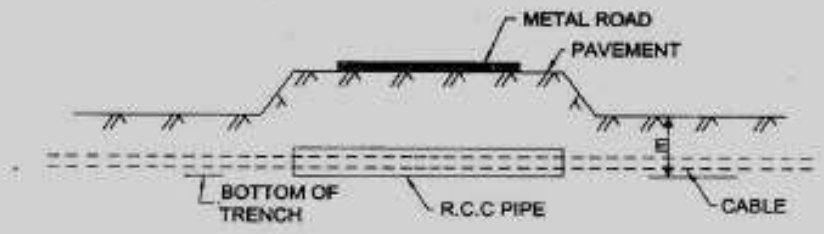




SIZE OF THE BRICK SHALL BE AS PER TENDER SCHEDULE

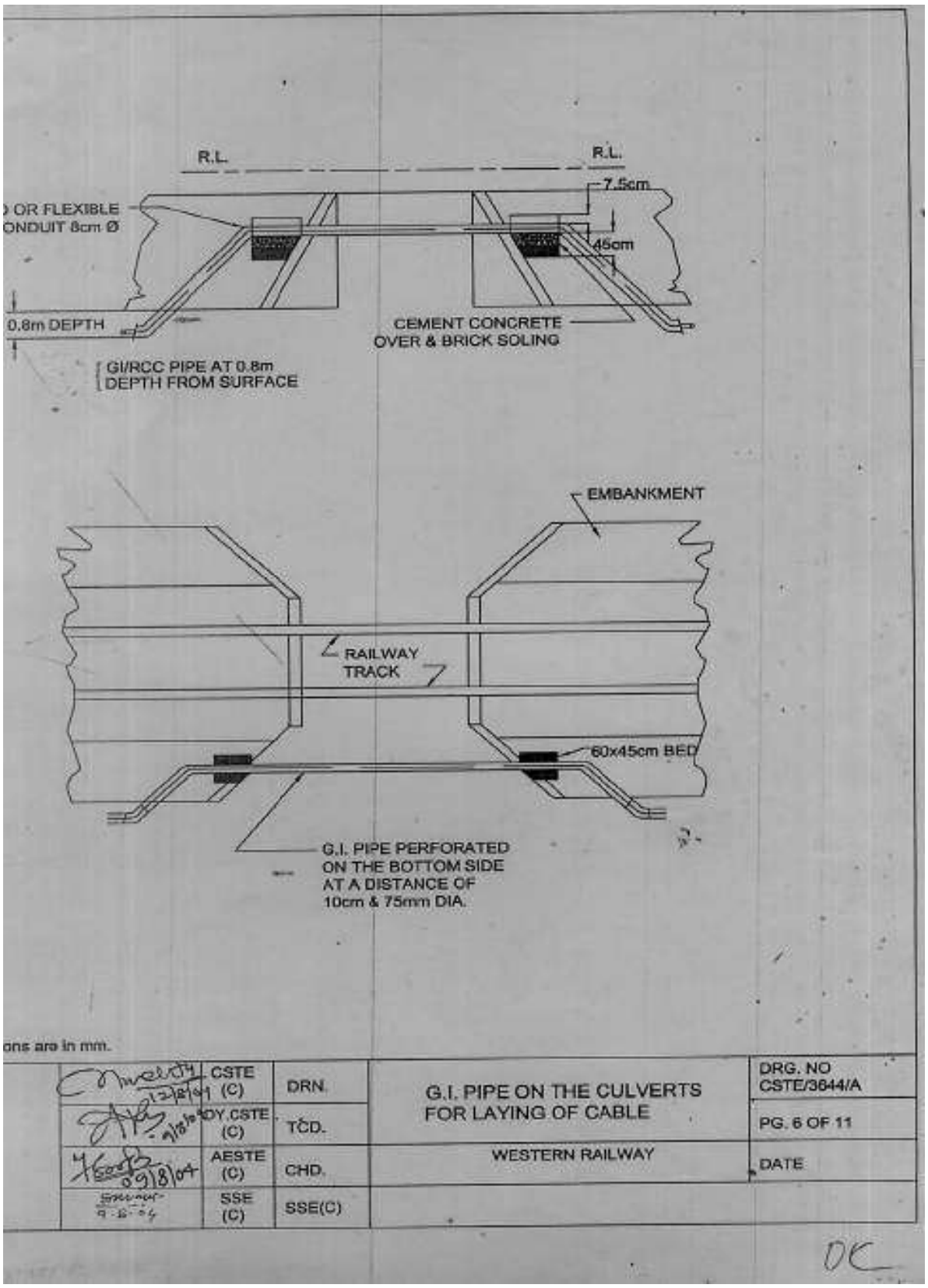
All Dimension are in mm

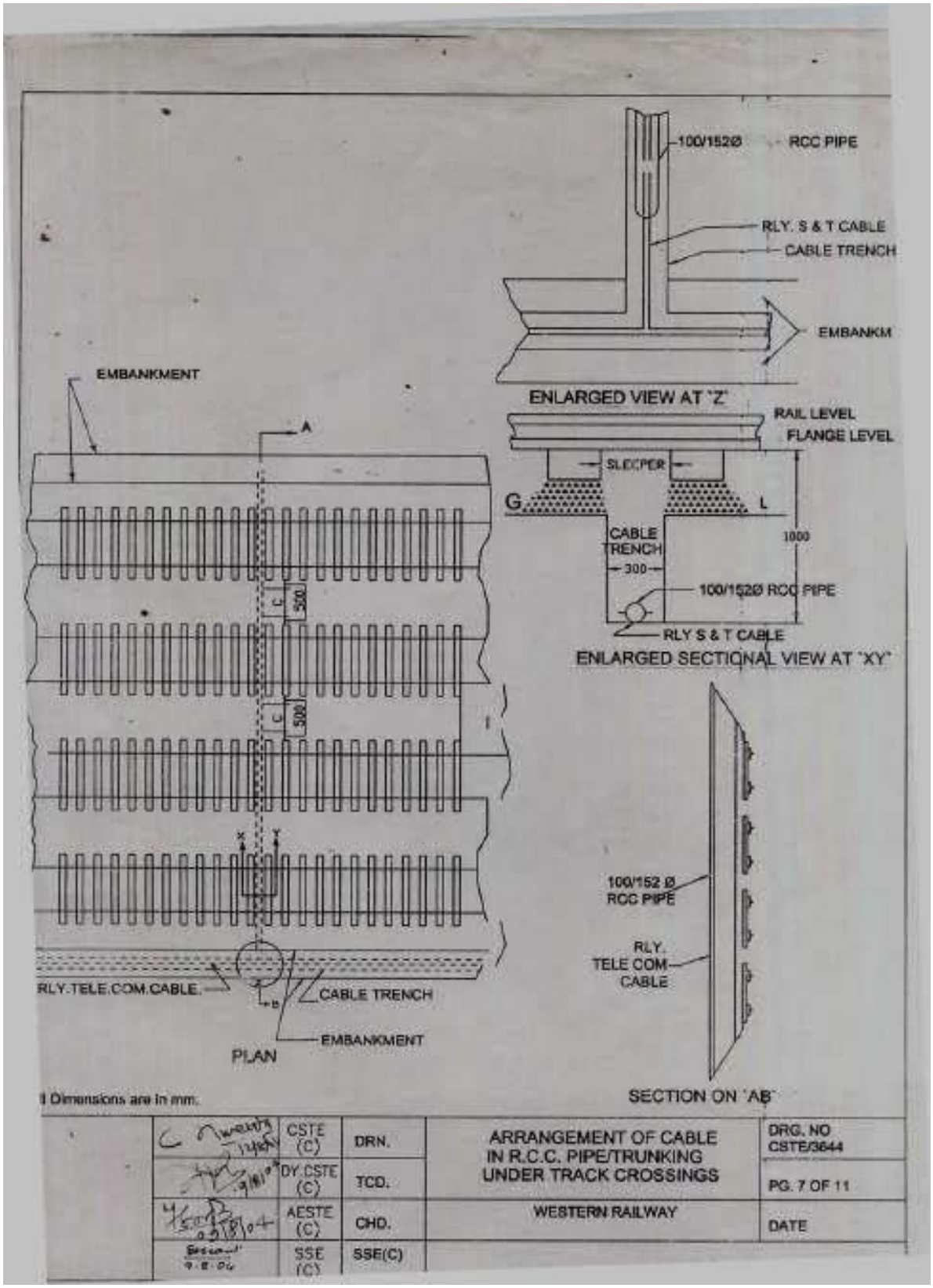
	CSTE (C)	DRN.	METHOD OF LAYING CABLES IN ROCKY SOIL OR IN PLATFORM	DRG. CSTE/3644/A NO.
	DY.CSTE (C)	TCD.		PG. 4 OF 11
	AESTE (C)	CHD.	WESTERN RAILWAY	DATE :
	SSE (C)	SSE(C)		

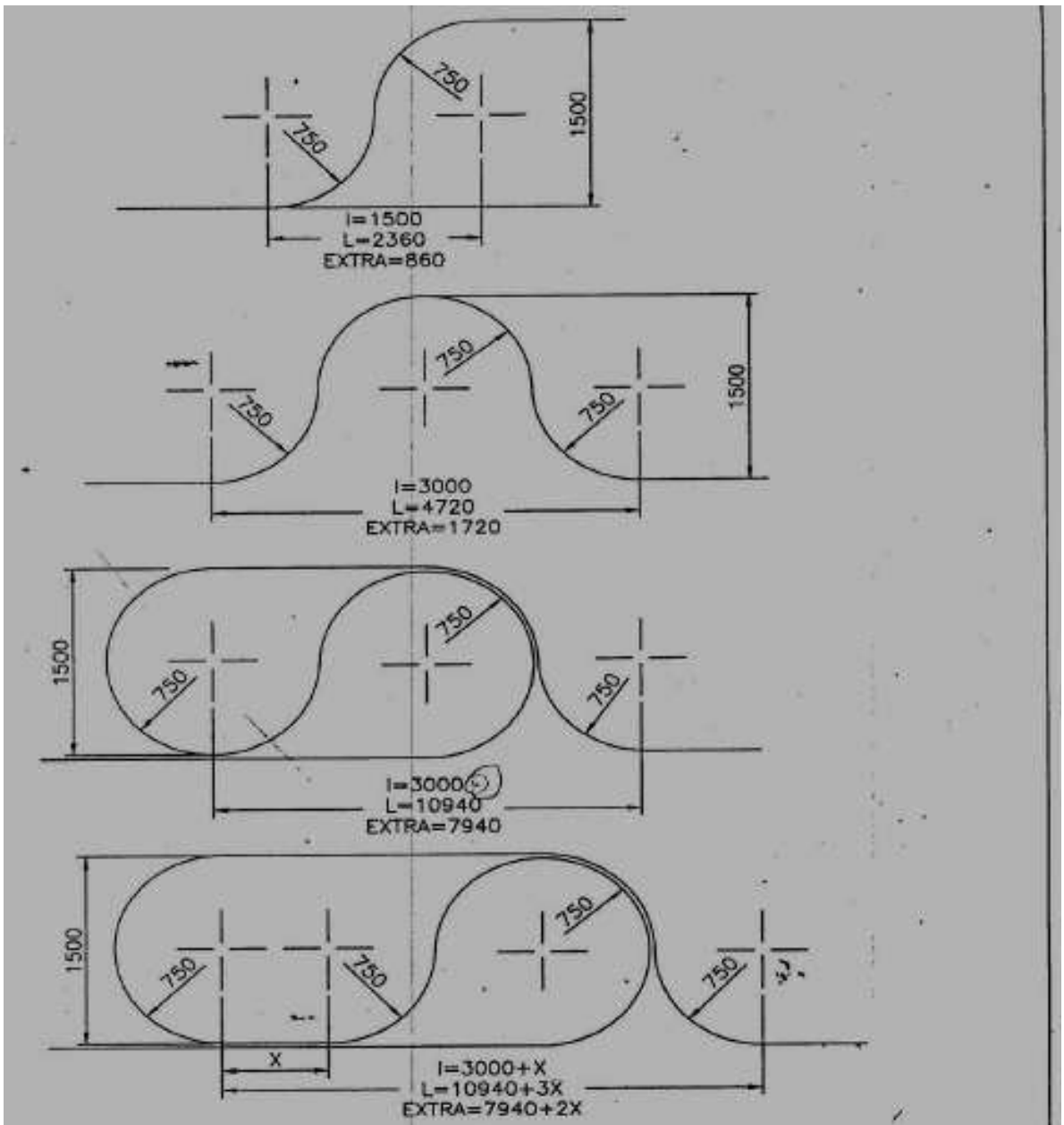


Dimensions are in mm.

	CSTE (C)	DRN.	ARRANGEMENT OF RCC PIPE/ TRUNKING UNDER METAL ROAD FOR LAYING OF CABLE	DRG. NO CSTE/3644
	DY.CSTE (C)	TCD.		PG. 5 OF 11
	AESTE (C)	CHD.	WESTERN RAILWAY	DATE
	SSE (C)	SSE(C)		


R.L.
R.L.
7.5cm
OR FLEXIBLE
ONDUIT 8cm Ø
45cm
0.8m DEPTH
CEMENT CONCRETE
OVER & BRICK SOLING
GI/RCC PIPE AT 0.8m
DEPTH FROM SURFACE
EMBANKMENT
RAILWAY
TRACK
60x45cm BED
G.I. PIPE PERFORATED
ON THE BOTTOM SIDE
AT A DISTANCE OF
10cm & 75mm DIA.
ons are in mm.
CSTE (C)
DRN.
DY.CSTE (C)
TCD.
AESTE (C)
CHD.
SSE (C)
SSE(C)
G.I. PIPE ON THE CULVERTS
FOR LAYING OF CABLE
WESTERN RAILWAY
DRG. NO
CSTE/3644/A
PG. 6 OF 11
DATE


100/152Ø
RCC PIPE
RLY. S & T CABLE
CABLE TRENCH
EMBANKM
ENLARGED VIEW AT 'Z'
RAIL LEVEL
FLANGE LEVEL
SLEEPER
G
L
CABLE TRENCH
300
1000
100/152Ø RCC PIPE
RLY S & T CABLE
ENLARGED SECTIONAL VIEW AT 'XY'
EMBANKMENT
A
500
500
X
Y
RLY.TELE.COM.CABLE
CABLE TRENCH
EMBANKMENT
PLAN
100/152 Ø RCC PIPE
RLY. TELE COM CABLE
SECTION ON 'AB'
1 Dimensions are in mm.
CSTE (C)
DRN.
DY.CSTE (C)
TCD.
AESTE (C)
CHD.
SSE (C)
SSE(C)
ARRANGEMENT OF CABLE IN R.C.C. PIPE/TRUNKING UNDER TRACK CROSSINGS
WESTERN RAILWAY
DRG. NO CSTE/3644
PG. 7 OF 11
DATE



METHOD OF LEAVING CABLE RESERVE

N IN MM.

12/8/04	CSTE (C)	DRN.	INSTRUCTIONS FOR LAYING OF CABLES	DRG. NO. CSTE/3644
9/8/04	DY.CSTE (C)	TCD.		PG. 8 OF 11
09/8/04	AESTE (C)	CHD.	WESTERN RAILWAY	DATE :
9.8.04	SSE (C)	SSE(C)		

OK

MANUFA-CTURER'S DRUM NO	LENGTH ON DRUM	USED AT					LENGTH LEFT FOR REUSE	REMARKS
		STATION	ROUTE PLAN NO	BETWEEN LOC.	CABLE NO.	LENGTH USED		

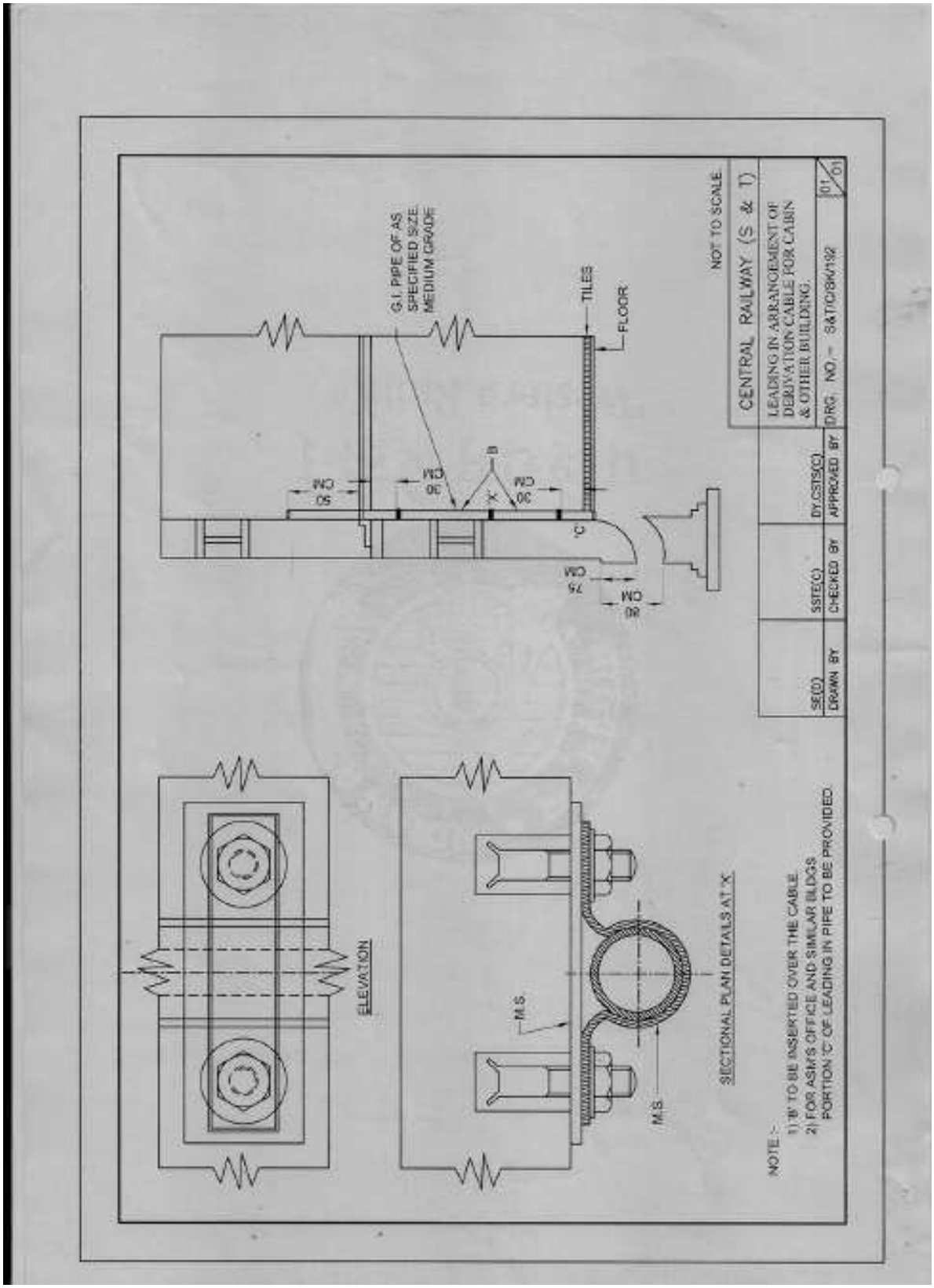
LY ORDER	21/8/04	CSTE (C)	DRN.	CABLE BACK-UP SHEET	DRG. CSTE/3644 NO.
	9/8/04	DY.CSTE (C)	TCD.	SIZE OF CABLE	PG. 10 OF 11
	02/8/04	AESTE (C)	CHD.	WESTERN RAILWAY	DATE : 3-6-83
FACTURER'S	9.8.04	SSE (C)	SSE(C)		

