SOUTHERN RAILWAY

(CONSTRUCTION ORGANISATION)

E-TENDER NOTICE No. TBM-SG-CN-2026-27-02-OT

Two Packet System

For and on behalf of The President of India, **The Deputy Chief Signal and Telecommunication Engineer, Construction, Tambaram, Southern Railway, Chennai – 45**, invites **e-tenders** for the following work:

Item No.	Name of the work			
1.	Provision of Electronic interlocking signalling arrangements (Both Indoor and Outdoor)and Telecommunication arrangements at Podanur Junction in connection with 1) New coaching terminal at PTJ 2) Creation of Trip Maintenance/Advance inspection Centre at PTJ 3)Interlocking of stabling line with new EI and by-pass line between CBE-IGU and 4) Development of coach maintenance facilities at PTJ.			
(1)	(2)	(3)	(4)	(5)
Sl. No.	Approximate Cost of Work **(Rs.)**	Bid security **(Rs.)**	Last Date of e-**submissi**on of Tender / Date of Opening of the Tender	Period of Completion in month(s)
1.	**₹33,44,74,705.63**	**₹66,89,500/-**	**12.06.2026**	**TEN**

GST: It may please be noted that the supplier of Goods and/or Services for the tender/ agreement, would be subject to GST Act and Rules as applicable from time to time.

Tender period is split as under:

a) **Advertisement Period:** Time during which all information pertaining to tender shall be available but offers cannot be submitted.

b) **Offer submission period:** Fifteen days prior to opening of tender during which Tenderers can submit their offer.

The offers will be received up to 14:00 hrs on the date of opening mentioned (col.4) and will be opened at 14:30 hrs on the same date.

Tenderers are required to satisfy the following eligibility criteria:

Signature Not Verified
Digitally signed by SURESH SIVAPRAKASAM
Date: 2026.05.20 16:33:04 IST
Reason: IREPS-CRIS
Location: New Delhi

Sl. No.	Certificate	Minimum Criteria
1.	**Technical Eligibility Criteria:** The tenderer must have successfully completed or substantially completed any one of the following categories of work(s) during last 07 (seven) years, ending last day of month previous to the one in which tender is invited	Three similar works each costing not less than the amount equal to 30% of advertised value of the tender, OR Two similar works each costing not less than the amount equal to 40% of advertised value of the tender, OR One similar work each costing not less than the amount equal to 60% of advertised value of the tender.
2.	**Financial Eligibility Criteria:** The tenderer must have minimum average annual contractual turnover of V/N or 'V' whichever is less; where V= Advertised value of the tender in crores of Rupees N= Number of years prescribed for completion of work for which bids have been invited.	The average annual contractual turnover shall be calculated as an average of "total contractual payments" in the previous three financial years, as per the audited balance sheet. However, in case balance sheet of the previous year is yet to be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover. The tenderers shall submit requisite information as per Annexure-VIB, along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet.

SIMILAR NATURE OF WORK MEANS:

Any Signal interlocking works involving EI OR RRI OR PI OR IBS OR LC GATE INTERLOCKING OR UFSBI OR TRACK CIRCUIT AFTC OR (SSDAC OR MSDAC OR HA-SSDAC) OR Automatic signalling

❖ While bidding, the bidder should submit an undertaking that they will procure item from RDSO approved firm. The successful bidder shall submit an MOU with RDSO approved EI OEM. MOU shall include after sales support required during warranty period and beyond the warranty period upto the codal life of the item, training to railway officials or AMC or ARC etc.

Note:

1. Submission of 'Undertaking by the tenderer' that the equipment for EI, Data logger, RTU HASSDAC, MSDAC, ELDs, SSBPAC, IPS, UPS and Conventional power supply shall be procured from RDSO approved sources and installation, testing and commissioning shall also be got done from the same source including after sales support required during the warranty period.

2. After the award of the contract, MOU with RDSO approved source covering supply, installation, testing and commissioning of equipment EI, Data logger, RTU, HASSDAC, MSDAC, ELDs, SSBPAC, IPS, UPS and Conventional power supply by the same RDSO approved source including after sales support required during the warranty period before supply of equipment is undertaken.

3. In the MoU The original manufacturer shall:

   i) Offer technical support for supply, installation and commissioning of the equipment.
   ii) Undertake certification of Factory Acceptance Test.
   iii) Undertake verification and certification of pre-commissioning checklist as per RDSO guidelines.
   iv) Sign on the Application for Technical System approval by RDSO wherever applicable to ensure that the installation is as per the RDSO stipulations.
   v) Impart training to Railway officials at their factory premises and at site.
   vi) Offer warranty for equipment as per the condition laid in the tender document and RDSO specification for a period of one year from the date of commissioning.
   vii) Guarantee to supply spares for a minimum period of SEVEN years after the expiry of the warranty period.
   viii) Support Railways for entering into AMC/ARC if any on later date after the expiry of warranty period.

4. The appropriate level of satisfactory performance certificate shall be obtained from Indian Railways/ RVNL/ IRCON/ CORE/ RITES from a JA Grade Officer in Indian Railways or equivalent.

Joint venture is allowed for works costing more than Rs. 10 crores only.

All documents to support fulfillment of eligibility criteria should be furnished along with the tender and should be uploaded in pdf format while submitting the e-tender offer at the e-tender portal of Indian Railways, www.ireps.gov.in. Tenders not accompanied by documentary evidence in support of eligibility will be rejected. No post tender communication, in any form will be made or entertained, after opening of tenders, in this regard.

(R.Balasubramanian)

Deputy Chief Signal and Telecom Engineer,
Construction,Tambaram, Southern Railway,
Chennai – 45
For and On behalf of President of India

GUIDELINES TO TENDERERS – TWO PACKET

1) Tenderers shall hold the offer open for acceptance for a minimum period of **90 days** from the date of opening of the tender.

2) If the date of opening of tender is declared a holiday at a later date, the tenders will be opened on the next working day.

3) E-tender shall be issued free of cost to all tenderers.

4) **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** as mentioned in Para 5 of Instructions to Tenderers (ITT) in Part-I of tender Document, Volume-I.

5) The Bid Security of the tenderers, will be forfeited, if they resile from their offers within the validity period.

6) The tenderer should upload a certificate for verification of credentials enclosed as **Annexure V**. Non submission of the certificate through online by the tenderer shall result in rejection of his/their offer.

7) If the Tenderer deliberately gives/Tenderers deliberately 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. The entire Bid Security with Railway will be forfeited. In addition, action will be taken to suspend the business with the tenderer for a period of TWO years.

8) All terms and conditions in the tender documents are binding on the tenderers.

9) Railway reserves the right to accept or reject any or all the tenders and to award the work in whole or in part without assigning the reason for any such action.

10) The tenderers are advised to visit the site of work in their own interest and acquaint themselves with the site conditions and expected quantum of work.

11) Tenderers may upload only the relevant and required documents related to the sake of eligibility rather uploading bunch of repeated documents in other categories.

12) All documents in support of fulfillment of eligibility criteria should be uploaded along with the tender. Tenders without documentary evidence in support of eligibility criteria will be summarily rejected. No post tender correspondence will be permitted and the tender shall be decided based on the documents submitted/ attached with the offer only. However, Railway reserves the right to verify/ seek for any clarification on the documents/ credentials already submitted by the tenderer along with the offer.

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PART I

Instructions to Tenderers (ITT)

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

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

i. Letter of Award/Acceptance (LOA)

ii. Bill(s) of Quantities

iii. Special Conditions of Contract

iv. Technical Specifications as given in tender documents

v. Drawings

vi. Indian Railways Standard General Conditions of Contract updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents.

vii. Indian Railways Unified Standard Specification (IRUSS-2019) updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents, if applicable in the contract.

viii. CPWD Specifications 2019 Vol I & II updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents, if applicable in the contract.

ix. Indian Railways Unified Standard Specifications (Works and Material) 2010 updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents, if applicable in the contract.

x. IR Specifications/Guidelines updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents.

xi. Relevant B.I.S. Codes updated with correction slips issued up to date of inviting tender or as otherwise specified in the tender documents.

1.1 Interpretation: These Instructions to Tenderers shall be read in conjunction with the Standard General Conditions of Contract which are referred to herein and shall be subject to modifications additions or suppression by Special Conditions of Contract and/or Special Specifications, if any, annexed to the Tender Forms.

1.2 Definition: In these Instructions to Tenderers, the following terms shall have the meanings assigned hereunder except where the context otherwise requires:

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

(b) “General Manager” shall mean the Officer-in-Charge of the general superintendence and control of the Zonal Railway/Production Unit and shall also include Addl. General Manager, General Manager (Construction) and shall mean and include their successors of the Successor Railway.

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

(d) “Divisional Railway Manager” shall mean the Officer-in-Charge of a Division of Zonal Railway and shall mean and include Divisional Railway Manager of the Successor Railway.

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

(f) “Tenderer” shall mean the person / firm / co-operative or company whether incorporated or not who tenders for the works with a view to execute the works on contract with the Railway and shall include their representatives, successors and permitted assigns.

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

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

(i) “Works” shall mean the works contemplated in the drawings and Bill(s) of Quantities set forth in the tender forms and required to be executed according to the specifications.

(j) “Specifications” shall mean the Specifications for Materials and Works of the Railway as specified under the authority of the Ministry of Railways or Chief Engineer or as amplified, added to or superseded by special specifications if any, appended to the Tender Forms.

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

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

(l) “Drawings” shall mean the maps, drawings, plans and tracings, or prints thereof annexed to the Tender Forms.

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

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

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

CREDENTIALS OF CONTRACTORS

2. Application for Registration and Approved list of contractors:

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

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

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

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

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

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

(f) his financial position;

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

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

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

TENDERS FOR WORKS

3. **Tender Form:** Tender Forms shall embody the contents of the contract documents either directly or by reference and shall be as per specimen form, Annexure-I. e-Tender Forms shall be issued free of cost to all tenderers.
4. **Omissions & Discrepancies:** Should a tenderer find discrepancies in or omissions from the drawings or any of the Tender Forms or should he be in doubt as to their meaning, he should at once notify the authority inviting tenders. The tender inviting authority may, if deemed necessary, clarify the same to all tenderers. It shall be understood that every endeavour has been made to avoid any error which can materially affect the basis of tender and successful tenderer shall take upon himself and provide for the risk of any error which may subsequently be discovered and shall make no subsequent claim on account thereof.

5. **Bid Security:**

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

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

Note:

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

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

(b) It shall be understood that the tender documents have been issued to the tenderer and the tenderer is permitted to tender in consideration of stipulation on his part, that after submitting his tender he will not resile from his offer or modify the terms and conditions thereof in a manner not acceptable to the Engineer. Should the tenderer fail to observe or comply with the said stipulation, the aforesaid amount shall be liable to be forfeited to the Railway.

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

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

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

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

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

6. Care in Submission of Tenders:

(a) (i) Before submitting a tender, the tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the works, that all conditions liable to be encountered during the execution of the works are taken into account and that the rates he enters in the tender forms are adequate and all-inclusive to accord with the provisions in Clause-37 of the Standard General Conditions of Contract for the completion of works to the entire satisfaction of the Engineer.

(a) (ii) Tenderers will examine the various provisions of The Central Goods and Services Tax Act, 2017(CGST)/ Integrated Goods and Services Tax Act, 2017(IGST)/ Union Territory Goods and Services Tax Act, 2017(UTGST)/ respective state's State Goods and Services Tax Act (SGST) also, as notified by Central/State Govt.& as amended from time to time and applicable taxes before bidding. Tenderers will ensure that full benefit of Input Tax Credit (ITC) likely to be availed by them is duly considered while quoting rates.

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

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

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

(c) The Railway will not be bound by any power of attorney granted by the tenderer or by changes in the composition of the firm made subsequent to the execution of the contract. It may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Contractor.

6.1 The tenderers shall submit a copy of certificate stating that all their statements/documents submitted along with bid are true and factual. Standard format of certificate to be submitted by the bidder is enclosed as **Annexure-V**. In addition to Annexure-V, in case of other than Company/Proprietary firm, Annexure – V(A) shall also be submitted by each member of a Partnership Firm / Joint Venture (JV) / Hindu Undivided Family (HUF) / Limited Liability Partnership (LLP) etc. as the case may be. Non submission of above certificate(s) by the bidder shall result in summarily rejection of his/their bid. It shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested/digitally signed by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document.

CONSIDERATION OF TENDERS

7. **Right of Railway to Deal with Tenders:** The Railway reserves the right of not to invite tenders for any of Railway work or works or to invite open or limited tenders and when tenders are called to accept a tender in whole or in part or reject any tender or all tenders without assigning reasons for any such action. In case if tender is accepted in part by Railway administration, Letter of Acceptance shall be issued as counter offer to the Tenderer, which shall be subject to acceptance by the Tenderer.

7A. Two Packets System of Tendering: With a view to assess the tenders technically without being influenced by the financial bids, 'Two Packets System of tendering' shall be adopted wherein tender documents provide for the same.

7B. Pre-Bid Conference: In tenders having advertised value more than Rs 50 Crore or as mentioned in the tender document, Railway shall conduct Pre Bid Conference(s) with the prospective bidders.

7C. Make in India Policy: Provisions of Make in India Policy 2017 issued by Govt. of India, as amended from time to time, shall be followed for consideration of tenders.

7D. **Permission to Bid for a bidder from a country which shares Land boundary with India:** Any bidder from the countries sharing a land border with India will be eligible to bid in any procurement of works (including turnkey projects) only if the bidder is registered with the Competent Authority. The Competent Authority for registration will be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT), Government of India. For interpretation of this para, Department of Expenditure, Ministry of Finance, Government of India letter F.No.6/18/2019-PPD dated 23/07/2020 shall be referred.

7E. Clarification of Bids: To assist in the examination, evaluation & comparison and pre-qualification of the Tender, the Railway may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Railway shall not be entertained or considered. The Railway request for clarification and the response of the bidder in this regard shall be in writing.

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

8. **Execution of Contract Document:** The Tenderer whose tender is accepted shall be required to appear in person at the office of General Manager/General Manager (Construction), Chief Administrative Officer (Construction), Divisional Railway Manager or concerned Engineer, as the case may be, or if tenderer is a firm or corporation, a duly authorized representative shall appear (there would be no need for appear in person if agreement is signed digitally) and execute the contract agreement within seven days of notice from Railways that the Contract Agreement is ready. Failure to do so shall constitute a breach of the agreement affected by the acceptance of the tender. The Contract Agreement shall be entered into by Railway only after submission of valid Performance Guarantee by the Contractor. In such cases the Railway may determine that such tenderer has abandoned the contract and there upon his tender and acceptance thereof shall be treated as cancelled and the Railway shall be entitled to forfeit the full amount of the Bid Security and other dues payable to the Contractor under this contract. The failed Contractor shall be debarred from participating in the re-tender for that work.

9. **Form of Contract Document:** Every contract shall be complete in respect of the document it shall so constitute. Not less than 2 copies of the contract document shall be signed by the competent authority and the Contractor and one copy given to the Contractor (there would be no need of signing two copies if agreement is signed digitally).

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

(b) For contracts for specific works, the contract document required to be executed by the tenderer whose tender is accepted shall be an agreement as per specimen form Annexure- IV.

ANNEXURE - I

_____ RAILWAY

TENDER FORM (First Sheet)

Tender No. _____

Name of Work _____

To

The President of India

Acting through the _____ Railway

I/We _____ have read the various conditions to tender attached hereto and agree to abide by the said conditions. I/We also agree to keep this offer open for acceptance for a period of _____ days from the date fixed for closing of the tender and in default thereof, I/We will be liable for forfeiture of my/our "Bid Security". I/We offer to do the work for _____ Railway, at the rates quoted in the attached bill(s) of quantities and hereby bind myself/ourselves to complete the work in all respects within _____ months from the date of issue of letter of acceptance of the tender.

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

3. A Bid Securityof ₹ _____ has already been deposited online/ submitted as Bank Guarantee bond. Full value of the Bid Security shall stand forfeited without prejudice to any other right or remedies in case my/our Tender is accepted and if:

(a) I/We do not submit the Performance Guarantee within the time specified in the Tender document;
(b) I/We do not execute the contract documents within seven days after receipt of notice issued by the Railway that such documents are ready; and
(c) I/We do not commence the work within fifteen days after receipt of orders to that effect.

4. (a) I/We am/are a Startup firm registered by …… Department of Industrial Policy and Promotion (DIPP) and my registration number is ……. valid upto ……. (Copy enclosed) and hence exempted from submission of Bid Security.

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

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

_____

Signature of Witnesses:

(1) _____ Signature of Tenderer(s)

(2) _____ Date _____

Address of the Tenderer(s)

_____

ANNEXURE - I (Contd. …)

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 _____ or obtained from the office of the Chief Engineer, _____ Railway on payment of prescribed charges.

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

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

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

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

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

5. The works are required to be completed within a period of NINE months from the date of issue of acceptance letter.

6. **Bid Security:**

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

(b) **The Tenderer(s) shall keep the offer open for a minimum period of 90 days** (in case of single packet system of tendering **60** days) 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 _____ 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) (1) In case of tenders for composite works (e.g. works involving more than one distinct component, such as Civil Engineering works, S&T works, Electrical works, OHE works etc. and in the case of major bridges – substructure, superstructure etc.), tenderer must have successfully completed or substantially completed any one of the following categories of work(s) during last 07 (seven) years, ending last day of month previous to the one in which tender is invited:

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

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

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

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

However, if required in tender documents by way of Special Conditions, a formal agreement duly notarised, legally enforceable in the court of law, shall be executed by the main contractor with the subcontractor for the component(s) of work proposed to be executed by the subcontractor(s), and shall be submitted along with the offer for considering subletting of that scope of work towards fulfillmint of technical eligibility. Such subcontractor must fulfil 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 Sublette, in last 5 years, ending last day of month previous to the one in which tender is invited through a works contract.

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

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

Note for Item 10.1:

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

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

10.2. Financial Eligibility Criteria: The tenderer must have minimum average annual contractual turnover of **V/N or 'V'** whichever is less; where

V= Advertised value of the tender in crores of Rupees

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

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

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

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

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

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

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

*1. **Substantially Completed Work means** an ongoing work in which payment equal to or more than 90% of the present contract value (excluding the payment made for adjustment of Price variation (PVC), if any) has been made to the contractor in that ongoing contract and no proceedings of termination of contract on Contractor's default has been initiated. The credential certificate in this regard should have been issued not prior to 60 days of date of invitation of present tender.*

2. In case a work is started prior to 07 (seven) years, ending last day of month previous to the one in which tender is invited, but completed in last 07 (seven) years, ending last day of month previous to the one in which tender is invited, the completed work shall be considered for fulfillment of credentials.

3. If a work is physically completed and completion certificate to this extent is issued by the concerned organization but final bill is pending, such work shall be considered for fulfillment of credentials

4. In case of completed work, the value of final bill (gross amount) including the PVC amount (if paid) shall be considered as the completion cost of work. In case final bill is pending, only the total gross amount already paid including the PVC amount (if paid) shall be considered as the completion cost of work.

In case of substantially completed work, the total gross amount already paid including the PVC amount (if paid), as mentioned in the certificate, shall be considered as the cost of substantially completed work.

5. If a bidder has successfully completed a work as subcontractor and the work experience certificate has been issued for such work to the subcontractor by a Govt. Organization or public listed company as defined in Note for Item 10.1 Para 10 of the Tender Form (Second Sheet), the same shall be considered for the purpose of fulfillment of credentials.

6. In case a work is considered similar in nature for fulfillment of technical credentials, the overall cost including the PVC amount (if paid) of that completed work or substantially completed work, shall be considered and no separate evaluation for each component of that work shall be made to decide eligibility.

*7. In case of newly formed partnership firm, the credentials of individual partners from previous propriety firm(s) or dissolved previous partnership firm(s) or split previous partnership firm(s), shall be considered only to the extent of their share in previous entity on the date of dissolution / split and their share in newly formed partnership firm. For example, a partner A had 30% share in previous entity and his share in present partnership firm is 20%. In the present tender under consideration, the credentials of partner A will be considered to the extent of 0.3*0.2*value of the work done in the previous entity. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.*

8. In case of existing partnership firm, if any one or more partners quit the partnership firm, the credentials of remaining partnership firm shall be re-worked out i.e., the quitting partner(s) shall take away his credentials to the extent of his share on the date of quitting the partnership firm(e.g. in a partnership firm of partners A, B & C having share 30%, 30% & 40% respectively and credentials of Rs 10 crore; in case partner C quits the firm, the credentials of this partnership firm shall remain as Rs 6 crore). For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.

9. In case of existing partnership firm if any new partner(s) joins the firm without any modification in the name and PAN/TAN no. of the firm, the credentials of partnership firm shall get enhanced to the extent of credentials of newly added partner(s) on the same principles as mentioned in item 6 above. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deeds, dissolution/splitting deeds and proof of surrender of PAN No.(s) in case of dissolution of partnership firm etc.

10. Any partner in a partnership firm cannot use or claim his credentials in any other firm without leaving the partnership firm i.e., In a partnership firm of A&B partners, A or B partner cannot use credentials of partnership firm of A&B partners in any other partnership firm or propriety firm without leaving partnership firm of A&B partners.

11. In case a partner in a partnership firm is replaced due to succession as per succession law, the proportion of credentials of the previous partner will be passed on to the successor.

12. If the percentage share among partners of a partnership firm is changed, but the partners remain the same, the credentials of the firm before such modification in the share will continue to be considered for the firm as it is without any change in their value. Further, in case a partner of partnership firm retires without taking away any credentials from the firm, the credentials of partnership firm shall remain the same as it is without any change in their value.

13. In a partnership firm "AB" of A&B partners, in case A also works as propriety firm "P" or partner in some other partnership firm "AX", credentials of A in propriety firm "P" or in other partnership firm "AX" earned after the date of becoming a partner of the firmAB shall not be added in partnership firm AB.

14. In case a tenderer is LLP, the credentials of tenderer shall be worked out on above lines similar to a partnership firm.

15. In case company A is merged with company B, then company B would get the credentials of company A also.]

11. Tenderer Credentials:

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

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

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

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

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

(v) The Railway reserves the right to verify all statements, information and documents submitted by the bidder in his tender offer, and the bidder shall, when so required by the Railway, make available all such information, evidence and documents as may be necessary for such verification. Any such verification

or lack of such verification, by the Railway shall not relieve the bidder of its obligations or liabilities hereunder nor will it affect any rights of the Railway there under.

(vi) (a) In case of any information submitted by tenderer is found to be false, forged or incorrect at any time during process for evaluation of tenders, it shall lead to forfeiture of the tender Bid Security besides banning of business for a period of up to **two** years.

(b) In case of any information submitted by tenderer is found to be false, forged or incorrect after the award of contract, the contract shall be terminated. Bid Security, Performance Guarantee and Security Deposit available with the Railway shall be forfeited. In addition, other dues of the contractor, if any, under this contract shall be forfeited and 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 _____, _____ Railway for carrying out the work according to the Standard General Conditions of Contract, Special Conditions / Specifications annexed to the tender and Standard Specifications (Works and Materials) of Railway as amended/corrected upto latest correction slips, mentioned in tender form (First Sheet).

14. Documents to be Submitted Along with Tender

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

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

(a) Sole Proprietorship Firm:

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

(b) **HUF:**

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

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

(c) **Partnership Firm:**

(i) All documents as mentioned in 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 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 thepartnership 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 favor 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 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.

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 Appostille 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:

17.15.1Technical 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 papa 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 major component 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 other component(s) 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.

17.15.2Financial 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 _____

ANNEXURE - I (Contd. …)

TENDER FORM (Third Sheet)

Name of Work: _____

BILL OF QUANTITIES

1. Standard Schedule of Rates (SSOR) Items:

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

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

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

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

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

Dated _____
Signature of the Tenderer(s)

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

ANNEXURE – II

AGREEMENT FOR ZONE CONTRACT

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

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

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

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

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

Contractor _____ Designation
Address _____ Railway _____
(For President of India)
Witnesses (to signature of Contractor):
Signature of witnesses with address _____

Date _____ _____

Signature of witnesses with address _____

Date _____ _____

_____

ANNEXURE - III

WORK ORDER UNDER ZONE CONTRACT

WORK ORDER NO._____, DATED _____ UNDER CONTRACT AGREEMENT

NO._____ DATED _____.

Name of Work _____ (SITE) _____

Schedule of Drawings _____

Authority_____ Allocation _____

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

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

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

Divisional Railway Manager/Divisional _____ Engineer

_____ Division

_____ Railway

Date _____ for President of India

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

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

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

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

Contractor _____ (Signature) Railway: Designation _____

Address _____

For President of India)

Date _____ Date _____

Signature of Witnesses (to Signature of Contractor) with address

1. _____ _____

_____ _____

_____ _____

2. _____ _____

_____ _____

_____ _____

ANNEXURE - IV

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

Reference -Para 6.1 of ITT

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

I …….. (Name and designation)**appointed as the attorney/authorized signatory of the tenderer,

M/s …… (hereinafter called the tenderer) for the purpose of the Tender documents for the work of……. as per the tender No. …… of …… (Railway)**, do hereby solemnly affirm and state on the behalf of the tenderer including its constituents as under:

l. 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 understandthat if the contents of the **certificate** submitted by us are found to be forged/false or incorrect 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 years**. 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/forget or incorrect 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 besides any other action provided in the contract including banning of business for a period of upto **two** years.

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.

This certificate is to be given by each member of JV or Partners of Partnership firm/LLP/etc.