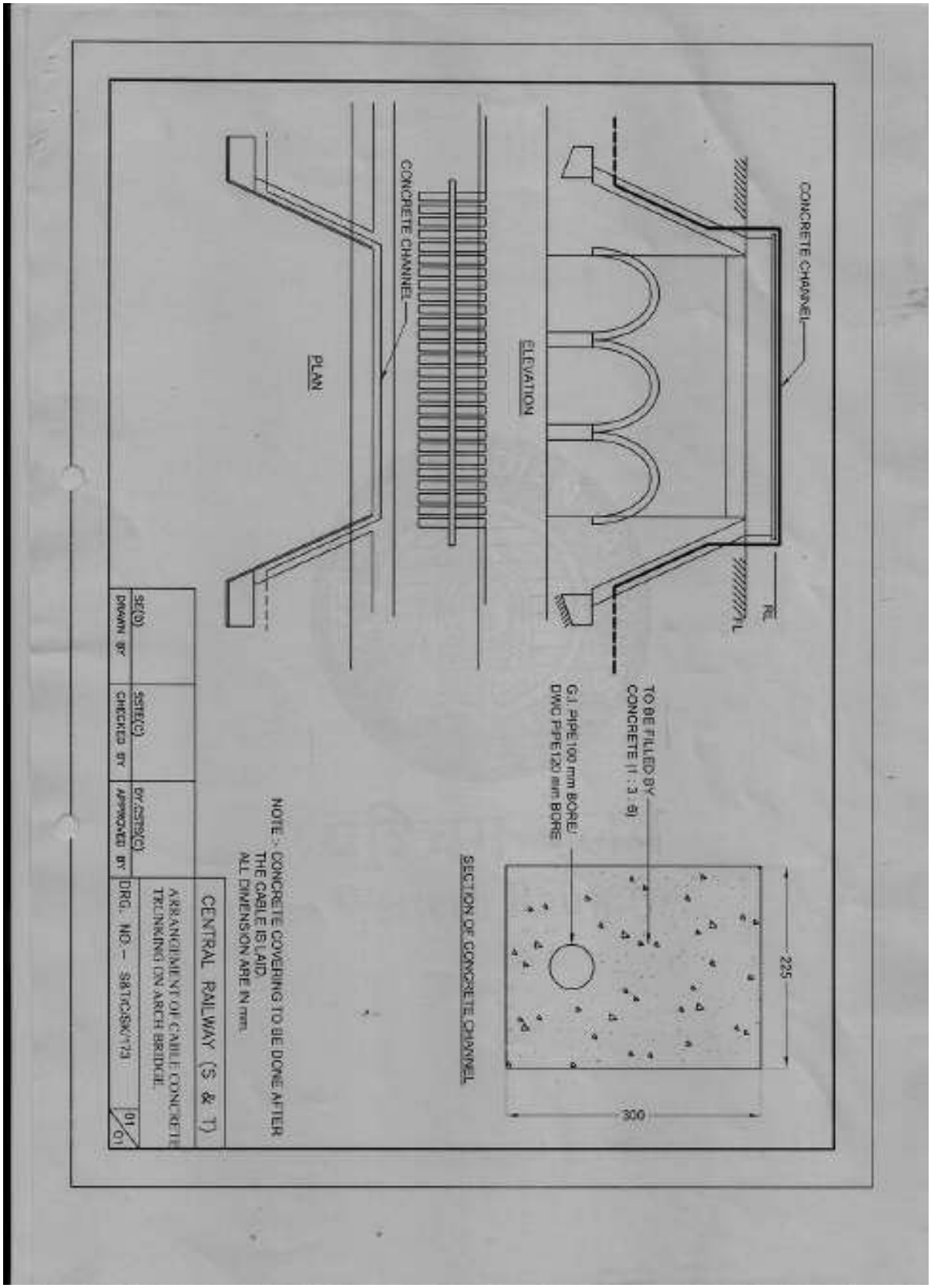
OK

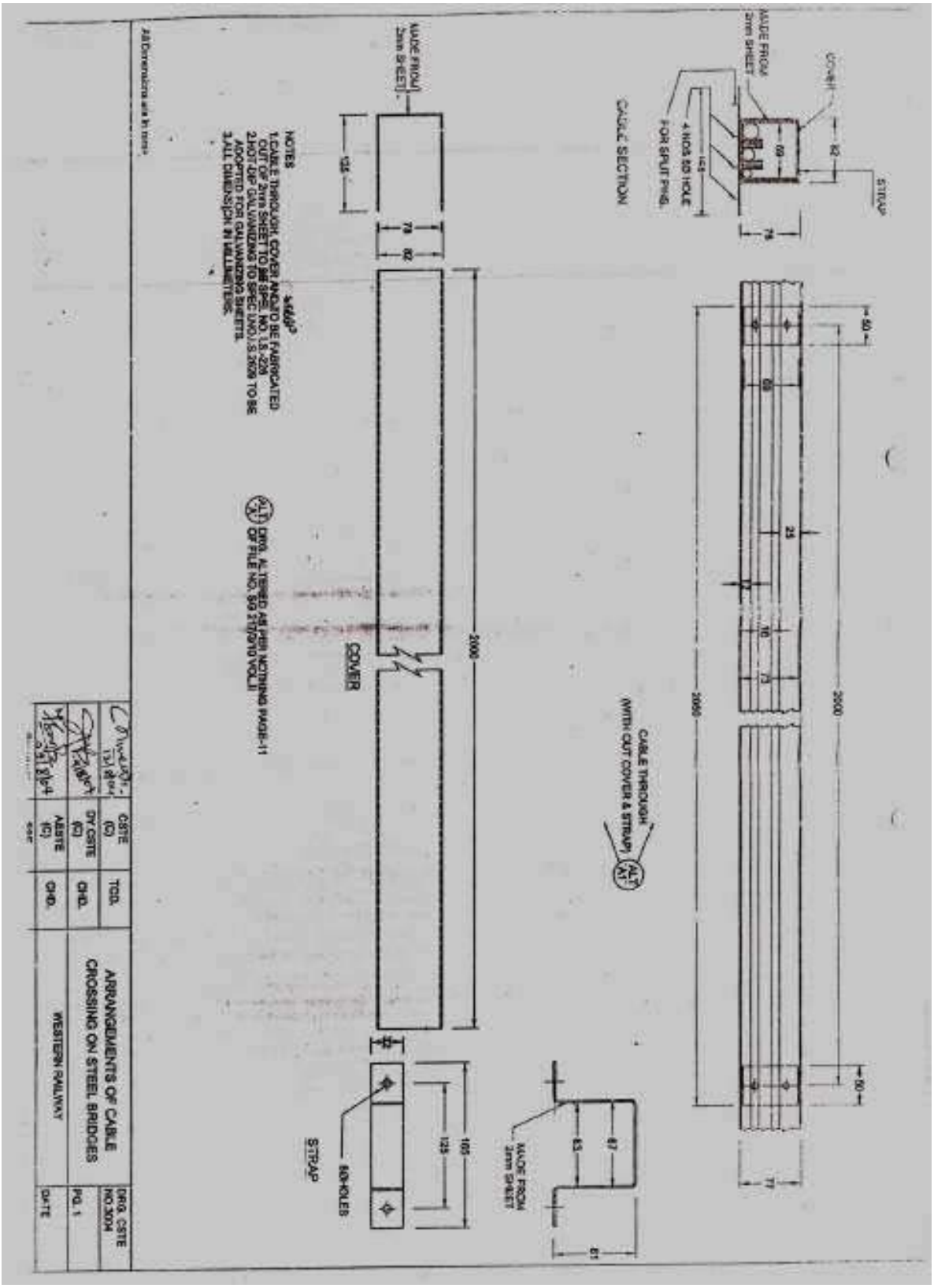
ABLE	ALLOWANCE AT LOCATION END	ROUTE LENGTH	ALLOWANCE FOR DIVERSION ETC.	ALLOWANCE AT OTHER END	TOTAL LENGTH (m)	DRUM NO	CROSS REF TO CABLE BACK UP SHEET NO	DATE OF INSTALLATION

12/8/04	CSTE (C)	DRN.	CABLE RECORD	DRG. NO. CSTE/3644
9/8/04	DY.CSTE (C)	TCD.	STATION, ROUTE PLAN NO.	PG. 11 OF 11
09/8/04	AESTE (C)	CHD.	WESTERN RAILWAY	DATE :
9.8.04	SSE (C)	SSE(C)		

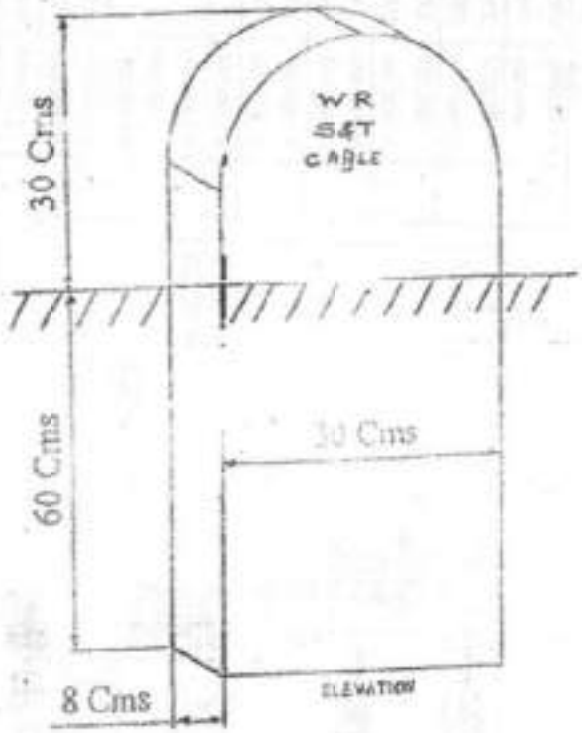
DK


G.I. PIPE OF AS SPECIFIED SIZE MEDIUM GRADE
TILES
FLOOR
50 CM
30 CM
30 CM
B
A
C
75 CM
20 CM
NOT TO SCALE
CENTRAL RAILWAY (S & T)
LEADING IN ARRANGEMENT OF DERIVATION CABLE FOR CABIN & OTHER BUILDING.
DRG. NO.- S&T/C8K/192
01/01
SE(D) DRAWN BY
SSTE(C) CHECKED BY
DY.CSTS(C) APPROVED BY
ELEVATION
M.S
M.S
SECTIONAL PLAN DETAILS AT 'X'
NOTE :-
1) 'B' TO BE INSERTED OVER THE CABLE
2) FOR ASM'S OFFICE AND SIMILAR BLDGS PORTION 'C' OF LEADING IN PIPE TO BE PROVIDED


CONCRETE CHANNEL
RL
TL
ELEVATION
TO BE FILLED BY
CONCRETE (1 : 3 : 6)
G.I. PIPE 100 mm BORE/
DWC PIPE 120 mm BORE
225
300
SECTION OF CONCRETE CHANNEL
CONCRETE CHANNEL
PLAN
NOTE :- CONCRETE COVERING TO BE DONE AFTER
THE CABLE IS LAID.
ALL DIMENSION ARE IN mm.
CENTRAL RAILWAY (S & T)
ARRANGEMENT OF CABLE CONCRETE
TRUNKING ON ARCH BRIDGE.
SE(D)
DRAWN BY
SSE(C)
CHECKED BY
by ASTE(C)
APPROVED BY
DRG. NO. - S&T/C-SK/173
01
01


COVER
STRAP
MADE FROM 2mm SHEET
4 HOLES 50 HOLE FOR SPLIT PINS.
CABLE SECTION
CABLE THROUGH (WITH OUT COVER & STRAP)
ALT
2000
COVER
STRAP
6 HOLES
MADE FROM 3mm SHEET
NOTES
1. CABLE THROUGH COVER AND STRAP SHOULD BE FABRICATED OUT OF 2mm SHEET TO BE SPEC. NO. I.S.-226
2. HOT DIP GALVANIZING TO SPEC. NO. I.S. 2629 TO BE ADOPTED FOR GALVANIZING SHEETS.
3. ALL DIMENSION IN MILLIMETERS.
DRG. ALTERED AS PER NOTHING PAGE-11 OF FILE NO. 50 21/3/10 VOL.II
All Dimensions are in mm.
CSTE (C)
TCD.
DY CSTE (C)
CHD.
ABSTE (C)
CHD.
ARRANGEMENTS OF CABLE CROSSING ON STEEL BRIDGES
WESTERN RAILWAY
DRG. CSTE NO.3004
PG. 1
DATE

OpenE-



WESTERN RAILWAY RATLAM DIVISION

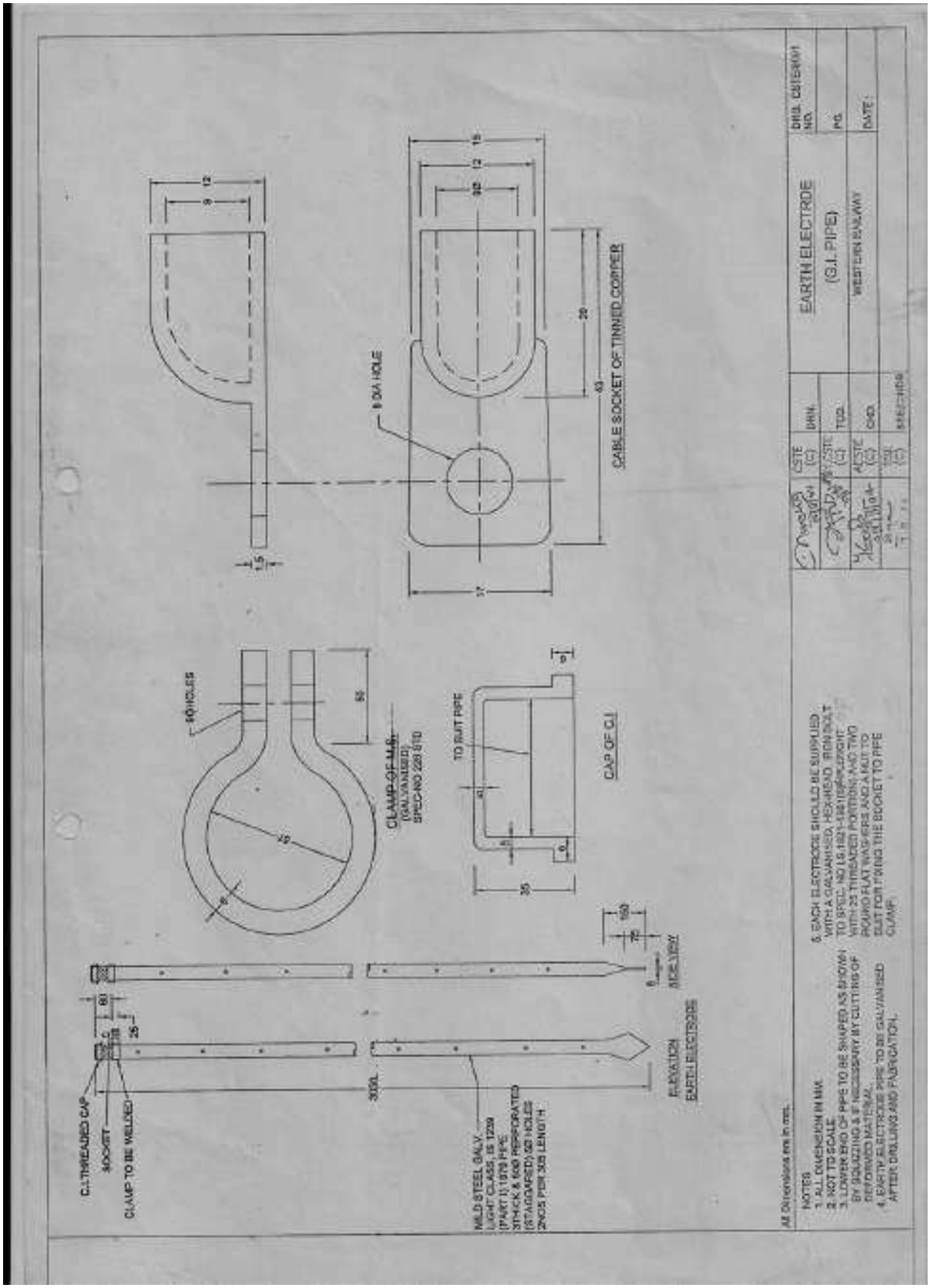
SIGNAL AND TELECOMMUNICATION DEPTT.