ANNEXURE-V(A)
Reference -Para 6.1 of ITT

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

I/We …….(Name), attorney/authorized signatory of the ……(constituent firm/constituent partner) and member/partner of the ……(tenderering 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. 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

Reference -Para 10.3 &17.15.3 of Tender Form (Second Sheet) of Annexure I of ITT

TENDERER'S CREDENTIALS (BID CAPACITY)

_____ RAILWAY

For tenders having advertised value more than Rs 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 value of the present tender. The available bid capacity shall be calculated as under:

Available Bid Capacity = [A×N×2] – 0.33×N×B

Where,

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

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

B = Existing commitments and balance amount of ongoing works with tenderer as per the prescribed Performa 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

Para 5 of the Instructions to Tenderers

(Bid Security)

Bank Guarantee Bond from any scheduled commercial bank of India

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

Name of the Bank: ----------

President of India,

Acting through ……,

…….. Railway,

Beneficiary: ……. Railway

Date:.....

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

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

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

AND

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

1. KNOW ALL MEN that by these present that I/We the undersigned ***[Insert name(s) of authorized representatives of the Bank],*** being fully authorized to sign and incur obligations for and on behalf of the Bank**,** confirm that the Bank, hereby, unconditionally and irrevocably guarantee to pay to the Railway full amount in the sum of ***[Insert required Value of Bid Security]*** as above stated.

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

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

4. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Bidder.

5. The Bank agrees that no change, addition, modifications to the terms of the Bid document or to any documents, which have been or may be made between the Railway and the Bidder, will in any way absolve the Bank from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification made by Railway at any time.

6. This guarantee will remain valid and effective from**…….[*insert date of issue*]**till**……..[*insert date, which should be minimum 90 days beyond the expiry of validity of Bid]*** . Any demand in respect of this Guarantee should reach the Bank within the validity period of Bid Security.

7. The Bank Guarantee is unconditional and irrevocable.

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

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

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

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

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

Date ……

……

Place……. Bank's Seal and authorized signature(s)

[Name in Block letters] ……....

[Designation with Code No.]……..……

P/Attorney] No.

Witness:

1 Signature, Name & Address & Seal

2 Signature, Name& address & Seal Bank's Seal

*[P/Attorney]*No.

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

Annexure –VIB

Reference -Para 10.2 & 17.15.2 of Tender Form (Second Sheet) of Annexure I of ITT

Each Bidder or each member of a JV must fill in this form separately:

NAME OF BIDDER/JV PARTNER:

Annual Contractual Turnover Data for the Previous 3/4 Years (Contractual Payment only)			
Year	**Amount Currency**	**Exchange Rate**	**Indian National Rupees Equivalent**
Average Annual Contractual Turnover for last 3 years			

1. The average annual contractual turnover shall be calculated as an average of "total contractual payments" in the previous three financial years. However, in case balance sheet of the previous year is yet to be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover.
2. The information supplied shall be substantiated by data in the audited balance sheets and profit and loss accounts for the relevant years in respect of the bidder or all members constituting the bidder.
3. Contents of this form should be certified by a Chartered Accountant duly supported by Audited Balance Sheet duly certified by the Chartered Accountant.

SEAL AND SIGNATURE OF THE BIDDER

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports._____

(Signature of Chartered Accountant)

Name of CA:_____

Registration No: _____

(Seal)

PART-II

CHAPTER – I

INSTRUCTIONS TO TENDERERS AND CONDITIONS OF TENDERING

1. INVITATION OF TENDERS:

Dy CSTE/CN/TBM invites E-Tenders for the work mentioned below:

2. Name of Work: Provision of Electronic interlocking signalling arrangements (Both Indoor and Outdoor)and Telecommunication arrangements at Podanur Junction in connection with 1) New coaching terminal at PTJ 2) Creation of Trip Maintenance/Advance inspection Centre at PTJ 3)Interlocking of stabling line with new EI and by-pass line between CBE-IGU and 4) Development of coach maintenance facilities at PTJ.

3. SCOPE OF WORK:

3.1 The scope of this work along with the list of stations where the works are to be carried out are furnished in Chapter IV of Volume-I.

3.2 Clarification about the latest policies/ practices for execution can be received from the Office of DY CSTE/CN/TBM, Tambaram, Chennai-600 045.

4. SUBMISSION OF OFFERS:

4.1 All offers should be submitted before the time and date fixed for the receipt of the offers through the e-tender portal in www.ireps.gov.in only. After the stipulated time and date, submission of offers will be not be possible at the portal.

4.2 **The tenderer shall submit his tender duly filled up as prompted in the portal against the respective fields and attach the required documents in pdf format for the following:**

i) Turnover:

Documentary proof of turnover shall be submitted in any of the following means: **(If stipulated in the eligibility criteria of Tender Notice).**

(a) ~~ITCC submitted along with the tender~~. The contract amount of the latest three years will be taken for verifying the credentials.

(b) Documentary evidence duly certified by Chartered Accountant/Company Auditor, audited balance sheet, certificate issued by Railway Officers not below the rank of JA grade/ Sr. Scale in independent charge.

ii) 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.

iii) Tenderer's credentials.

iv) If the tenderer wants to give any deviation, the **statement of Deviations** for any clause or sub-clause of "General Conditions of Contract", "Special Conditions of Contract", "Instructions to tenderers and conditions of tendering", which he proposes with detailed justification for deviation proposed should be submitted in the format given as **Form No .I, Volume-I .**

v) Similar works executed. Similar work as mentioned in the Tender notice. Particulars regarding supplies of similar equipments, testing and commissioning and details of project or major works executed of similar nature.

a) For the purpose of single similar nature of work, the **Experience Certificate** should be attached to the tender document as per proforma given as **Form No. II**, which can be filled up and signed by the tenderer, in case the format issued by the Executive is different. The certified copies of relevant Experience Certificate are also to be enclosed.

b) With respect to Railways, the credentials/ experience certificate should have been issued by at least a JA Grade Officer. However, the credential/ experience certificate issued by Sr. Scale Officer in their capacity as co-ordinating/ in-charge officer of a unit will also be accepted. With respect to other Government departments and (Public Sector Undertakings) PSUs, the certificate issued at the level of Executive Engineer and above can be taken as valid. Certificates issued by private parties for the execution of the work will not be considered.

c) Similar nature of work physically completed within the qualifying period, i.e. the last Seven financial years and current financial year (even though the work might have commenced before the qualifying period) shall only be considered.

d) The total value of similar nature of works completed during the qualifying period and not the payments received within the qualifying period alone shall be considered.

e) 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 the statutory deductions shall be considered. If final measurements have been recorded and work has been completed with negative variation, then also the paid amount including statutory deduction shall be considered. If final measurements have been recorded and work has been completed with positive variation, but variation has not been sanctioned, original agreement value or the last sanctioned agreement value whichever is lower shall be considered.

f) In case of composite works involving combination of different works, even separate completed works of required value shall be considered.

g) The tenderer shall note that the Credentials/ Experience Certificate for the works executed by them as Sub-contractor to Main Contractor of Govt. Dept/ PSUs will not be considered and the Credentials/ Experience Certificate for the works executed by them directly for Govt. Dept/ PSUs as Main Contractor will only be considered.

vi) Should a tenderer be a retired Engineer of the Gazetted Rank or any other Gazetted Officer working before his retirement, whether in the Executive or Administrative capacity or whether holding a pensionable post or not in the Engineering Department of any of the Railways owned and administered by the President of India for the time being or should a tenderer being partnership firm have as one of its partners a retired Engineer or a retired Gazetted Officer as aforesaid, or should a

tenderer being an incorporated company have any such retired Engineer or retired Officer as one of its Directors, or should a tenderer have in his employment any retired Engineer or retired Gazetted Officer as aforesaid, the full information as to the date of retirement of such Engineer or Gazetted officer from the said service and in case where such Engineer or Officer has not retired from Government Service at two years prior to the date of submission of the Tender 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, or to take employment under the contractor, has been obtained by the Tenderer or the Engineer or the Officer as the case may be from the President of India or any Officer duly authorized by him in this behalf shall be clearly stated in writing at the time of submitting the tender. Tenders without the information above referred to or a statement to the effect that no such retired Engineer or Retired Gazetted Officer is so associated with the Tenderer, as the case shall be rejected.

vii) Complete technical data and particulars of the equipment offered, as specified in the Tender papers together with descriptive literature, leaflets, etc.

4.3 Non-compliance with all or any of the condition said forth therein above is liable to result in the tender being rejected.

4.4 Tender Committee may at their discretion call for the originals of the credentials for verification from the tenderers or any clarifications/confirmations on the contents of the documents submitted.

4.5 In case the Certificates/Documents produced are proved to be false/ fabricated, the entire Bid security/earnest money is liable to be forfeited to the Railwayin addition to banning their business with the organization as per the GCC or will be done at the discretion of the Administration.

5. Eligibility criteria:

Tenderers are required to satisfy the following eligibility criteria:

Sl. No.	Certificate	Minimum Criteria
1.	**Technical Eligibility Criteria:** The tenderer must have successfully completed or substantially completed any one of the following categories of work(s) during last 07 (seven) years, ending last day of month previous to the one in which tender is invited	Three similar works each costing not less than the amount equal to 30% of advertised value of the tender, OR Two similar works each costing not less than the amount equal to 40% of advertised value of the tender, OR One similar work each costing not less than the amount equal to 60% of advertised value of the tender.
2.	**Financial Eligibility Criteria:** The tenderer must have minimum average annual contractual turnover of V/N or 'V' whichever is less;	The average annual contractual turnover shall be calculated as an average of "total contractual payments" in the previous three financial years, as per the audited balance sheet. However, in case balance sheet of the previous year is yet to

	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.	be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover. The tenderers shall submit requisite information as per Annexure-VIB, along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet.

SIMILAR NATURE OF WORK MEANS:

Work involving,

"Any Signal interlocking works involving EI OR RRI OR PI OR IBS OR LCGATE INTERLOCKING ORUFSBI OR TRACK CIRCUIT AFTC OR (SSDAC OR MSDAC OR HA-SSDAC) OR Automatic signalling."

1. While bidding, the bidder should submit an undertaking that they will procure item from RDSO approved firm.The successful bidder shall submit an MOU with RDSO approved EI OEM .MOU shall include after sales support required during warranty period and beyond the warranty period upto the codal life of the item.trainingto railway officials or AMC or ARC etc.

2. Submission of 'Undertaking by the tenderer' that the equipment for EI, Data logger, RTU HASSDAC, MSDAC, ELDs, SSBPAC, IPS, UPS and Conventional power supply shall be procured from RDSO approved sources and installation, testing and commissioning shall also be got done from the same source including after sales support required during the warranty period.

3. After the award of the contract, MOU with RDSO approved source covering supply, installation, testing and commissioning of equipment EI, Data logger, RTU HASSDAC, MSDAC, ELDs, SSBPAC, IPS, UPS and Conventional power supply by the same RDSO approved source including after sales support required during the warranty period before supply of equipments is undertaken.

4. In the MoU The original manufacturer shall:

i) Offer technical support for supply, installation and commissioning of the equipment.
ii) Undertake certification of Factory Acceptance Test.
iii) Undertake verification and certification of pre-commissioning checklist as per RDSO guidelines.
iv) Sign on the Application for Technical System approval by RDSO wherever applicable to ensure that the installation is as per the RDSO stipulations.
v) Impart training to Railway officials at their factory premises and at site.
vi) Offer warranty for equipment as per the condition laid in the tender document and RDSO specification for a period of one year from the date of commissioning.
vii) Guarantee to supply spares for a minimum period of SEVEN years after the expiry of the warranty period.
viii) Support Railways for entering into AMC/ARC if any on later date after the expiry of warranty period.

5. The appropriate level of satisfactory performance certificate shall be obtained from Indian Railways/ RVNL/ IRCON/ CORE/ RITES is from a JA Grade Officer in Indian Railways or equivalent.

5.1 The experience certificate issued by Project Management Consultants for the work executed for Govt. Departments/Public Sector Undertakings will be accepted subject to the condition that the same is countersigned by the Officer of the concerned Govt. Department/Public Sector Undertakings of the rank mentioned in clause 5.2. The tenderer shall note that the Credentials/Experience Certificate for the works executed by them as Sub-contractor to Main Contractor of Govt. Dept/PSUs will not be considered and the Credentials/Experience Certificate for the works executed by them directly for Govt. Dept/PSUs as Main Contractor will only be considered.

5.2 Documentary proof (in the form of certificates) of satisfaction of eligibility criteria should be furnished along with the tender documents. The offers of tenderers who do not pass the prescribed eligibility criteria will be rejected.

6. LOCAL CONDITIONS:

6.1 Need of tenderer's careful study of conditions & site conditions:

The intending tenderer is advised to study tender papers, concerned specification and other instructions carefully. The tenderer shall inspect the proposed site of work and acquaint himself with the site conditions, working hours, layout of land, trees and shrubs that he will have to cut, type of strata likely to be met while excavation, stacking space for materials, approach roads, pathways available etc. and all relevant items connected with execution for the work. No claim shall be entertained for the contractors making his own arrangements for approach roads from outside Railway Land and contractors will bear entire expenses such as road taxes, payment for right of way, etc. to outsiders and for constructions of approach roads, etc. The submission of tender shall be deemed to have been done after careful study and examination of the tender papers with full understanding of the implication thereof, unless otherwise, specifically commented upon by the tenderer in his quotation. Failure to adhere to any one or all these instructions may render his offer liable to be ignored without any reference.

6.2 No request for the change of price, or time schedule of delivery of stores shall be entertained after the offer is accepted by the Railways on account of any local condition or factor.

6.3 In the event of the tenderer desiring to have an independent field survey before furnishing his quotations, he may apply to Railways for permission in this regard. Such permission will be given in writing by the Railways but the expenses in this regard will be borne by the tenderer completely.

6.4 Should a tenderer find discrepancies in, or omission from the drawing or any of the Tender papers or hehas any doubt to their meaning, he should at once notify the Railway who may send a written clarification to all tenderers.

7. TENDERERS TO ADVISE STRENGTH OF STAFF:

7.1 Tenderer should advise the number of Engineer, Supervisors and Cable Jointers/Artisans employed by him or going to be employed with their s, qualifications, bio-data and experience in this particular trade under consideration along with the Tender.

7.2 Irrevocable letters of commitment of the said supervisors and key technicians/ artisans for doing the works shall be furnished along with tender papers, if they are not already in employment of the tenderer.

8. CONSORTIUM BID:

Consortium/ Joint ventures will not be accepted and all the credentials in proof of fulfilling eligibility criteria specified in the tender documents have to be in the name of sole tenderer only.

9. VALIDITY OF OFFER:

9.1 The tenderer shall keep the offer open for a minimum period of **90 days** 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 Earnest Money Deposit.

10. UNIT PRICES:

10.1 The unit prices quoted by the Contractor should be inclusive of GST component as applicable.

10.2 The description of items are given as a guide and the quantities given are approximate only and are subject to variation according to the needs of the Railways. The Railways accept no responsibility for their accuracy. The Railways do not guarantee work under each item of schedule.

10.3 The unit prices offered against the various items will include besides Labour the following elements of cost:

10.3.1 Cost of all materials required for laying the cables, casting of foundations, erection of Apparatus cases and Junction Boxes including their transport to site and all other incidentals connected therewith excluding the materials supplied by the Railways.

10.3.2 Cost of transportation of materials including loading, unloading, handling charges, etc. supplied by the Railways from place of delivery to the site of work.

10.3.3 Collection of balance cables, materials left over after the work, if any and materials released and handing over to the Railway Engineers at specified location.

10.3.4 All other miscellaneous expenses necessary for the execution of the work and fulfillment of the contractual obligations.

10.4 The contractor shall be responsible for undertaking repairs if any, to crates, cable drums packing cases, etc. for safe transport of materials from Railway's specified depot to the site of work. The contractor should also undertake necessary repairs to crates drums etc. in respect of unused materials required to be returned to the purchaser. No extra payment will be made on this account.

10.5 Materials to be supplied by the tenderer and by Railways are indicated separately in Vol. I. However, any particular item of material not included in the Contractor's list or in the Railway's list, but if still required to complete the works, the tenderer shall include such items of materials in his tender and quote for the same.

11. RATES DURING NEGOTIATION:

The tenderer shall not increase his quoted rates in case the Railway Administration negotiates 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.

12. NON TRANSFERABILITY AND NON REFUNDABILITY:

The tender documents are not transferable. The cost of tender paper is not refundable.

13. ERRORS OMISSIONS & DISCREPANCIES:

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

14. WRONG INFORMATION BY THE TENDERER:

If the tenderer deliberately gives wrong information in his tender, creates circumstances for the acceptance of his tender, the Railway reserves the right to reject such tender at any stage.

15. AUTHORITY FOR ACCEPTANCE:

The authority for the acceptance of the tender will rest with the competent authority of the Southern Railway on behalf of President of India. It shall not be obligatory on the said authority to accept the lowest or any tender or to assign any reason for non-acceptance or rejection of a tender. The Railway reserves the right to accept any tender in respect of the whole or any portion of the work specified in the tender paper or to sub-divide the work among different Tenderers or to reduce the work or to accept any tender for less than the tendered quantities without assigning any reason whatsoever.

It shall not be obligatory on the said authority to accept the lowest tender and no tenderer shall demand any explanation for the cause of rejection of his tender.

16. SECURITY DEPOSIT:

16.1 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 fulfilment of the contract by the Contractor. Provided further that, if Contractor submits the Cash or Term Deposit Receipt issued from a Scheduled commercial bank of India or irrevocable Bank Guarantee Bond from a Scheduled commercial bank of India, either towards the Full Security Depositor the Part Security Deposit equal to or more than Bid Security, the Railway shall return the Bid Security, to the Contractor.

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

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

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

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

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

16.2(ii) Forfeiture of Security Deposit: Whenever the contract is rescinded as a whole underclause 62 (1) of these conditions, the Security Deposit already with railways under the contract shall be forfeited. However, in case the contract is rescinded in part or parts under clause 62 (1) of these conditions, the Security Deposit shall not be forfeited.

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

17 PERFORMANCE GUARANTEE

The procedure for obtaining Performance Guarantee is outlined below:

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

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

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

(b) The successful bidder shall submit the Performance Guarantee (PG) in any of the following forms, amounting to **5%** of the original contract value:-

(i) A deposit of Cash;

(ii) Irrevocable Bank Guarantee;

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

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

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

(vi) Deposit in the Post Office Saving Bank;

(vii) Deposit in the National Savings Certificates;

(viii) Twelve years National Defence Certificates;

(ix) Ten years Defence Deposits;

(x) National Defence Bonds and

(xi) Unit Trust Certificates at 5% below market value or at the face value whichever is less. Also, FDR in favour of FA&CAO (free from any encumbrance) may be accepted.

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

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

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

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

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

(i) Failure by the Contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer may claim the full amount of the Performance Guarantee.

(ii) Failure by the Contractor to pay President of India any amount due, either as agreed by the Contractor or determined under any of the Clauses/Conditions of the Agreement, within 30 days of the service of notice to this effect by Engineer.

(iii) The Contract being determined or rescinded under clause 62 of these conditions.

18 <u>SUBMISSION OF BANK GUARANTEES</u>:

Bank Guarantees (BGs) to be submitted by suppliers/ contractors in the prescribed proforma attached herein as **Form No. III, should be issued in favour of FA&CAO/CN, Southern Railway, Egmore, Chennai – 8** and sent directly to the concerned authorities by the issuing Bank under Registered Post A.D.

19 AGREEMENT:

The successful tenderer shall be required to execute an agreement with The President of India acting through the Deputy Chief Signal and Telecommunication Engineer, Construction, Tambaram, Southern Railway, Chennai-600045 or his accredited officer for carrying out the work according to the General Conditions of the Contract and specifications of contract including the correction slips issued from time to time.

20 FOREIGN EXCHANGE:

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

21 TENDERERS's ADDRESS:

Tenderer shall state in the tender his postal address fully and clearly. Any communication sent to the tenderers by post at his said address, shall be deemed to have reached the tenderer duly & timely, notwithstanding the fact that the communication could not reach the tenderer at all or in time for whatever reason. Important documents shall be sent by Registered post.

The tenderers shall go through the instructions contained in the "Regulation for tenders and contracts and conditions of Tender" before submitting their offers. All the relevant blank spaces in the booklet must be suitably filled in and returned with the tender documents duly signed by the tenderers.

22 EXECUTIVE INCHARGE OF WORK: Indicated in Chapter-II of Volume-I

23 SCHEDULE OF WORK:

The schedule of works are indicated in Chapter-II of Volume-I. The tenderer should quote the rates for all the schedules of work in IREPS portal.

24 COMPLETION PERIOD OF WORK: The work is to be completed within **TEN** months from the date of issue of Letter of Acceptance.

25 LIST OF MATERIALS TO BE SUPPLIED BY RAILWAYS:

List enclosed in Chapter III of Vol. I as Annexure B-1.

26 LIST OF MATERIALS TO BE SUPPLIED BY CONTRACTOR:

List enclosed in Chapter III of Vol. I as Annexure B-2.

27 STORES DEPOT FROM WHERE THE MATERIALS SUPPLIED BY RAILWAYS ARE TO BE COLLECTED BY THE CONTRACTOR:

Indicated in Chapter-II of Volume-I.

28 DETAILS TO BE SUBMITTED ALONG WITH THE TENDER:

a. List of personnel, organization available on hand and proposed to be engaged for the subject work.

b. List of plant & machinery available on hand (own) and proposed to be inducted (own and hired to be given separately) for the subject work.

c. List of works completed in the last three financial years giving description of work, organization for whom executed, approximate 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.

d. List of works on hand indicating description of work, contract value, approximate value of balance work yet to be done and date of award.

Note:

1) In case of items (c) and (d) above, supportive documents/ certificates from the organizations with whom they worked/ are working should be enclosed.

2) Certificates from private individuals for whom such works are executed/ being executed shall not be accepted.

29 GOODS AND SERVICES TAX:

PROCEDURE FOR PAYMENT OF CONTRACTUAL BILLS:

(A)

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

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

iii. Since the agreemental rates of contracts are inclusive of all taxes as per clause 37 of GCC-2022, the calculation of Gross amount of work executed', 'Amount of work executed excluding GST amount' and GST amount' in the 'on account/final contract certificate' shall be done as under:

Let Z = Gross amount of work executed on the basis of quantum of work executed and agreemental rates.
X = Amount of work executed excluding GST amount.
Y = GST amount as per applicable GST rate for that goods/service code.
R = Percentage rate of GST for that goods/service code
Then Z = X + Y, Y = X * R/100

iv. Percentage rate of GST for various types of goods/services as finalised by GST coucil can be downloaded from the website www.cbec.gov.in .

(B)

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

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

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

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

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CHAPTER – II

A B S T R A C T S U M M A R Y

Name of Work: Provision of Electronic interlocking signalling arrangements (Both Indoor and Outdoor)and Telecommunication arrangements at Podanur Junction in connection with 1) New coaching terminal at PTJ 2) Creation of Trip Maintenance/Advance inspection Centre at PTJ 3)Interlocking of stabling line with new EI and by-pass line between CBE-IGU and 4) Development of coach maintenance facilities at PTJ.

E-Tender Notice No. TBM-SG-CN-2026-27-02-OT

	Railway assessed value Rs.	**Quotation Instruction**
Annexure-A1 (SOR Items)	185784354.34	Single rate for schedule
Annexure-A2	99928317.13	Single rate for schedule
Annexure-A3	42180204.18	Single rate for schedule
Annexure-A4	6581829.98	Single rate for schedule
TOTAL	334474705.63	
TOTAL (R/o)	**33,44,74,706/-**	

Tenderers to note:

1. Tenderers are requested to quote in the IREPS portal as indicated above.

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

NAME OF WORK: Provision of Electronic interlocking signalling arrangements (Both Indoor and Outdoor)and Telecommunication arrangements at Podanur Junction in connection with 1) New coaching terminal at PTJ 2) Creation of Trip Maintenance/Advance inspection Centre at PTJ 3)Interlocking of stabling line with new EI and by-pass line between CBE-IGU and 4) Development of coach maintenance facilities at PTJ.

EXECUTIVE IN CHARGE : Dy.CSTE/CN/TBM

Materials supplied by Railways shall be collected and transported by the Contractor at own cost from the Stores Depot at Perambur/Tambaram/Podanur.