JOINT/ROUTE INDICATOR

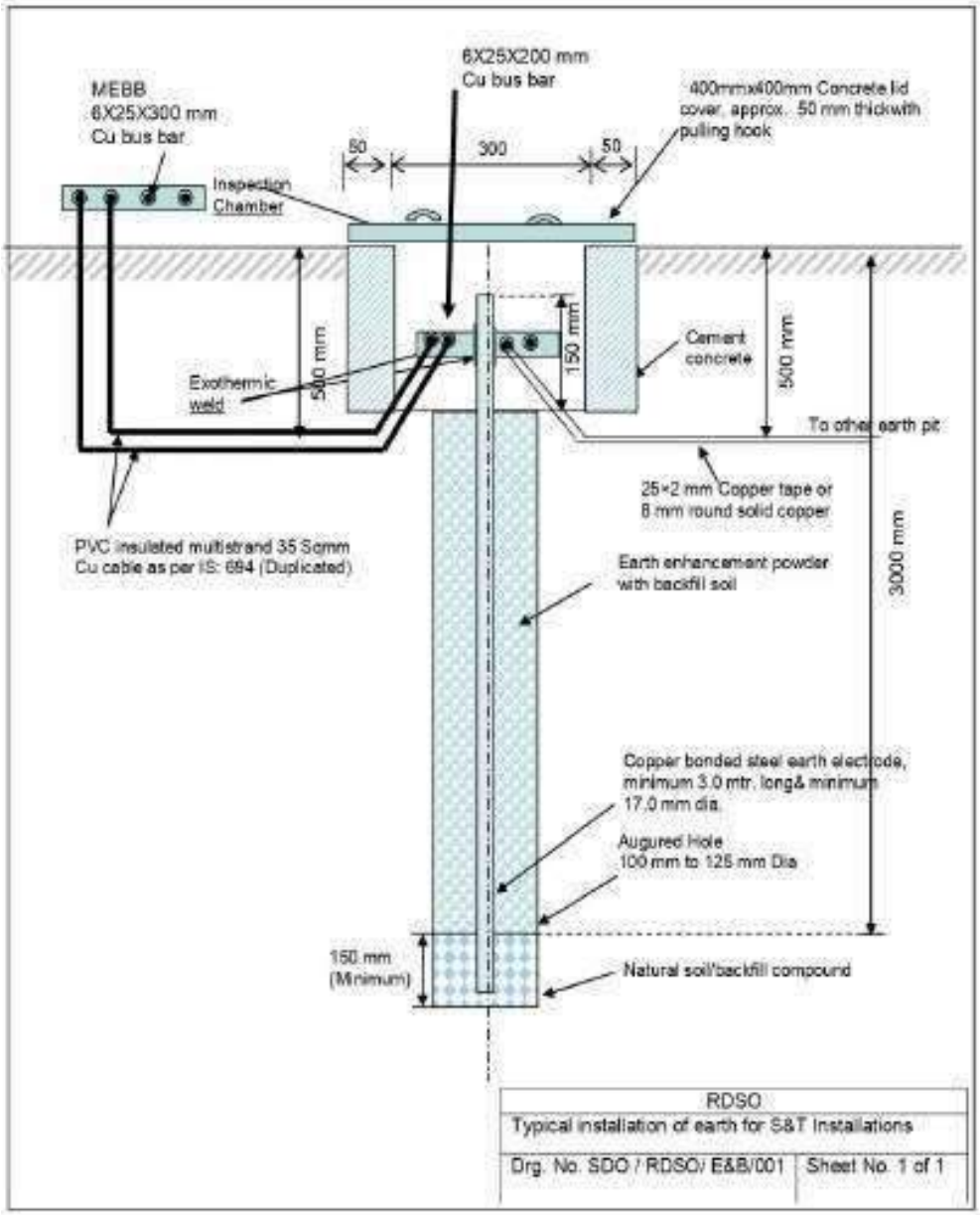
SCALE :- NTS

CK		DSTE-II/RTM	SR. DSTE/RTM	
DR		DRG. NO.	DRM/S&T/RTM/2007/4	

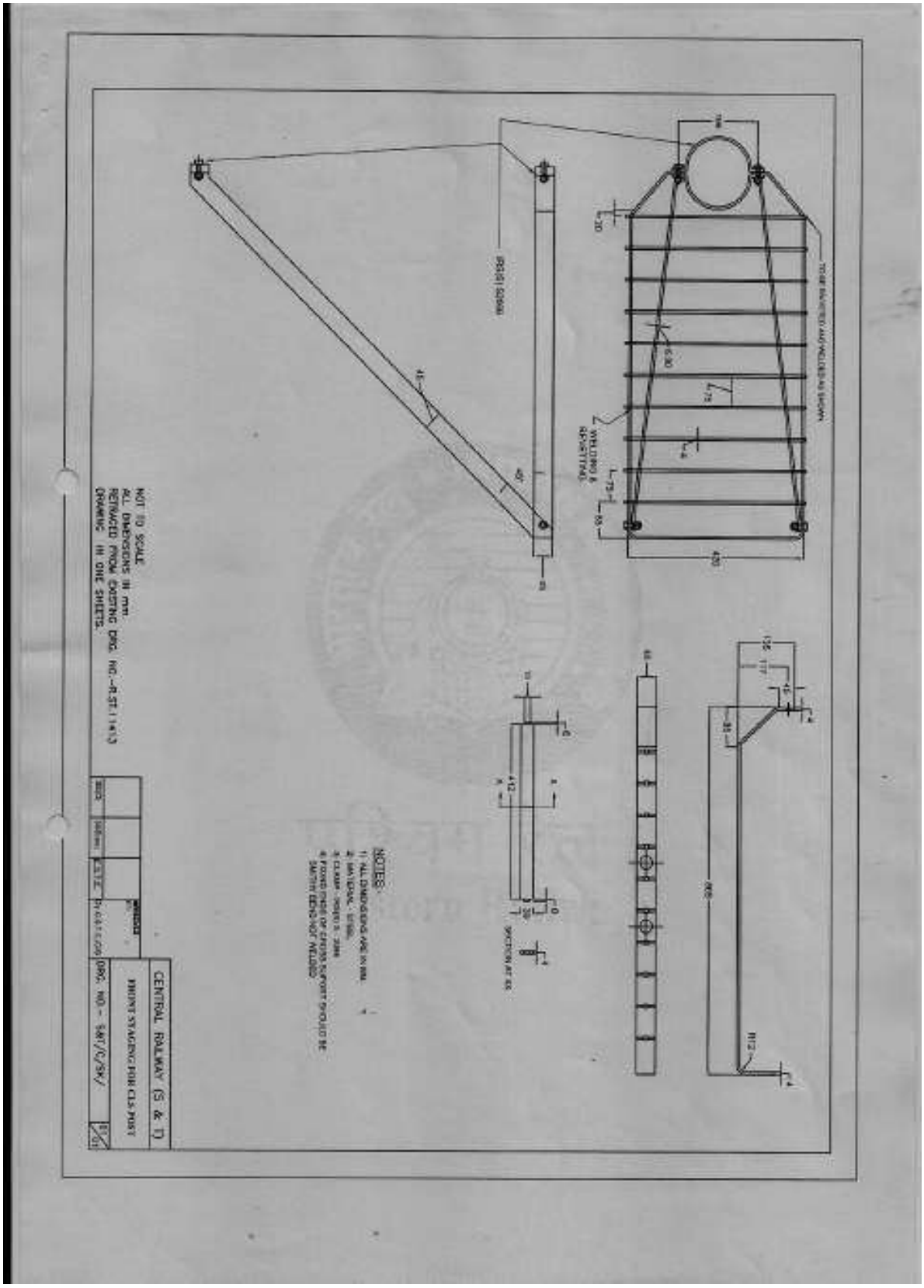
R.C.C. CABLE ROUTE MARKER Reference Dwg No. 4014/00/CCG

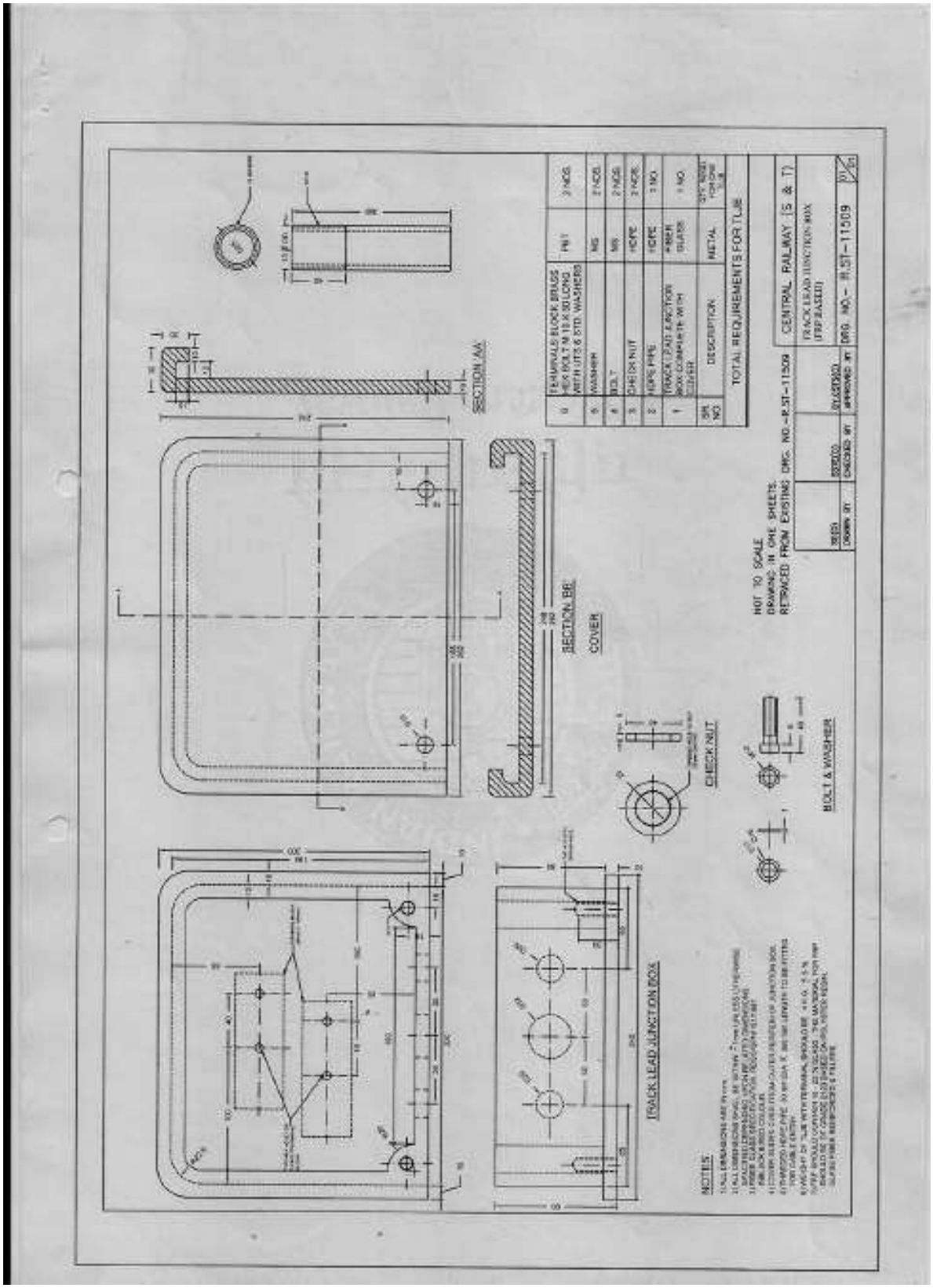

G.I. THREADED CAP
SOCKET
CLAMP TO BE WELDED
MILD STEEL GALV.
LIGHT CLASS, IS 1239
(PART I) 1979 PIPE
3THICK & 600 PERFORATED
(STANDARD) 320 HOLES
2NOS PER 305 LENGTH
300L
ELEVATION
EARTH ELECTRODE
6 HOLES
CLAMP OF M.S.
(GALVANISED)
SPEC-NO 229 S10
TO SUIT PIPE
CAP OF C.I.
8 DIA HOLE
CABLE SOCKET OF TINNED COPPER
All Dimensions are in mm.
NOTES
1. ALL DIMENSION IN MM.
2. NOT TO SCALE
3. LOWER END OF PIPE TO BE SHAPED AS SHOWN BY GRAZZING & IF NECESSARY BY CUTTING OF DEFORMED MATERIAL.
4. EARTH ELECTRODE PIPE TO BE GALVANISED AFTER DRILLING AND FABRICATION.
5. EACH ELECTRODE SHOULD BE SUPPLIED WITH A GALVANISED HEXHEAD BOLT TO SPEC. NO 16.1921-1961 (IS-1363) WITH 25 THREADED PORTION AND TWO ROUND FLAT WASHERS AND A NUT TO SUIT FOR FIXING THE SOCKET TO PIPE CLAMP.
EARTH ELECTRODE
(G.I. PIPE)
WESTERN RAILWAY
DRG. CATALOGUE NO.
PG.
DATE :

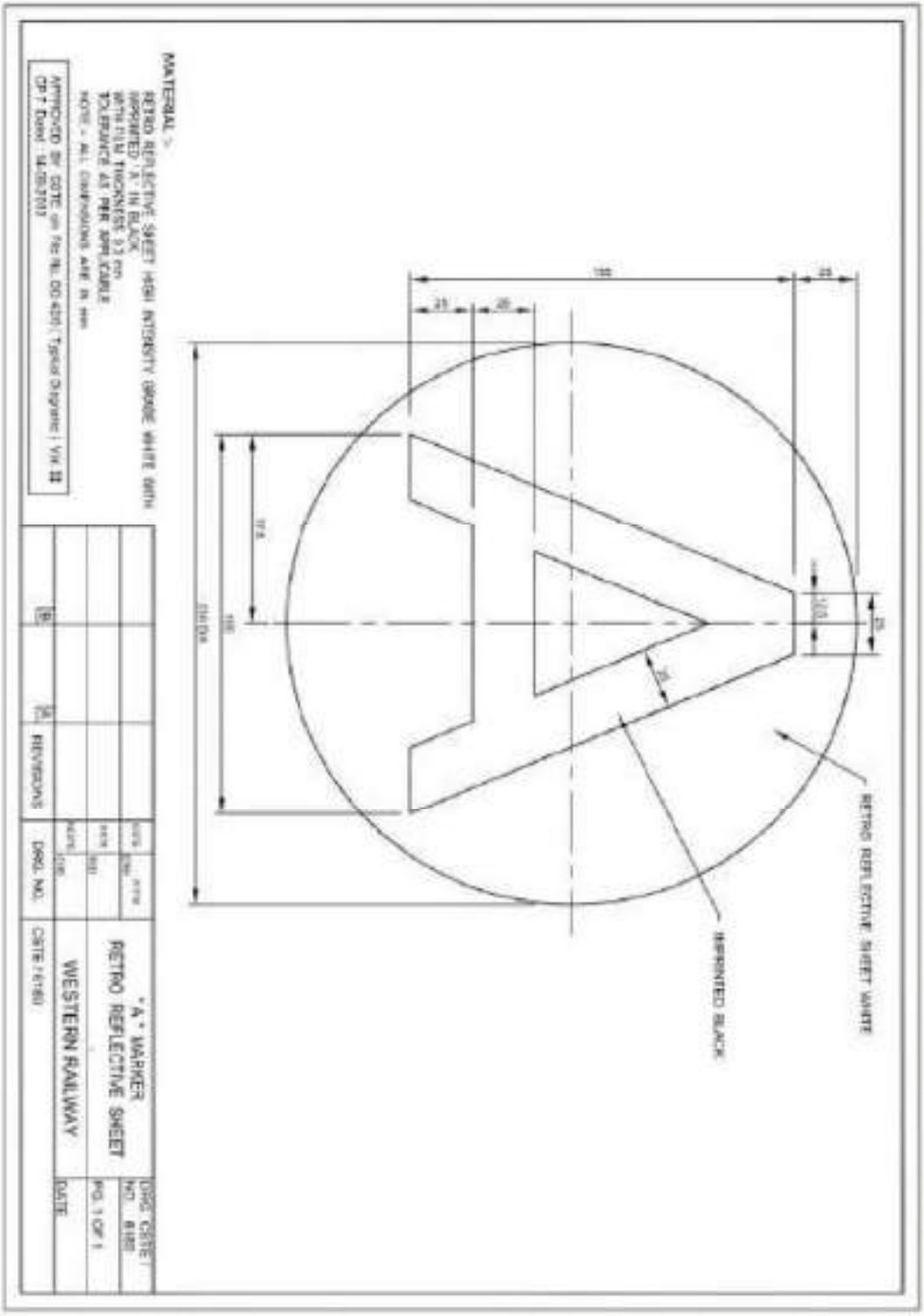
Page no.17 of 21	With effect from: 04.07.2016	Specification No. RDSO/SPN/197	Version 1.0
Document Title: Specification for Code of practice for Earthing& Bonding system for signaling equipments			