Annexure -A1

Sl. No.	SOR No.	Brief description of work	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	01_3	Supply of fan less embedded industrial grade computers (Similar to Moxa V2406 or better) with all accessories such as key board, mouse, antivirus etc. of industrial grade as per approved Specification as recommended by latest RDSO Specification(RDSO/SPN/192 or 203 or latest) for EI. (Inspection by RDSO)	Nos	8	375562.03	3004496.24
2	01_5	Supply of Power Supply arrangement for VDU and Embedded PC. This includes supply of 2Nos of 110VDC/24DC, 10A DC-DC converter and 2Nos of 110VDC/110V AC,500VAInverter in (1+1) configuration. (As per Technical Specification enclosed)(Inspection by RDSO)	Set	8	214096.98	1712775.84
3	01_7	Supply and Installation of work space as per enclosed drawing No PROJ/SG/MS/70/2019 – work space (as approved by engineer in charge) with control desk for 2 monitors, 2 operators & one module to be provided for storage - should include space for housing Two nos of Embedded PCs, 2 nos FDMS and their Power supply arrangement for with proper ventilation with two chairs (as per Drawing enclosed or as per site requirement)(Inspection by Consignee)	Nos	1	948672.1	948672.10

4	01_11	Training of Railway Personnel in installation, commissioning, testing, troubleshooting and in diagnosing faults using diagnostic tools/flow charts including supply of necessary documents. (Per Unit= 60 Man Days)	Per Unit	4	72,995.54	291982.16
5	01_14	Carrying out Automatic Factory Acceptance test for any station having Distributed EI configuration.	Stn	3	3,05,105.92	915317.76
6	01_16	Carrying out Automatic Site Acceptance test for any station having Distributed EI configuration.	Stn	3	9,73,868.46	2921605.38
7	01_17	Preparation and Submission of NI drawings/Plans, Rule Diagrams, Station Working Rules, CRS Documents, TSAA documents.	Stn	1	5,29,000.45	529000.45
8	1_19	Submission of all relevent final `As mades' of circuit diagrams, contact analysis charts, termination particulars of apparatus cases and cable termination rack, power supply arrangements, relay index board, cable plans, cable route plans, red boundary plans and all other particulars covered under various schedules. All 'As mades' shall be prepared by the Contractor in AUTOCAD 2000 or latest and submitted in CDs. One copy of the 'As mades' check print shall be submitted before Testing the circuits. The final negatives shall be made in tracing sheet (80 to 90 gsm). All 'As mades' except cable plan, cable route plan, bonding diagram & power supply diagram shall be prepared in A3 size. On approval the contractor shall submit along with the negatives, 8 copies in each, duly making booklet neatly bound.	per sheet	2000	382.12	764240.00

		Out of 8 sets, 2 sets of drawings and other plans shall be kept in transparent plastic cover (2 sheets back to back in one plastic cover) and handed over to Railways. Also the contractor has to supply one set of As mades in 'Reproduction Film'.The approved circuit diagram will be issued by Railways in soft copy as well as two sets of hard copies. Wherever alterations to existing circuits are involved, the existing as-made circuit diagrams will be supplied by Railways either in CDs or RP film. The Contractor shall incoporate the details of all the new wirings and alterations in the CD/RP film and submit them to Railways. On approval 8 copies shall be made for As-made circuit diagrams also as mentioned above				
9	01_20	Preparation of circuits, location diagrams, power diagrams, cable plan, bonding plan etc in Auto Cad 2000 or latest. The drawings shall be prepared in A3/A2/U size as required by Railways. The hard copies of the documents will be supplied by Railways. The Contractor has to draw the drawings in Auto Cad very carefully and submit one copy of check print along with the soft copy in CD. The drawings shall be checked and returned by Railways indicating corrections if any. The corrections have to be made and final copy submitted in A3/ A2/ U size as required by Railways along with the final soft copy in CD. The hard copy given by Railways have to be returned back without any damage. The size of sheet given in the unit column is for the hard copy given by Railways.a)Preparation of soft copy in AUTO CAD from A3 size hard copy	per A3 sheet	20	218.30	4366.00

10	02_2	Supply of data logger with 512 digital and 96 Analog inputs as per RDSO spec .no IRS-S-99/2006 or latest including Power Supply and Back-up arrangements(This work does not includes wiring of inputs from Relay to Intermediate tag block & from intermediate tag block to Datalogger equipment) (Inspection by RDSO)	Nos	6	494420.00	2966520.00
11	02_8	Supply of Fault Analysis Terminal for analysis of fault and generating reports for Datalogger installed at stations. As per Technical Specifications.(Inspection by Consignee)	Nos	1	54723.27	54723.27
12	02_9	Supply of Protocol Converter suitable for Electronic Interlocking system equipment.(Inspection by RDSO)	Nos	6	68051.41	408308.46
13	02_10	Supply of Dual Card RS232 to EI/OFC converter suitable to insert in the Datalogger Eurorack for inter-linking Datalogger/MFEP. (Inspection by RDSO)	Nos	6	45367.61	272205.66
14	02_20	Supply of isolation transformer 600:470 ohms as per IRS TC 76-2001 amd 1 or latest.(Inspection by Consignee)	Nos	6	791.12	4746.72
15	02_23	Supply, Installation, Testing and Commissioning of Failure Alarm SMS system integrated with Datalogger. This includes a) Software and configuring the SMS features in the NMDL/CMU. b) GSM Modem for Each Network. c)PCI Serial Port Adopter card.(Inspection by Consignee)	Set	1	142809.29	142809.29
16	02_26	Installation, testing and commissioning of 512 Digital & 96 Analog data logger. This includes transportation of materials to Site location and provision of Ladder and cable trough arrangements including connection to the BRC earth. Also includes carrying out of pre-commission checklist and Networking of datalogger. (This schedule doesn't cover wiring and preparation of Simulation chart)	Nos	6	29500.00	177000.00

17	02_33	Wiring of Relay Inputs to Wago Block and Wago block to Datalogger. Necessary Wagos required is included as per schedule.	Unit	1500	285.86	428790.00
18	02_34	Wiring of Analog Voltages from IPS Room to Datalogger. Necessary Wagos required is included as per schedule.	Nos	150	285.86	42879.00
19	02_35	Installation of Fault Analysis Terminal (for analysis of fault and generating reports for Datalogger installed at stations)	Nos	1	23452.83	23452.83
20	02_38	Installation of isolation transformer 600:470 ohms as per IRS TC 76-2001 or latest.	Nos	6	339.05	2034.30
21	03_1	Supply of indicative type Surge Protection Device as per RDSO Spec. No. SPN/165/ 2023, Version 4.0 Amdt.1 or latest (Lightning and Transient surge protection for power line). The system shall have stage1 (class B) and stage 2 (class C) type against Lightning electromagnetic Impulse configuration. The protection of Type 1 and 2 against Lightning electromagnetic Impulse (LEMP) and other high surge, shall be provided at the incoming of the power line at the stations, LC gates before the power equipment's as per the instructions of Engineer in-charge at site. Supply of surge protection with Potential free contacts shall be of approved make like OBO, DEHN, PHOENIX, LPT or better make. All other miscellaneous materials required for the work shall be supplied by the contractor. (as per Technical Specification enclosed)(Inspection by RITES)	Nos	6	22756.39	136538.34

22	03_2	Supply and Provision of indicative type Class D Surge Protection Device for 24V DC/48V DC (spark gap type), with Potential Free contacts and installed as per the instructions of the Engineer in charge at site (OBO, DEHN, PHOENIX, LPI, ZOTUP, HAKEL or better make). All other miscellaneous materials required for installation shall be supplied by the contractor.(Inspection by RITES)	Nos	35	6328.80	221508.00
23	03_3	Supply and Provision of indicative type Class D SPD of Operating Voltage of 110V AC/DC with Potential Free contacts and installed as per the instructions of the Engineer in charge at site (OBO, DEHN, PHOENIX, LPI,ZOTUP, HAKEL or better make). All other miscellaneous materials required for installation shall be supplied by the contractor.(Inspection by RITES)	Nos	35	6830.72	239075.20
24	03_4	Supply and Provision of Earthing as per RDSO Specification RDSO/SPN/197/2008 or latest (as per Technical Specification enclosed)(Inspection by RDSO)	Nos	35	28118.51	984147.85
25	03_5	Supply and Installation of Copper tape of size 25mm x 3mm for Down conductor from Franklin Rod to Maintenance free earth. This work includes installation of insulated standoffs at every 1 Mtr. interval for fixing the Copper tape. This work also includes Exothermic welding of Copper tape to the Franklin rod and the maintenance free earth for high conductivity. (All the materials required for the above work shall be supplied by the Contractor).(Inspection by Consignee)	Mtr	350	690.54	241689.00

26	03_6	Supply and provision of Earthing arrangements for EI/MSDAC buildings as per RDSO specifications as required for the EI system along with supply of all required materials. Earthing shall be carried out as per RDSO/SPN/197/2008 and RDSO Lr .No STS/L/SSI/CA/US&S Dt 26.07.2011 for Typical Earthing connections for EI. Painting of earthing diagram as replica of the ground on backside wall of relay room as per the instruction of Site In-charge.(Per unit= Per goomty/station)(Inspection by RDSO)	Per unit	6	291723.20	1750339.20
27	03_8	Supply of earth electrodes (GI) as per Drg no SG/CN/02/13.(Inspection by RDSO)	Nos	55	1618.75	89031.25
28	03_9	Provision of earth electrodes as per drawing No.SG/CN/02/13 and earthing of metallic sheath and armour of all cables in all apparatus cases, relay room, equipment room, SM's room for block and control, and earthing of all equipments in apparatus cases, power room, relay rack, cable termination rack, control panel, signals, lever frames with MS flat 35mmX6mm/19c cable (MS flat for closer by areas and MS flat/19c cable combination for farther areas) as per the instructions of Railway representative at site. The work includes painting of earth resistance value on the earth pit. (Supply of 19C cable is not covered in the scope of this schedule). [MS flat for earthing 35mmX6mm, cement, GI earth electrodes, common salt, charcoal, country bricks, M sand, soldering materials and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Nos	55	1707.55	93915.25

29	03_10	Full Location: Supply and fixing of GI Flat of size 1050x25x3mm as given in enclosed drawing to connect all cable armours to earth point with suitable nuts/bolts as given below. A) GI nuts/bolts of size 8x25mm with Two flat and one spring washer of 23set. B) GI nuts/bolts of size 12x40mm with two flat and one spring washer of 02set as per site in-charge.(Inspection by Consignee)	Per Location Box	42	1370.66	57567.72
30	03_11	Half Location: Supply and fixing of GI Flat of size 550x25x3mm as given in enclosed drawing to connect all cable armours to earth point with suitable nuts/bolts as given below. A) GI nuts/bolts of size 8x25mm with Two flat and one spring washer of 23set. B) GI nuts/bolts of size 12x40mm with two flat and one spring washer of 02set as per site incharge.(Inspection by Consignee)	Per Location Box	20	846.75	16935.00
31	03_12	Installation of 230V Class B & Class C Surge Protection Device. This includes transportation of materials to site. Installation to be carried out as per the direction of Railway Engineer. Necessary copper wire for Power Wiring and connecting the earth to be supplied as part of the schedule. All other miscellaneous materials required for installation shall be supplied by the contractor.	Nos	6	9752.74	58516.44
32	04_2	Supply of 12-Channel Earth Leakage Detector as per RDSO Specifications RDSO/SPN/256/2002 or latest. - 16 channel.(Inspection by RDSO)	Nos	8	150841.73	1206733.84
33	04_5	Supply of DC-DC Converter of Capacity 110V DC/24-40V, 5A as per RDSO Specifications RDSO/SPN/165 /2012 Ver 3.0 or latest.(Inspection by RDSO)	Nos	10	18095.30	180953.00
34	04_6	Supply of DC-DC Converter of Capacity 110V DC/24-40V, 10A as per RDSO Specifications RDSO/SPN/165 /2012 Ver 3.0 or latest.(Inspection by RDSO)	Nos	10	21381.60	213816.00

35	04_21	Supply and Fabrication of Power Equipment Stand at stations/Huts/Power room at station. As per drawing enclosed.(Inspection by Consignee)	Nos	6	26575.63	159453.78
36	04_30	Supply of Stackable type VRLA batteries 2V, 200Ah - 1 cell as per RDSO Specifications IRS S: 93/96 with Amnd 1 or latest.(Inspection by RDSO)	Nos.	240	4,074.88	977971.20
37	04_32	Supply, installation and wiring of 230/24V -1A transformer rectifier conforming to RDSO spec. IRS S 91/2014 with latest Amendment in power room for LVR.(Inspection by RDSO)	Nos	6	12,335.32	74011.92
38	04_35	Supply of IPS to suit 6 Line RE station as per RDSO Specifications RDSO/SPN/165 or latest (This schedule does not include Batteries) As per drawing enclosed.(Inspection by RDSO)	Set	5	13,07,398.11	6536990.55
39	04_40_b	Supply of Low maintenance secondary cells of the following capacities with necessary inspection as per specification/ drawing/ description enclosed in this document. b)Supply of Secondary cells - 2V-80AH capacity.(Inspection by RDSO)	Nos	302	3,379.20	1020518.40
40	04_40_e	Supply of Secondary cells - 2V-300AH capacity.(Inspection by RDSO)	Nos.	60	9,574.00	574440.00
41	04_41	Supply of track feed battery charger IRS:S 89–2013.(Inspection by RDSO)	Nos.	83	4375.25	363145.75
42	04_42	Supply of 'B type choke IRS:S 65–83.(Inspection by RDSO)	Nos.	166	2855.6	474029.60

43	04_51	Supply, fabrication and provision of suitable power equipment stand in the power room at stations (with more than 5 roads) using M.S. Angles 65mm x 65mm x 8mm and MS flats 50mmx6mm covered with 100mmx50mm hardwood reapers, installation of power equipments and wiring the same using wire PVC 7/1.4mm and 3/0.75mm copper as per approved wiring diagram, fabrication and installation of Power panel Box type using powder coated 16G MS sheet with inbuilt locking facility with a power distribution board fitted inside made of Phynolic synthetic industrial fibre base fine weave cotton fibre sheet of size 1200mm X 1200mm X10mm. Terminations using circuit breakers, HRC fuse blocks and PBT terminals shall be provided on the phynolic sheet. DIGITAL Voltmeters, ammeters and by pass switches shall be fitted on the front side of the MS power panel. This work includes installation of power distribution diagram board using phynolic sheet 6mm thick of size 1800mm x 1200mm with Aluminium grooved channel frame in the relay room.	Set	1	219668.82	219668.82

		The particulars shall be digitally using good quality laminated gum sheet.(Supply of power equipments is not covered in this schedule).[MS angles 65mmx65x8mm, Phynolic synthetic industrial fibre base fine weave cotton fibre sheet of size 1200x1200x10mm, Hard Wood planks for reapers 100x50mm, Power coated 16G MS sheet, teakwood base planks 25mm x 150mm and 50mm x 50mm for fixing cables,50mm, bolts & nuts required for manufacturing power panel & power rack, circuit breakers, HRC Fuses with base and carrier, ammeters, voltmeter- 3 Nos., bypass switches for stabilisers-63A capacity - 3 Nos., power distribution diagram board using phynolic sheet - 6mm thick of size 1200X1800mm with Aluminium grooved channel frame, paints, wire PVC 7/1.4mm and 3/0.75mm copper, and all other miscellaneous materials required shall be supplied by the Contractor.(Inspection by Consignee)				
44	04_52	Supply, fabrication and provision of suitable power equipment stand in the power room at stations (up to 5 roads) using M.S.Angles 65mmx65mmx8mm and MS flats 50mmx6mm covered with 100mmx50mm hardwood reapers, installation of power equipments and wiring the same using wire PVC 7/1.4mm and 3/0.75mm copper as per approved wiring diagram, manufacture of power panel using phynolic sheet 1200mm x 1200mm x 10mm and erecting it using MS angles 25mm x 25mm x 6mm and fixing of meters, stabilizer and ammeter by pass switches, HRC fuse blocks, PBT terminals	Set	4	161805.53	647222.12

		60mm centre and connecting the power equipments to the power panel as per approved power diagram, in the power room.This work includes installation of power distribution diagram board using phynolic sheet 6mm thick of size 1200mm x 1200mm with Aluminium grooved channel frame in the relay room. The particulars shall be digitally using good quality laminated gum sheet.(Supply of power equipments like battery charger, transformers, transformer rectifiers, voltage stabilisers, DC-DC convertor, invertors etc., is not included in this schedule).(Inspection by Consignee)				
45	04_53	Supply of Modular terminal block as per RDSO specification No 18/2004 or latest which consists as per following: a) 2 Conductor disconnect type terminal block as per Model No wago 280-870 or similar - 6 Nos b) End Plate type 280-374 suitable for disconnect terminal of Model No wago 280-870 or similar - 1 No c) End Stop terminal block type as per model no wago 249-117 or similar - 2 Nos d) Shorting Links (16A) as per Model wago 280-402 or similar - 1 No.(Inspection by RDSO)	Set	300	772.74	231822.00
46	04_54	Supply of Modular Terminal Block of 2.5sq.mm 2 IN 2 OUT type disconnect type of Wago/Phoenix make or similar along with accessories as per RDSO Spec.No. RDSO/SPN/189/2004/ rev 2 or latest.(Inspection by RDSO)	Nos	2000	194.95	389900.00
47	04_55	Supply of FUSE terminals block with LED indication upto 2.5sq.mm screw type 1 IN 1 OUT (Suitable 400mA, 630mA, 1A, 1.6A, 2A, 4A, 6.3A, & 10A) (Without Fuse) as per RDSO Spec.No.RDSO/SPN/189/2004/ rev 2 or latest.(Inspection by RDSO)	Nos	150	219.87	32980.50
48	04_56	Supply of DIN channel for the terminal.(Inspection by Consignee)	Mtr	60	344.87	20692.20
49	04_57	Supply of END plates for modular terminal block.(Inspection by Consignee)	Nos	30	36.86	1105.80

50	04_58	Supply of END clamp for modular terminal block.(Inspection by Consignee)	Nos	30	26.35	790.50
51	04_59	Supply of Shorting Link insulated Grey in color.(Inspection by Consignee)	Nos	60	21.20	1272.00
52	04_60	Supply of operating tool, screw driver and stripper for modular terminal. These tools shall be of Wago/Phoenix make or similar and model suitable for the modular terminal supplied.(Inspection by Consignee)	Nos	3	12,246.29	36738.87
53	04_61	Supply of FUSE links of (400mA, 630mA, 1A, 1.6A, 2A, 4A, 6.3A & 10A)(Inspection by Consignee)	Nos	150	61.74	9261.00
54	04_63	Supply of Distilled water for topping of secondary cells to be supplied at site, IS 1106.(Inspection by Consignee)	Ltr	200	11.08	2216.00
55	04_64	Supply of distilled water plant similar to `KILBURN' make capacity 3.5 to 4.5 Lits. per hour, with two detachable heating elements of 1500W each to work on 230VAC, single phase, fitted with automatic cut-outs and removable connectors, with Stainless Steel boiling chambers, condenser pipe, toughened glass lid; Distilled water plant, tank 200 Litres capacity similar to sintex make, GI pipe 25mm dia, power plug with socket, regulating valves, jelly, cement, sand and other materials shall be supplied by the Contractor.(Inspection by Consignee)	Nos.	1	25,774.20	25774.20
56	04_65	Installation of distilled water plant with provision of water supply connection from water tap to water tank, water tank to distilled water plant using G.I Pipes 25mm dia and with regulating valves, provision of separate power supply socket and wiring. This work includes fixing of 2 Nos. of rails on the wall and grouting as instructed by Railway representative at site. (Cut rails will be supplied by Railways).	Nos.	1	11,745.65	11745.65

57	04_67	Installation of 12-Channel Earth Leakage Detector. This includes transportation of materials to Site location and provision of cable trough arrangements including connection to the BRC earth. Also includes carrying out of pre-commission checklist.	Nos	8	13,725.36	109802.88
58	04_71	Installation of Power Panel for IPS Room.	Nos	7	7,246.46	50725.22
59	04_72	Commissioning of IPS, this schedule includes arrangement of OEM engineer for checking the Installation and carrying out adjustments of IPS modules and submission of Pre-commissioning checklist.	Set	5	59,000.00	295000.00
60	04_73	Installation, wiring and testing of IPS as per RDSO Specification No. RDSO /SPN /165 or latest. This work includes transporting the IPS from the Stores by loading without any damages and installation of the same at site. This also includes wiring of all modules, proper earthing of equipments and all other works connected for testing and commissioning of the same. Necessary powdered coated Aluminium ladder arrangements including cable trench, pipes, bolts, and other accessories is included in this schedule. [Earthing is not covered under this schedule]	Set	5	77,160.07	385800.35
61	04_77	Fixing of Modular terminal block/fuse block along with accessories with provision of fixing holes on hylam sheet/side angles of Location Box and fixing by Galvanized nuts and bolts. This includes fixing of DIN channel for cable termination on Modular terminal.	Nos	1000	28.97	28970.00
62	05_1	Supply of 24 Corex1.5 Sq.mm PVC insulated Armoured, unscreened underground Railway Signalling copper cable as per IRS: S-63/2014 REV.4(Inspection by RDSO)	Mtr	80000	388.15	31052000.00

63	05_2	Supply of 12Cx1.5 SQMM PVC insulated Armoured, unscreened underground Railway Signalling copper cable as per IRS: S-63/2014 REV.4.(Inspection by RDSO)	Mtr	55000	215.92	11875600.00
64	05_4	Supply of 2x2.5 sq.mm PVC insulated Armoured, unscreened, underground Railway Signalling Copper cable as per spec IRS.S.63/2014(Rev.4.0) or latest.(Inspection by RDSO)	Mtr	23500	98.76	2320860.00
65	05_7	Supply of 2x0.5 Sqmm (16/0.20) Flexible Annealed Tinned Copper (ATC) PVC Insulated Twin Twisted Un Sheathed Cable IRS:S: 76/89 with all latest amendments (Red & Black).(Inspection by RDSO)	Mtr	500	15.34	7670.00
66	05_8	Supply of 1x0.5 Sq.mm (16/0.20mm) Flexible ATC PVC Insulated Unsheathed Single Core Cable as per IRS:S: 76/89 with all latest amendments.(Inspection by RDSO)	Mtr	500	7.08	3540.00
67	05_11	Supply of 16 Sq.mm multistrand Flexible APC PVC insulated copper cable as per IS 694.(Inspection by RDSO)	Mtr	1000	228.14	228140.00
68	05_12	Supply of 35 Sq.mm multistrand Flexible APC PVC insulated copper cable as per IS 694.(Inspection by RDSO)	Mtr	1000	475.77	475770.00
69	05_13	Supply of 70 sq. mm multi strand Flexible APC PVC insulated copper cable as per IRS:S: 76/89 with all latest amendments.(Inspection by RDSO)	Mtr	500	814.20	407100.00
70	05_15	Supply of 60Cx1 mm Solid PVC Insulated, Binder Taped and PVC Sheathed Unarmoured Cable as per IRS:S:76/89 with all latest amendments(Inspection by RDSO)	Mtr	2500	696.20	1740500.00
71	05_16	Supply of Underground jelly filled 6 QUAD, 0.9MM Dia as per spec IRS:TC 30-05 with amd 5 or latest.(Inspection by RDSO)	Mtr	43000	301.05	12945150.00
72	05_17	Supply of 24 Fibre armoured OFC cable as per RDSO Specification RDSO/SPN/TC/ 110/2020 Rev. 0 or latest.(Inspection by RDSO)	Mtr	5000	95.23	476150.00
73	05_18	Supply of 48 Fibre armoured OFC cable as per RDSO Specification RDSO/SPN/TC/ 110/2020 Rev. 0 or latest.(Inspection by	Mtr	40000	126.32	5052800.00

		RDSO)				
74	05_20	Supply of Polythene Insulated Polythene Sheathed armoured Jelly Filled Telephone Cable with Poly-AL Moisture Barrier, 20 Pairs, 0.63 MM Conductor Diameter as per RDSO Specification No. IRS:TC-41/97 with amendment 1 or latest.(Inspection by RDSO)	Mtr	2000	258.20	516400.00
75	05_21	Supply of Polythene Insulated Polythene Sheathed armoured Jelly Filled Telephone Cable with Poly-AL Moisture Barrier, 50 Pairs, 0.63 MM Conductor Diameter as per RDSO Specification No. IRS:TC-41/97 with amendment 1 or latest.(Inspection by RDSO)	Mtr	1500	354.74	532110.00
76	05_22	Supply of FCPC To SCPC 5 meter long patch cords with 0 db adaptors as TEC spec G/OJC-O1/03 JAN 99 or latest.(Inspection by Consignee)	Mtr	30	832.51	24975.30
77	05_23	Supply of OFC Patch cord (FC-PC/SC-PC/LCPC to FC-PC/SC-PC/LC-PC so as to suit for switches and FMS supplied).(Inspection by Consignee)	Mtr	30	374.03	11220.90
78	05_25	Supply of switch board cable, finolex/Deltron make or better 0.5mm, 20 pair conforming to IRS/TC/24-91.(Inspection by Consignee)	Mtr	3000	102.81	308430.00
79	05_27	Supply of UTP Cable /CAT6/6A cable ETL or UL or CE3P certified panduit or Systimax or R&M or AMP or Molex or Krone Or D-Link Makes.(Inspection by Consignee)	Mtr	3300	34.73	114609.00
80	05_28	Supply of PVC insulated, unsheathed, Flame retarding type Single core flexible wire 16/0.2 mm dia. With annealed, tinned copper conductor of colour code (Red =50% ,Black=50%,) as per IRS-S-76/89 Amd-3(with amdt. upto date if any).(Inspection by Consignee)	Mtr	10000	6.83	68300.00
81	05_30	Supply and fixing of 20 pair Krone module housed in MS box and termination of Cables. (Inspection by Consignee)	Nos	5	3962.00	19810.00
82	05_32	Supply and fixing of 20 pair CT box and termination of cables.(Inspection by Consignee)	Nos	9	4761.16	42850.44

83	05_36	Supply of 10way Annunciator with Push button switches and having conference facility. Model No AM-10 similar to Epsilon, Telelinks or better.(Inspection by Consignee)	Nos	1	17790.89	17790.89
84	05_37	Supply and provision of normal joint using Thermo shrink jointing kit (RDSO specs No TC/77/2012 (Rev.3) with amendment No.1&2 or latest. & jointing kit to be inspected by RDSO) for 4/6 quad cable normal joint. The work includes excavation of joint pit of size 1mX1.5mX1.5m and closing the same after completion of cable joint as per the instruction of Railway representative at site.(Inspection by RDSO)	Nos	28	4,628.91	129609.48
85	05_38	Supply and provision of derivation joint complete for 6 Quad cables using thermoshrink jointing kit for LC's/stations.(Inspection by RDSO)	Nos	4	4,901.27	19605.08
86	05_39	Supply and installation of 24 Fibre Joint enclosure for armoured optical fibre cable conforming to RDSO spec.RDSO/SPN/TC/68/2014 rev2.0 or latest.(Inspection by Consignee)	Nos	8	13,647.37	109178.96
87	05_40	Supply and installation of 48 fibre Joint enclosure for armoured optical fibre cable conforming to RDSO spec.RDSO/SPN/TC/68/2014 rev2.1 or latest.(Inspection by Consignee)	Nos	20	20,060.00	401200.00
88	05_41	Supply of RCC cable markers (Supply of RCC cable markers as per drawing No.CSTE/CN/OFC/1. The lettering on the cable marker shall be "SIG"/"TELE"/"OFC" as per the instructions of Railway representative at site.) as per drawing enclosed.(Inspection by RITES)	Nos.	330	262.65	86674.50

89	05_42	Preparation of Cement concrete for covering of GI Pipes/cables. Providing & Laying in position cement concrete of specified proportion including cost of cement, centering and shuttering with 1:3:6 composition 1 Cement: 3 Sand: 6 grade stone aggregate 25mm nominal size) (Cement, M-Sand, stone jelly of 25mm and all other misc materials required for the work should be supplied by Contractor).	CUM	2000	9361.46	1872292 0.00
90	05_43	Laying of STP/OFC/Power Cable/ switch board (10 pair/ 20 pair/50 pair) Cables in 1" PVC conduit/case caping and clamping on the wall/Roof tops/ Shelters with suitable clamping and hose to be provided where ever bends/ curves (PVC conduit/ Case capping and other accessories to be supplied by the contractor)	Mtr	3500	37.30	130550.0 0
91	05_44	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 1.0 Mtrs and to a width of 0.3 Mtrs. (Laying of cables is not included in this schedule)	Mtrs	13000	64.10	833300.0 0
92	05_45	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 0.5 Mtrs and to a width of 0.3 Mtrs. (Laying of cables is not included in this schedule.)	Mtrs	1000	32.05	32050.00
93	05_46	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 1.0 Mtrs and to a width of 0.5 Mtrs. (Laying of cables is not included in this schedule.)	Mtrs	1000	79.51	79510.00

94	05_47	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 0.5 Mtrs and to a width of 0.5 Mtrs. (Laying of cables is not included in this schedule.)	Mtrs	500	39.82	19910.00
95	05_50	Breaking of Platform concrete having 0.3 feet thickness - 0.5 feet thickness and to a width of 0.3 Mtr using cutter machine and removal of RCC slabs on the Passenger Platform, trenching to a depth of 0.6m to accommodate the additional cables, replacing the slabs removed after the cables are laid and replastering with cement mortar, refilling the trench by ramming and consolidating it as per the instructions of Railway Representatives at site. (Laying of cables is not included in this schedule).	Mtrs.	400	2224.44	889776.00
96	05_51	Excavation of trench along route of existing cable duct, opening the slabs to accommodate additional cable laying, REPOSITIONING the slabs removed after the cables are laid and PLASTERING with cement mortar, and refilling the trench by ramming and consolidating it as per the instructions of Railway Representatives at site. (Laying of cables is not included in this schedule.) [Cement, M Sand and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Mtrs.	500	161.92	80960.00

97	05_52	Excavation of trench to a depth of 1 Mtr. for track crossing of cables, refilling of trench by ramming and consolidating it as per the instructions of Railway representative at site after laying of DWC/RCC pipes. During excavation of trench, it has to be ensured that the excavated soil does not mix with the ballast available. The depth of 1m trench shall be from the bottom of sleepers for track crossings. Laying of cables and DWC pipes is not included in this schedule. (Supply of DWC/RCC pipes with couplers/collars is not included in this schedule).	Mtrs	2000	385.45	770900.00
98	05_53	Excavation of trench to a depth of 1 Mtr. for road crossing of cables, laying of DWC/ RCC pipes with collar/ coupling, refilling of trench by ramming and consolidating it and resurfacing it to the original position. Laying of cables is not included in this schedule. (Supply of DWC/RCC pipes with couplers/collars is not included in this schedule).	Mtrs	100	501.03	50103.00

99	05_54	Provision of GI pipes (50/100mm dia) for cable laying with offset at both ends and with couplings over RCC bridges, drainage, culverts, and girder bridges. For RCC bridges, drainage, and culverts, the pipes shall be mounted on concrete masonry supports of size 300mm x 300mm x 300mm at an interval of 2 meters. For girder bridges, the pipes shall be fixed on suitable MS clamps at an interval of 2 meters. The ends of the pipes shall be closed with brick masonry abutments to ensure that no cable is exposed. The work shall be carried out as per the instructions of the Railway representative at the site. (Supply of GI pipes with couplings and laying of cables is not included in this schedule).Stone jelly (20/25mm size), bricks, sand, cement, MS angles, flats, bolts,nuts for manufacturing and fixing clamps, bricks, M sand, cement, and other miscellaneous materials for the work shall be supplied by the contractor.	Mtrs.	620	208.54	129294.80
100	05_56	Provision of GI pipes 50mm/100mm dia on excavated trenches/platforms/over the ground without abutments and supports.	Mtrs	108	118.22	12767.76
101	05_58	Provision of GI pipes (50/100mm dia) for cable laying in hard rocky area with off sets at both ends duly supported by concrete blocks of size 300mm x 300 mm x 300 mm at an interval of 2m. The ends of the pipes shall be closed with brick masonry abutments work so that no cable is exposed, The work shall be carried out as per the instructions of Railway representative at site. (Supply of GI pipes with couplings and laying of cables is not included in this schedule). [Stone jelly of size 20/25mm, bricks, sand, cement, and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Mtrs.	3000	182.87	548610.00

102	05_59	Laying of signaling/power/telecommunication cables as per cable plan in cable trenches, masonry ducts, RCC Pipes, DWC pipes, GI Pipes etc. (Supply of cables is not included in this schedule).	Mtrs.	246500	18.18	4481370.00
103	05_63	Refilling of cable trench 1m depth by 0.3m width throughout, with earth after laying of cables, and consolidating the trench by ramming and levelling.	Mtrs.	13000	15.40	200200.00
104	05_64	Refilling of cable trench 0.5m depth by 0.3m width throughout, with earth after laying of cables, and consolidating the trench by ramming and leveling.	Mtrs	1000	7.77	7770.00
105	05_65	Refilling of cable trench 1m depth by 0.5m width throughout, with earth after laying of cables, and consolidating the trench by ramming and levelling.	Mtrs.	1000	19.29	19290.00
106	05_66	Refilling of cable trench 0.5m depth by 0.5m width throughout, with earth after laying of cables, and consolidating the trench by ramming and levelling.	Mtrs.	500	9.30	4650.00
107	05_68	Digging of pit to a depth of 800mm of size 300mmX300mm, casting of concrete foundation of size 300mmX300mmX300mm and Placing of RCC cable markers on top of the foundation and refilling the pit and consolidating it by ramming. The cable markers shall be provided at an interval of 20 Mtrs. within station limits and 50 Mtrs. outside station limits throughout the cable route, diversions and also at every track/road crossing.	Nos.	330	123.35	40705.50

108	05_69	Excavation of cable coil pit to a size of 1.5mx1.5m and depth as instructed by Railway representative at site, for coiling the cables in rear of relay rooms/ AFTC huts, apparatus cases etc. The work includes coiling the underground cables and placing closely one layer of country bricks of size approx. 220mm x 100mm x 60mm breadth wise above the cables to cover all the cables in the cable pit, closing and consolidating the pit by ramming and levelling. [Country bricks of size 220mmx100mmx60mm (approximately) shall be supplied by the Contractor].	CUM	100	949.05	94905.00
109	05_71	Cutting of rock to a depth of 200 mm and width of 200 mm where rock is visible from surface to a depth more than 300 mm up to 550mm, excavation of trench with width 300mm above rock concreting 200mmx200mm after laying of cable with/1cement: 2sand : 4graded stone aggregate 20mm nominal size and curing of concrete to the required number of days, refilling with excavated soil ramming and consolidation except in bridges, culverts, level crossings, track crossings, cable pits, rocky soil including marking of cable alignment, clearing of debris etc., complete to the finished item of work as directed by site in charge. Drg No.SK/CN/NEW/3. All the material is to be arranged by contractor	Mtr	1000	314.85	314850.00

110	05_72	Road crossing/ Track Crossing through Horizontal Drilling at approximately depth of 1.5 to 2m below the formation level of the earth including insertion of HDPE pipe/DWC pipe along with couplers, drawl of cable (or) direct drawl of cables etc. (Note: The pilot used for HDD should be of sufficient size to suit insertion of HDPE /DWC pipe of size 120mm (outer dia.) or direct drawl of three cables (Signalling/Power/Quad/OFC) or three nos.of 40mm dia HDPE pipe or any other combination as directed by the site engineer) (Supply of HDPE pipe is not covered in this schedule)	Mtr	1250	1351.45	1689312.50
111	05_74	Blowing/Drawing of OFC cable/Power cable/Signalling cable inside permanently solid lubricated HDPE Pipe already laid. This work includes necessary duct integrity test for solid lubricated HDPE pipe. (This includes Transportation of materials from nominated stores to site)	mtr	45000	23.43	1054350.00
112	06_1	Supply of Main LED Signal Aspect - Green as per RDSO Specifications No.RDSO/SPN/199/2010 Rev1.1 or latest.(Inspection by RDSO)	Nos	35	10,030.00	351050.00
113	06_2	Supply of Main LED Signal Aspect - Yellow as per RDSO Specifications No.RDSO/SPN/199/2010 Rev1.1 or latest.(Inspection by RDSO)	Nos	50	8,850.00	442500.00
114	06_3	Supply of Main LED Signal Aspect - Red as per RDSO Specifications No.RDSO/SPN/199/2010 Rev1.1 or latest.(Inspection by RDSO)	Nos	60	9,233.50	554010.00
115	06_5	Supply of subsidiary Signal Aspect - Route LED as per RDSO Specifications SPECIFICATION NO. RDSO/SPN/153/2023 Revision 5.0 or latest.(Inspection by RDSO)	Nos	150	5,703.33	855499.50
116	06_6	Supply of subsidiary Signal Aspect - Calling on LED as per RDSO Specifications SPECIFICATION NO. RDSO/SPN/153/2023 Revision 5.0 or latest.(Inspection by RDSO)	Nos	55	5,726.13	314937.15

117	06_7	Supply of subsidiary Signal Aspect - Shunt LED as per RDSO Specification SPECIFICATION NO. DSO/SPN/153/2023 Revision 5.0 or latest.(Inspection by RDSO)	Nos	55	5,740.70	315738.50
118	06_9	Supply of Multi Lamp Route indicator (LED Double Digit) from 1 to 9 with white LED (With Housing) as per technical specification.(Inspection by RDSO)	Nos	2	64900.00	129800.00
119	06_14	Supply and provision of Screening arrangement for Signals in RE area as per standard practice. The work comprises of providing MS angle frame and wire mesh in order to avoid close proximity of OHE wires. The work also includes provision of earthing wire using 4 SWG GI wires from the screening arrangement up to surface base as per the instructions of Railway representative at site. [All materials required for this work shall be supplied by the Contractor].(Inspection by Consignee)	Nos.	2	1880.71	3761.42
120	06_15_a	Supply of Colour light Signal pole 140mm dia, 4.6m/3.6m tall with necessary inspection as per specification/drawing/description enclosed in this document. a)Supply of colour light Signal pole 4.6m tall and 140 mm dia(Galvanised).(Inspection by RITES)	Nos.	30	5,841.00	175230.00
121	06_15_b	Supply of colour light Signal pole 3.6m tall and 140 mm dia (Galvanised).(Inspection by RITES)	Nos.	15	4,737.70	71065.50
122	06_16	Supply of surface base to suit CLS Signal pole 140mm dia with necessary inspection as per specification/drawing/description enclosed in this document.(Inspection by RITES)	Nos.	30	6,814.50	204435.00
123	06_17_a	Supply of ladder with platform and shoes to suit CLS pole 4.6m/3.6m tall, with necessary inspection as per specification/drawing/ description enclosed in this document. a) Supply of ladder with platform (4.6m) for CLS(Galvanised).(Inspection by RITES)	Nos.	30	5,698.00	170940.00

124	06_17_b	Supply of ladder with platform (3.6m) for CLS(Galvanised).(Inspection by RITES)	Nos.	15	5,494.50	82417.50
125	06_18	Supply of post type shunt signal - complete with hood etc., with necessary inspection as per specification/drawing/description enclosed in this document.(Inspection by RITES)	Nos.	30	5,087.50	152625.00
126	06_19	Supply of Ground type shunt signal - complete with surface base, signal pole, hood etc., with necessary inspection as per specification/drawing/ description enclosed in this document.(Inspection by RITES)	Nos.	35	7,463.50	261222.50
127	06_20_a	Supply of Colour Light Signal Multi Unit type - complete for 4/ 3/ 2 aspect with mounting socket, with necessary inspection as per specification/drawing/description enclosed in this document. a)Supply of colour light Signal unit (4 aspect)(Inspection by RITES)	Nos.	2	19,470.00	38940.00
128	06_20_b	Supply of colour light Signal unit (3 aspect)(Inspection by RITES)	Nos.	25	16,874.00	421850.00
129	06_20_c	Supply of colour light Signal unit (2 aspect)(Inspection by RITES)	Nos.	25	14,278.00	356950.00
130	06_21_a	Supply of Junction type route indicator – 5 unit arm – 1/2/3/4/5/6 way with mounting sockets, with necessary inspection as per specification/ drawing/description enclosed in this document. a)Supply of Junction type route indicator - 1 way(Inspection by RITES)	Nos.	11	15,121.70	166338.70
131	06_21_b	Supply of Junction type route indicator - 2 way(Inspection by RITES)	Nos.	6	18,691.20	112147.20
132	06_21_c	Supply of Junction type route indicator - 3 way(Inspection by RITES)	Nos.	1	22,260.70	22260.70
133	06_22_a	Supply of Calling On Signal / 'A' marker light - complete with necessary inspection as per specification/drawing/ description enclosed in this document. a)Supply of Calling On Signal(Inspection by RITES)	Nos.	20	3,663.00	73260.00

134	06_23_a	Supply of Off-set brackets - large/small made of cast iron with necessary inspection as per specification/drawing/ description enclosed in this document. a)Supply of Off set bracket - large(Inspection by RITES)	Nos.	40	3,569.50	142780.00
135	06_23_b	Supply of Off set bracket - small(Inspection by RITES)	Nos.	30	2,645.50	79365.00
136	06_24	Supply of cable termination box (FRP type) with necessary inspection as per specification/ drawing/ description enclosed in this document.(Inspection by RITES)	Nos.	13	7,788.00	101244.00
137	06_27	Supply of Signal post telephone with facility of paging and talk-back including voice communication equipment with suitable switching arrangement at the Signal post and at SM's room as per specification enclosed in this document. This includes drawl of tail cable through GI pipe 25mm dia and 2 mtrs long duly clamped to Signal post with bend as required at site, termination of tail cable at one end in the apparatus case and other end in the console. In the SM's room, console shall be fixed on a table top. The wiring shall be done using wire PVC 16/0.2mm copper. [Talk-back equipment complete including housing box, wire PVC 16/0.20mm and all other miscellaneous materials required for the work shall be supplied by the Contractor].(Inspection by RDSO)	Nos.	6	11,897.35	71384.10
138	07_1	Supply of plug-in type, Style QL1, Magnetically Latched Neutral Line 24V DC, 11F/4B contacts Relay complete with plug board (base plate), connectors and retaining clips and conforming to BRS 935A and RDSO Spn. No IRS S-34 and S-23 or latest. The interlocking code for this unit shall be "ABDEG".(Inspection by RDSO)	Nos	80	7,076.52	566121.60

139	07_3	Supply of Relay Non – AC immune plug in type Style 'QN1K' DC neutral line, 24V 1000 ohms 6F.6B contacts front contacts metal to carbon & back contacts metal to metal/carbon complete with plug board retaining clip and connectors conforming to BRS:930, IRS:S- 34 & IRS:S-23 and RDSO Spec. STS/E/Relays/UEA(PI) dt. 30.5.97 (Annexure-1) (as applicable). The interlocking code for this unit shall be BDEKX.(Inspection by RDSO)	Nos	10	4,720.00	47200.00
140	07_6	Supply of Relay, AC Immune, plug-in-type, Style 'QNA1K', DC Neutral line, 24V, 1000 ohms 6F.6B, contacts, front contacts metal to carbon and back contacts metal to carbon, complete with plug board, retaining clip & connectors conforming to BRS:931A, IRS:S60, IRS:S 34, IRS:S 23 & RDSO Spec. No. STS/ E/Relays/UEA (PI) dt.30.05.97 (Annexure-II) (as applicable). The interlocking code for this unit shall be CDEKY.(Inspection by RDSO)	Nos	10	5,890.80	58908.00
141	07_7	Supply of Plug in Type Q-Series Relay QBAT (2F/2B)(Miniature, Tractive armature, AC Immune, D.C Biased Track Relay) A.C. immunity level of 80 Volt A.C, coil nominal resistance of 9 Ohms, confirming to BRS spec no. 939A & 966F2 and RDSO specification No. 84/88 or latest. The interlocking code for this unit shall be "ABEJX".(Inspection by RDSO)	Nos	10	9,858.79	98587.90
142	07_8	Supply of KLCR relays 24V, ACI (Supply of Key Lock Checking Relay (KLCR) with one number K-50 neutral Relay to work on 24V DC non AC immunized as per specification No.RDSO/SPN/219/2016 Ver 1.0 with Amdt-1 or latest (with one extra ward plate and with case) contact configuration-4F/4B and as per IRS:S-23, IRS:S:34, IRS:46 or latest.(Inspection by RDSO)	Nos	30	10,722.72	321681.60

143	07_11	Supply of Relay, Non-AC Immune, plug-in type, Style 'QN1', DC neutral line, 24V, 8F.8B contacts front and back contacts metal to carbon with plug board, retaining clip & connectors confirming to BRS:930, IRS:S 34 & IRS:S 23 or latest. The interlocking code for this unit shall be ABDEF.(Inspection by RDSO)	Nos	480	4,366.63	2095982.40
144	07_13	Supply of Relay, AC Immune, plug-in-type, Style 'QNA1', DC Neutral line, 24V, 8F.8B contacts, front and back contacts metal to carbon, with plug board, retaining clip and connectors confirming to BRS:931A, IRS:S 60, IRS:S 34 and IRS:S 23 or latest. The interlocking code for this unit shall be ABDGH.(Inspection by RDSO)	Nos	600	4,639.03	2783418.00
145	07_17	Supply of Relay rack universal type as per drg.No.S&T/ MFT/ 291 with scaffolding, POWDER COATED with stainless steel nuts and bolts for fixing the racks. Supporting angles, frame mounting triangle base with 'J' bolts and insulation of required numbers complete to suit QN1 / K-50 pre wired tag blocks with suitable inner frames. b) 2 way.(Inspection by RITES)	Nos	9	16,459.48	148135.32
146	07_18	Supply of electronic time delay units (120/60 secs) with plug boards, connectors and retaining clips with necessary inspection as per specification/ drawing/ description enclosed in this document.(Inspection by RDSO)	Nos.	10	2,742.03	27420.30
147	07_19	Supply of lamp proving relays (QECX-61) for LED aspects with plug boards, connectors and retaining clips with necessary inspection as per specification. (Inspection by RDSO)	Nos.	245	5,901.50	1445867.50
148	07_20	Supply of QBCA1 - heavy duty contact relays with necessary inspection as per specification. (Inspection by RDSO)	Nos.	63	6,613.75	416666.25
149	07_21	Supply of Computer based Relay Testing Kit suitable for testing all types of Relays.(Inspection by RDSO)	Nos	1	3,54,000.00	354000.00

150	07_22_a	Manufacture and supply of M.S. relay frames of suitable size to hold up to 4/8/12/ 20 relays/plug in type as required by Railways and fixing them in apparatus cases for all types of signal control circuits, LC gate control circuit and Point control circuits, fixing of plug boards, relays, resistors and electrolytic condensers on Phynolic synthetic industrial fibre base fine weave cotton fibre sheet - 6mm thick to IS specification 2036 - 1995 - Type F5, wiring and termination as per approved circuit diagram and painting the particulars. [Wire PVC copper, 3/0.75mm and 16/0.2mm copper, Phynolic synthetic industrial fibre base fine weave cotton fibre sheet - 6mm thick to IS specification 2036 - 1995 - Type F5, for fixing resistors and condensers, MS flats 25mmx6mm brass bolts and nuts, paints, soldering materials, resistors, condensers and all other miscellaneous materials required for the work shall be supplied by the contractor].a. Wiring of Signal/point/LC control circuit (up to 4 relays/Plug in type)	Set	15	4,945.51	74182.65
151	07_22_b	b.Wiring of Signal/Point/ LC control circuit (up to 8 relays/plug in type)	Set	13	8,786.26	114221.38
152	07_22_c	c.Wiring of Signal/ Point/ LC control circuit (up to 12 relays/plug in type)	Set	3	11,355.02	34065.06
153	07_22_d	d.Wiring of Signal/ Point/ LC control circuit (up to 20 relays/plug in type)	Set	6	13,597.41	81584.46
154	07_23	Supply of QTA2 - track relays with plug boards, connectors and retaining clips with necessary inspection as per specification.(Inspection by RDSO)	Nos.	73	4,070.00	297110.00
155	07_24	Supply of QSPA1 type relays with plug boards, connectors and retaining clips with necessary inspection as per specification/drawing.(Inspection by RDSO)	Nos.	78	7,139.00	556842.00

156	07_26	Supply of relay rack to hold 168 relays, with necessary inspection, as per specification/drawing.(Inspection by RITES)	Nos.	12	40,700.00	488400.00
157	07_27	Supply of powder coated FTOT of 500 capacity.(Inspection by RITES)	Nos	5	50,593.80	252969.00
158	07_28	Supply of powder coated FTOT of 210 capacity.(Inspection by RITES)	Nos	2	41,627.08	83254.16
159	07_32	Fabrication and Supply of box suitable for 8 Nos of KLCRs.	Nos	2	28,143.00	56286.00
160	07_33	Fabrication and Supply of box suitable for 4 Nos of KLCRs.	Nos	15	15009.60	225144.00
161	07_34	Erection of Relay Rack 1way/2way/4way with scaffolding suitably concreting tri-pod bases using J-bolts, fixing rack supporting of size 50x50x6mm on to the wall. Reel insulators are to be provided for insulating the rack from the scaffolding & tri-pod bases. (Payment based on number of equivalent 1way relay racks) (per Unit = Per 1way Relay Rack)	Per Unit	12	596.38	7156.56
162	07_36_a	Concreting and erection of cable termination rack 500/210/140 Terminals capacity on teakwood base frame of size 50mmx150mm of suitable length and width with rectangular slot in the centre for taking in the cables and painting as per standard practice. (Supply of cable termination racks are not included in this schedule). [Foundation bolts and nuts with washers, cement, sand, stone jelly, teak wood base frame 50mmx150mm of suitable length and breadth, paint, varnish and all other miscellaneous materials required for the work shall be supplied by the contractor]. a)Concreting and erection of cable termination rack 140/210 capacity.	Nos.	4	9752.74	39010.96
163	07_36_b	Concreting and erection of cable termination rack -500 terminal capacity	Nos.	5	13668.26	68341.30

164	07_37_a	Fixing of PBT terminal block/ PBT fuse block, rubber grommets, clamping of cables using teakwood cable clamps and base planks, termination of cables, provision of ND type fuses of required capacities, provision of copper bus bar for supply terminals, wiring, provision of termination particulars diagram board using plywood of thickness 12mm - teakwood finish of size 1800mm x 1200mm with Aluminium grooved channel frame in the relay room. The blank spaces over the top of the cable termination rack shall be covered with phynolic sheet of thickness 3mm wherever required. The termination and cable core particulars shall be painted on the PVC/ nylon sleeves. The work also includes identification of cables using aluminium tags provided on each cable with letters punched neatly.	Per Terminal Block	4400	167.99	739156.00
		(Supply of PBT terminal blocks 25mm & 60mm centers and PBT Fuse blocks is not covered in the schedule) [Wire PVC 3/0.75mm copper, brass bolts and nuts and washers, for fixing PBT terminal/Fuse Block, other fixing bolts and nuts, rubber grommets, PVC/ Nylon sleeves, copper bus bars, teakwood 50mm x 50mm for cable clamps, 25mmx 100mm for base planks, phynolic sheet 6mm thick of size 1200mm x 1800mm with aluminium grooved channel frame, phynolic sheet 3mm thick, paint and all other miscellaneous materials shall be supplied by the Contractor]. a) Fixing of PBT terminal blocks (25mm/60mm centre) and termination				
165	07_37_b	Termination using PBT fuse block in cable termination rack.	Per Fuse Block	350	201.27	70444.50