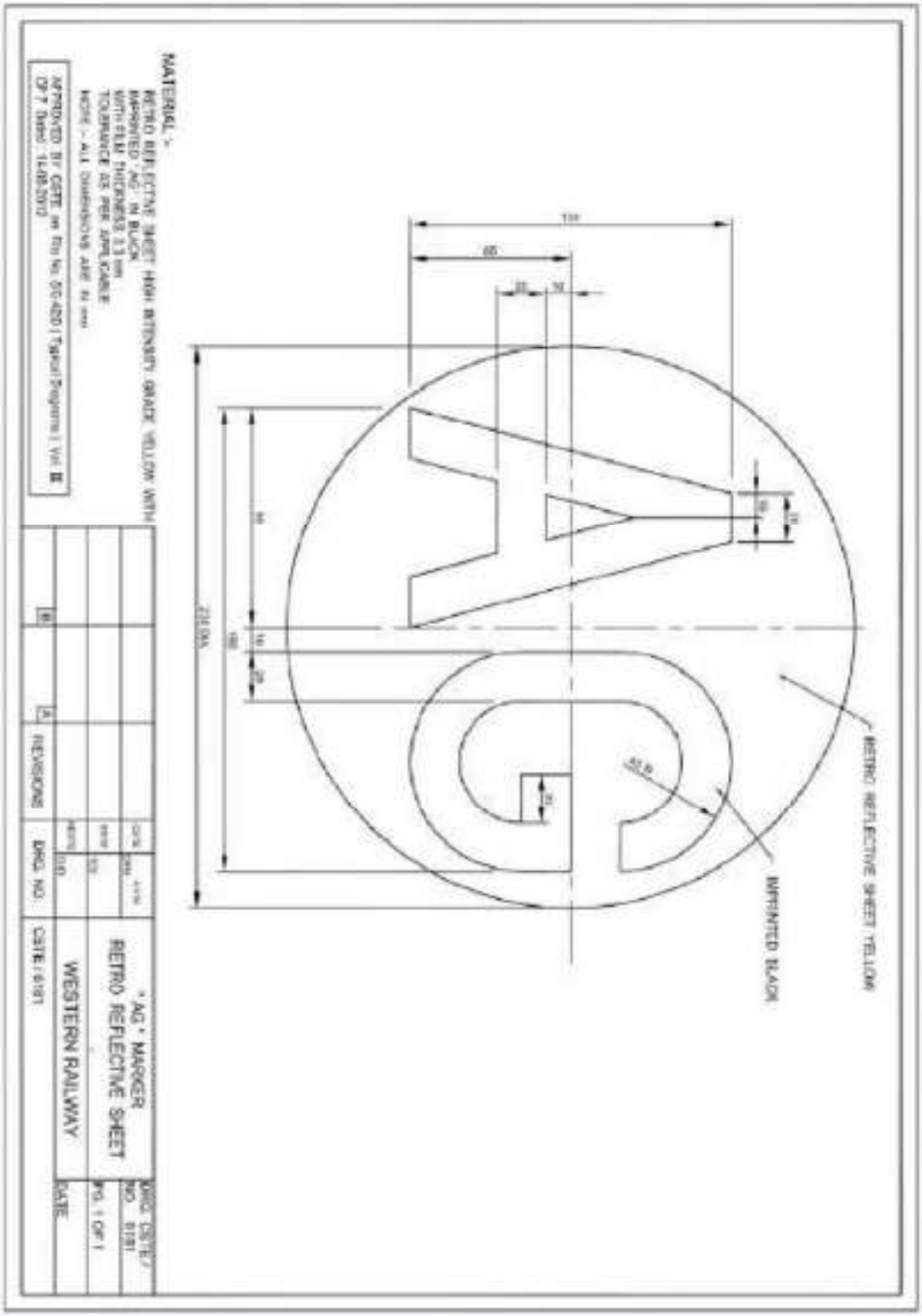


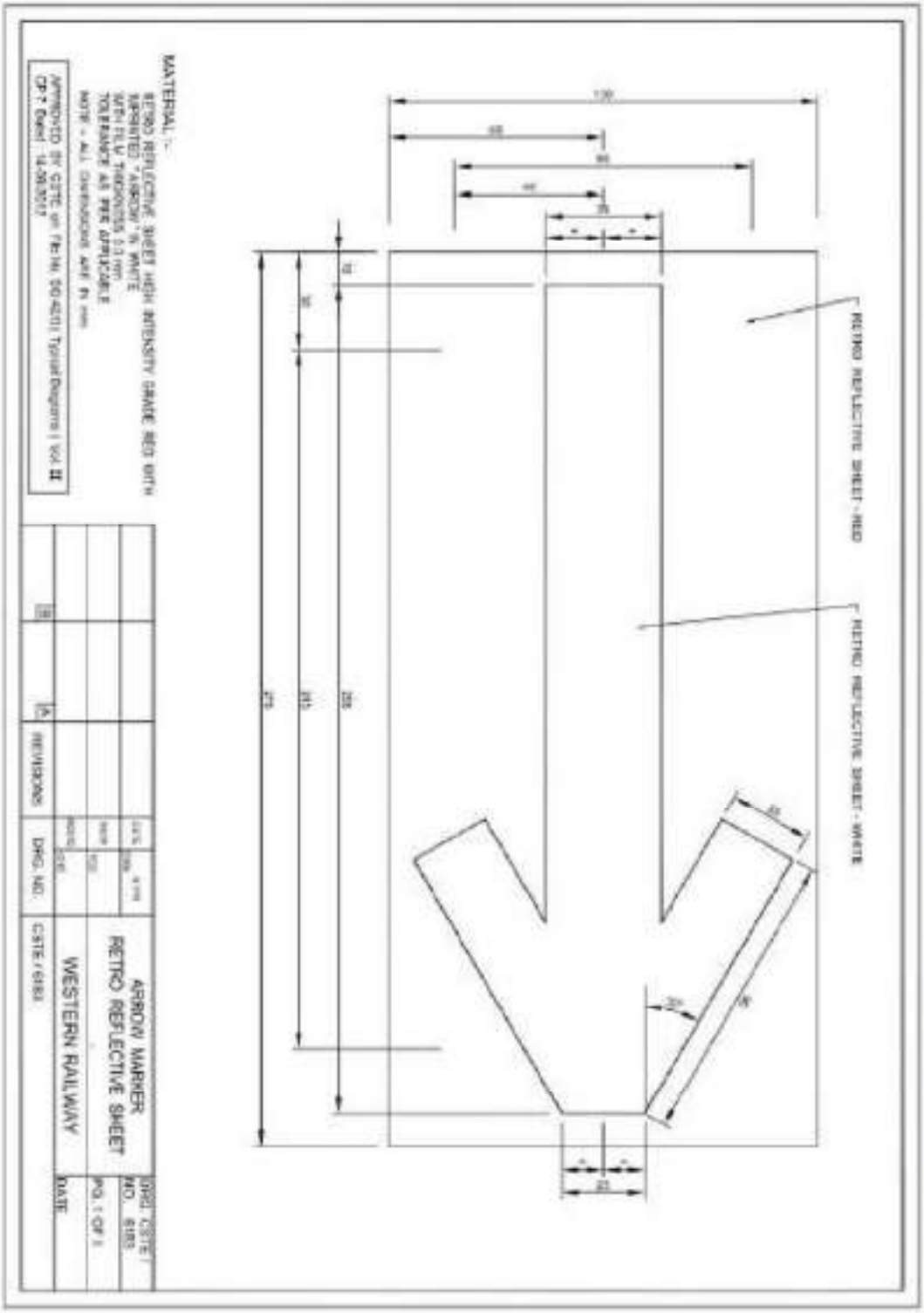
Prepared by: SSE/Signal	Checked by: DD/Signal	Issued by: Dir/Signal

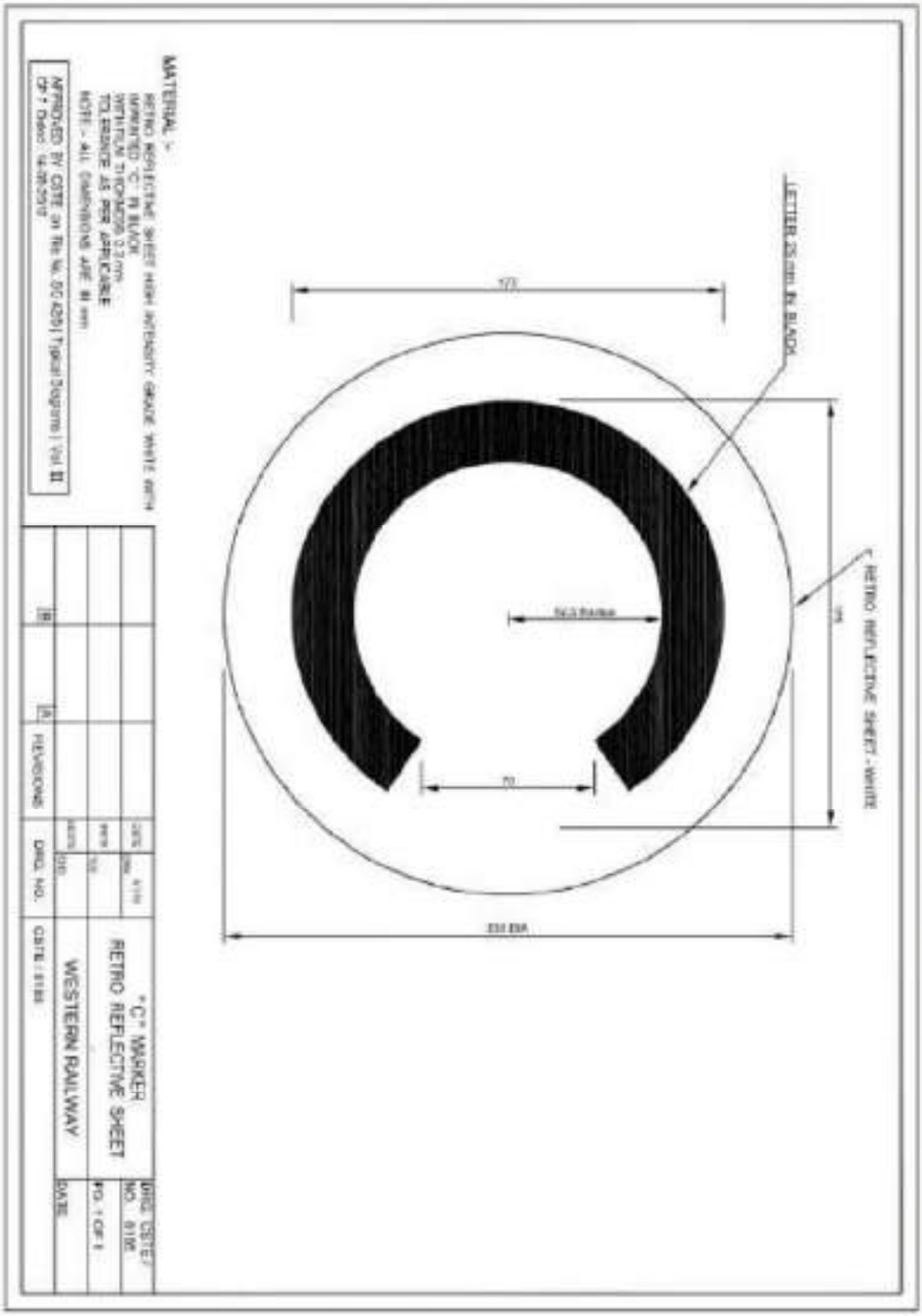

NOTES
NOT TO SCALE
ALL DIMENSIONS IN mm.
RETRACED FROM EXISTING DRG. NO.-R.ST.1143
DRAWING IN ONE SHEETS.
CENTRAL RAILWAY (S & T)
PROPOSED STAGING FOR CLS POST
DRG. NO.- S&T/C/SK/

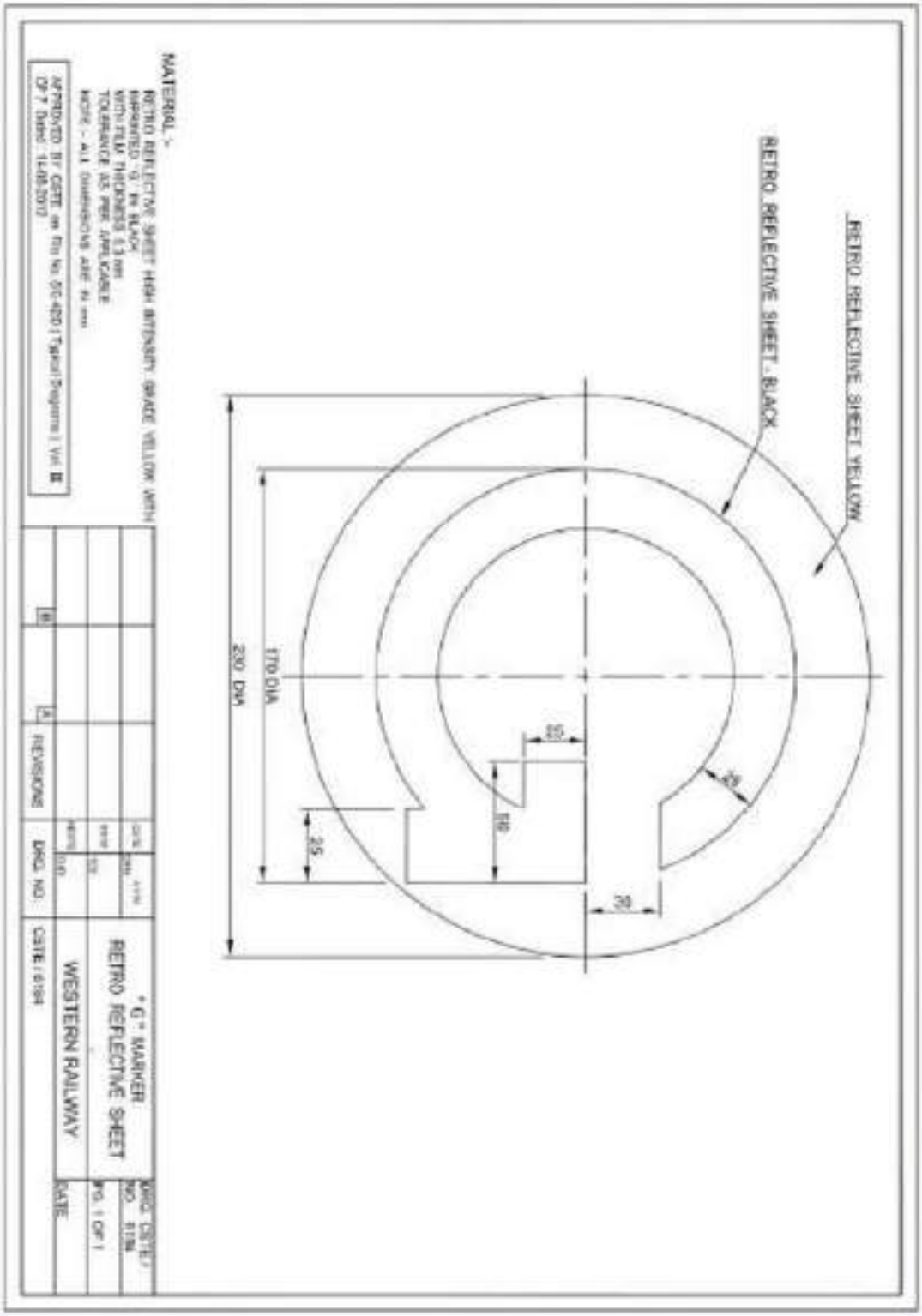

SECTION AA
SECTION BB
COVER
CHECK NUT
BOLT & WASHER
TRACK LEAD JUNCTION BOX
NOTES
NOT TO SCALE
DRAWING IN ONE SHEETS.
REPLACED FROM EXISTING DWG. NO.-R.ST-11509
CENTRAL RAILWAY (S & T)
TRACK LEAD JUNCTION BOX
(FRP BASED)
DWG. NO.- R.ST-11509
TOTAL REQUIREMENTS FOR TLJB
DESCRIPTION
METAL
FERRULES BLOCK BRASS
PEK BOLT M 10 X 50LONG
WITH UTS & STD. WASHERS
WASHER
BOLT
CHECK NUT
HOSE PIPE
TRACK LEAD JUNCTION
BOX COMPLETE WITH
COVER
FIBER
GLASS
DRAWN BY
CHECKED BY
APPROVED BY

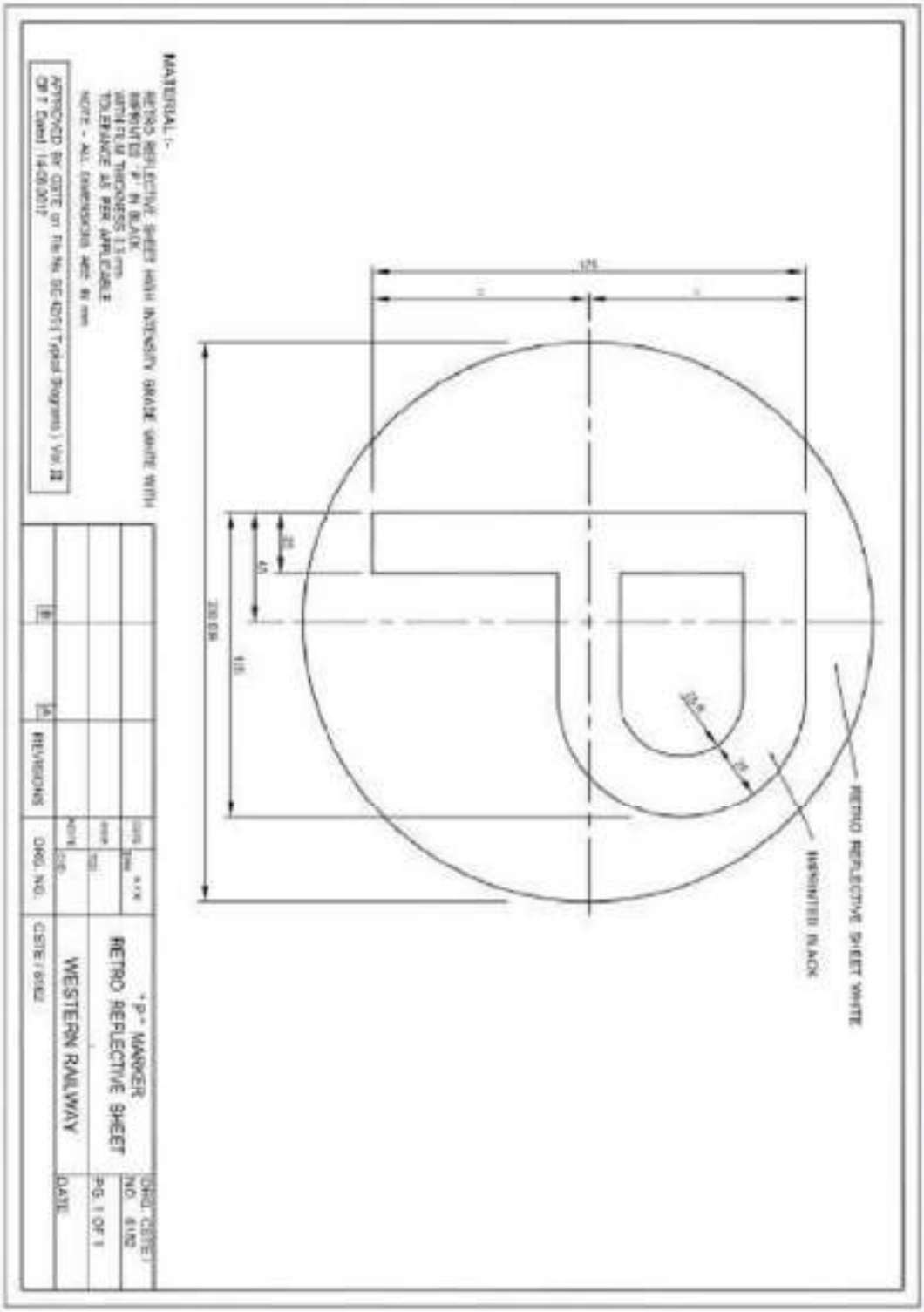

RETRO REFLECTIVE SHEET WHITE
IMPRINTED BLACK
MATERIAL :-
RETRO REFLECTIVE SHEET HIGH INTENSITY GRADE WHITE WITH
IMPRINTED 'A' IN BLACK
WITH FILM THICKNESS 0.2 mm
TOLERANCE AS PER APPLICABLE
NOTE - ALL DIMENSIONS ARE IN mm
APPROVED BY DOTC on Ref No. DO 4201 (Typical Diagram) Vide
CP.7 Dated : 14-05-2013
REVISIONS
DWG. NO.
DATE : 11-11-60
"A" MARKER
RETRO REFLECTIVE SHEET
WESTERN RAILWAY
DWG. CODE / NO. 8180
PG. 1 OF 1
DATE

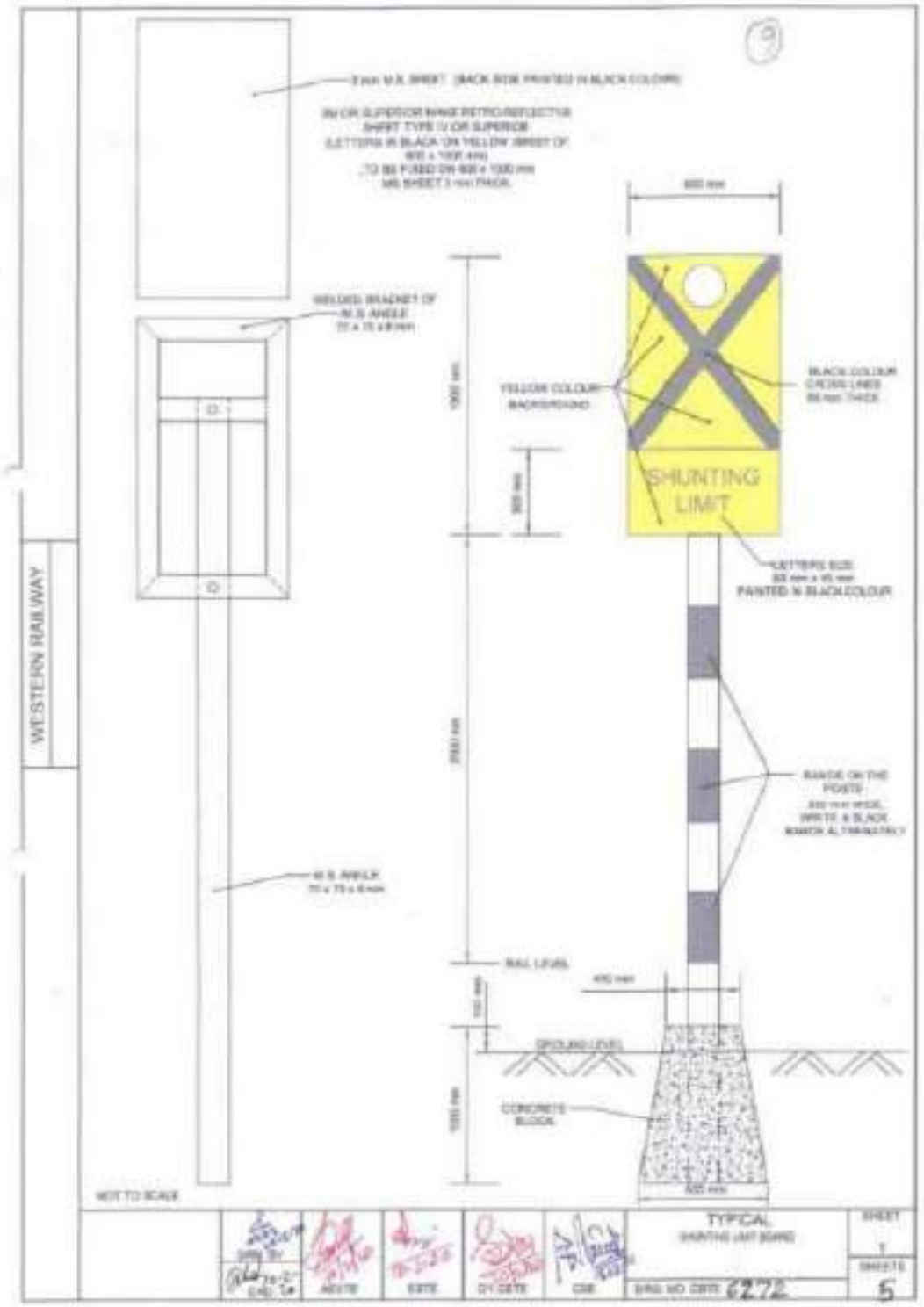

RETRO REFLECTIVE SHEET YELLOW
IMPRINTED BLACK
MATERIAL :-
RETRO REFLECTIVE SHEET HIGH INTENSITY GRADE YELLOW WITH
IMPRINTED "AG" IN BLACK
WITH FILM THICKNESS 0.3 mm
TOLERANCE AS PER APPLICABLE
NOTE :- ALL DIMENSIONS ARE IN mm
APPROVED BY CSTE on this No. CC-420 (Typical Programme) Ver. III
Dt 7 Dated 14.08.2012
REVISIONS
DRG. NO.
CSTE / 6181
"AG" MARKER
RETRO REFLECTIVE SHEET
WESTERN RAILWAY
DRG. CSTE/7
NO. 6181
PG. 1 OF 1
DATE

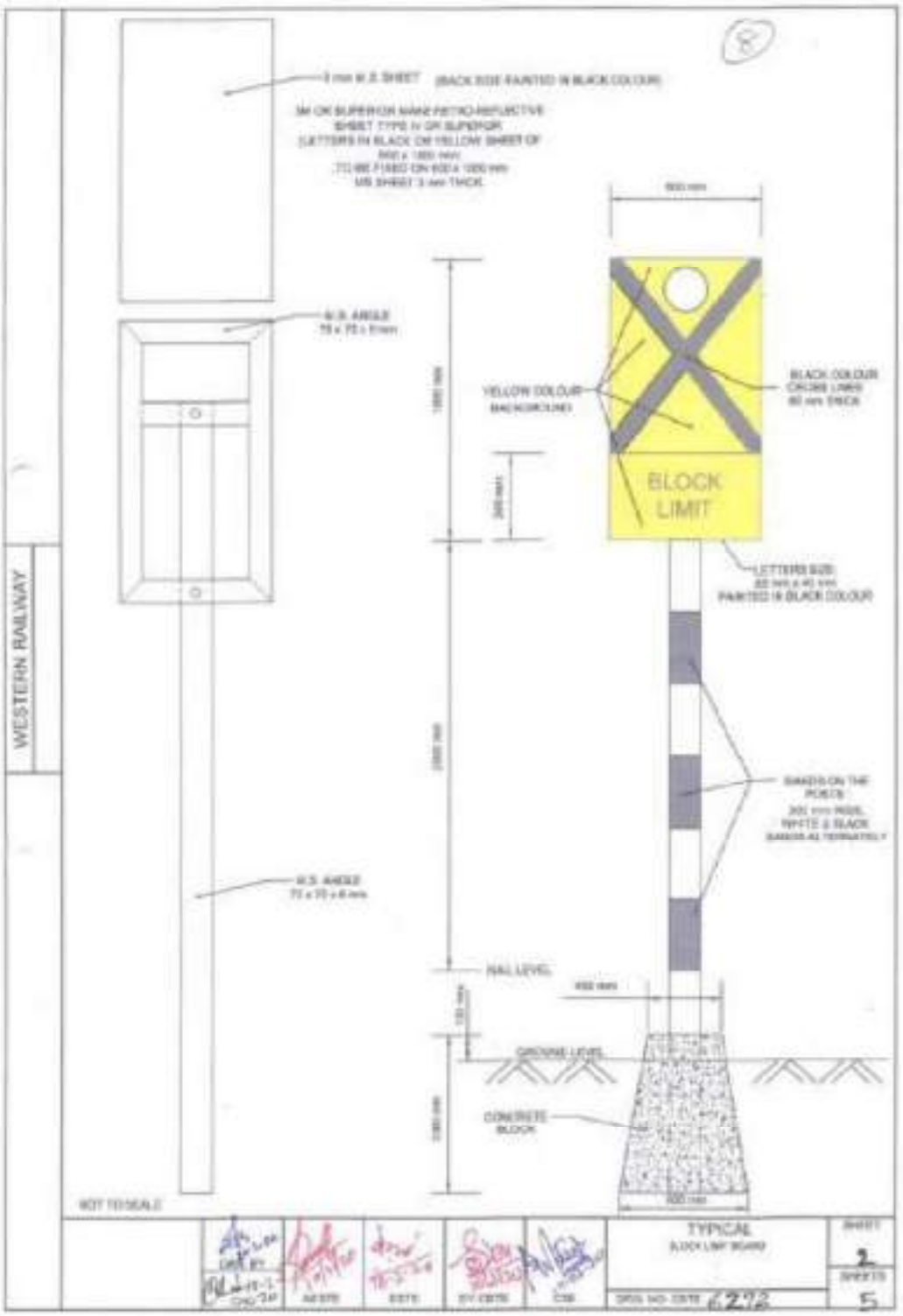

RETRO REFLECTIVE SHEET - RED
RETRO REFLECTIVE SHEET - WHITE
MATERIAL :-
RETRO REFLECTIVE SHEET HIGH INTENSITY GRADE RED WITH
IMPRINTED "ARROW" IN WHITE
WITH FILM THICKNESS 0.2 mm
TOLERANCE AS PER APPLICABLE
NOTE - ALL DIMENSIONS ARE IN mm
APPROVED BY CSTE on File No. SG-4011 Typical Diagrams | Vol. II
CP 7 Dated - 14.08.2012
REVISIONS
DRG. NO.
CSTE / 6183
ARROW MARKER
RETRO REFLECTIVE SHEET
WESTERN RAILWAY
DRG. CSTE/
NO. 6183
SHT. 1 OF 1
DATE

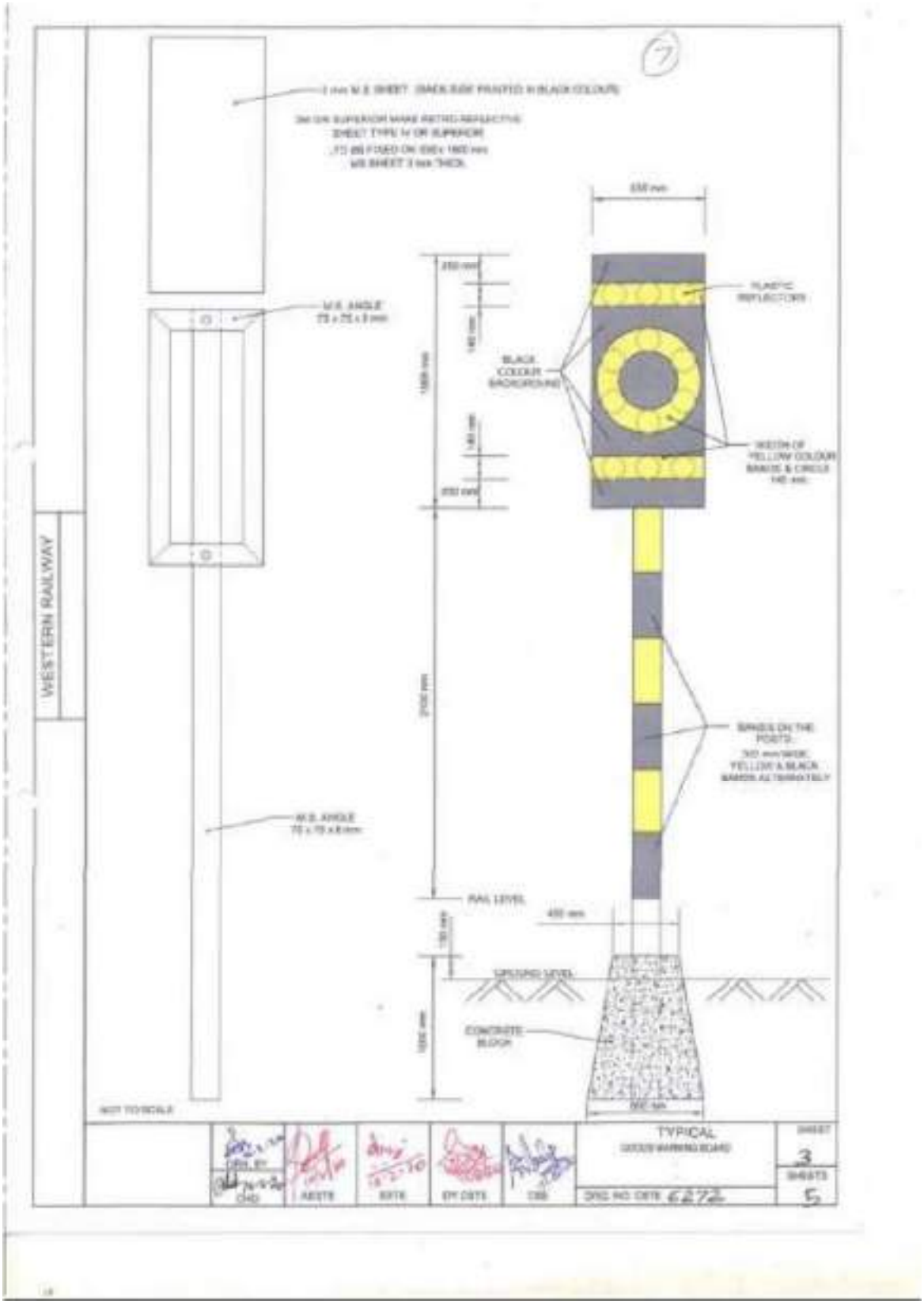

LETTER 25 mm IN BLACK
RETRO REFLECTIVE SHEET - WHITE
MATERIAL :-
"C" MARKER
RETRO REFLECTIVE SHEET
WESTERN RAILWAY
REVISIONS
DRG. NO.
DATE

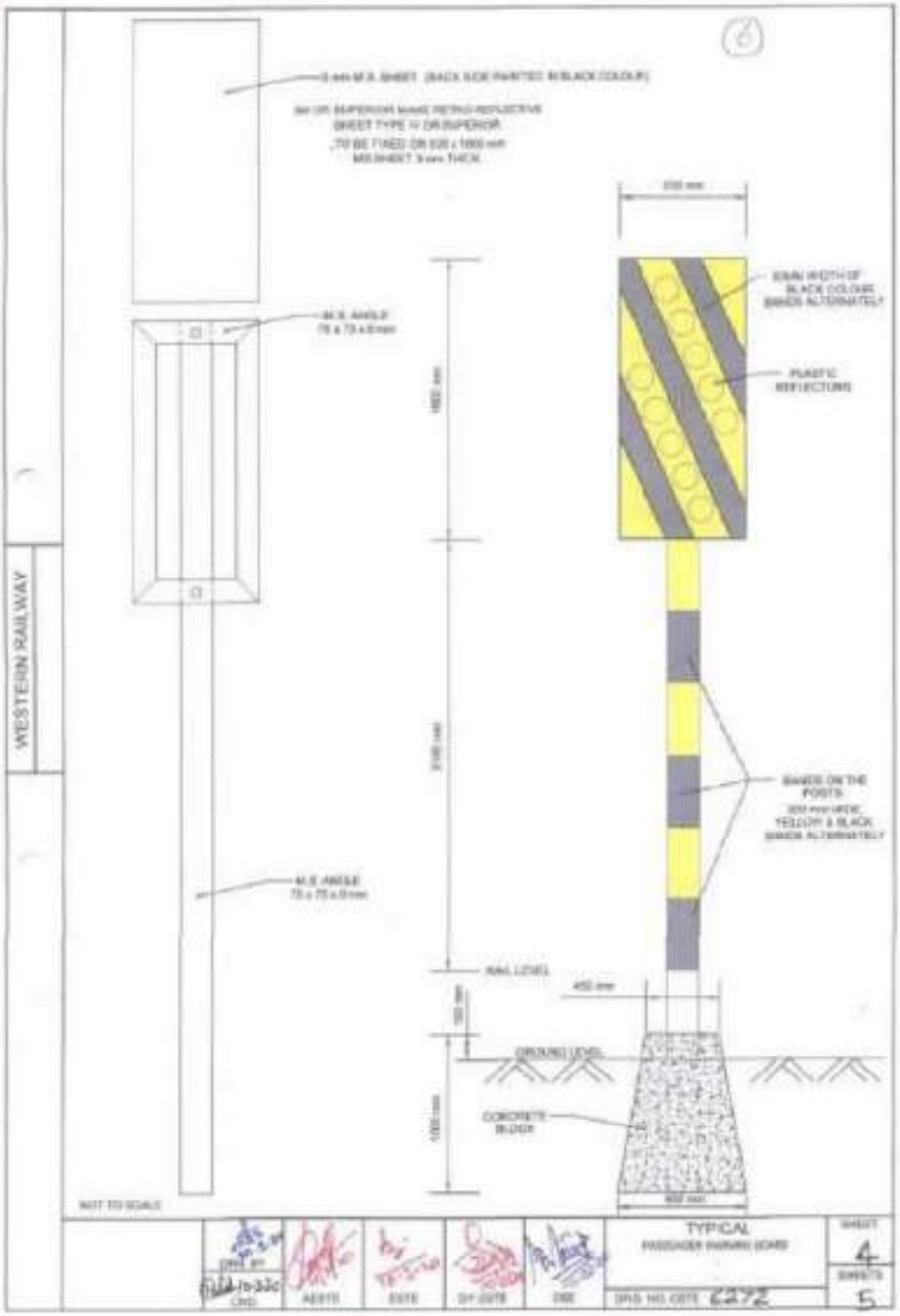

RETRO REFLECTIVE SHEET YELLOW
RETRO REFLECTIVE SHEET - BLACK
170 DIA
200 DIA
25
25
R6
30
MATERIAL :-
RETRO REFLECTIVE SHEET HIGH INTENSITY GRADE YELLOW WITH
IMPRINTED "G" IN BLACK
WITH FILM THICKNESS 0.5 mm
TOLERANCE AS PER APPLICABLE
NOTE - ALL DIMENSIONS ARE IN mm
APPROVED BY CSTE on this No. CC-420 (Typical Drawing) Vol. III
Dt 7 Dated 14.08.2012
REVISIONS
DRG. NO.
CSTE / 6194
"G" MARKER
RETRO REFLECTIVE SHEET
WESTERN RAILWAY
DRG. CSTE/7
NO. 6194
PG. 1 OF 1
DATE

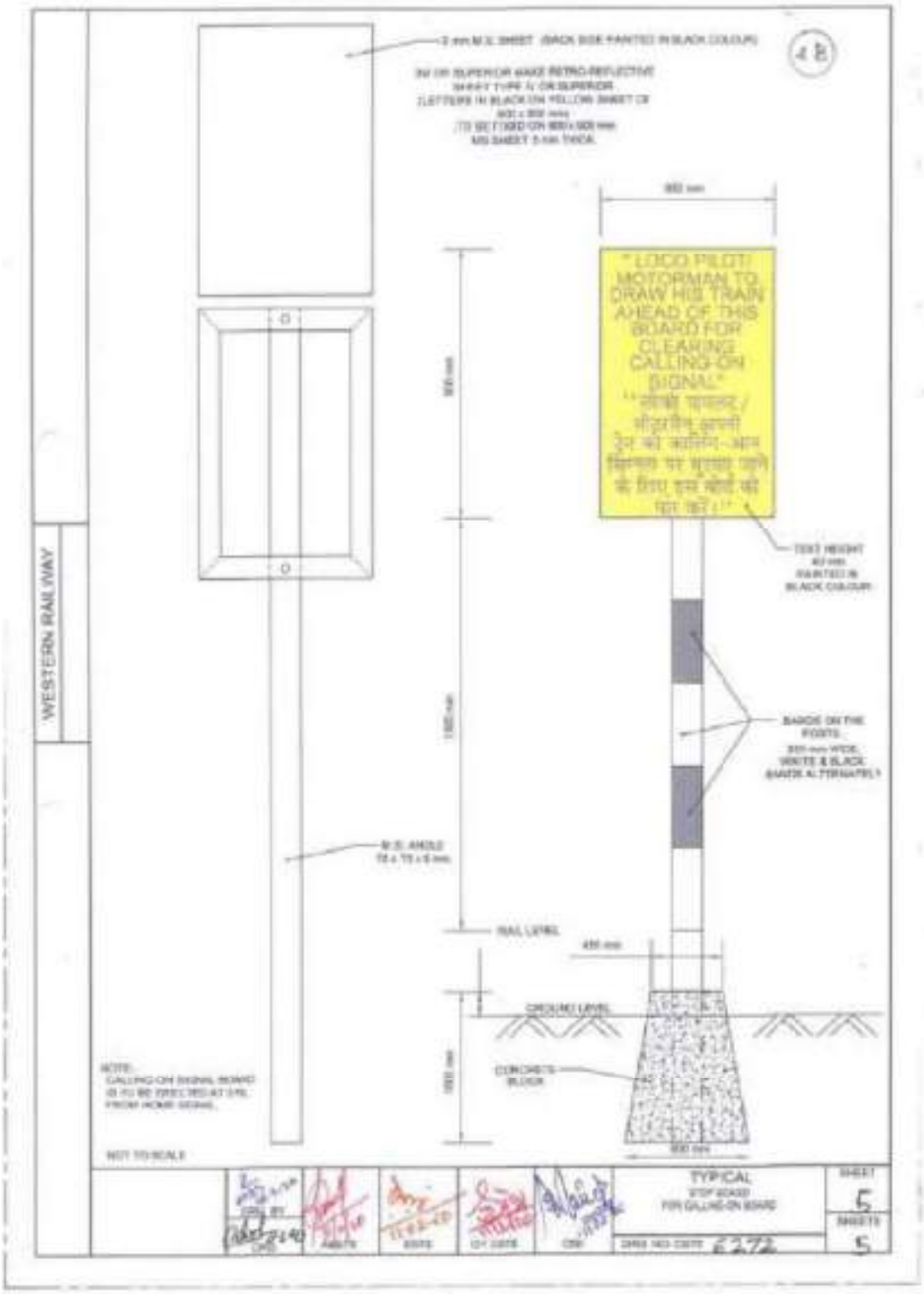

RETRO REFLECTIVE SHEET WHITE
HANDWRITTEN BLACK
125
125
20.4
20
20
40
410
200 DIA
MATERIAL :-
RETRO REFLECTIVE SHEET HIGH INTENSITY GRADE WHITE WITH
HANDWRITTEN "P" IN BLACK
WITH FILM THICKNESS 0.3 mm
TOLERANCE AS PER APPLICABLE
NOTE - ALL DIMENSIONS ARE IN mm
APPROVED BY CITE on File No. SC-4201 (Typical Diagrams) Ver. B
GPT Dated 14-08-2012
REVISIONS
DWG. NO.
CSTE / 6162
"P" MARKER
RETRO REFLECTIVE SHEET
WESTERN RAILWAY
DWG. CSTE/
NO. 6162
PG. 1 OF 1
DATE