166	07_38_a	Concreting and erection of Relay racks-168/56 relay capacity using 'J' type bolts and painting of relay rack as per the instructions of Railway representative at site.(Supply of relay rack is not covered in this schedule). ['J' type bolts and nuts with washers, nylon bushes, concreting materials, paint and all other miscellaneous materials required for the work shall be supplied by the Contractor].a)Concreting and erection of relay rack - 168 capacity	Nos.	14	6818.18	95454.52
167	07_39	Fixing of plug boards, 50 way terminal blocks with 2BA terminals, and wiring of relays as per the approved circuit diagram using wire PVC 16/0.2mm copper. Suitable wire supporting tray with cover made of PVC shall be provided horizontally and vertically in the relay racks.. While running the wires on the aluminium ladder proper care shall be taken to provide smooth materials like rubber beading in the openings on Phynolic sheets, to avoid damage to wires. The work also includes wiring of contacts for data logger and terminating them in tag blocks, provision of relay index board. (Supply of relays, plug boards, connectors and retaining clips is not covered in this schedule). [Wire PVC 16/0.2mm copper, tag blocks, 2BA terminals, hard wood plank of size 600mmx 900mmx25mm with decolum finish, MS angles of size 25mmX25mmX6mm, relay fixing bolts and nuts, teakwood plank 25mm thick for fixing resistors and condensers, phynolic sheet 6mm thick of size 1200mmX1800mm with aluminium grooved channel frame for relay index board, paints, soldering materials, bunching thread, wire wound resistance, condenser, wire supporting tray with cover of suitable size made of PVC, paint, varnish and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Per Relay	25	1045.76	26144.00

168	07_40	Fixing of additional plug boards, 50 ways terminal blocks and wiring of additional relays as per the approved circuit diagram using wire PVC 16/0.2mm copper. Additional wire supporting tray with cover made of PVC shall be provided wherever required. Alterations to Relay particulars shall be incorporated in the relay Index board. (Supply of relays, plug boards, connectors and retaining clips and 50 way terminal boards is not covered in this schedule).[Wire PVC 16/0.2mm copper, 2 BA terminals, teakwood plank 25mm thick for fixing resistors and condensers, soldering materials, bunching thread, wire wound resistance, condenser, wire supporting tray with cover of suitable size made of PVC, paint, varnish and all other miscellaneous materials required for the work shall be supplied by the Contractor]	Per Relay	50	726.50	36325.00
169	07_41	Carrying out alterations to the existing relays in the relay racks/apparatus cases as per the approved circuit diagram using wire PVC 16/0.2mm copper. The work includes painting alterations and releasing the unwanted wires carefully without disturbing the existing wiring. [Wire PVC 16/0.2mm copper, soldering materials, bunching threads, condensers, resistances and teakwood plank for fixing them and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Per Relay	75	695.67	52175.25

170	07_42_b	Provision of Interconnections between relay racks, cable termination racks, SM's control panel, battery room, power room, termination and wiring. The work involves laying of underground cables in the duct as well as with clamping arrangements on the walls, supply and fixing of aluminium ladders and supports with 3mm thick phynolic sheet for running the cables in the relay room. Interconnection shall be carried out with signaling multi core cable (skinned/ unskinned) and power cables as per the instructions of Railway representative at site. The work also include termination of the interconnection cables on 50 way terminals in the relay rack/ control panel, cable termination rack etc. After the interconnection cables are laid, the ducts shall be filled with M sand and closed.	LS	1	147833.50	147833.50
171		Wherever required the cables shall be taken to other floors in the building by clamping them on MS angles and flats grouted on the walls. (Supply of interconnection cables is not included in this schedule). [2BA terminals, Aluminium ladder arrangements using 37mmx37mmx5mm aluminium angles and 25mmx6mm aluminium flats, aluminium supports, phynolic sheet - 3mm thick for bottom of aluminium ladders, MS angles and flats, bolts and nuts, concreting materials, and all other materials required for the work shall be supplied by the contractor]. b) Provision of interconnection - more than 5 roads (same floor)				
172	7_42_c	c) Provision of interconnections -more than 5 roads (different floors)	LS	1	175746.30	175746.30

173	08_1	Supply of aspiration type smoke detector. Highly sensitive smoke aspiration system for Monitoring of rooms and equipment's for earliest possible fire detection For Relay rooms as per RDSO spec No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	5	708081.12	3540405.60
174	08_2	Supply of single Loop Analog addressable Fire Alarm system with loop capacity of connecting maximum 50 devices. The panel shall have a built in power supply and battery charger RDSO Spec. No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	5	311682.08	1558410.40
175	08_3	Supply of Multi Sensor detector Dual Optical/ Thermal as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	90	16042.23	1443800.70
176	08_4	Supply of Addressable Single action indoor manual call point with back box (RED) as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	5	9494.38	47471.90
177	08_5	Supply of Sounder having range of 81 dbA to 92 dbA as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	5	11420.51	57102.55
178	08_6	Supply of Intelligent addressable Monitor module as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	20	9494.38	189887.60
179	08_7	Supply of Intelligent addressable control module as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	1	9494.38	9494.38
180	08_8	Supply of Auto-dialer for SMS alarm generation & routing in case of Fire Alarm to concerned persons as per RDSO No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	5	43931.48	219657.40

181	08_9	Supply of 2core 1.5sq.mm FRLS Copper unarmoured cable as per RDSO specificationsNo.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Mtrs	1200	296.94	356328.00
182	08_10	Supply of LHS Cable RDSO Spec. No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Mtrs	250	2246.07	561517.50
183	08_11	Supply of LHS control module.RDSO Spec. No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	5	155660.6	778303.00
184	08_12	Supply and Installation of Air sampling CPVC Pipes with all required accessories for Aspiration system).(Inspection by RDSO)	set	5	76137.76	380688.80
185	08_15	Supply of BIS listed Semi-automatic Stainless Steel preventive device with UL approved clean gas with Auto manual Reverse Stainless Steel valve 'NASA 400 MAR' or similar having capacity of 4kg, and made of stainless steel 304 grade with Indian Railway logo put on each unit.(Inspection by Consignee)	Per unit	10	35,219.46	352194.60
186	08_17	Supply Of movable tender at doorstep with UL approved having capacity of 10kgs made of SS 304 grade with Indian Railway logo put on each unit and clean gas shelf life with 10 years warranty for leakage. Note: Warranty of OEM and Test certificates of any NABL approval LAB for clean gas along with the offer.(Inspection by Consignee)	Per unit	2	103181.84	206363.68
187	08_18	Supply of Relay Module as per RDSO specification No.RDSO/SPN/217/2021 Ver.3.0 or latest.(Inspection by RDSO)	Nos	5	9,867.99	49339.95
188	08_19	Supply of TCIP Module /Networking card for interfacing the Fire Alarm and Detection systems.(Inspection by RDSO)	Nos	5	30,881.44	154407.20

189	08_20	Supply, installation, configuring, testing and commissioning of remote monitoring software along with license for 99 control panels as per No.RDSO/SPN/217/2021 Ver.3.0 or latest.. This includes necessary gateway card and network interface card for the system fully functional as desired by railways. (software suitable for 8 stations).(Inspection by RDSO)	LS	5	5,21,517.86	2607589.30
190	08_21	Installation, testing and commissioning charges of fire alarm system including programming of devices and fire alarm panel	Set	1	95933.57	95933.57
191	08_22	Supervision, programming, testing & Commissioning of Aspiration smoke detection	Set	1	83751.53	83751.53
192	09_1	Supply of Handheld True RMS Multi Meter, as per Technical specification.(Inspection by Consignee)	Nos	5	23192.34	115961.70
193	09_2	Supply of Handheld True RMS clamp Meter, as per Technical specification.(Inspection by Consignee)	Nos	5	33510.29	167551.45
194	09_4	Supply of OTDR (mini) with standard accessories for 1310/1550nm with all standard accessories as per TEC specification GR/OTD-02/02 Jan 2005 or latest, (this item should have valid TEC approval certificate) as per Technical specification.(Inspection by Consignee)	Nos	1	3,07,856.22	307856.22
195	09_6	Supply of Digital Insulation tester (Megger) 50V-500V/1000 mega ohm battery operated with all complete accessories, as per Technical specification.(Inspection by Consignee)	Nos	2	11,844.52	23689.04
196	09_7	Supply of Cable Route Tracer as per Technical specification.(Inspection by RITES)	Nos	2	578788.99	1157577.98
197	09_8	Supply of Portable Cable Fault Locator as per Technical specification.(Inspection by Consignee)	Nos	1	186694.53	186694.53
198	09_11	Supply of Digital Earth clamp Tester as per Technical specification.(Inspection by	Nos	1	71,129.79	71129.79

		Consignee)				
199	09_13	Supply of Hand Held Thermometer, as per Technical specification.(Inspection by Consignee)	Nos	1	8,437.00	8437.00
200	09_14	Supply of OFC Power Meters, as per Technical specification.(Inspection by Consignee)	Nos	1	47,200.00	47200.00
201	09_17	Supply of Laser source and Power meter with accessories as per Technical specification.(Inspection by Consignee)	Nos	1	40,710.00	40710.00
202	09_23	Supply of Rodometer as per Technical specification.(Inspection by Consignee)	Nos	1	4,252.24	4252.24
203	09_24	Supply of Battery Tester as per Technical specification.(Inspection by Consignee)	Nos	5	715.95	3579.75
204	09_25	Supply of Hydrometer.(Inspection by Consignee)	Nos	10	228.94	2289.40
205	10_1	Supply of Double walled corrugated pipe - 103.5mm inner dia & 120mm outer dia conforming to specification No. IS 14930 (Part 2): 2001 with one coupler for every 6m of pipe as per Technical specification.(Inspection by RITES)	Mtrs	2000	365.19	730380.00
206	10_2	Supply of GI pipes - 50mm dia -3.65mm thick as per Technical specification.(Inspection by Consignee)	Mtrs	250	457.88	114470.00
207	10_3	Supply of GI pipes - 100mm dia-4.5mm thick as per Technical specification.(Inspection by RITES)	Mtrs	1500	1,119.16	1678740.00
208	10_5	Supply of High-Density Polyethylene Pipes (HDPE) of 110 mm Outer Dia, 10 mm Wall Thickness, along with one coupler for every 6 Meters as per specification No. IS 4984: 2016 with latest amendments and Material Grade:PE 80.(Inspection by RITES)	Mtr	1250	853.55	1066937.50
209	10_6	Supply and laying of PVC Warning Tape colour Orange, width of 250mm (10") by printing with black letters 'Indian Railway Signal/Telecom/OFC Cable' on both sides.(Inspection by Consignee)	Mtr	5000	46.15	230750.00
210	10_7	Supply of Electronic Cable Route Marker 3M make or similar, Model: RFID (1421) and installation, cable detection of capacity to detect the cable upto 5 feet depth.(Inspection by RDSO)	Nos	250	2,441.72	610430.00

211	10_8	Supply of HDPE Pipe 40mm (outer dia)/33 mm (inner dia) with couplers.(Inspection by RITES)	Mtr	45000	60.93	2741850.00
212	10_10	Supply and Installation of Wall/Rack mountable 24 Fibre management system (FMS) conforming to RDSO/SPN/TC-37/2000(rev-3 amdt-1 or latest similar to COMMSCOPE make or better, suitable for splicing and front patching 24F cable with all accessories and terminating the optical fibre cable with splicing and front patching in FMS in the Location Box. This includes Supply and Provision of 4 nos of Patch cords of required length (All other materials required for splicing are to be supplied by contractor).(Inspection by RDSO)	Nos	2	18686.74	37373.48
213	10_11	Supply and Installation of Wall/Rack mountable 48 Fibre management system (FMS) conforming to RDSO/SPN/TC-37/2000(rev-3 amdt-1 or latest similar to COMMSCOPE make or better, suitable for splicing and front patching 48F cable with all accessories and terminating the optical fibre cable with splicing and front patching in FMS in the Location Box. This includes Supply and Provision of Wooden Plank, L clamps and 4 nos of Patch cords of required length (All other materials required for splicing are to be supplied by contractor).(Inspection by RDSO)	Nos	25	32885.01	822125.25
214	10_13	Supply and Installation of 19", 6U rack of size 600mm x 600mm with complete accessories.(Inspection by Consignee)	Nos	4	4936.26	19745.04
215	10_14	Supply and Installation of surface Wall mountable type 19 inch 12U network Rack with front glass door with lock and rack fixing multipoint AC Power trip & all accessories (Power extension board with one set of MCB, exhaust fan, cable manager).(Inspection by Consignee)	Nos	6	6761.51	40569.06

216	10_15	Supply and Installation of covered 19inch racks of size 1950mm x600mm x 600mm or higher (Make: HCL/ Vero/President/ Rittal/ Puncom or better) complete with all fittings including DC Fans (24V/48V)-2nos, separator sheet/ plate to keep testing equipment-1no and AC power distribution panel (Horizontal fitting) with power sockets and fuse protection (min 6 nos of 230V – 15/5A combined and other accessories.(Inspection by Consignee)	Nos	1	65734.12	65734.12
217	10_16	Supply of machine nylon Insulations for IRS point machine.(Inspection by Consignee)	Set	20	1671.75	33435.00
218	10_18	Supply of track lead junction box - FRP type with 4 terminals and stumps with necessary inspection as per specification/ drawing/ description enclosed in this document.(Inspection by RITES)	Nos.	272	1,622.50	441320.00
219	10_19	Supply of Track Feed Resistance.(Inspection by RDSO)	Nos.	92	287.77	26474.84
220	10_20	Supply of Bond Pins (pack of 100).(Inspection by Consignee)	Nos	2	191.85	383.70
221	10_22	Supply of gauge Tie Plate Insulation.(Inspection by Consignee)	Set	90	210.72	18964.80
222	10_25_a	Supply of PBT terminals 25mm/60mm centre and PBT Fuse blocks with necessary inspection as per specification/drawing/ description enclosed in this document. a)Supply of PBT terminals 25mm centre.(Inspection by RDSO)	Nos.	8500	61.44	522240.00
223	10_25_b	Supply of PBT terminals 60mm centre.(Inspection by Consignee)	Nos.	2000	93.02	186040.00
224	10_25_c	Supply of PBT fuse block without ND fuse.(Inspection by Consignee)	Nos.	450	103.84	46728.00
225	10_26_a	Supply of apparatus cases (full/ half/ quarter size) to suit Southern Railway standard with necessary inspection as per specification/ drawing/ description enclosed in this document. a)Supply of apparatus case - Full size.(Inspection by RITES)	Nos.	42	18821.00	790482.00
226	10_26_b	Supply of apparatus case - Half size.(Inspection by RITES)	Nos.	20	15576.00	311520.00

227	10_35	Supply and installation of yard layout diagram board in the station master's room. The board shall be made of Phynolic synthetic industrial fibre base fine weave cotton fibre board (matt finish) 6mm thick size 1800mmX1200mm with aluminium channel frame. The yard layout shall be neatly painted and fixed as instructed by Railway representative at site. [All materials required for the work shall be supplied by the Contractor].(Inspection by Consignee)	Nos.	1	16,722.15	16722.15
228	10_36	Manufacture and supply of teak wood tool box of size 1000X750X100mm made of 25mm thick teak wood persplex sheet fronted 6mm (Colourless) fixed on the wall at a convenient location as instructed by Railway representative at site. The board should have provision of pad lock and locking arrangements and shall be equipped with the following tools[reputed make]: a. Digital Mulltimeter similar to Model No. Rish Multi 18S with suitable carrying case and test probes. b. Centre zero ammeter 30-0-30 Amps -1 No. c. Screw drivers of different types and sizes with common handle - 1 set d. Spanner double ended 33mm - 1 No. e. Spanners double ended 3/8x1/2" - 1 No. f. Spanners double ended 5/8x3/4" - 1 No. g. Spanners double ended 7/8x1" - 1 No. h. Hammer 1 1/2 lbs ball pane - 1 No.	Set	5	29,185.60	145928.00

229		i. Hacksaw frame - 1 No. j. Adjustable screw spanner 12" - 1 No. k. Insulated cutting pliers- 1 No. l. Insulated nose plier- 1 No. m. Electric soldering iron 230V 60W Soldron/Philips make - 1 No. n. Electric soldering iron 110V 35W Soldron/Philips make - 1 No. o.Megger 500V/ 500Mohms. with Probe - 1 No. The above tools shall be purchased from Reputed manufacturers only in consultation with the Railway representative at site. [Teak wood tool box made of 25mm teak wood plank, perspex sheet, all the tools mentioned above, padlock and other miscellaneous items shall be supplied by the Contractor].				
230	10_37	Supply of magneto telephone handle type and supply of Ni-cad power pack 4V-2.2AH with charger to work on 110VAC.(Inspection by RITES)	Nos.	15	8,106.70	121600.50
231	10_38	Supply and installation of teakwood glass fronted box of size 300mm x 600mm x 75mm with hooks to keep various keys with description engraved on the tags. [TW Glass fronted box of size 300mmx600mmx 75mm with built in lock, hooks, engraved tags and all other miscellaneous materials required for the work shall be supplied by the Contractor].(Inspection by Consignee)	Nos.	2	7,505.45	15010.90
232	10_40	Supply of 3/0.75mm or 4 Sq.mm Copper cable(per coil=100 mtrs) APC.(Inspection by Consignee)	Per Coil	50	3,459.50	172975.00
233	10_43	Supply of ND Fuse of various capacities.(Inspection by RDSO)	Per Fuse	300	37.74	11322.00
234	10_45	Supply and provision of Rubber mat of not less than 6mm thick and with an insulation to withstand 650VAC, on the floor of relay room etc at places as indicated by railway representative at site.(Inspection by Consignee)	Sft	500	144.86	72430.00
235	10_48	Supply of External Solid state Drive (SSD) of 1TB capacity.(Inspection by Consignee)	Nos	1	15,498.45	15498.45

236	11_1	Excavation of pit, erection of cable termination boxes on rails and concreting as per Drg. No.SG/CN/02/8, drilling of suitable holes in the box, fixing of 2 Nos. of GI pipes 32mm dia and 300mm long at the bottom with clamp nuts - 12 mm thick, one at the inner side and another at the outer side for each pipe for cable entry and one GI pipe 150mm long 32mm dia for drawl of jumper wires for Point machines etc., fixing of hardwood plank 37mm thick on the bottom, provision of one EWS lock, and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints.	Nos.	13	5,029.69	65385.97
237	11_2	Installation of combined type point machine - IRS type and connecting all ground connections including wiring and termination in point machine and interconnections between point machine and CT box through PVC hose pipe with 3/0.75mm and 7/1.40mm copper wire and painting. This work includes provision of insulation to stretcher bars, throw bar lug and "D" bracket wherever required, cutting of notches on the point machines covers to suit crank handle configuration. (Combined type point machine with ground connection, uninsulated stretcher bar, throw bar lug and 'D' brackets will be supplied by Railways. [All types of insulations connected to point work, coal bengal, all type of bolts and nuts, washers spring/flat wire PVC 7/1.4mm copper, PVC hope pipe, paints, PVC/nylon sleeves and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Nos.	36	16,383.88	589819.68
238	11_3	Installation of Signal post telephone (paging and talk back)	Nos.	6	5,392.75	32356.50

239	11_4	Fixing and wiring of platform repeaters. The work involves fixing of platform repeater using suitable fixing arrangements at places indicated, wiring the same and painting as per the instructions of Railway representative at site. The signal shall be connected to the apparatus case using cables neatly clamped. The work also includes provision of one EWS lock. (Laying of cable is not included in the scope of this work.)(Supply of repeater signals and cables is not included in this schedule). [Wire PVC 3/0.75mm copper, paint, EWS lock and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Nos.	3	6,063.56	18190.68
240	11_6	Filling earth around location boxes/ signal foundations for a width of 0.5m on all sides, up to a level 150mm below the foundation top. This work includes consolidation of earth by watering and ramming. The earth shall be taken from Railway premises as instructed by Railway representative at site.	CUM	210	231.30	48573.00
241	11_7	Excavation of pit, casting concrete foundation as per Drg.No.SG/CN/02/9 using metallic templates, for erection of colour light signals up to 4 aspects. [Foundation bolts, cement, M sand, stone jelly of size 20/25mm dia and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Nos.	30	9,213.28	276398.40

242	11_8	Erection of surface base, signal pole, mounting of colour light signal up to 4 aspects complete on Signal pole/ Off-set bracket, (for LED/ filament bulbs) with lenses, triple pole lamp holder, filament switching units, CLS transformer, current regulators (whichever is applicable), fixing of ladder with platform complete and concreting of ladder shoe, fixing of number plates, marker board, lens guard, fixing of speed limit board wherever necessary, termination of tail cables, wiring of signal unit with PVC wire 3/0.75mm copper, provision of EWS locks, and painting of one coat of red oxide and two coats of aluminium/ enamel paints. When the aspect is fixed on Offset bracket using 'U' bolts and nuts, a through bolt shall be provided by drilling a hole in the signal pole to prevent the offset bracket from sliding down.	Nos.	120	8,287.08	994449.60
243		(Supply of surface base, Offset bracket, CLS pole, CLS aspects complete, ladder with shoes and platform, Speed limit board, LED aspects, current regulators, lamp holders, lamps, filament switching unit and CLS transformer is not covered in this schedule).['U' bolts and nuts, through bolts and nuts, cement, stone jelly 20/25mm dia, M sand, Signal Collar Rings, wire PVC 3/0.75mm copper, lens-guard, all fixing bolts and nuts, lead wool, paints PVC/Nylon sleeves, enameled number plates. enameled marker boards, EWS locks, and all other miscellaneous materials for the work shall be supplied by the Contractor].				

244	11_9	Excavation of pit and casting concrete foundation as per Drg, No.SG/CN/02/10 using metallic templates, for erection of ground type colour light shunt signal. [Foundation bolts and nuts, cement, M sand, stone jelly of size 20/25mm and all other miscellaneous materials for the work shall be supplied by the Contractor].	Nos.	35	4,645.17	162580.95
245	11_10	Erection of Ground type shunt signal complete including surface base, signal pole, LED aspects/lenses, bulbs with holders (whichever is applicable), fixing of lens guards, number plate, termination of tail cables, wiring of signal unit with PVC wire 3/0.75mm copper, provision of EWS locks and painting of one coat of red oxide and two coats of Aluminium/enamel paint.(Supply of Ground type shunt signal complete including surface base, signal pole, LED aspects, holder, bulbs, and lenses is not covered in this schedule).[Wire PVC 3/0.75mm copper, lens guards, EWS locks, Enameled number plates, bolts and nuts, lead wool, paints and all other miscellaneous materials shall be supplied by the Contractor].	Nos.	35	3,170.44	110965.40
246	11_11	Fixing of Offset brackets using 'U' bolts and nuts, erection of Post type shunt Signals, termination of tail cables and wiring using wire PVC 3/0.75mm copper, provision of EWS lock and painting of one coat of red- oxide and two coats of aluminium/ enameled paint. The work also includes drilling suitable holes on the CLS post and provision of a through bolt with nut to prevent the Off-set bracket from slipping down.	Nos.	50	2,306.03	115301.50

247	11_14_a	Fixing of junction type route indicators - 1 way to 6 ways - complete/fixing of additional limb to the existing route indicators, termination of tail cables, wiring as per approved circuits diagram using wire PVC 3/0.75mm copper, provision of required No of EWS locks, wire mesh, and painting. (Supply of junction type Route Indicators - complete and additional limb is not covered in this schedule). [3/0.75mm wire PVC, fixing bolts and nuts, EWS locks, wire mesh, PVC/Nylon sleeves, paints and all other miscellaneous materials shall be supplied by the Contractor]. a)Fixing and wiring of direction type route indicator - 1 way	Nos.	10	2,238.04	22380.40
248	11_14_b	Fixing and wiring of direction type route indicator - 2 way	Nos.	5	2,460.04	12300.20
249	11_14_c	Fixing and wiring of direction type route indicator - 3 way	Nos.	1	2,679.26	2679.26
250	11_15	Fixing of Offset brackets using 'U' bolts and nuts, erection of Calling On Signals/'A' marker lights, termination of tail cables and wiring using wire PVC 3/0.75mm opper, provision of EWS lock, number plates/marker boards and painting. The work also includes drilling suitable holes on the CLS post and provision of a through bolt with nut to prevent the Off-set bracket from slipping down. (Supply of Calling on Signal/ 'A' marker light, LED aspects/holders & bulbs and Off set brackets is not covered in this schedule). ['U' bolts and nuts, through bolts with nut, wire PVC 3/0.75mm copper, EWS lock, Enameled number plates, wire mesh, PVC/Nylon sleeves, paints and all other miscellaneous materials shall be supplied by the contractor].	Nos.	20	2,081.25	41625.00

251	11_16	Releasing of existing tail cables and drawl of new tail cables for colour light signals up to four aspects with or without route indicator, post type shunt signal and Calling on signals, termination of new tail cables and wiring using wire PVC 3/0.75mm copper. This work includes drawl of new tail cables into the signal post duly releasing the existing tail cables from the relevant signals and re-surfacing the earth excavated as instructed by Railway representative at site.[Wire PVC 3/0.75mm copper, paints and all other miscellaneous materials shall be supplied by the Contractor].	Per Cable	5	1,524.86	7624.30
252	11_18	Removal of existing CLS units, fixing of new CLS units with LED aspects/ lamps, holders etc., up to four aspects, directly or using off set brackets duly drilling holes on the signal poles, provision of EWS locks wherever necessary, termination of tail cables and wiring using wire PVC3/0.75mm copper and painting of aspect. The new tail cables shall be taken through the signal poles and the unwanted cables duly released	Nos.	5	10,296.64	51483.20
253	11_19	Excavation of pit and construction of masonry platform as per drawing No. SG/CN/02/12 with country bricks of size 220mmx100mmx60mm (app) at the foot of signal post telephones as per the instructions of Railway representative at site. [Country bricks of size 220mmx100mmx60mm (app), cement, M sand and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Nos.	5	5,355.94	26779.70