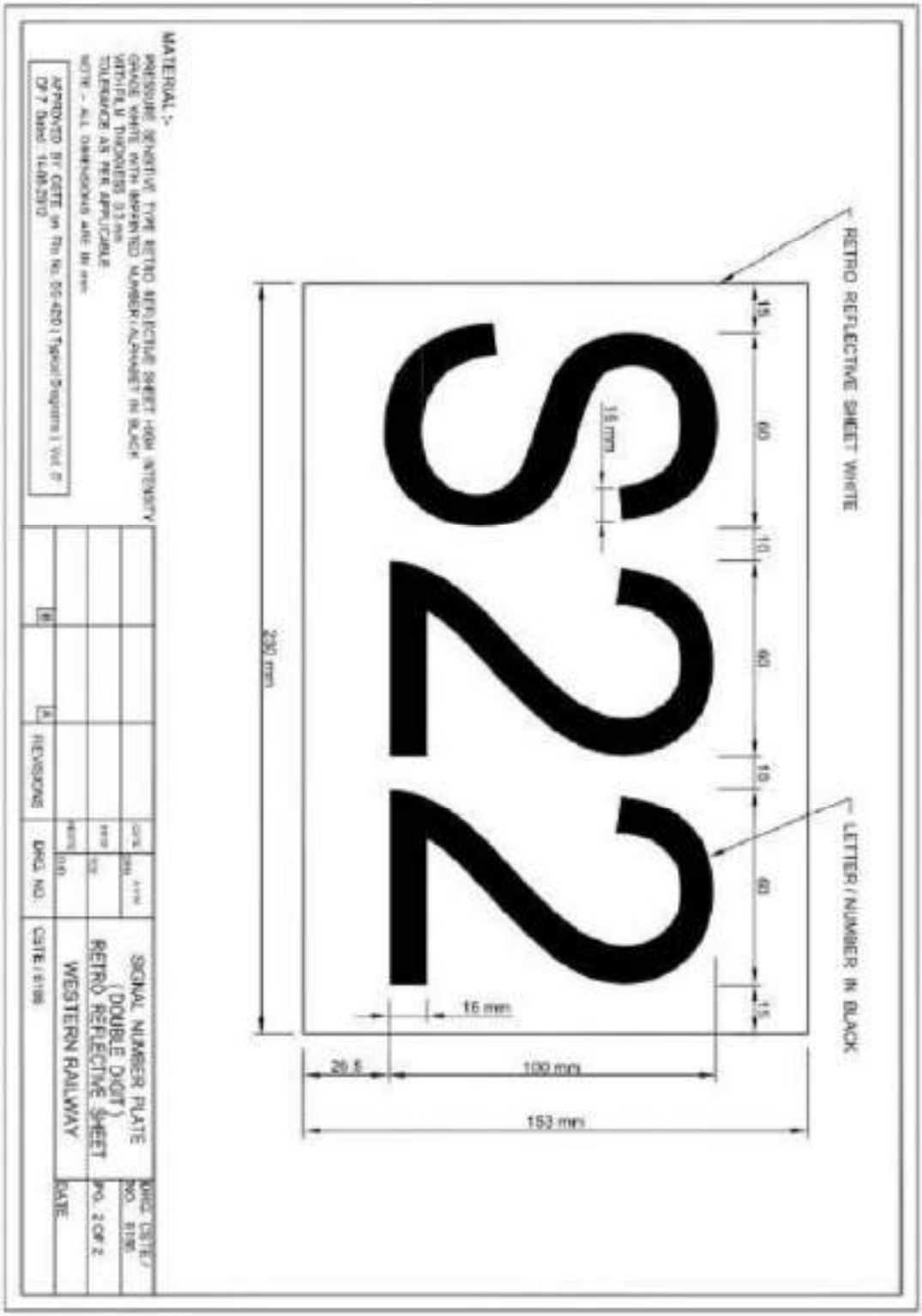

WESTERN RAILWAY
SHUNTING LIMIT
NOT TO SCALE
TYPICAL
SHEET
5


WESTERN RAILWAY
YELLOW COLOUR
BLACK COLOUR
BLOCK
LIMIT
RAIL LEVEL
GROUND LEVEL
CONCRETE
BLOCK
NOT TO SCALE
TYPICAL
2
5


WESTERN RAILWAY
PLASTIC REFLECTORS
BLACK COLOUR BACKGROUND
RAIL LEVEL
GROUND LEVEL
CONCRETE BLOCK
NOT TO SCALE
TYPICAL
3
5


WESTERN RAILWAY
PLASTIC REFLECTORS
BANDS ON THE POSTS
RAIL LEVEL
GROUND LEVEL
CONCRETE BLOCK
NOT TO SCALE
TYPICAL
SHEET 4
SHEETS 5


WESTERN RAILWAY
"LOCO PILOT/ MOTORMAN TO DRAW HIS TRAIN AHEAD OF THIS BOARD FOR CLEARING CALLING-ON SIGNAL"
RAIL LEVEL
GROUND LEVEL
CONCRETE BLOCK
NOTE:
NOT TO SCALE
TYPICAL
SHEET
5
SHEETS
5


RETRO REFLECTIVE SHEET WHITE
LETTER / NUMBER IN BLACK
15
60
10
60
10
60
15
16 mm
16 mm
230 mm
26.5
100 mm
153 mm
MATERIAL :-
PRESSURE SENSITIVE TYPE RETRO REFLECTIVE SHEET HIGH INTENSITY
ORANGE WHITE WITH IMPRINTED NUMBER / ALPHABET IN BLACK
WITH FILM THICKNESS 0.3 mm
TOLERANCE AS PER APPLICABLE
NOTE - ALL DIMENSIONS ARE IN mm
APPROVED BY CSTE on Rly No. DS-420 (Typical Diagrams) Vol. II
Dt 7 Dated 14.06.2012
REVISIONS
DRG. NO.
CSTE / 6196
SIGNAL NUMBER PLATE
(DOUBLE DIGIT)
RETRO REFLECTIVE SHEET
WESTERN RAILWAY
DRG. CSTE/
NO. 6196
PG. 2 OF 2
DATE

Fax : 91-522-2452332
Mob. No : 9794863311
E-mail: dirsig3rdso@gmail.com
dirsig3@rdso.railnet.gov.in

सत्यमेव जयते

Government of India - Ministry of Railways
Research Designs & Standards Organisation
LUCKNOW –226011

Room No. 206 S&T Directorate, Annexe-I Building,
ManakNagar,LUCKNOW–226011

No.: STS/E/Cable-Laying Practices Vol-IV

Date: 19.12.2024

प्रमुख मुख्य संकेत एवं दूरसंचार अभियन्ता,	**Principal Chief Signal & Telecom Engineer,**
मध्य रेलवे, मुम्बई सी.एस.टी.– 400001	Central Railway, Mumbai CST-400 001
पश्चिम रेलवे, चर्चगेट, मुम्बई– 400020	Western Railway, Churchgate, Mumbai – 400 020
पूर्व रेलवे, फेयरली प्लेस, कोलकाता– 700001	Eastern Railway, Fairlie Place, Kolkata – 700 001
दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकाता–43	South Eastern Rly., Garden Reach, Kolkata – 43
उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली– 01	Northern Railway, Baroda House, New Delhi- 01
पूर्वोत्तर रेलवे, गोरखपुर– 273012	Northeastern Railway, Gorakhpur -273 012
पूर्वोत्तर सीमान्त रेलवे, मालीगांव, गुवाहाटी–11	North Frontier Railway, Maligaon, Guwahati- 781 011
दक्षिण रेलवे, पार्क टाउन, चेन्नई– 600 003	Southern Railway, Park Town, Chennai -600 003
दक्षिण मध्य रेलवे, सिकन्दराबाद – 500 371	South Central Railway, Rail Nilayam, Secunderabad-71
पूर्व मध्य रेलवे, हाजीपुर – 844101	East Central Railway, Hazipur-844101
उत्तर पश्चिम रेलवे, जयपुर–300206	North Western Railway, Jaipur-300206
पूर्वतटीय रेलवे, ग्राउन्डतल, उत्तरी ब्लाक, समन्तविहार, भुवनेश्वर–17	East Coast Railway, Rail Vihar, Ground floor, North Block, Samant Vihar, Bhubneshwar -17
उत्तर मध्य रेलवे, गंगा काम्पलेक्स, सूबेदारगंज, इलाहाबाद – 211012	North Central Railway, Ganga Complex, Subedarganj, Allahabad- 211012
दक्षिण पश्चिम रेलवे, क्लब रोड, केशवपुर, हुबली–580023	South Western Railway, Club Road, Keshavpur, Hubli-23
पश्चिम मध्य रेलवे, जबलपुर – 482001	West Central Railway, 2nd floor, DRM Office, Jabalpur-482001
दक्षिण पूर्वमध्य रेलवे, आर0ई0 ऑफिस काम्पलेक्स, बिलासपुर–495004	South East Central Railway, R. E. Office Complex, Bilaspur-495004
मैट्रो रेलवे, 33/1, जवाहर लाल नेहरू रोड, कोलकाता– 700 071	Metro Railway, 33/1, Jawaharlal Nehru Road, Kolkata – 700071
कोर, नवाब युसुफ रोड सिविल लाइन्स इलाहाबाद– 211 001	CORE, Nawab Yusuf Road, Civil Lines, Allahabad- 211 001
निदेशक/इरिसेट, तारनाका रोड, लल्लागुडा, पीओ सिकन्दराबाद–17	Director/IRISET, Tarnaka Road Lallaguda, P.O Secunderabad -17

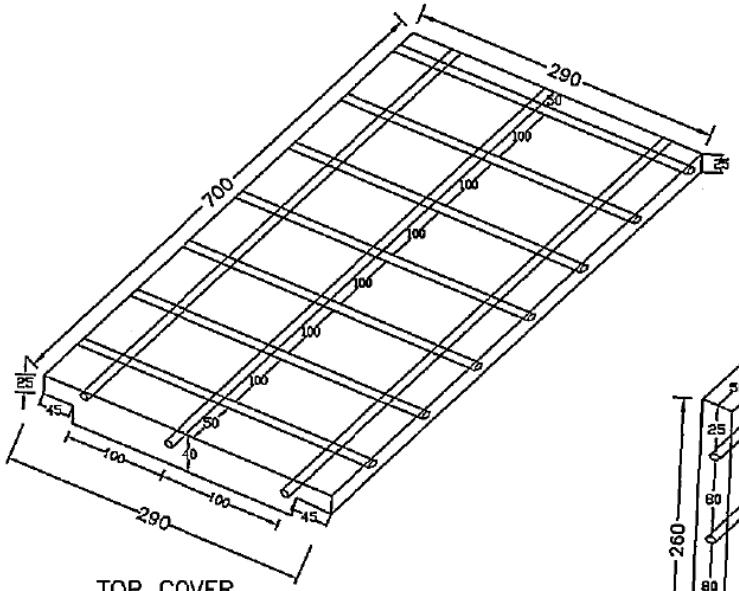
Sub.: Typical Drawing of RCC Cable Duct of size 290 mm for S&T Cable laying.

In view of above subject, a typical drawing of RCC cable duct of size 290 mm for S&T Cable laying is prepared by RDSO is issued for use of zonal Railways. This drawing is provisional. Any feedback/suggestion to improve the same further, may please be sent to dirsig3@rdso.railnet.gov.in & dirsig3rdso@gmail.com.

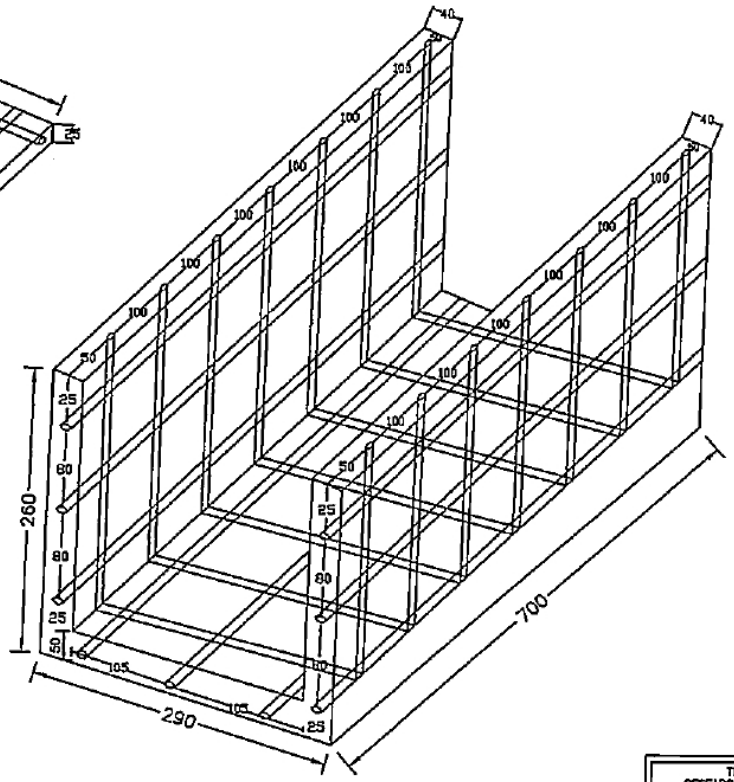
This has approval of the competent authority.

DA: 01 No. drawing of RCC cable duct.

(Y.P. SINGH)
Director/Signal-III
RDSO/Lucknow



TOP COVER



TRUNKING

N O T E:

1. TRUNKING AND CAPPING ARE SUITABLE FOR BURYING ADJACENT TO THE TRACKS IN TRENCHES WITH MINIMUM DEPTH OF 60mm.
2. THE TRUNKING TO BE ALLIGNEDBY PUTTING AN MS ROD OF 8mm DIA. x 100mm LONG AS PER IS: 432 PART (I) - 1982 IN THE TWO HOLES PROVIDED.
3. 6mm DIA. HIGH STRENGTH DEFORMED STEEL BARS CONFIRMING TO IS: 11786 TO BE USED FOR REINFORCEMENT.
4. M-25 GRADE CONCRETE TO BE USED CONFIRMING TO IS: 10262 - 1982 AND IS: 456 - 2000 - 10mm SIZE COARSE AGGREGATE TO BE USED.
5. OPC OF 43 GRADE TO BE USED CONFIRMING TO IS: 8112 - 1989.
6. THE ACCEPTANCE TEST SHALL BE CONDUCTED IN A RECOGNISED LABORATORY AND THE COST OF THE TEST AS CHARGED BY THE LABORATORY SHALL BE BORNE BY THE CONTRACTOR.
7. CURING SHALL BE DONE AS PER THE IS: 456 - 2000.
8. DUCT MAY BE IN SITU OR FACTORY MADE.
9. ONE HOLE EACH OF 8mm DIA. AND 50mm DEPTH SHALL BE PROVIDED ON ALL FOUR SIDES AT A DISTANCE OF 150mm FROM THE EDGE IN THE BASE.
10. ALL DIMENSIONS ARE IN mm.

THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS AND STANDARDS ORGANISATION (MINISTRY OF RAILWAYS) LUCKNOW-226011-INDIA AND SHALL NOT BE USED, COPIED OR REPRODUCED IN PART OR WHOLE WITHOUT PRIOR CONSENT IN WRITING.

R.D.S.O.

TYPICAL DRAWING FOR RCC CABLE DUCT OF SIZE 290MM FOR LAYING S&T CABLE

PROVISIONAL DATE- . .2024

DRAWING NO. SDO/S&T/RCC DUCT/1025

NOTE	SPECIFICATION	SCALE	ALT	DESCRIPTION
PREPARED BY- SSE/S&T (SSE/S&T 19-12-2024)	CHECKED BY-ADE/SIGNAL-V (19-12-2024)	SCRUTINISED & RECOMMENDED BY DIRECTOR/SIGNAL-II (19/12/2024)	APPROVED BY ED/SIGNAL (19/12/24)	

CHAPTER-6

TENDER SCHEDULE

The Schedule of works and material is available on IREPS portal.

The provision of quoting of offer rate is available on IREPS portal. Before quoting the rates, tenderer should go through the following notes:

1. Drawings & RDSO specifications refer to the latest issue. Although a year of specifications is given in the Schedule, the latest amendment, if any, shall apply. The decision of Engineering-in-charge shall be final in this regard.

2. The schedule of material & works should be read with Special conditions as given in Chapter-4 & Technical requirements & Specifications as given in Chapter-5 of the Tender Document. All material, installation & maintenance should be as per Technical requirements & Specifications given in Chapter-5. In addition to this, the contractor should also carry out installation, Commissioning & maintenance as per Principal's (OEM's) Manual (if any).

3. Tenderer shall not quote rate for individual items.

4. Tenderer should only quote a percentage above or below the Railway's total estimated cost.

5. Rate quoted by the Tenderer should include all Taxes & duties.

6. The cost of supply of minor materials and accessories other than specified in the tender document but necessary & required to make the system operational should be included while quoting the rates.

7. Various latest guidelines issued by Western Railway should be strictly adhered to and should be followed meticulously for the said work.

   Except the amount printed in rates, sub-total & total amount of above schedule of work, if at any place in tender documents any mistakes due to printing will be found in description of items, specifications, drawing, etc. & terms & conditions in tender document, the Railway has full power to rectify the same which will be binding for Contractor to agree the same after rectification. In this regard, the decision of Railway will be final and no any argument will be accepted from Contracto

CHAPTER –
List of Annexure & Forms

1. Annexures I to VI are already given along with tender form - second sheet and can be referred to in GCC also.
2. Please refer GCC part II Annexures VII to XVI regarding tenders and contract forms.

3. Annexure A (General Guidelines and technical specification) referred in chapter V and Annexure B (scope of work and its compliances) referred in SCC are to be studied properly and compliances may be submitted in desired format.

4. Format (1 to 11) required during tender stage/contract stage are given below and may be submitted where ever required.

ANNEXURE- I

TENDER FORM (Third Sheet)

Name of Work: "Design, Supply, Installation, Programming, Testing and Commissioning of New Hot Standby Electronic Interlocking System at Waghodiya , Jarod and Lotna Stations and EI alteration at Dabhoi and Samlaya station along with BPAC proving with Axle Counter , Supply, Installation, Testing and Commissioning of various Indoor and Outdoor Signaling Systems in Dabhoi-Waghodiya -Jarod - Lotna-Samlaya Section in connection of provision of Gauge Conversion Work under Dy. CSTE Construction, Vadodara, Gujarat (Western Railway)**"**

SCHEDULE OF RATES AND QUANTITIES: (As per uploaded on ireps website)

Sl. No	Item No:	Description of Item of Work	Approximate Quantity	Unit	Rates in Figures and words (Rs.)	Amount (Rs.)
1	2	3	4	5	6	7

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

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

Dated _____

Signature of the Tenderer(s)

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

ANNEXURE –II

AGREEMENT FOR ZONE CONTRACT

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

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

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

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

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

Contractor _____ Designation

Address _____ Railway _____

(For President of India)

Witnesses (to signature of Contractor):

Signature of witnesses with address _____

Date _____ _____

Signature of witnesses with address _____

Date _____ _____

_____

ANNEXURE –III

WORK UNDER ZONE CONTRACT

WORK ORDER NO._____, DATED _____ UNDER CONTRACT AGREEMENT

NO._____ DATED _____.