254	11_22	Hot dip Galvanization of signal post and ladder (4.6m tall, 140 mm dia /3.60 m tall, 140 mm dia), clamps, point roddings and other materials related to Signalling. Minimum DF thickness shall be 80 microns. Transportation of materials from site/stores to galvanization workshop and back to site/stores not included in this schedule. Transportation charges will be as per relevant SOR schedules. Test certificate showing the DFT, type of galvanization, materials used etc., from galvanizing firm for each batch to be submitted. (Unit is calculated based on the weight of the Signal poles, ladders, clamps, rodding's etc.,)	Kg	500	25.31	12655.00
255	11_23_a	Provision of DC Single/Double rail track circuit to suit RE/Non-RE areas as per approved signaling plan using Plug-in type track relays. This work includes provision of double bonding, and parallel jumpers, provision of bond wire clips, provision of track lead connections using 2c X 2.5 sq.mm cable, provision of TLD boxes 2 Nos. at Relay end, 2 Nos. at Feed end and 2 No's for parallel jumpers as necessary to suit layouts, for each Track Circuit, and termination of jumpers and tail cables in track lead junction boxes, installation of relays, track feed battery chargers to charge up to 4 cells, track feed resistance, 'B' type choke' and secondary cells - 80 AH capacity in apparatus cases and wiring with wire PVC 3/0.75mm copper. The work also includes painting of track Circuit No. with Feed end/ Relay end details on the TLD boxes. The work also includes provision of insulations for gauge tie plates and nose crossing plates wherever required. (Provision of rail joint insulation is not covered in this schedule.)(Uninsulated gauge type plate and nose crossing plate will be supplied by Railways. Supply of track feed battery charger, 'B' type choke, track relays, un-charged secondary cells (2V - 80AH), TLD boxes with stumps,2cX2.5	Nos.	48	8,914.50	427896.00

		sq.mm cable, is not covered in this schedule).a)Provision of track circuit in RE/Non RE area (point zone)				
256	11_23_b	b)Provision of track circuit in RE/Non RE area (other than point zone)	Nos.	23	7,145.44	164345.12
257	11_24_a	Alteration to existing DC Track Circuits to suit RE/Non RE standard as per approved signaling plan. This work includes provision of double bonding and parallel jumpers, provision of bond wire clips, wherever required, shifting of relay end and feed end equipments and re-wiring them, provision of track lead connections wherever necessary using 2c x 2.5 sq.mm cable a)Alteration to existing track circuits at feed end	Nos.	10	4,234.65	42346.50
258	11_24_b	Alteration to existing track circuits at relay end	Nos.	10	3,850.31	38503.10
259	11_26	Excavation of pit, casting concrete foundation and erection of apparatus case full size as per Drg. No.SG/CN/02/6 and fixing of 2 Nos. of 'E' type locks, one for the front door and another for the back door, fixing of one hard wood shelf plank 37mm thick and painting the apparatus case inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of apparatus case is not included in this schedule). [Foundation bolts & nuts, 'E' type locks, cement, M sand, stone jelly of size 20/25 mm, hardwood plank of 37mm thick, paints, varnish, fixing bolts & nuts and all other miscellaneous materials required for the work shall be supplied by the Contractor.]	Nos.	42	11,333.10	475990.20

260	11_28	Excavation of pit, casting concrete foundation and erection of apparatus case half size as per Drg, No.SG/CN/02/7, fixing one 'E' type lock for the front door and latching arrangement for the back door, and fixing of one hardwood shelf plank 37mm thick and painting the apparatus case inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of apparatus case is not included in this schedule). [Foundation bolts and nuts, cement, 'E' type locks, M sand, stone jelly of size 20/25mm, 37mm hard wood planks, latching arrangements, paints, varnish, fixing bolts & nuts and all other miscellaneous materials required for the work shall be supplied by the Contractor]	Nos.	20	8,787.04	175740.80
261	11_30	Excavation of pit, erection of cable termination boxes on rails and concreting as per Drg. No.SG/CN/02/8, drilling of suitable holes in the box, fixing of 2 Nos. of GI pipes 32mm dia and 300mm long at the bottom with clamp nuts - 12 mm thick, one at the inner side and another at the outer side for each pipe for cable throughing, fixing of hardwood plank 37mm thick on the bottom, provision of one EWS lock, and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of CT boxes is not covered in this schedule. Rails of different length shall be supplied by Railways. The contractor shall cut lengthy rails wherever required.) [Cement, M sand, stone jelly of size 20/25mm, paint, varnish, GI Pipes 32mm dia with clamp nuts - 12mm thick - 2 Nos. for each pipe, fixing bolts and nuts with washers, EWS locks, paints and all other miscellaneous materials shall be supplied by the Contractor].	Nos.	5	4,999.16	24995.80

262	11_31	Fabrication and erection of rail staging, concreting, construction of stock brick, masonry support, supply and provision of concrete slabs 3 Nos. of size 300mm x 1700mm x 80mm for platform on stage support for erecting apparatus case full size on embankment and casting concrete foundation and erection of apparatus case full size over the compacted earth and masonry , fixing 2 Nos. of 'E' type locks, one for the front door and another for the back door, supply and fixing of one hardwood shelf plank of 37mm thick and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints.	Nos.	2	20,609.19	41218.38
263	11_32	Fabrication and erection of rail staging, concreting, construction of stock brick, masonry support, supply and provision of concrete slabs for platform, 3 Nos. of size 300mm x 1000mm x 80mm for platform stage support for apparatus case half size on embankment and casting concrete foundation and erection of apparatus case half size over the compacted earth and masonry work , fixing 1 No. of 'E' type locks, for the front door and the latching arrangements for the back door and fixing one H.W shelf plank of 37mm thick and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of apparatus case is not included in this schedule. Rails of different lengths will be supplied by Railway and the Contractor has to cut the rails to required lengths).	Nos.	2	16,011.20	32022.40

264	11_33_a	Excavation of pit in and around the existing location boxes very carefully without damaging the working cables and shifting and turning the location boxes to clear of the infringement as instructed by the Railway representative at site. The work includes ensuring the safety of the signaling system, releasing the cable coils to give access for shifting/turning the location boxes. Necessary masonry work and earth work in and around the location boxes to the required level shall be done as instructed by the Railway representative at site. If the existing earth connections to the location boxes are disturbed, the earth wires shall be properly re-connected. a)Shifting of apparatus case (full)	Nos.	3	5,348.81	16046.43
265	11_33_b	b) Shifting of apparatus case (half)	Nos.	3	3,545.06	10635.18
266	11_34	Termination of new main/tail cables on the existing terminals/ fuse blocks in apparatus cases/ battery boxes/ CT boxes/ cable termination racks as per approved circuit diagram. The terminal particulars are to be repainted /corrected on the doors of apparatus cases/ battery boxes/ cable termination boxes and FTOT index board as instructed by Railway representative at site. This work includes closing the opening created for entry of new cables in the apparatus cases with masonry brick work and sealing the bottom of the apparatus cases/ cable termination racks with cable compound.[Paints, wire PVC 3/0.75mm and 16/0.2mm copper, sealing compound, bricks, cement, M sand and all other required miscellaneous materials shall be supplied by thecontractor].	Per Terminal block	1000	73.59	73590.00

267	11_35_a	Termination of main, tail, Signaling and power cables and internal wiring on terminal/ fuse blocks in new apparatus cases, cable termination boxes and in gate Lodges excluding cable termination rack at relay room. The work includes fixing of all new cables by teakwood clamp on teakwood base plank, fixing of Phynolic synthetic industrial fibre base fine weave cotton fibre board 6mm thick for terminal board to suit each apparatus case, varnishing all teakwood items, fixing of terminals/ fuse blocks on the terminal board, drilling of necessary holes, termination of cables, wiring, identification of cables using aluminium tags with letters punched neatly, as per approved circuit diagram and cable plan, painting of particulars on sleeves and also on the inner side of the doors of apparatus cases. After terminations are over, the side openings of apparatus case foundation shall be closed with brick work, cement plastered, the inter-space filled with M sand up to base level and the bottom surface shall be sealed with sealing compound. (Supply of PBT terminals and Fuse blocks is not covered in this schedule). a)Termination on 25/60mm PBT terminals (new location)(Phynolic sheet)	Per Terminal block	6250	172.14	1075875.00
268	11_35_b	Termination on PBT fuse block (new location) (Phynolic sheet)	Per FuseBlock	800	209.93	167944.00

269	11_36_a	Termination of main, tail, Signaling and power cables and internal wiring by fixing additional terminals/ fuse blocks on the existing terminal boards of apparatus cases, cable termination boxes etc. The work includes fixing of all new cables by teakwood clamp on teakwood base plank, varnishing all teakwood items, fixing of terminals/ fuse blocks, on the existing terminal boards, drilling of necessary holes, termination of cables, wiring, identification of cables using aluminium tags with letters punched neatly, as per approved circuit diagram and cable plan, painting of particulars on sleeves and also on the inner side of the doors of apparatus cases. After terminations are over, the side openings of apparatus case foundation shall be closed with brick work, cement plastered, the inter-space filled with M sand up to base level and the bottom surface shall be sealed with sealing compound. a)Termination of cables on 25/60mm PBT terminals (existing location)	Per TerminalBlock	750	151.09	113317.50
270	11_36_b	Termination of cables on PBT fuse block (existing location)	Per FuseBlock	100	188.86	18886.00

271	11_42_b	Charging and installation of secondary cells of the following capacities, on existing battery stand/ RCC slabs in the battery room. The work involves charging of secondary cells, fixing and connecting the batteries with strips, manufacture and fixing of teakwood terminal box, termination of cables, wiring with suitable wire PVC 7/1.40mm and 3/0.75mm copper through suitable PVC pipes/ casing properly clamped, provision of battery particulars board made of phynolic sheet 6mm thick of size 900mm x 1200mm with Aluminium grooved channel frame in the relay room. The particulars shall be digitally using good quality laminated gum sheet, provision of hydrometer -1 No. on a stand and battery tester-1 No. Charging of secondary cells shall be done by the contractor through reputed agencies. (Supply of secondary cells is not covered in this schedule). [Teakwood plank 25mm thick for manufacturing termination box with locking facility, wire PVC 7/1.4mm and 3/0.75mm copper, anti-corrosive paint, varnish, PVC pipes/ casing, and all other miscellaneous materials required for this work shall be supplied by the contractor]. b)Installation of 2V-200AH cell on existing stand/ slabs.	Per cell.	60	869.41	52164.60
272	11_42_d	Installation of 2V-40/80AH cell on existing stand/ slabs.	Per cell	32	615.08	19682.56

273	11_50	Provision of signaling arrangement during Non-Interlocked working of Signals and Points, such as erection and wiring of temporary relay racks and wiring of relays, SM's slide instruments, wiring alterations in the cable termination rack, apparatus cases, signals, Control panel etc, as per the instructions of Railway representative at site. (Supply of relay rack, relays, and SM slide instrument is not included in this schedule). [All other miscellaneous materials required for the work shall be supplied by the Contractor].	Per station	1	33,631.06	33631.06
274	11_51	Provision of PA system and Magneto telephone communication at stations/ tents as per the instructions of Railway representative at site. The PA system and magneto telephones will be returned to the contractor after the completion of NI working. Signalling cables available may be used for the communication. (Hiring of PA system equipments and magneto telephones shall be done by the Contractor)[All other miscellaneous materials required for the work shall be supplied by the Contractor].	Per tent per day	8	1,637.25	13098.00
275	11_52	Hiring of tarpaulin tents and providing the same at places as instructed by Railway representative at site. The spacing inside the tent shall be app 8ft x 8 ft. Each tent shall be provided with a table, chair, tube lights and pedestal fan. Drinking water in cans. The tents shall be fixed firmly to withstand rain, strong wind etc.	Per tent per day	3	1,328.30	3984.90

276	11_53	Fixing of Annunciator at SM's Room as required by Railways, wiring it as per circuit diagram and painting of particulars. The work includes connecting 1 No. of magneto telephone with Ni-cad power pack 4V-2.2AH with charger to work on 110VAC and connecting the annunciator to the different telephone circuits. The particulars of the circuits and the ringing codes shall be painted on the top of the annunciator box. (Supply of annunciator is not included in this schedule).	Nos.	1	4,094.05	4094.05
277	11_55	Installation of magneto telephones with Nicad pack	Nos.	12	3,322.60	39871.20
278	11_69	Casting concrete foundation and erection and painting of boards with `LEGEND' such as “Draw close if signal is at on" at the required places as per the Signalling plan. The work involves concreting of rail post to a size of 600mm x 600mm x 900mm and fixing the board to the rail using MS clamps, bolts and nuts. (Supply of boards is not covered in this schedule. Rails of different lengths will be supplied by Railways and the Contractor has to cut them to the required lengths) [Stone jelly of size 20/25mm dia, M sand, cement, M.S.flats, fixing bolts and nuts, paint and all other miscellaneous materials required for the work shall be supplied bythe Contractor].	Nos.	15	3,972.14	59582.10
279	11_72	Provision of HDPE Pipe of dia 40/33 mm	Mtr	45000	26.11	1174950.00
280	11_73	Laying of DWC/Split DWC Pipes for Track Crossing/Road Cutting/Trenches	Mtr	2000	42.46	84920.00

281	11_74	Releasing of existing relay racks/ cable termination racks along with all the terminals, fuse blocks, relays, with jacks, holding clips etc., 50 way boards, terminals, connecting wires, cables etc., carefully without causing any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site. After releasing, the floor shall be levelled and cement plastered	Per rack	5	1977.19	9885.95
282	11_75	Releasing of existing Route Indicators of different types including tail cables, carefully without causing any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site	Nos.	16	1541.51	24664.16
283	11_76	Breaking of concrete and releasing of STOP board/Warning board/ LEGEND boards along with rails, accounting and stacking them neatly at a place as instructed by Railway representative at site. Also the resultant pits shall be re-surfaced and consolidating by ramming and levelling.	Nos.	15	1580.36	23705.40
284	11_77	Releasing of existing point lay-out with facing point lock, split stretchers, electrical detector, lock bars, point/trap indicators cranks, rods etc., carefully without damaging the materials, accounting and stacking them neatly at a place as instructed by Railway representative at site.	Set	5	2852.70	14263.50
285	11_78	Removal of obstructing sleepers, and rails available in the path of cable trench (Above the ground)	Nos	200	235.47	47094.00
286	11_79	Removal of obstructing sleepers, and rails available in the path of cable trench (buried inside ground)	Nos	30	3,205.70	96171.00
287	11_80	Jungle cutting along with the cable route	Mtr	5000	5.84	29200.00

288	11_83	Releasing of existing apparatus cases (Full/ Half/ Quarter size) without damage after releasing the shelf planks, Terminal blocks, Fuse Blocks, Terminal Boards, Relays of all types EKTs, Secondary Cells, power equipments, 'E' type locks, etc., and breaking the concrete foundation. After releasing, the resultant pits are to be closed and consolidated by ramming and levelling. The released materials shall be accounted and stacked at a place as instructed by Railway representative at site.	Nos.	60	3,006.71	180402.60
289	11_84	Breaking of concrete and releasing the existing cable termination boxes, after releasing the base plank, Terminal blocks, Fuse Blocks, Terminal Boards, cut rails, pipes, etc., closing the resultant pits and consolidating it by ramming and levelling. The released materials shall be accounted and stacked neatly at a place as instructed by Railway representative at site.	Nos.	50	2,004.94	100247.00
290	11_86	Dismantling and releasing of existing Colour light Signals complete (upto 4 aspects) with or without Route Indicators, calling on signals, shunt signals etc., carefully without any damage to the gadgets, accounting and stacking them neatly at a place as instructed by Railway representative at site. The work includes breaking the concrete foundation, closing the resultant pit and resurfacing it by ramming and levelling.	Nos.	28	3,083.03	86324.84
291	11_87	Dismantling and releasing of existing Point machines (all types) including ground connections and other accessories available complete without any damage to the gadgets, accounting and stacking them neatly at a place as instructed by Railway representative at site.	Nos.	10	2,698.69	26986.90

292	11_89	Releasing of Secondary cells and battery stands available in the battery room along with connecting strips, wires and terminal boxes carefully without causing any damage to the batteries, accounting and stacking them neatly at a place as instructed by Railway representative at site. After releasing any holes in the walls/ flooring shall be filled with cement mortar and plastered.	Set	55	5,395.99	296779.45
293	11_93	Releasing of existing ground type shunt signals along with surface base, signal post etc carefully without any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site. The work also includes breaking and removal of concrete foundation and refilling of the resultant pit by ramming and levelling.	Nos.	15	2,196.41	32946.15
294	11_94	Releasing of existing TLD boxes with stumps and terminals after releasing all the bond wires. The released materials shall be accounted and stacked neatly at a place as instructed by Railway representative at site.	Nos.	230	159.29	36636.70
295	11_95	Releasing of all power equipments including equipment stands, terminal boards, power panel etc., in the power room carefully without causing any damage to the equipments after disconnecting all the supply wires. The released equipments shall be accounted and stacked at a place as instructed by Railway representative at site. After releasing any holes in the walls/ flooring shall be filled with cement mortar and plastered.	Set	1	12640.13	12640.13
296	11_97	Survey of Cable Route and Preparation of Cable Route Plan.	Km	12	716.01	8592.12

297	11_98	Provision of one skilled and 2 unskilled staff round the clock to attend the teething trouble of the installation along with SSE/JE after the installation has been brought into commissioning. The work includes routine maintenance, failure restoration as per the direction of the SSE/JE	Month	6	73,903.01	443418.06
298	11_99	Videography of cable Route	Kms	10	519.85	5198.50
299	11_100	Providing the services of Computer oriented technical manpower to carryout works like Drawing, computation, writeup etc., using computer, using software like AUTOCAD, MS Office etc., for 08.00 hrs in a day with all expenses of transportation, accommodation, food, consumables etc., with all ascents, descents, taxes, octroi, cess, fees, duties, duties with contractors cost etc., as per special conditions/ specifications/ regulations and as directed by Engineer-in-charge. Note: The person engaged for providing the services shall be convergent with computer working knowledge in above software.	Man Days	150	913.28	136992.00
300	11_101	Protection adjustments and re-instating of S&T gears by deputation of Helpers/ Unskilled labour for executing additional S&T portion of the works. The work can involve fixing, eleasing, dismantling, replacement, excavation, clearing of vegetation, loading and unloading of material and assisting skilled persons etc as per instruction of Railway representative.	Man Days	300	847.59	254277.00

301	11_102	Protection, adjustment and reinstating of S&T gears by deputation of Fitter/Wireman/Painter/Welder/ Mason/Cable Jointer (Skilled Labour or Technician) etc., for executing additional S&T portion of works. The work can involve fixing, releasing, dismantling, replacement, painting or alteration of various signalling assets or parts, termination of cables, minor patch work on damages at location box, Plastering, Concreting brick work, wiring alterations, cable jointing etc as per instruction of Railway representatives at size.	Man Days	90	1073.45	96610.50
302	11_103_a	Transportation of Signalling materials by road as per the instructions of Railway representative at site. The work also includes loading and unloading of the materials. a)Transportation of Signalling materials upto 100kms	per ton. Km.	1100	22.75	25025.00
303	11_103_b	Transportation of Signalling materials more than 100km	per ton. Km.	500	13.91	6955.00
304	11_104	Engaging mechanical excavators like JCB or other machineries for regarding and levelling the formation, dismantling any infringing structures, clearing and removing debris etc., with all leads and lifts etc., complete and as per the instruction of Railway representative at site.	per hour	110	1,202.50	132275.00
Railway Assessed Value of Annexure-A1						185784354.34
Annexure-A2						

305	NS1	Design and supply of Electronic Interlocking system as per RDSO Specification RDSO/ SPN/203/2011 or latest on the date of tender opening for PTJ Station as per the tentative plan enclosed. This EI system shall be of Hot stand by with DISTRIBUTED system configuration. This system should have either relay interface or object controllers to drive field gears. If object controllers are used, it shall be installed at relay room of station and huts. This system shall be compatible for working with DUAL VDU arrangements. Data logging facilities shall conform to clause 6.2 of RDSO/ SPN/203/2011 or latest. (a)The EI Supply material (Both hardware and software) shall be suitable for yard with ONE MAIN CABIN and 4 HUTS at PTJ yard. The enclosed plan is only tentative and the exact details have to be made based on the Table of control and approved signalling plan supplied by Railways. b) DC-DC converters of N+1 mode shall be supplied separately for A & B Systems and communication arrangement as per RDSO spec.	Set	1	30625256.15	3062525 6.15
		Railways will provide unstabilized 230V AC for the EI Equipment and its accessories. Necessary arrangements like cable laying and other associated works for extending the 230V Supply from SM Room or from IPS Room shall be done by contractor as instructed by Railway Engineer. Supply of one set of special and general purpose tools and measuring instruments for maintenance of EI.Supply of all special relays (except 24V QN1, QNA1& universal ECR relays. These relays will be supplied by railways).Designing of EI software and supply of 1 set of hard copies of Design documents (logic diagrams) for approval and supply of 2 sets of final approved copy. .				

		NOTE 1: The design of EI system should be as per the RDSO Spec: RDSO/SPN /203/ 2011 or latest on the date of tender opening. The EI system including its equipment and subsystems shall be under warranty for three years from the date of commissioning of complete system as per RDSO spec No.RDSO/SPN/203/2011. NOTE 2: a)At least 25% additional (spare) input/output ports shall be catered in the installed system hardware for facilitating minor alterations without any hardware additionsb) The system shall be equipped with and have provision for expansion to accommodate additional 25% of I/O cards. & 10% spares shall be provided for each card/module				
		NOTE 3:EI shall have user-friendly graphic based design tool to generate station specific application software to carry out future yard modifications. All the software tools required for yard modification shall be provided to the purchaser by supplier. List of such tools shall be submitted to RDSO at the time of approval. 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 Railway signalling staff for the same as per agreement with the Railway NOTE 4: Modification in the existing software like aspect changes distant/LSS/combination of aspects/Bifurcation of Track circuit or Provision of Berthing track/Engineering gate modifications/Shifting of starter /any minor changes in the SIP and Panel /VDU indication should be on free of cost.Any additional Cards/Modules required for the work will be supplied by the Railways. (Inspection by RDSO)				

306	NS2	Installation, testing and commissioning of EI equipment supplied vide sch No.NS1. This includes installation of relay racks and wiring of all types of interface relays. Non deteriorating fuses, LED indicators for fuses, indoor cable, different wire coils, etc. required to wire the various relays will be supplied by the contractor	Set	1	3469248.07	3469248.07
307	NS3	Supply of ESSENTIAL spares @ 10% of eachcards/modules/ PCBs for EI system supplied for under NS-1 subject to a minimum of 1 number ofeach. Item wise Rates should be quoted inseparate annexure. NOTE: The rates of various modules equipments, Subassembly and otherstores shall be quoted individually with unit rate.Total cost also should be given in detail by the tenderer. (Inspection by RDSO)	Set	1	5017996.93	5017996.93
308	NS4	Supply and installation of Operator VDU 86" monitor or bigger size. The monitors should be of 4K resolution or better and suitable for 24x7 operation.(Inspection by RITES)	Numbers	2	964675.00	1929350.00
309	NS5	Supply of Commercial Grade VDU of size 55 inch - Full HD (Inspection by RITES)	Numbers	5	179728.29	898641.45
310	NS6	Supply and laying of DWC split pipe of 250/217 mm dia, 2 m long in already DUG cable trenches.(Inspection by RITES)	Metre	5000	955.03	4775150.00
311	NS7	Supply of 2 Amps capacity self resetting fuse made of Polymeric Positive Coefficient (PPTC) material in thin clip.(Inspection by Consignee)	Numbers	50	16.16	808.00
312	NS8	Supply of 4 Amps capacity self resetting fuse made of Polymeric Positive Coefficient (PPTC) material in thin clip.(Inspection by Consignee)	Numbers	50	18.37	918.50

313	NS9	Supply of 6 Amps capacity self resetting fuse made of Polymeric Positive Coefficient (PPTC) material in thin clip.(Inspection by Consignee)	Numbers	75	23.89	1791.75
314	NS10	Supply and installation of STOP BOARD (Inspection by Consignee)	Numbers	5	8196.21	40981.05
315	NS11	Supply and Fabrication of Table having dimensions 2.5 Mtr x 1 Mtr for accommodation of Datalogger Terminal, Maintenance Terminal including Printer arrangements. This includes supply of one chair (Godrej PCH7002DX or superior as approved by engineer in charge) (Inspection by Consignee)	Numbers	2	24,552.49	49104.98
316	NS12	Supply of CORRKIL-E or similar (RDSO SPECFICATION NO.M&C/PCN /121/2011) Anti-corrosive chemical coating compound Top coat of Copolymeric base ,in single pack Twenty litres TIN drum containing polyethylene ,caprolactum against corrosion resulting from a wide range of industrial chemical ,gases and adverse weather conditions.(Inspection by Consignee)	Litre	300	3,808.12	1142436.00
317	NS13	Application of CORRKIL-E or Thermo tech or similar (RDSO SPECFICATIONNO.M&C/PCN/121/2011) Anti-corrosive chemical coating compound.	Litre	300	7.93	2379.00
318	NS14	Supply of Goods Warning Board (Inspection by Consignee)	nos	2	7312.54	14625.08
319	NS15	Supply and Installation of calling on board. This work involves supply and installation of 3mm prismatic retro reflective sign board.(Inspection by Consignee)	Nos	6	6357.23	38143.38
320	NS16	Supply of Block Section Limit Board.(Inspection by Consignee)	Nos	1	2712.28	2712.28

321	NS17	Design, Supply, Installation,Testing and Commissioning of Multi section Digital Axle Counters (MSDAC) complete system as per RDSO/SPN/176/2013 version 3 or with latest amendments in distributed arrangements with one central cabin and 4 huts.Tenderer shall design the scheme for provision of required number of evaluators, Trackside junction boxes, detection points, andtrack clearance relays etc..Design should have facility to reset track section by manual resetting system withcooperative type resetting features. This includes supplyof all the track side junctionboxes, required number ofEvaluators, Detection points,Track Clearance Relays (Qseries relays), Reset Panels,LV boxes, communication equipments/interface equipments for connectingevaluators, Reset Panels andLV boxes. Provision of atleast10% expansion slot in mother board all otheraccessories, includingMultiplexers, Modems, Cards, Modules etc , and any other miscellaneous materialsrequired for the work shall be supplied by the contractor.	Numbers	120	351207.81	42144937.2
322		This also includes supply of inbuilt cable for Axle Detector length - upto 15m. The Reset Panels and LV boxes shallhave the facility to work in Quad / OFC cables. (Railways will provide 230VAC/110V DC/24V DCsupply for the working of theMSDAC system).(Underground Quad and OFCcables will be supplied by Railways.) Total cost shall be given against the schedule. See Technical conditions for MSDAC for Full description (Any other materials not quoted in the breakup and/or any increase in quantities listed in the break up but found necessary while commissioning should be supplied free of cost by the contractor.) All the MSDAC equipment to be provided with efficient lightning and surge protections which also to be supplied along with the system.				

		The connectivity between Evaluators to Evaluators, Reset box & LV box at different location/station shall be through OFC and QUAD cable with Automatic changeover arrangements for redundancy purpose. (Inspection by RDSO)				
323	NS18	Supply of 10% essential Spares of all cards, modules and relays (minimum of 1 No.) to be supplied for Indoor and outdoor equipments of MSDAC (subject to a fractional quantity to be rounded off to next higher digit). The supply of spares required should be certified as essential by OEM.(Inspection by RDSO)	Lumpsum	1	860043.38	860043.38
324	NS19	Supply of Tool Kit for installation and maintenance of MSDAC as per OEM requirement comprising of 1) Portable Data Analyser for downloading event logger data for analysis and report generation - 1 No. 2)True RMS Digital Multimeter of reputed make as recommended by OEM - 1 No 3)Dummy wheel - 1 No. 4) Set of Spanners and Screw drivers including soldering iron - 1 Set 5)Adjustable Torque wrench - 1 No. 6) Marking jig for drilling-1 no Any other specialised tools and measuring equipments as per OEM requirement. .(Inspection by Consignee)	Set	1	190898.73	190898.73
325	NS20	Training of Railway personnel in MSDAC by OEM. The contractor shall provide training for Railway official in Hardware and software to enable him to install.	Man Days	30	1192.54	35776.2
326	NS21	Supply of single spike air terminals of 17 mm dia. & 2000 mm length as required and as per site conditions. The air terminal shall be manufactured with CBS & shall be as per IEC 62561-2. The air terminal shall be fixed with (Base Plate arrangement) (Inspection by RDSO)	Nos.	12	6000.00	72000

327	NS22	Supply of 8 mm dia. Copper Bonded Steel round conductor (250 Micron) for air termination network at Roof and shall meet the requirement of IEC 62561-2.(Inspection by RDSO)	Mtr.	370	400.00	148000
328	NS23	Supply of Roof Parapet Conductor holder for holding of 8 mm dia. round conductor (for RCC roof). The conductor holder shall be of Stainless steel and shall meet the requirements of IEC 62561-4.It should be installed at every 1 mtr.(Inspection by RDSO)	Nos.	370	350.00	129500
329	NS24	Supply of 16sq.mm. copper cable along with lugs, having 500mm length & as per IEC 62561-1 so as to connect air termination rod with any metallic structure on the roof.(Inspection by RDSO)	Nos.	12	320.00	3840
330	NS25	Supply of Universal Connector for making straight, Tee & Cross joint of 8-10mm dia. Copper Bonded Steel Round Conductor to 8-10mm dia. Copper Bonded Steel Round conductor on parapet wall, roof and vertical facade of masonery / glass / metallic work.(Inspection by RDSO)	Nos.	60	294.00	17640
331	NS26	Supply of 8 mm dia Copper Bonded Steel round conductor (250 Micron) for Down conductors to be installed on vertical wall, façade of masonary / glass / metalic work. It shall meet the requirements of IEC 62561-2.(Inspection by RDSO)	Mtr.	300	400.00	120000
332	NS27	Supply of Down Conductor holder for holding of 8 mm dia. round conductor (for RCC wall). The conductor holder shall be of Stainless steel and shall meet the requirements of IEC 62561-4.It should be installed at every 1 mtr.(Inspection by RDSO)	Nos.	300	325.00	97500

333	NS28	Supply of Expansion piece made of 8mm dia. Copper Bonded Steel & as per IEC 62561-2 along with 2MV clamps used as connecting accessory from both the ends. It shall be installed at every 20 mtr to maintain the flexibility to the conductor due to heat.(Inspection by RDSO)	Nos	23	888.00	20424
334	NS29	Supply of Test Clamp to disconnect the 8 mm dia. Copper Bonded Steel down conductor from the 25x2mm Copper Strip of earth termination network for regular checks of the earth termination resistance value. (with enclosure). It shall meet the requirements of IEC 62561-2. (Inspection by RDSO)	Nos	21	1250.00	26250
335	NS30	Supply of Digital Lightning Strike counter Model: JMV/DLSC-3D for counting the number of lightning strikes and has a 3 Digit display facility and also records date and time . The Counter should be mounted on the Down Conductor. The Lightning Counter should be IP 67 rated enclosure suitable for external application. It shall meet the requirements of IEC 62561-6.(Inspection by RDSO)	Nos.	6	20000.00	120000
336	NS31	Supply of Earthing termination as per RDSO/SPN/197.(Inspection by RDSO)	Nos.	19	11000.00	209000
337	NS32	Supply of 25 x 2 mm Copper Strip laid 500mm below the ground for Ring Earthing as per RDSO/SPN/197.(Inspection by RDSO)	Mtr.	515	1120.00	576800
338	NS33	Supply of Strip holder for holding of 25x2 mm Strip (for RCC wall). The conductor holder shall be of Plastic and shall meet the requirements of IEC 62561-4.It should be installed at every 1 mtr.(Inspection by RDSO)	Nos.	38	100.00	3800

339	NS34	Supply of 2D- T joint between Horizontally laid 25 x 2mm Copper strip to Horizontally laid 25 x 2mm Copper strip.(Inspection by RDSO)	Nos.	31	1740.00	53940
340	NS35	Supply of 2D- T joint between Horizontally laid 25 x 2mm Copper strip to 25 x 6 x 200mm Copper Bus Bar.(Inspection by RDSO)	Nos.	32	1150.00	36800
341	NS36	Supply of Straight joint between 25 x 2mm Copper strip to 25 x 2mm Copper strip.(Inspection by RDSO)	Nos.	35	2295.00	80325
342	NS37	Supply of Isolating spark Gap for lightning equi-potential bonding of different earth grids according to IEC 62561-3.(Inspection by RDSO)	Nos.	12	28000.00	336000
343	NS38	Installation and commissioning of External Lightning Protection (ELP), ClassA.Warranty of the earthing system shall be 60 months from date of commissioning as per RDSO Lr .No TAN STS/E/TAN/3006 Ver.3.1 or latest	JOB	6	450000.00	2700000
344	NS39	Supply of Single Section Digital Axle Counter (Phase Reversal Type) asper RDSO Specification No. RDSO/SPN/177/2012 (Ver.3) or latestconsisting of the following:- High frequency TX Coil and RX Coil (AD-711FS) consisting of Tx = 02Nos. & Rx = 02 Nos. – 01 Set- Track side digital axle counter unit DACF-710P -2 Nos.- Vital Relay box duly wired = 2 Nos, each with 2 Nos. of 24V, 1000Ohms, “Q” type relays.- Clamp with deflector plates and hardware etc. – 4 Nos.- Reset Box –2 Nos.- Surge Voltage Protection Device – 2 Nos.- Commissioning and OEM Certification of SSDAC, The Warranty certificate should be issued from the date of commissioning.(Inspection by RDSO)	Set	6	581150.00	3486900

345	NS40	Supply of Tool Kit for maintenance of Single Section Digital Axle Counter Systems.(Inspection by RDSO)	Set	1	200600.00	200600
346	NS41	Installation of SSDAC system complete with Dual sensor as per latest RDSO specification ; this work includes Testing and commissioning as per instruction of OEM and Railway representative at site. The Pre-Commissioning checklist issue by RDSO for SSDAC will be prepared by OEMs Engineer and signed jointly with Railways Site Engineer before commissioning of SSDAC. OEM will submit site installation certificate mentioning that SSDAC has been installed, wired, tested and commissioned by approved vendor of RDSO i.e., by OEM. This items also include installation of track device(rail contact) including drilling of holes if required in rails, laying of separate Double walled anti rodent corrugated pipe from Axle Detector to Digital Axle counter field unit for TX & RX cables, drawing of cables and making its terminations, fixing of deflector plates. (Double walled anti rodent pipe 103.5 / 120mm is not covered in this schedule) (Wire PVC, Copper Lugs and other consumable materials will be supplied by Contractor)	Set	6	41300.00	247800
Railway Assessed Value of Annexure-A2						9992831 7.13
Annexure-A3						
347	NS42	Supply of Full HD Bullet type IP Colour Camera as per RDSO Specification No RDSO/SPN/TC/65/2021 Version 6.0 or latest. (Inspection by RDSO)	Nos	30	13077.47	392324.10
348	NS43	Installation, Testing & Commissioning Full HD bullet type IP Colour Camera along with, Mount. All the accessories and fixing materials including mount required for this installation are to be supplied by contractor within the same cost.	Nos	30	221.62	6648.60

349	NS44	Supply of Full HD Resolution Fixed dome type IP Colour Camera as per RDSO Specification No RDSO/SPN/ TC/65/2021 Version 6.0 or latest. (Inspection by RDSO)	Nos	15	13986.24	209793.60
350	NS45	Installation, Testing & Commissioning HD Resolution Fixed dome type IP Colour Camera along with, Mount . All the accessories and fixing materials including mount required for this installation are to be supplied by contractor within the same cost.	Nos	15	296	4440.00
351	NS46	Supply of Full HD Resolution PTZ (Pan, Tilt, Zoom) IP Colour Camera as per RDSO Specification No RDSO/SPN/TC/65/ 2021 Version 6.0 or latest. (Inspection by RDSO)	Nos	10	38385.79	383857.90
352	NS47	Installation, Testing & Commissioning of Full HD Resolution PTZ (Pan, Tilt, Zoom) IP Colour Camera along with, Mount . All the accessories and fixing materials including mount required for this installation are to be supplied by contractor within the same cost.	Nos	10	643.94	6439.40
353	NS48	Supply, Installation, Testing & Commissioning of Video Management Software with License as per RDSO Specification RDSO/SPN/ TC/65/2021 Rev 6.0 or latest amendment(Per camera licence means Video Management (Viewing) at multiple locations such as Station, RPF Post & Server room by same license) (Inspection by RDSO)	Nos	2	1105.06	2210.12
354	NS49	Supply of Server Hardware for Video Management and recording along with all accessories as per RDSO Specification No RDSO/SPN/ TC/ 65/2021 Version 6.0 or latest.(Inspection by RDSO)	Nos	2	330952.78	661905.56
355	NS50	Installation, Testing & Commissioning of Video Management & recording Server with required accessories as per RDSO spec. No: RDSO/SPN/TC/65/2021 Ver.6.0 or latest (Inspection by RDSO)	Nos	2	6619.06	13238.12

356	NS51	Supply, Installation, Testing & Commissioning of Video Recording Software with License as per RDSO Specification RDSO/SPN/TC/ 65/ 2021 Rev 6.0 or latest amendment (Per camera Licence means Video Recording at multiple locations such as Station, RPF Post & Server room by same license) (Inspection by RDSO)	Nos	45	640.76	28834.20
357	NS52	Supply of Large Format LED Display Unit, 55" (inches), Full HD 1920 x 1080, Brightness: 350cd/m, contrast ratio 1100:1, HDMI &RGB/VGA/BNC port, USB port Including wall mount kit.as per clause 9.0 ofRDSO/SPN/TC /65/2021 Revision 6.0 or latest. (Inspection by RDSO)	Nos	10	63492.29	634922.90
358	NS53	Installation, testing and commissioning of large format display monitor unit 55 with all accessories and fixing materials required for this installation are to be supplied by contractor within the same cost.	Nos	10	1206.69	12066.90
359	NS54	Fabrication, Supply and installation of MS sheet box of 3mm thick to accommodate 55 inch LED TV, 12F FMS,5/15A power socket terminations and Media converters etc with suitable lock and key arrangements (min 2 Nos), Polycorbonate Glass (min 4mm thick) on the front side to display TV. The box to be painted enamel black. (This includes supply of 12 F FMS (SC type) and splicing of fibres , supply of 5/15APower socket with switch - 3 Nos and termination of power cables and suitable clamps for hanging/Fixing ,miscellaneous materials including necessary interface like TV LAN adapter set required if any for functioning of TV for installation to be supplied by the contractor). The box and clamp drawing to be submitted for approval before fabrication. The cabinet shall be provided with rain hood and sealed to protect from rain water, bird guard to be provided. (This includes Transportation of materials from Nominated stores to site)(Inspection by consignee).	Nos	10	23000.00	230000.00

360	NS55	Supply, installation, Testing and Commissioning of 10port Gigabit switch with POE ports-8 Nos and SFP ports-02 Nos. 10/100/1000 base -TEthernet ports 1-8 portsupports PoE+ (30W) powersupply and PoE output fullpower up to 115 W. Providing DC power and data transmission for AP, IP phone and IP camera through category 6 twisted pair. Similar to Cisco SG350-10Por latest. (Inspection by consignee)	Nos	12	19059.06	228708.72
361	NS56	Supply, Installation, Testing and commissioning of Manageable Layer-2 Switches consisting of 24 x10/100/1000 BASE-T PoE ports, 4 x10G SFP+ ports with all ports loaded except SFPs along with all accessories A required for the installation as per RDSO Specification No. RDSO/SPN/TC/65/2021, Rev6.0. Supply of optical SFP/SFP+ is not included in this schedule. (The to be procured from TTP Approved sources) (Inspection by RDSO)	Nos	15	85050.00	1275750.00
362	NS57	Supply, Installation, Testing & Commissioning of 10G SFP+ supports minimum of 10Km with dual fibre connectivity to suit the switches as per RDSO/SPN/TC/65/ 2021, Ver. 6 with Amdt. 1 or latest. (Inspection by RDSO).	Nos	10	5197.03	51970.30
363	NS58	Supply of Single mode single fibre 1G SFP module compatible toLayer 2 switch, Aggregate and field switch (Inspection by Consignee)	Nos	24	1250.01	30000.24
364	NS59	Installation, testing and commissioning of single mode single fibre 1G SFP module	Nos	24	56.63	1359.12
365	NS60	Supply and fixing of optical fibre termination boxes for 6 fibre and splicing of 6 fibre.(OFC pigtail patch chords of suitable length and all other materials required for splicing are to be supplied by contractor). (Inspection by Consignee)	Nos	10	3782	37820.00
366	NS61	Supply of OFC single mode 6 fibre unarmoured cable. Make Molex/AMP/Finolex or similar.(Inspection by Consignee)	Mtrs	3000	17.04	51120.00

367	NS62	Supply of 3 core 2.5 sq mm, multi strand copper conductor, PVC insulated armoured power cable ,confirming to IS: 1554 Part-I. (Inspection by RDSO)	Nos	2000	75.73	151460.00
368	NS63	Supply, Installation, Testing and Commissioning of External Storage System for 30 days recording at station/RPF/GRP Thana/Post along with all accessories required for installation purposes as per RDSO Specification No. RDSO/SPN/TC/65/2021, Ver. 6 with Amdt. 1& 2 or latest. This is to be distributed and installed with suitable Hardware at 5locations, as per the site requirement.(Inspection by RDSO)(Unit is 1 Nos = 1TB)	Nos	64	4950	316800.00
369	NS64	Supply, Installation, Testing and Commissioning of server hardware as per class 10.1.1.3, 10.1.2, 10.1.3 of RDSO spec to configure as Video Management &Recording server(to support 128 cameras)(min)/ Video Analytics Server/ Video FRS server in 1:1 redundancy with all accessories required for installation as per the Technical Specification and RDSO Specification No. RDSO/SPN/TC/65/2021Ver. 6 with Amdt. 1 or latest. Note: Unit is set consisting of two server hardware configured in 1:1 Redundancy. (Inspection by RDSO)	Nos	2	511033.9	1022067.80
370	NS65	Supply, installation,testing, wiring &commissioning of Face Recognition software with license as per RDSO Specification No RDSO/SPN/TC/65/2021Version 6.0 or latest amendment. (Per camera license means videomanagement (Viewing) atmultiple locations such asstation, RPF post & serverroom by same license).(Inspection by RDSO)	Nos	2	39188.29	78376.58

371	NS66	Supply of Client workstation for viewing cameras in multi screen mode, monitoring, system management with graphical user interface,4K UHD LED Monitor of 24" size including all required licensed software's (like OS, MS Office, Anti virus total 3years security),multi functioning device for documentation,accommodate PC workstation & monitor with all accessories, spike buster(minimum 5 nos 6A points with fuse), 500VA UPS,Mounting Rack and other required materials as per RDSO spec. No.RDSO/SPN/TC/ 65/2021Version 6.0 or latest (Inspection by RDSO)	Nos	2	275733.05	551466.10
372	NS67	Installation, testing and commissioning of PC work station with all accessories and fixing materials required for this installation are to be supplied by contractor within the same cost.	Nos	2	4364.8	8729.60
373	NS68	Supply and Installation of 5KVA online UPS APC/NUMERIC/ TATALIBERT with one hour backup.(Inspection by Consignee)	Numbers	4	92,011.28	368045.12
374	NS69	Supply , testing and commissioning of 1 KVA UPS with 1hour backup similar to the make of APC or better. (Inspection by consignee).	Numbers	8	12,620.77	100966.16
375	NS70	Supply of Microphone with Stand, make AHUJA, Model AUD - 99MS or ACM66 or similar or higher version.(Inspection by Consignee)	Numbers	2	4,436.41	8872.82
376	NS71	Supply of high power public address amplifier 500 Watt,230 VAC operation similar to model Ahuja SSA-5000EM or better (Inspection by Consignee).	Numbers	1	33,877.91	33877.91

377	NS72	Supply and Provision 25W Horn Speaker in open areas for public address system of ABS plastic with 100 v line matching transformer with multiple taps/impedances easily selectable by rotating switch .It should meet EN-60065 standard. This works includes supply, fabrication and erecting of pole, angles, fastenings and rain hood as per the instruction of railway representative at site.(Inspection by Consignee)	Numbers	10	9,340.58	93405.80
378	NS73	Supply of column speaker 15watts similar to model no. SCM 15 of Ahuja make for public address system with100 volts line matching transformer with multiple taps/impedances easily selectable by rotating switch. It should meet EN-60065 standard.(Inspection by Consignee)	Numbers	2	2,754.94	5509.88
379	NS74	Supply of Duplex shielded cable for Public address wiring with 2 conductor, 30 strands/ conductor with double jacketing and shielded.(Inspection by Consignee)	Metre	1000	74.70	74700.00
380	NS75	Supply, Installation, Testing and Commissioning of 24 port (fully loaded with 12optical and 12 electrical SFP's) manageable Layer 2 switch as per Spec. No: RDSO/SPN/TC/83/2020 Ver2.0 or latest. (Inspection by consignee)	Numbers	1	33,464.68	33464.68
381	NS76	Supply, Installation, Testing and Commissioning of 24 port manageable Layer 3 switch with 4 Nos of 10G SFP port (fully loaded) and 24Nos of GE port (fully loaded with 12 optical and 12 electrical SFP's) with all accessories as per Spec. No: RDSO/SPN/TC/83/2020 Ver2.0 or latest.(Inspection by RDSO)	Numbers	4	1,37,888.01	551552.04

382	NS77	Supply , fixing of shutter and lable type dual port face plate fitted with female keystone jacks of RJ45 along with surface mount PVC back box and termination of telecom cables for data and voice .Dlink or DAX or Krone or Panduit makes (Inspection by Consignee)	Numbers	46	499.95	22997.70
383	NS78	Supply and provision of 1/2"(or) 1" PVC pipe/ channel and fixing on the wall and wiring of CAT6 UTP Cable/ telephone cable (all accessories for the work shall be supplied by the contractor).(Inspection by Consignee)	Mtrs	1000	31.68	31680.00
384	NS79	Supply of 7 feet length of factory crimped moulded booted type UTP CAT-6/6A Patch cords. Panduit or systimax or R&M or AMP or MOLEX or Krone makes (Inspection by Consignee)	Numbers	30	280.83	8424.90
385	NS80	Supply, Installation, testing and commissioning of Media Convertor fibre to Ethernet to supportdistance range of 20Km over single mode Fibreof D- Link / MROTEK make or better.(Inspection by consignee)	Pair	4	8,816.03	35264.12
382	NS81	Cutting of trench across/ onthe platform /floor withtiles/walls for a depth of 10cm with marble cuttingmachine and filling the trenchafter cable laying andrestoring the surface withconcrete/plaster etc. to normal condition.	Metre	500	260.24	130120.00
383	NS82	Supply, Installation, Testing and Commissioning of Digital Clock with GPS Synchronization Single side at SM Room as per RDSO Specification No. RDSO SPN TC 62/2008 Rev.3.0 or latest (Necessary materials for installation should be supplied by contractor). (Inspection by RITES)	Numbers	4	23,948.10	95792.40

384	NS83	Supply of Laser Color Printer for Fault Analysis Terminal of supplied vide SOR 2_8. Make: HP M128fn Laserjet or similar (Inspection by Consignee)	Numbers	2	22,452.11	44904.22
385	NS84	Supply and Installation of wireless router similar to linksys E2500 with suitable clamps and all accessories to be supplied by the contractor. (Inspection by Consignee)	Numbers	4	3,444.00	13776.00
386	NS85	Supply of Ferrule Printer Canon MK3000/MK5000 similar or better. (Inspection by Consignee)	Numbers	2	66,120.00	132240.00
387	NS86	Shifting of VHF(25W) from existing building to new building.	Station	1	7,778.04	7778.04
388	NS87	Supply and provision of Outdoor signaling design Management software with GIS mapping: Design, develop and deployment of Outdoor signaling information Software for managing station-wise cable core allocation, asset connectivity mapping, and automated generation of cable core plans, Cable Route Plan with cable depths details and its logical paths. The software shall serve as a centralized digital platform to streamline the design, documentation,and control of outdoor signaling infrastructure in compliance with railway practices: The software shall have the following specifications: i. Location Box Management: Each location box will have a dedicated location diagram showing the Terminal arrangements, wiring details, Terminal numbering and label configuration ii. Interactive SIP and Interactive Cable core plan: Clicking on elements within a SIP (Signal, Point, Track) and Location boxes should display corresponding cable functional details.	Station	1	24,15,000.00	2415000.00

		iii. GIS Based asset mapping: Built-in integration with GIS platforms to plot and manage: Asset locations (Signals, Points, Cable Markers, Location Boxes) Cable routes plan and its logical paths, Bonding Plan and Power Diagram. iv. Controlled Access and Authorization: Role based access control must be enforced: General users can view data. Only authorized personnel can approve and finalize updates, and all edits and approvals shall be logged via an audit trail system which will have all the details of changes that have been done and approved.				
		v. The software shall be loaded in a server or PC at Test Room as well as at the respective location in a standalone mode (The required hardware shall also be supplied along with it: Min spec: Intel i5 with 16GB RAM & 512GB SSD or similar) as per the requirements of Railway executive in charge. vi. The software shall be upgraded free of cost whenever there are changes in the design or shall do the necessary upgradation as per the Railway in charge's requirementsvii. The software shall have warranty for a period of 2 Years inclusive of the above software up gradation from the date of the commissioning of the station. The warranty shall cover rectifications of bugs or any other UI related issues.				

		viii. All the field data should be collected and the inputs for the software once provided shall be verified jointly with the Railways before delivering the final software. ix. The final cable core plan, cable route plan,Bonding plan and Power diagram shall be generated by the software and the same shall be submitted in the form of hard copy of the Required size. x.The software training required to implement necessary changes in the cable core plan or route plan, in the event of any future station design modifications, shall be provided to the Railways.(Inspection by RDSO)				
389	NS88	Alteration in existing EI at Podanur Jn. inconnection with Proposed Trip Maintenance/Advanced Inspection Centre at PTJ includes 1)Redesigning of Application Logic(for full station) as per approved SIP & TOC 2) Redesigning ofInterface Circuits as per approved SIP & TOC.3) The above circuits shall be prepared by contractor inAUTOCAD 2000 or latest in A3 size. Initially contractor has to submit one set of hard copy forchecking and approval.(All drawings including As mades shall be given for full station) 4) Contractor to arrange for Factory acceptance test for EI system. 5) Contractor to arrange for Site acceptancetest for EI system.	Set	1	38,00,000.00	3800000.00