Name of Work _____ (SITE) _____

Schedule of Drawings _____

Authority_____ Allocation _____

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

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

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

Divisional Railway Manager/Divisional _____ Engineer

_____ Division

_____ Railway

Date _____ for President of India

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

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

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

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

Contractor _____ (Signature) Railway: Designation _____

Address _____

For President of India)

Date _____ Date _____

Signature of Witnesses (to Signature of Contractor) with address

1. _____ _____

_____ _____

_____ _____

2. _____ _____

_____ _____

_____ _____

ANNEXURE –IV

WESTERN RAILWAY
CONTRACT AGREEMENT OF WORKS
CONTRACT AGREEMENT NO. _____DATED _____

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

WHEREAS the Contractor has agreed with the Railway for performance of the works _____ set forth in the Bill(s) of Quantities hereto annexed upon the Standard General Conditions of Contract, updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents and the Specifications of _____ updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents and the applicable Standard Schedule of Rates (SSOR) of _____ updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents and the Special Conditions and Special Specifications, if any and in conformity with the drawings here-into annexed AND WHEREAS the performance of the said works is an act in which the public are interested.

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

Contractor _____ (Signature) Railway: Designation _____

Address _____ (For President of India)

Date _____ Date _____

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

Witnesses:

_____ _____

_____ _____

ANNEXURE-V

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

I……(*Name and designation*)**appointed as the attorney/authorized signatory of the tenderer,
M/s_____ (hereinafter called the tenderer) for the purpose of the Tender documents for the work of _____ as per the tender No._____ of _____(*Railway*)**, do hereby solemnly affirm and state on the behalf of the tenderer including its constituents as under:

1. I/we the tenderer (s) am/are signing this document after carefully reading the contents.
2. I/We the tenderer(s) also accept all the conditions of the tender and have signed all the pages in confirmation thereof.
3. I/we hereby declare that I/we have downloaded the tender documents from Indian Railway website www.ireps.gov.in . I/we have verified the content of the document from the website and there is no addition, no deletion or no alteration to the content of the tender document. In case of any discrepancy noticed at any stage i.e. evaluation of tenders, execution of work or final payment of the contract, the master copy available with the railway Administration shall be final and binding upon me/us.

4. I/we declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.

5. I/We also understand that my/our offer will be evaluated based on the documents/credentials submitted along with the offer and same shall be binding upon me/us.

6. I/We declare that the information and documents submitted along with the tender by me/us are correct and I/we are fully responsible for the correctness of the information and documents, submitted by us.

7. I/we certify that I/we the tenderer(s) is/are not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of submission of bids, either in individual capacity or as a HUF/ member of the partnership firm/LLP/JV/Society/Trust.

8. I/we understand that if the contents of the certificate submitted by us are found to be forged/false at any time during process for evaluation of tenders, it shall lead to forfeiture of the Bid Security and may also lead to any other action provided in the contract including banning of business for a period of upto two year. Further, I/we (*insert name of the tenderer*) **_____and all my/our constituents understand that my/our offer shall be summarily rejected.

9. I/we also understand that if the contents of the certificate submitted by us are found to be false/forged at any time after the award of the contract, it will lead to termination of the contract, along with forfeiture of Bid Security/Security Deposit and Performance guarantee and may also lead to any other action provided in the contract including banning of business for a period of upto two year.

10. I/We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India and certify that I am/We are not from such a country or, if from such a country, have been registered with the competent Authority. I/We hereby certify that I/we fulfil all the requirements in this regard and am/are eligible to be considered (evidence of valid registration by the competent authority is enclosed)

SEAL AND SIGNATURE
OF THE TENDERER

Place:
Dated:

**The contents in Italics are only for guidance purpose. Details as appropriate are to be filled in suitably by tenderer.

ANNEXURE-V(A)

(***This certificate is to be given by attorney/authorized signatory/each member of Partnership firm/Joint Venture (JV) / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc***.)

I/We……(Name), attorney/authorized signatory of the …… …..….. (constituent firm/constituent partner) and member/partner of the ……(tendering firm) hereby solemnly affirm and state as under:

1. I/we certify that ……..….. (constituent firm/constituent partner) is/are not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of submission of bids, either in individual capacity or as a HUF/ member of the partnership firm/LLP/JV/Society/Trust.
2. I/We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India and certify that I am/We are not from such a country or, if from such a country, have been registered with the competent Authority. I/We hereby certify that I/we fulfil all the requirements in this regard and am/are eligible to be considered (evidence of valid registration by the competent authority is enclosed),

SEAL AND SIGNATURE
OF THE CONSTITUENT FIRM/CONSTITUENT PARTNER

Place:
Dated:

ANNEXURE – VI

TENDERER'S CREDENTIALS (BID CAPACITY)

_____RAILWAY

For tenders having advertised value more than Rs 20 crore wherein eligibility criteria includes bid capacity also, the tenderer will be qualified only if its available bid capacity is equal to or more than the total bid value of the present tender. The available bid capacity shall be calculated as under:
Available Bid Capacity = [A x N x 2] – 0.33xNxB
Where,

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

N= Number of years prescribed for completion of work for which bids have been invited.
B = Existing commitments and balance amount of ongoing works with tenderer as per the prescribed proforma of Railway for statement of all works in progress and also the works which are awarded to tenderer but yet not started upto the date of inviting of tender.

Note:

(a) The Tenderer(s) shall furnish the details of -
(i) Maximum value of construction works executed and payment received in any one of the previous three financial years or the current financial year (up to date of inviting tender) for calculating A, and
(ii) Existing commitments and balance amount of ongoing works with tenderer as per the prescribed proforma of Railway for statement of all works in progress and also the works which are awarded to tenderer but yet not started upto the date of inviting of tender for calculating B. In case of no works in hand, a 'NIL' statement should be furnished.
The submitted details for (i) and (ii) above should be duly verified by Chartered Accountant.
(b) In case if a bidder is JV, the tenderer(s) must furnish the details of
(i) Maximum value of construction works executed and payment received in any one of the previous three financial years or the current financial year (up to date of inviting tender) by each member of JV for calculating A, and
(ii) Existing commitments and balance amount of ongoing works with each member of JV either in individual capacity or as a member of other JV as per the prescribed proforma of Railway for statement of all works in progress and also the works which are awarded to each member of JV either in individual capacity or as a member of other JV but yet not started upto the date of inviting of tender for calculating B. In case of no works in hand, a 'NIL' statement should be furnished.
The submitted details for (i) and (ii) above should be duly verified by Chartered Accountant.
(c) Value of a completed work/work in progress/work awarded but yet not started for a Member in an earlier JV shall be reckoned only to the extent of the concerned member's share in that JV for the purpose of satisfying his/her compliance to the above mentioned bid capacity in the tender under consideration.
(d) The arithmetic sum of individual "bid capacity" of all the members shall be taken as JV's "bid capacity".
(e) In case, the tenderer/s failed to submit the above statement along with offer, their/his offer shall be considered as incomplete and will be rejected **summarily**.
(f) The available bid capacity of tenderer shall be assessed based on the details submitted by the tenderer. In case, the available bid capacity is lesser than estimated cost of work put to tender, his offer shall not be considered even if he has been found eligible in other eligibility criteria/tender requirement.

Annexure –VIA

(Bid Security)

Bank Guarantee Bond from any scheduled commercial bank of India

(On non-judicial stamp paper, which should be in the name of the Executing Bank).

Name of the Bank: ----------
President of India,
Acting through ……,
…….. Railway,

Beneficiary: ……. Railway

Date:.....

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

In consideration of the President of India acting through----- ***(Designation & address of Contract Signing Authority***), …….. Railway, ……., …. (hereinafter called "The Railway") having invited the bid for_____through Notice inviting tender (NIT) No.._____, We have been informed that . . . . . ***[Insert name of the Bidder]***..... (**hereinafter called "the Bidder"**) intends to submit its bid (hereinafter called "the Bid") .

WHEREAS, the Bidder is required to furnish Bid Security for the sum of ***[Insert required Value of*** Bid Security***]***, in the form of Bank Guarantee, according to conditions of Bid.

AND

WHEREAS, ...***[Insert Name of the Bank]***, with its Branch .....***[Insert Address]*** having its Headquarters office at..... ***[Insert Address]***, hereinafter called the **Bank,** acting through .....***[Insert Name and Designation of the authorised persons of the Bank]***, have, at the request of the Bidder, agreed to give guarantee for Bid Security as hereinafter contained, in favour of the Railway:

1. KNOW ALL MEN that by these present that I/We the undersigned ***[Insert name(s) of authorized representatives of the Bank],*** being fully authorized to sign and incur obligations for and on behalf of the Bank**,** confirm that the Bank, hereby, unconditionally and irrevocably guarantee to pay to the Railway full amount in the sum of ***[Insert required Value of Bid Security]*** as above stated.
2. The Bank undertakes to immediately pay on presentation of demand by the Railway any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Railway on the Bank shall be final, conclusive and binding, absolute and unequivocal on the Bank notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Bidder or Bank.
3. The Bank shall pay the amount as demanded immediately on presentation of the demand by Railway without any reference to the Bidder and without the Railway being required to show grounds or give reasons for its demand of the amount so demanded.
4. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Bidder.
5. The Bank agrees that no change, addition, modifications to the terms of the Bid document or to any documents, which have been or may be made between the Railway and the Bidder, will in any way absolve the Bank from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification made by Railway at any time.
6. This guarantee will remain valid and effective from***……[insert date of issue]***till ……..*[insert date, which should be minimum 90 days beyond the expiry of validity of Bid]*. Any demand in respect of this Guarantee should reach the Bank within the validity period of Bid Security.
7. The Bank Guarantee is unconditional and irrevocable.

8. The expressions Bank and Railway herein before used shall include their respective successors and assigns.

9. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the Railway. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No.758.

10. The Bank hereby confirms that it is on the SFMS (Structured Financial Messaging System) and shall invariably send the advice of this Bank Guarantee to the following bank details –

IFSC CODE	SBIN000RAIL
IFSC TYPE	BRANCH
BANK NAME	STATE BANK OF INDIA
BRANCH NAME	RAIL
CITY NAME	NAVI MUMBAI
ADDRESS	SECTOR-11, CBD BELAPUR, NAVI MUMBAI
DISTRICT	NAVI MUMBAI
STATE	MAHARASHTRA
BG ENABLED	YES

11. The Guarantee shall be valid in addition to and without prejudice to any other security Guarantee(s) of Bidder in favour of the Railway. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Railway.

Date ……

Bank's Seal and authorized signature(s)

……

[Name in Block letters] ……....

[Designation with Code No.]……..…..…

[P/Attorney] No.

Witness:

1 Signature, Name & Address & Seal

2 Signature, Name& address & Seal

Bank's Seal

*[P/Attorney]*No.

Note: All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.

Annexure –VIB

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)

FORMAT-1

REQUISITION-CUM-RECEIPT FOR THE MATERIAL

Requisition-cum-receipt for the material Sr.No._____

Date:

(A) Please arrange to supply the bearer _____

_____ **Description of materials required**

Qty	Nos.	in words	in figures

at (place of supply) _____Station _____

for sub-section between Km. _____to Km. _____

against Contract no._____

Signature of the
Contractor/Contractors

(Specimen signature)

(B) Received the above material Qty. _____

(fig) _____as mentioned above.

On _____ received in good condition and I/We undertake the responsibility for replacement / payment of/ for the same as shall be deemed fit by the Railway in terms of Special Conditions

Station: Signature of the Contractor(s)
Dat

FORMAT-2

TENDER NO. .

INDEMNITY BOND

Indemnity Bond for safe custody of Railway material to be supplied to M/s.___ under Tender no._____

We, M/s._____(hereinafter called the Contractor) do hereby undertake that we shall hold in our custody for and on behalf of the President of India acting in the premises through the General Manager, Western Railway or for him all Railway materials which have been handed over to us against the contract for Tender no. dtd._____ for the work of "_____ _____" by the Railway for the purpose of execution of the said contract until such time the materials are duly installed and/or erected or otherwise handed over to the Railway.

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 Railway or as directed otherwise and shall indemnify the Railway against any loss, damage or deterioration whatsoever in respect of the said materials. Any Officer authorized by the General Manager, Western Railway or his nominee shall at all time open the said materials to Inspection.

Should any loss, damage or deterioration of materials occur or surplus materials disposed off and a refund becomes due, the Railway shall be entitled to recover from us the full cost and compensation determined in terms of the contract 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 thereafter 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 General Manager, Western Railway or his authorized nominee shall be final and bind upon us.

Signed at _____

on this day of _____

Signature of Witness: _____

for & on behalf of _____

M/s._____

Name of Witness in
BLOCK LETTERS

ADDRESS:

FORMAT-3

PROFORMA FOR PERFORMANCE GUARANTEE BOND

B.G. No.
Dated:

TO:
The President of India
Acting through
FA & CAO (C) CCG
Western Railway,
Churchgate, Mumbai

1. In consideration of the President of India (hereinafter called "the Government"having agreed to accept from _____
(Name of firm and address)
_____(hereinafter called "the said Contractor/s"), under the terms and conditions of an Agreement/Acceptance letter No._____ dated _____ made between _____ and _____ for the work of _____(hereinafter called "the said Agreement") the Performance Guarantee for the due fulfilment by the Contractor/s of the terms and conditions in the said Agreement on irrevocable Bank Guarantee for Rs._____
(Rupees
_____ only) _____ (% amount must be as per acceptance letter/agreement) We, _____ indicate the name of the Bank hereinafter referred to as "the Bank") at the request of _____contractor/s do hereby undertake to pay the government an amount not exceeding Rs. _____ against any loss or damage caused to or suffered by 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 /acceptance letter.
2. We _____do hereby

(Name of Bank)

undertake to pay the amounts due and payable under this guarantee without any demur merely on demand from the Government stating that the amount claimed is by way of loss or damage caused to or suffered by the Government by reason of breach by the said contractor of any of the terms of conditions contained in the said agreement or by, reason of the contractor's failure to perform the agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable to the bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding `._____` _____only.

3. We undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(s)/supplier(s) in any suit or proceeding 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, _____further agree that the
(Name of Bank)
guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement including Maintenance/ Warrantee period and that it shall continue to be enforceable till the dues of government under or by virtue of the said agreement have been fully paid and its claim satisfied or discharged or till _____ Office/Department) Ministry of Railway certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharged this performance guarantee, unless a demand or claim

under this guarantee is made on us in writing on or before the we shall be discharged from all liability under this guarantee thereafter.

5. We _____ further agree with the
(Name of Bank)

Government that the Government shall have the fullest liberty without consent and without affecting in any manner our obligations hereunder to vary any of the4 terms and conditions of the said agreement or to extend time of performance by the said contractor from time to time or to postpone from any time or from to time any of the powers exercisable by the Government against the said contract and to for bear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the contractor(s) or for any forbearance, act or omission on the part of the Government or indulgence by the Government to the said contractor/s or such any 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 of the Contractor(s)/Supplier(s).

7. We_____ undertake not to revoke this Guarantee during

(Name of Bank)

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

8. Notwithstanding anything contained hereinabove.

(i) Our liability under this B.G. shall not exceed to Rs.
(ii) This B/G shall be valid upto _____ and
(iii) We are liable to pay the guaranteed amount or any part thereof under this B/G only and only, if you serve upon us a written claim or demand on or before _____

Dated This _____ day of _____ 2013.

For_____ (Indicate the name of Bank) (under Rubber stamp of name, designati8on & code no of authorized signatories) Round seal of Bank

FORMAT- 4

STATEMENT OF DEVIATIONS

PROFORMA FOR STATEMENT OF DEVIATIONS

Sr. No.	Chapter	Para No.	Railway Clause	Proposed Clause	Reason / Remarks for deviation

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

Signature of Tenderer(s)

FORMAT-5

TECHNICAL CREDENTIALS

(Only for the eligible completed similar single work)

For the most eligible completed similar single 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	:-
2.	Contract awarding	:-
3.	Contact agreement	:-
	Name of the firm	:-
	Date of award	:-
	Original value of contract	:-
7.	Original date of	:-
8.	(a) Whether work has been physically completed	:-
	(b) Actual date of completion.	:-
	Whether worked as a main contractor	:-
	Whether worked in the individual capacity or in a joint venture.	:-
12.	If the work was executed as a joint venture firm, the share of each partner to be given.	:-
13.	Brief scope of work	:-

FORMAT-6

TURNOVER

The tenderer is required to submit the turnover details for the last three years and the current financial year. Tenderer shall also enclose relevant certificate/documents issued by concerned authority in this regard.

S N	TURNOVER DETAILS		
	Previous 3rd Financial Year	-:	
	Previous 2nd Financial Year		
	Previous 1st Financial Year	-:	
	Current Financial Year till the date of opening of the tender	-:	
	Grand Total		
2.	Whether the certificate issued for the turnover amount is audited & certified by chartered accountant.	-:	YES/NO
3.	Whether the turnover amount for which the certificate is issued is more than required as per the eligibility criteria of the tender.	-:	YES/NO

Signature of Tenderer

FORMAT-7

WORK EXPERIENCE

LIST OF WORKS COMPLETED

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

FORMAT-8

LIST OF WORKS IN HAND

Description of work	Organization for whom work being executed	Contract number /LoA with date	Contract Value	Physical / Financial progress of the work

FORMAT – 9

NEFT / RTGS MANDATE FORM

FROM: Date:

SUB: WILLINGNESS TO RECEIVE PAYMENT THROUGH NEFT / RTGS SYSTEM.

We refer to the National Electronic Fund Transfer (NEFT) System for remittance of our payment using NEFT / RTGS SCHEME and confirm that we are agreeable to our payments being made through the above scheme to our under noted Account:

NAME OF ORGANISATION AND ADDRESS:

IFSC CODE :

MICR CODE :

BANK NAME :

BRANCH NAME :

BANK ADDRESS :

BRANCH TELE/FAX NO. :

ACCOUNT (CORE BANKING SYSTEM) NO.:

TYPE OF ACCOUNT :

We have agreed to accept all the terms and conditions of the Electronic Fund Transfer System, as enclosed herewith. A Xerox copy of the cheque leaf is attached herewith for necessary action at your end.
Encl: As stated above.

Signature and Stamp
Confirmed by Bank

FORMAT-10

ELIGIBILITY CRITERIA CALCULATION SHEET (As per Tender Chapter -2, clause 2.6.1)

FOR TECHNICAL CREDENTIAL: Details of work qualifying Eligibility Criteria executed during last 07 (seven) years, ending last day of month previous to the one in which tender is invited:			
For Technical credential	60% value of single similar nature tender	40% value of Two nos. of similar nature tenders	30% value of three nos. of similar nature tenders
Technical eligibility calculation (Rs)	NIT value of floated tender x 60% of single similar work=	NIT value of floated tender x 40% of single similar 1st work=	NIT value of floated tender x 30% of single similar 1st work=
			NIT value of floated tender x 30% of single similar 2nd work=
		NIT value of floated tender x 40% of single similar 2nd work=	NIT value of floated tender x 30% of single similar 3rd work=

a(i) details of one similar nature work for 60% value (NIT x 60%) in Rs=					
Name of work, LOA & Date	Organization for whom work executed	Value of contract	Date of physical completion of work	Final value of contract	Certificate issuing authority
1.					

a(ii) Details of two similar works for 40 % value (NIT x 40%) in RS=					
Name of work, LOA & Date	Organization for whom work executed	Value of contract	Date of physical completion of work	Final value of contract	Certificate issuing authority
1.					
2.					

a(iii) Details of Three similar works for 30 % value (NIT x 30%) in Rs=					
Name of work, LOA & Date	Organization for whom work executed	Value of contract	Date of physical completion of work	Final value of contract	Certificate issuing authority
1.					
2.					
3.					

FOR FINANCIAL CRITERIA:- The tenderer must have minimum average annual contractual turnover of V/N or 'V' whichever is less where

V= Advertised value of the tender in crores of Rupees

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

The average annual contractual turnover shall be calculated as an average of "total contractual payments" in the previous three financial years, as per the audited balance sheet. However, in case the 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.

FOR BID CAPACITY:-Details is given Annexure- VI , Formula for Available BID capacity =[A x N x 2] – 0.33xNxB

a) BID capacity calculation

A in RS	N (Years)	B (in RS)	[A x N x 2] – 0.33xNxB
=	=	=	=

b) Details of work:- List of all ongoing works to evaluate Bid Capacity

Name of work, LOA & date	Organization for whom work being executed/ contract No. with date	Value of contract	Total payment received so far	Payment received in 2017-18	Payment received in 2018-19	Payment received in 2019-20	Payment received in 2020-21	Payment received in 2021-22 upto opening of tender	Balance value of work

c) **Formal statement for Bid capacity duly verified by Chartered Accountant as per Annexure-VI to be submitted by contractor/firm.**

Signature of contractors/Firms

Verified by Chartered Accountant

Format 11

Bid Security Declaration:

I/We, M/s._____ am/are aware that I/We have been exempted from submission of Bid Security/Earnest Money Deposit in lieu of this Bid Security Declaration. I/We understand and accept that if I/We withdraw my/our bid within bid validity period or if awarded the tender and on being called upon to submit the Performance Guarantee/Performance Security fail to submit the same within the stipulated time period mentioned in tender documents or on being called upon to sign the contract agreement fail to sign the same within stipulated period mentioned in tender documents,

I/We i.e.,_____the bidder shall be banned from submission of bids in any Works/Service Tender issued by Indian Railways for a period of 12 months from the date of such banning done on e-platform IREPS.

Signature of Tenderer(s)

FORMAT-12

CHECK LIST

CHECK LIST OF ITEMS TO BE COMPLIED BY TENDERERS BEFORE SUBMITTING THEIR BIDS. THE TENDERER SHALL ENSURE THAT THE FOLLOWING ARE COMPILED BEFORE QUOTING THE RATES.		
S. No.	**Description**	**Compliance/Remarks**
1.	Payments towards the **Cost of Tender Document** has been paid/submit in proper form as per special condition.	
2.	Requisite **Earnest Money** has been paid/submit in proper form as per special condition or Bid security document (format 11) is submitted.	
3.	Rates have been quoted collectively for all schedules as % above/below/at par the NIT cost.	
4.	Document in support for **Special technical eligibility criteria** has been attached/uploaded. **Work completion certificates for similar nature of works of previous 7 (seven) years.**	
5.	Document in support **Special financial eligibility criteria** has been attached/uploaded. **Turnover certificate, Audited Balance sheet by Charted accountant, Form 26- AS, etc of previous three years & current year.**	
6.	The tenderer shall upload the all essential documents as per ***General Instructions and commercial compliances.***	
7.	**Affidavit/certificate with** Public notary on non-judicial stamp paper of the value of Rs.100/-. Must be uploaded.	
8.	**Power of Attorney, if any**	
9.	Self- attested copy of the Certificate of Registration of firm, Deed of Formation, etc. to be uploaded.	
10.	**Statement of deviation or No deviation** must be uploaded.	
11.	**Bid Capacity calculation sheet, Technical & financial credential calculation sheet to be submitted by tenderer as per Format-10.**	
12	**Authorization letter from OEMs for EI card/modules break and Authorisation letter from OEMs/Experienced firms for TMS & AWS modifications.**	
13	**Compliances on Annexure B (scope of works)**	

FORMAT-13

Certificate of No Relative being an Employee of Western Railway

I/We,the Under Signed here by solemnly declare and certify that I/We do not have any of our Relative/Relatives Employed in In the Western Railway (Engineering Department) except the namesmentionedHerein Under:

SN	Name of Relative employed in WesternRailway	Designation	Name of Office	Headquarter where relative is posted

Note: Names, Designation, Name of Office, head quarter of the tenderer's relative in WesternRailway(Engineering Department) to be mentioned by the tenderer as per above table.

Signature.....

Name&Designation.....
(InCapital)

Address.....

Date

Annexure to Top Sheet **Annexure-A**

Mandatory list of items/documents to be given/enclosed while submitting E-Tender offer

The tenderer shall clearly specify whether the tender is submitted on his own or on behalf of partnership Firm/joint venture (JV) Society etc. The tenderer(s) who is/are constituents of the firm, company, Association or Society shall enclose self-attested copies of the constitution of their concern, Partnership Deed and Power of Attorney along with their tender. Tender documents in such cases shall be signed by such persons as may be competent to sign them on behalf of the firm, Company, Association or Society as the case may be.

The tenderer shall give full details of the constitution of the Firm/JV/Company/Society etc. and shall also submit following documents (as application) in addition to documents mentioned above.

Sr. No.	Item	Submitted Yes or No.
(A)		
(1)	**IF TENDERER IS SOLE PROPRIETORSHIP FIRM:** Notarized copy of the affidavit.	
(2)	**IF TENDERER IS PARTNERSHIP FIRM:** Self –attested copies of (i) registered / notarized partnership deed and (ii) Power of Attorney duly authorizing one or more of the partners of the firm or any other person(s) , authorized by all the partners to act on behalf of the Firm and to submit and sign the tender , sign the agreement , witness measurements, sign measurement books, receive payment , make correspondence(s) , compromise/settle/relinquish any claim (s) preferred by the firm, sign " No claim certificate "refer all or any dispute to arbitration and to take similar action in respect of all tenders/contracts or said tender/ contact.	
(3)	**IF TENDERER IS JOINT VENTURE (JV) FIRM:**	
(i)	In case one or more of the members of the JV firm is/are partnership firm (s) , following documents shall be submitted: -	
(a)	Notary certified copy of the Partnership Deed.	
(b)	Consent of all the partners to enter into the Joint Venture Agreement on a stamp paper of appropriate value.	
(c)	Power of Attorney (duly registered as per prevailing law) in favour of one of the partners of the partnership firm to sign the JV Agreement on behalf of the partnership firm and create liability against the firm.	
(ii)	In case one or more members is/are proprietary Firm or HUF, the following documents shall be enclosed :-	
	Affidavit on Stamp Paper of appropriate value declaring that his/her Concern is a proprietary Concern and he/she is sole proprietor of the Concern OR he/she has the authority , power and consent given by other partners to act on behalf of HUF.	
(iii)	In case one or more members is/are limited companies, the following documents shall be submitted.	
(a)	Notary certified copy of resolutions of the Directors of the Company, permitting the company to enter into a JV Agreement , authorizing MD or one of the Directors or Managers of the Company to sign JV Agreement , such other documents required to be signed on behalf of the Company and enter into liability against the company and / or do any other act on behalf of the company.	
(b)	Copy of Memorandum and Articles of Association of the Company.	
(C)	Power of Attorney (duly registered as per prevailing law) by the Company authorizing the person to do/ act mentioned in the para (a) above.	
(iv)	All the members of JV shall certify that they are not black listed or debarred by Railways or any other Ministry / Department / PSU (Public sector	

	Undertaking) of the Govt. of India / State Govt. from participation in tenders/contract on the date of opening of bids either in their individual capacity or as a member of the JV firm in which they were / are members.	
4	**COMPANY REGISTERED UNDER COMPANIES ACT- 1956:** (i) Copies of MOA (Memorandum of Association) and AOA (Articles of Association) of the company and (ii) Power of Attorney duly registered / Notarized by the Company (backed by the resolution of Board of Directors) in favour of the individual, signing the tender on behalf of the company.	
5	**SOCIETY:** (i) Self- attested copy of the Certificate of Registration, (ii) Deed of Formation and (iii) Power of Attorney in favour of the tender signatory.	
(B)		
(i)	Certificate for credentials as per Annexure	
2	Legal papers / documents for Eligibility Criteria.	
(i)	(i) Similar nature of work	
(ii)	(iii) Turnover: Attested certificate from the employer / client , Audited Balance sheet duly certified by the chartered accountant etc.	
(iii)	(iv) Combined eligibility criteria: List of completed works within qualifying period and works in progress	
3	Bid Security paid on line through payment gateway	
4	Cost of tender document paid on line through payment gateway.	
5	Compliance on technical specifications requirements given in Annexure B	
6	Submission of breakup of cards/modules and other accessories from various OEMs of EI in terms of RB's letter No. 2013/signal/01/(pt)Dup dated 17.02.2022.	
7	The bidder shall submit an undertaking Letter from the TMS &AWS OEM/firm currently working successfully on the existing TMS & AWS system for the proposed modification work.	

Note:

1. If it is mentioned in the tender that it is being submitted on behalf of/by a sole proprietor firm/ Partnership firm / Joint venture / Registered company etc. but above mentioned documents /s (as applicable) are not enclosed along with the tender, the tender shall be summarily rejected.
2. If it is Not mentioned in the tender that it is being submitted on behalf of /by 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.
After opening of the tender, any document pertaining to the constitution of the Firm /JV/Society etc. shall neither be asked nor be entertained / considered.
3. A tender from JV/Consortium /Partnership firm etc. shall be considered only where permissible as per the tender conditions.
4. 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 submission of tender. It may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contractor.
5. No document shall be accepted after opening of tender. If any of the above documents is not submitted along with the tender, the tender may be **summarily rejected** considering it as a non-compliant bid OR as per decision of competent authority.
6. The Railway reserves the right to verify all statements, information and documents submitted by the bidder in this tender offer and the bidder shall, when so required by the Railway, make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification by the railway shall not relieve the bidder of its obligations here under nor will it affect any rights of the railway there under.
7. In case of any wrong information submitted by the tenderer, the contract shall be terminated, Bid security Performance Guarantee (PG) and Security Deposit (SD) of contract forfeited and agency barred for doing business on the entire Indian Railway for 2 (Two) years.

CHECK LIST

CHECK LIST OF ITEMS TO BE COMPLIED BY TENDERERS BEFORE SUBMITTING THEIR BIDS. THE TENDERER SHALL ENSURE THAT THE FOLLOWING ARE COMPILED BEFORE QUOTING THE RATES.		
S. No.	Description	Compliance/Remarks
1.	Payments towards the Cost of Tender Document have been paid/submitted in proper form as per special condition.	
2.	Requisite Bid security has been paid/submitted in proper form as per special condition.	
3.	Rates have been quoted collectively for all schedule items as % above/below/atpar the NIT cost.	
4.	Document in support for Special technical eligibility criteria has been attached/uploaded. Work completion certificates for similar nature of works of previously 7 (seven) years.	
5.	Document in support of Special financial eligibility criteria has been attached/uploaded. Turnover certificate, Audited Balance sheet by Charted accountant, Form 26- AS,etc of previous three years & current year.	
6.	The tenderer shall upload the all-essential documents as per General Instructions and commercial compliances.	
7.	Affidavit with Public notary on non-judicial stamp paper of the value of Rs.100/-. Must be uploaded.	
8.	Power of Attorney, if any	
9.	Self- attested copy of the Certificate of Registration of firm, Deed of Formation, etc. to be uploaded.	
10.	Statement of “NO” deviation must be uploaded.	
11	Compliances of MSDACs to be submitted by Tenderer as per Annexure-A attached. (As per RDSO spec Clauses mentioned).	
12.	Bid Capacity calculation sheet, Technical & financial credential calculation sheet to be submitted by tenderer as per Format. In case Bid Security and cost of tender document are not accompanied in the Bid, the offer will be summarily rejected.	

OEM's Site Installation Certificate

(For EI, SSDAC/MSDAC,UFSBI/BPAC,IPS, Datalogger only)

To,

Dy Chief Signal & Telecom Engineer (Construction/Field),
8th Floor, Station Building, Churchgate
Mumbai-400 020,
Western Railway.

This is to certify that verification of system installation (details given below) has been completed by undersigned (OEM representative) and all necessary arrangements like earthing, surge protection, power supply, power & communication cables, and equipment wiring meet the required standards of engineering for trouble free working of installed system.

1. **System being commissioned:**
2. **Station / Section:**
3. **Division:**
4. **Date of commissioning:**

……..

Name of RDSO approved Original Equipment Manufacturer:
……..
Name of OEM representative with Designation:
……..
Signature of OEM representative with Date

DETAILS OF PLANT AND MACHINERY ALREADY AVAILABLE WITH THE FIRM

SN	Particulars of equipment	No. of Unit	Kind & make	Capacity	Date by which the plant would be available for use on this work	Age & condition	Work on which it is being used.	Proposed to be purchased	
								Date of placing order	Likely date of receipt
	1	2	3	4	5	6	7	8	9
1									
2									

Note:

1. **Indicate clearly, whether (i) Owned by firm, or (ii) To be purchased by firm giving date of placing order and likely date of receipt.**
2. **Optimum Plants and Machineries required to be deployed during execution of work.**
3. **Earthwork in formation of New Line / Doubling/ GaugeConversion Project: Poclain, JCB, Vibratory Roller, Grader, Dumpers, Tractors, Water tank etc.**
4. **Concreting work for bridge work: Concrete pump, Transit mixer as per requirement, Batching plant of suitable capacity, JCB, Needle vibrator 60/40mm etc.**

Signature.....

Name & Designation.....

(InCapital)

Address.....

Date

Details of Checklist of JV, Partnership Firm, Proprietorship Firm, etc. if applicable- Mandatory

CHECK LIST FOR JOINT VENTURE

SN	Item	Remarks
1	Documents to be enclosed by the JV along with the tender:	
A	In case one or more of the members of the JV is/are Partnership firm(s), following documents shall be submitted:	
(i)	A notarized copy of the Partnership Deed,	
(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,	
(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 createliabilityagainstthe firm	
B	In case one or more members is/are hurt,the following documents shall be enclosed:	
(i)	A copy of notarized affidavit on Stamp Paper declaring that he whois signing the affidavit onbehalfofHUFis in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act onbehalfofHUF.	
C	In case one or more members of the JV is/areCompanies,the following documents shall be submitted:	
(i)	A copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement,	
(ii)	The copies of MOA (Memorandum of Association)/AOA (Articles of Association) of the company	
(iii)	A copy of Certificate of Incorporation	
(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.	
D	All the Members of JV shall certify that they are not blacklisted or debarred by Railways or any other Ministry/Department of the Govt.of India from participation intenders/contract on the date of opening of bids either in their individual capacity or as a member of the JV in which they were/are members.	

CHECK LIST FOR
SOLE PROPRIETOR FIRM

SN	Item	Remarks
1	Whether sole proprietary firm in mentioned in Annexure-II (General Information of Tender) or not	
2	Whether an undertaking that he is not black listed or debarred by Railways or any other Ministry/Department of Govt.of India from participation in tender on the date of opening of bids, either in individual capacity or as a member of the partnership firm or JV in Which he was/ is a partner/member is submitted or not.	

CHECKLIST FOR PARTNERSHIP FIRM

SN	Item	Remarks
1	Whether Partnership Firms participating in the tender are legally valid under the provisions of the Indian Partnership Act or not.	
2	Whether a Partnership firm is either registered with the Registrar or the partnership deed is notarized prior to the date of tender opening as per the Indian Partnership Act.	
3	Whether Separate identity/name is given to the partnership firm or not (in case of new partnership firm) Note:The partnership firm should have PAN/TAN number in its own name and PAN / TAN number in the name of any of the constituent partners shall not be considered. The valid constituents of the firm shall be called partners.	
4	Whether power attorney to any member/person for submission of tender offer on behalf of Partnership is submitted or not. Note: Such“Power of Attorney” shall be notarized/ registered and submitted along with the tender.	
5	Whether any partner of the Partnership firm is participated Either in his individual capacity or as a partner of any other firm in the tender or not	
6	Whether EMD is submitted by a partnership firm or not. Note: EMD submitted in the name of any individual partner or in the name of authorized partner(s)shall not be considered.	

CHECK LIST FOR COMPANY

Sr. No	Item	Remarks
1	Whether copies of MOA (Memorandum of Association) / AOA (Articles of Association) of the company are submitted with tender offer or not.	
2	Whether a copy of Certificate of Incorporation is submitted or not.	
3	Whether 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 is submitted or not.	
4	Whether an undertaking that the Company is not black listed or debarred by Railways or any other Ministry/Department of Govt.of India from participation in tender on the date of opening of bids, either in individual capacity or as a member of the partnership firm or JV in which the Company was /is a partner/member is submitted or not.	

Completion Certificate of Similar Nature of Works

(On Letter head of Issuing Organization with full Particulars)

1	Name Of Work	
2	2 Contract Agreement No. & Date	
3	Name of Agency	
4	Date of Acceptance Letter	
5	Cost of work as per CA	
6	Original D.O.C. (as per agreement)	
7	Status of work	
8	Details of extension: -	
	i) On Railway's account	
	ii) On Contractor's account with/without penalty	
9	Final cost of work (as per final bill)	
10	If the final bill is not paid the amount paid up to date.	
11	Performance	
12	Scope of Work	

I hereby certify that above mentioned work has been physically completed in all respects as per contract agreement. Performance of the contractor while executing the work had been satisfactory.

(Signature)
Name and Designation of officer
Mobile No. of officer
Seal of officer

NOTE: -

i)Completion Certificates should be submitted for each Work listed in Annexure V (as applicable).

ii) Submission of false Completion Certificates of Similar Nature of Works shall lead to forfeiture of EMD and other action including penal action.

iii) Copy of Completion Certificate of Similar Nature of Works duly self-attested by Tenderer shall be submitted along with tender document.

iv) Payment made as indicated in above certificate (SN 9,10 & 11) will be considered as value of completed work for the purpose of eligibility under Technical Eligibility Criteria.

v) Only those works will be treated as composite works which consist of more than one distinct component of work such as Civil Engg. Works, S&T work, Electrical work, OHE work etc.

vi) Format given above is for guidance only. Any certificate, containing information in other format asked for, shall be considered.

END OF TENDER DOCUMENT