		6) On successful FAT & SAT contractor to arrange for Installation, Testing & Commissioning of EI system as per approved SIP & TOC 7) After execution of the work one copy of the "As made" check print along with ALC(service version as uploaded at station) shall be submitted for checking. 8) On approval of "AS MADE" the contractor shall submit six sets of documents duly making neatly bound booklets along with the negatives(Tracing sheets). Out of six sets, two sets of drawings and other plans shall be kept in Transparent plastic cover(Two sheets back to back in one plastic cover) and handover to Railways. 9) Contractor has to submit the final AUTOCAD drawing , approved circuits in PDF, ALC files, VDU files, MT files as commissioned at site, DL bit list, FAT files and other soft copies as per the make of EI system in Pendrive. 10)Networking and validation of Datalogger to be ensured.				
390	NS89	HDD boring including insertion of High Density Polyethylene Pipes (HDPE) of of size 110mm outer dia in the bore drilled along with couplers required, pulling of different size of signalling cables through HDPE duct by machine as instructed by railway representative .Boring trench shall be minimum 1.5m to 2mts below the platform, Track and yard/midsection. Radio or any other detection system should be used for avoiding damage to existing underground utilities. Minimum horizontal distance of 50m to 100m should be taken up with a launching point. Transportation of HDD machine, fuel and other materials required for boring and pulling of cable etc.(Supply of HDPE DUCT is not included).	Metre	500	2,749.37	1374685.00

391	NS90	Supply of 8 port switch manageable with 2 nos 1000 baseX SM SFP optical module and 6 nos of ethernet ports Layer 2 POE switch with SPF module as per specification RDSO/SPN/TC/65/2009 Rev.4 or latest. (Inspection by RDSO)	Numbers	4	20,000.00	80000.00
392	NS91	Supply of Fiber to E1 Converter.(Inspection by Consignee)	Pair	4	34,842.18	139368.72
393	NS92	Supply of 2 X 70 sq.mm Aluminium power cable as per IS:7098(part -1)/ 1988 with all amendments or latest. (Inspection by RDSO)	Metre	500	240.00	120000.00
394	NS93	Design , Fabricate& Supply of rack mountable modular intelligent service IP MPLS aggregator router with minimum switching speed of160Gbps , unit to supportsL2VPN ,L3 VPN,MPLS- TE ,unit to be capable to support8x10Gbe or more, 32x1GbEor more , 64xE1 ,12xSTM 1ports or 2x8 port WDM support multiple routing functions such as OSPF V3,ISIS, BGP & MP-BGP and support LDP and RSVP - TE to dynamically establish IMPLS tunnels & PW service. It should support dual main control card redundancy design supporting 1:1 hot back up. The router should have console and SNMP interface, Fan module, control card module and Redundant 48V DC power supply modules including connection cable and fixing accessories etc. The Router should have required interface slots to accommodate 4x10Gbe ,8x1Gbe , 16 E1s and 4xSTM1 or 2x8 interface modules. The router should support all the software features, environmental standards and security features as mentioned in RDSO technical document no STT/TAN/IP-MPLS/2020 Ver1.0 or latest for the LER Router.(Inspection by RDSO)	Set	1	556845.35	556845.35
395	NS94	Supply of 4 port x10G SFP module card suitable for the IP MPLS router in NS22.(Inspection by Consignee)	Numbers	1	20,278.87	20278.87

396	NS95	Supply of 8 port x 1GbE(4nos of optical ports and 4nos. of electrical ports)module card suitable for the IP-MPLS router in NS27.(Inspection by Consignee)	Numbers	1	24,049.65	24049.65
397	NS96	Supply of 16 port channelised E1 interface card suitable for the IP-MPLS router in NS27.(Inspection by Consignee)	Numbers	1	50,711.84	50711.84
398	NS97	Supply of SFPs for 1Gbe(optical)/RJ 45 ports as per the site requirement.(Inspection by Consignee)	Numbers	8	6,354.72	50837.76
399	NS98	Design , Fabrication & Supply of rack mountable modular intelligent service IP MPLS aggregator router with minimum switching speed of 160 Gbps, unit to supportL2VPN ,L3 VPN, MPLS-TE , unit to be capable to support8x10Gbe or more , 48x1GbE or more , 64xE1 or more ,12xSTM1 ports or 2x8 port WDM support multiple routing functions such as OSPF, ISIS,BGP & MP-BGP and support LDP and RSVP - TE to dynamically establish MPLS tunnels & PW service. It should support dual main control card redundancy design supporting 1:1 hot backup. The router should have console and SNMP interface, Fan Module , Redundant control card modules and Redundant48V DC power supply modules including connection cable and fixing accessories etc. The Router should have required interface slots to accommodate8x10Gbps interface modules. The router should support all the software features, environmental standards and security features as mentioned in RDSO technical document no STT/TAN/IP-MPLS/2020 Ver1.0or latest for the LSR Router.(Inspection by RDSO)	Set	2	5,95,466.25	1190932.50
400	NS99	Supply of 8x10Gbps SFP module card suitable for the IP-MPLS in NS27.(Inspection by Consignee)	Numbers	2	50,786.84	101573.68
401	NS100	Supply of SFP + 10G (40 Km)SMF,1550nm for 40KM transmission working on single or dual fibre as per site requirement.(Inspection by Consignee)	Set	4	22,799.46	91197.84

402	NS101	Supply of Channelised STM1/4(4 Port STM-1 or one port STM-4) card or 2 Nos of 4/8 port X 10Gbps WDM interface module card suitable for the above in NS27 & NS 32 along with 2nos of SFP's(1.2Gbps or 2.5Gbps)as per the site requirement.(Inspection by RDSO)	Numbers	2	1,01,407.36	202814.72
403	NS102	Supply of covered 19" Racks of size 2200 mm X 600 mm X600 mm (WQ/Vero President/Rittal/APC make)complete with all fittings including DC Fans (48 V) - 2Nos, seperator sheet/plate to keep testing equipments - 1No and AC Power distribution panel (horizontal fitting) with power sockets and fuse/MCB protection (minimum 6 Nos of 230V- 15A/5A. combined)and other accessories. Rack should have compatibility with all equipment conforming to DIN 41494 or equivalent EIA/ISO/EN standard, Manufacture must certify that products are complied with DIN41494 or equivalent EIA/IISO/EN/CEA/UL standards(Inspection by Consignee)	Numbers	1	29,029.24	29029.24
404	NS103	Supply of SMPS based powerplant with 48v/25A SMRFR/FC modules in 2+1configuration compatible with VLRA battery bank of 48V DC/ 300AH, suitable for incoming power supply of single phase 165V - 260V AC conforming to RDSO spec.No. RDSO/SPN/TC/23/1999Ver.4 with latest amendments. (Inspection by RDSO).	Numbers	1	1,27,690.10	127690.10
405	NS104	Supply of DC Power distribution panel to cater DC power requirements of IPMPLS/STM Multiplexers/PD MUX / EOW / Fans to be fixed in 19" rack (Minimum 8 Nos of DC distribution arrangement with MCB's of suitable rating) for -ve .Connecting copper strip for +ve. (Inspection by Consignee)	Numbers	2	3,580.82	7161.64

406	NS105	Installation of IP MPLS Router and switches, with power distribution panel and all accessories in the Rack (19"42 U) , DDF, Aluminium runway ladder, patch cord etc and their testing and commissioning. This includes termination of all E1's on DDF, connection of pigtails, optical patch cords and 48 Vbus to the IPMPLS equipment including supply of wires and connectors. It also includes proper mounting of rack, provision of Aluminum runway ladder, casing andcapping and conduit pipe asper requirement at each station, other materials from stores supplied by Railways for installation. (Conduit pipe/ casing and capping,aluminium runway ladder and all other miscellaneous materials should be supplied by the contractor).	Numbers	2	22,013.57	44027.14
407	NS106	Installation. wiring and testing of battery sets and battery chargers for optic fibre circuits. This includes installation of AC and DC power supply distribution board with MCB's of suitable rating, wiring of external alarm contacts, Fixing arrangements for battery and charger in the equipment room with 25 sq.mm Multistrand single core Copper cable PVC insulated from Battery charger to Battery with suitable copper lugs crimped/soldered to it ,16 sq.mm Multistrand single core Copper cable PVC insulated from battery charger to power distribution panel in the rack with suitable copper lugs crimped/soldered to it.Connection from Battery Charger body and battery +ve terminal to Earth terminal by16 Sq.mm Multistrand single core Copper cable PVC insulated seperately with suitable copper lugs crimped/soldered to it and Extension of AC 230V power supply wiring through PVC pipe with 6 sqmm cu. wire for phase & neutral and 1 sqmm cu .wire for earth to the 19"rack (Copper cables , 20Ametal clad with MCB for AC supply to fix in the wall ,conduits and other miscellaneous materials required for the work should be supplied by the contractor. This work also	Numbers	1	12,358.58	12358.58

		includes transportation of materials from stores/supplied by Railways for installation.				
408	NS107	Integration, Testing and Final commissioning of equipments at each station for all the equipments confirming with the approved system design including end to end testing for realization of optical fibre system. This also includes supply of all as made documents for the entire section (six copies) plus technical, maintenance and installation manuals for IPMPLS , NMS, Charger and Power Supply unit.	Job	1	15,824.07	15824.07
409	NS108	Training of Railway staff at the factory premises of manufacturer of IP-MPLS equipment (or) at a reputed training institution as approved by railway executive in charge. This includes boarding and lodging charges. (Travel expenses will be borne by the railways).	Man-Week	3	16,603.45	49810.35

410	NS109	Alteration in existing EI at Podanur Jn.,CBE & IGU Yard inconnection with Proposed new By-Pass line and creation of new Cabin at PTJ. includes 1)Redesigning of Application Logic(for full station) as per approved SIP & TOC 2) Redesigning ofInterface Circuits as per approved SIP & TOC.3) The above circuits shall be prepared by contractor inAUTOCAD 2000 or latest in A3 size. Initially contractor has to submit one set of hard copy forchecking and approval.(All drawings including As mades shall be given for full station) 4) Contractor to arrange for Factory acceptance test for EI system. 5) Contractor to arrange for Site acceptancetest for EI system.	Station	3	25,31,100.00	7593300.00
		6) On successful FAT & SAT contractor to arrange for Installation, Testing & Commissioning of EI system as per approved SIP & TOC 7) After execution of the work one copy of the "As made" check print along with ALC(service version as uploaded at station) shall be submitted for checking. 8) On approval of "AS MADE" the contractor shall submit six sets of documents duly making neatly bound booklets along with the negatives(Tracing sheets). Out of six sets, two sets of drawings and other plans shall be kept in Transparent plastic cover(Two sheets back to back in one plastic cover) and handover to Railways. 9) Contractor has to submit the final AUTOCAD drawing , approved circuits in PDF, ALC files, VDU files, MT files as commissioned at site, DL bit list, FAT files and other soft copies as per the make of EI system in Pendrive. 10)Networking and validation of Datalogger to be ensured.				

411	NS110	Supply of Microprocessor based Distributed Electronic Interlocking System (Hot standby only) for one OC HUT to suit the existing EI at PTJ yard as per RDSO Spec.RDSO/SPN/192/2019 Ver 2.0 asper technical conditions enclosed This schedule includes supply as per RDSO specifications • Microprocessor Equipment, Interface Equipment, Interconnecting cables, Relay Racks, Fixtures, Mounting arrangements and other Accessories necessary to make the EI System installed and functional• All special relays shall be supplied by tenderer, except QNA1, QECX, QUCX and QN1 having different operatingvoltages i.e., 24V DC, 50V DC, 60VDCetc.,. which is in the scope of Railways• Operator console (Without PowerSupply & Earthing) - Note:Supply of Operator VDU table for SM, Table for Maintenance Terminal & Datalogger,and General Purpose tools for EI maintenance are not covered in this schedule	Set	1	93,79,932.02	9379932.02
		Supply of DC-DC converters in N+1 mode individually for A&B systems is not covered under this schedule. • Accessories such as managed Ethernet switch, RS232,isolator etc. as required to interface EIwith VDU shall covered under this schedule. • The system shall have provision for 1) At least 20% additional(spare) input/output ports shall be catered in the installed system hardware for facilitating minor alterations without any hardware additions. 2) The system shall be equipped with and have provision for expansion for accommodating additional 25% of I/O cards in the form of unused I/O cards slots or the unused bits in installed cards. NOTE: Required materials has to be supplied by the Contractor. The paralleling of DC track with MSDAC should be done in the EI application logic only.The Electronic Interlocking (EI) systems in the OC hut must be interfaced with the Main Cabin.(Inspection by RDSO)				

412	NS111	Excavation of OFC cable joint pit and provision of RCC joint/ loop chambers of 1.2m dia, 60cm height and 50mm thickness with 2 pieces top and bottom cover with holes for drainages (reinforcement as per DRG No. OFC/2009/17). This includes filling up of sand complete in the joint chamber after cable laying, back filling and consolidation of soil around the chamber, disposal of excess soil as per plan or as advised by railway engineer at site as well as transportation of joint chamber to site at every KM in the section.	NOS	20	8424.89	168497.8
413	NS112	Supply of trunking and capping as per drawing No.Proj/SG/MS/ 55A/2006.(Inspection by RITES)	Numbers	4000	1280.57	5122280.00
414	NS113	Placing of Trunking to a depthof 500 mm and capping.Excavation of trench to a depth of 500 mm and to awidth suitable for accommodating the trunking and capping in all kinds of soilexcept hard rocky areasclearing of roots withoutcausing damage to theexisting cables, placing of RCC ducts (Trunking),plastering the inner spacing between ducts.	Numbers	4000	290.83	1163320.00
415	NS114	Supply of Ethernet Tester of Stanlay make NETCATPRO2.(Inspection by Consignee)	Numbers	1	62995.66	62995.66
Railway Assessed Value of Annexure-A3						42180204.18
Annexure-A4						
The value of AMC Schedule shall be taken into consideration for evaluation of the tender but shall not form part of the Contract Agreement for the work. The AMC Contract Agreement shall be executed separately with the Division and only after the Contract Agreement for AMC is executed, Security Deposit shall be released to the Contractor. The Tenderers are requested to quote single percentage on the total value of Annexure-A4.						
416	NS115	1st Year AMC for PTJ (Inclusive of GST)	Station	1	1089417.32	1089417.32
417	NS116	2nd Year AMC for PTJ(Inclusive of GST)	Station	1	1196342.43	1196342.43
418	NS117	3rd Year AMC for PTJ(Inclusive of GST)	Station	1	1307928.91	1307928.91
419	NS118	4th Year AMC for PTJ(Inclusive of GST)	Station	1	1427985.44	1427985.44

420	NS119	5th Year AMC for PTJ(Inclusive of GST)	Station	1	1560155.88	1560155.88
Railway Assessed Value of Annexure-A4						6581829.98
Railway Assessed Value of Annexure-A3						42180204.18
Railway Assessed Value of Annexure-A2						99928317.13
Railway Assessed Value of Annexure-A1						185784354.34
Total Railway Assessed Value						334474705.63

PVC VALUE

Name of work: Provision of Electronic interlocking signalling arrangements (Both Indoor and Outdoor)and Telecommunication arrangements at Podanur Junction in connection with 1) New coaching terminal at PTJ 2) Creation of Trip Maintenance/Advance inspection Centre at PTJ 3)Interlocking of stabling line with new EI and by-pass line between CBE-IGU and 4) Development of coach maintenance facilities at PTJ.

Sl No.	SOR No.	Brief description of work	Type of work	Electronics	Communication	Cable	Labour	Other Material
1	01_3	Supply of fan less embedded industrial grade computers (Similar to Moxa V2406 or better) with all accessories such as key board, mouse, antivirus etc. of industrial grade as per approved Specification as recommended by latest RDSO Specification(RDSO/SPN/192 or 203 or latest) for EI.	Signaling	100%				
2	01_5	Supply of Power Supply arrangement for VDU and Embedded PC. This includes supply of 2Nos of 110VDC/24DC, 10A DC-DC converter and 2Nos of 110VDC/110V AC,500VAInverter in (1+1) configuration. (As per Technical Specification enclosed)	Signaling	100%				
3	01_7	Supply and Installation of work space as per enclosed drawing No PROJ/SG/MS/70/2019 – work space (as approved by engineer in charge) with control desk for 2 monitors, 2 operators & one module to be provided for storage - should include space for housing Two nos of Embedded PCs, 2 nos FDMS	Signaling				26%	74%

		and their Power supply arrangement for with proper ventilation with two chairs (as per Drawing enclosed or as per site requirement)						
4	01_11	Training of Railway Personnel in installation, commissioning, testing, troubleshooting and in diagnosing faults using diagnostic tools/flow charts including supply of necessary documents. (Per Unit= 60 Man Days)	Signaling				100 %	
5	01_14	Carrying out Automatic Factory Acceptance test for any station having Distributed EI configuration.	Signaling				100 %	
6	01_16	Carrying out Automatic Site Acceptance test for any station having Distributed EI configuration.	Signaling				100 %	
7	01_17	Preparation and Submission of NI drawings/Plans, Rule Diagrams, Station Working Rules, CRS Documents, TSAA documents.	Signaling				100 %	
8	1_19	Submission of all relevent final `As mades' of circuit diagrams, contact analysis charts, termination particulars of apparatus cases and cable termination rack, power supply arrangements, relay index board, cable plans, cable route plans, red boundary plans and all other particulars covered under various schedules. All 'As mades' shall be prepared by the Contractor in AUTOCAD 2000 or latest and submitted in CDs. One copy	Signaling					100%

		of the 'As mades' check print shall be submitted before Testing the circuits. The final negatives shall be made in tracing sheet (80 to 90 gsm). All 'As mades' except cable plan, cable route plan, bonding diagram & power supply diagram shall be prepared in A3 size. On approval the contractor shall submit along with the negatives, 8 copies in each, duly making booklet neatly bound.						
		Out of 8 sets, 2 sets of drawings and other plans shall be kept in transparent plastic cover (2 sheets back to back in one plastic cover) and handed over to Railways. Also the contractor has to supply one set of As mades in 'Reproduction Film'.The approved circuit diagram will be issued by Railways in soft copy as well as two sets of hard copies. Wherever alterations to existing circuits are involved, the existing as-made circuit diagrams will be supplied by Railways either in CDs or RP film. The Contractor shall incoporate the details of all the new wirings and alterations in the CD/RP film and submit them to Railways. On approval 8 copies shall be made for As-made circuit diagrams also as mentioned above						

9	01_20	Preparation of circuits, location diagrams, power diagrams, cable plan, bonding plan etc in Auto Cad 2000 or latest. The drawings shall be prepared in A3/A2/U size as required by Railways. The hard copies of the documents will be supplied by Railways. The Contractor has to draw the drawings in Auto Cad very carefully and submit one copy of check print along with the soft copy in CD. The drawings shall be checked and returned by Railways indicating corrections if any. The corrections have to be made and final copy submitted in A3/ A2/ U size as required by Railways along with the final soft copy in CD. The hard copy given by Railways have to be returned back without any damage. The size of sheet given in the unit column is for the hard copy given by Railways.a)Preparation of soft copy in AUTO CAD from A3 size hard copy	Signaling					100%
10	02_2	Supply of data logger with 512 digital and 96 Analog inputs as per RDSO spec .no IRS-S-99/2006 or latest including Power Supply and Back-up arrangements(This work does not includes wiring of inputs from Relay to Intermediate tag block & from intermediate tag block to Datalogger equipment)	Signaling	100%				

11	02_8	Supply of Fault Analysis Terminal for analysis of fault and generating reports for Datalogger installed at stations. As per Technical Specifications.	Signaling	100%				
12	02_9	Supply of Protocol Converter suitable for Electronic Interlocking system equipment.	Signaling	100%				
13	02_10	Supply of Dual Card RS232 to EI/OFC converter suitable to insert in the Datalogger Eurorack for inter-linking Datalogger/MFEP.	Signaling	100%				
14	02_20	Supply of isolation transformer 600:470 ohms as per IRS TC 76-2001 amd 1 or latest.	Signaling					100%
15	02_23	Supply, Installation, Testing and Commissioning of Failure Alarm SMS system integrated with Datalogger. This includes a) Software and configuring the SMS features in the NMDL/CMU. b) GSM Modem for Each Network. c)PCI Serial Port Adopter card.	Signaling	70%			30%	
16	02_26	Installation, testing and commissioning of 512 Digital & 96 Analog data logger. This includes transportation of materials to Site location and provision of Ladder and cable trough arrangements including connection to the BRC earth. Also includes carrying out of pre-commission checklist and Networking of datalogger. (This schedule doesn't cover wiring and	Signaling				74%	26%

		preparation of Simulation chart)						
17	02_33	Wiring of Relay Inputs to Wago Block and Wago block to Datalogger. Necessary Wagos required is included as per schedule.	Signaling				74 %	26%
18	02_34	Wiring of Analog Voltages from IPS Room to Datalogger. Necessary Wagos required is included as per schedule.	Signaling				74 %	26%
19	02_35	Installation of Fault Analysis Terminal (for analysis of fault and generating reports for Datalogger installed at stations)	Signaling				26 %	74%
20	02_38	Installation of isolation transformer 600:470 ohms as per IRS TC 76-2001 or latest.	Signaling				74 %	26%
21	03_1	Supply of indicative type Surge Protection Device as per RDSO Spec. No. SPN/165/ 2023, Version 4.0 Amdt.1 or latest (Lightning and Transient surge protection for power line). The system shall have stage1 (class B) and stage 2 (class C) type against Lightning electromagnetic Impulse configuration. The protection of Type 1 and 2 against Lightning electromagnetic Impulse (LEMP) and other high	Signaling					100%

		surge, shall be provided at the incoming of the power line at the stations, LC gates before the power equipment's as per the instructions of Engineer in-charge at site. Supply of surge protection with Potential free contacts shall be of approved make like OBO, DEHN, PHOENIX, LPT or better make. All other miscellaneous materials required for the work shall be supplied by the contractor. (as per Technical Specification enclosed)						
22	03_2	Supply and Provision of indicative type Class D Surge Protection Device for 24V DC/48V DC (spark gap type), with Potential Free contacts and installed as per the instructions of the Engineer in charge at site (OBO, DEHN, PHOENIX, LPI, ZOTUP, HAKEL or better make). All other miscellaneous materials required for installation shall be supplied by the contractor.	Signaling				30%	70%
23	03_3	Supply and Provision of indicative type Class D SPD of Operating Voltage of 110V AC/DC with Potential Free contacts and installed as per the instructions of the Engineer in charge at site (OBO, DEHN, PHOENIX, LPI,ZOTUP, HAKEL or better make). All other miscellaneous materials required for installation shall be supplied by the	Signaling				30%	70%

		contractor.						
24	03_4	Supply and Provision of Earthing as per RDSO Specification RDSO/SPN/197/2008 or latest (as per Technical Specification enclosed)	Signaling				30%	70%
25	03_5	Supply and Installation of Copper tape of size 25mm x 3mm for Down conductor from Franklin Rod to Maintenance free earth. This work includes installation of insulated standoffs at every 1 Mtr. interval for fixing the Copper tape. This work also includes Exothermic welding of Copper tape to the Franklin rod and the maintenance free earth for high conductivity. (All the materials required for the above work shall be supplied by the Contractor)	Signaling				30%	70%
26	03_6	Supply and provision of Earthing arrangements for EI/MSDAC buildings as per RDSO specifications as required for the EI system along with supply of all required materials. Earthing shall be carried out as per RDSO/SPN/197/2008 and RDSO Lr .No STS/L/SSI/CA/US&S Dt 26.07.2011 for Typical Earthing connections for EI. Painting of earthing diagram as replica of the ground on backside wall of relay room as per the instruction of Site In-charge.(Per unit= Per	Signaling				26%	74%

		goomty/station)						
27	03_8	Supply of earth electrodes (GI) as per Drg no SG/CN/02/13	Signaling					100%
28	03_9	Provision of earth electrodes as per drawing No.SG/CN/02/13 and earthing of metallic sheath and armour of all cables in all apparatus cases, relay room, equipment room, SM's room for block and control, and earthing of all equipments in apparatus cases, power room, relay rack, cable termination rack, control panel, signals, lever frames with MS flat 35mmX6mm/19c cable (MS flat for closer by areas and MS flat/19c cable combination for farther areas) as per the instructions of Railway representative at site. The work includes painting of earth resistance value on the earth pit. (Supply of 19C cable is not covered in the scope of this schedule). [MS flat for earthing 35mmX6mm, cement, GI earth electrodes, common salt, charcoal, country bricks, M sand, soldering materials and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Signaling				100 %	

29	03_10	Full Location: Supply and fixing of GI Flat of size 1050x25x3mm as given in enclosed drawing to connect all cable armours to earth point with suitable nuts/bolts as given below. A) GI nuts/bolts of size 8x25mm with Two flat and one spring washer of 23set. B) GI nuts/bolts of size 12x40mm with two flat and one spring washer of 02set as per site in-charge	Signaling				26%	74%
30	03_11	Half Location: Supply and fixing of GI Flat of size 550x25x3mm as given in enclosed drawing to connect all cable armours to earth point with suitable nuts/bolts as given below. A) GI nuts/bolts of size 8x25mm with Two flat and one spring washer of 23set. B) GI nuts/bolts of size 12x40mm with two flat and one spring washer of 02set as per site incharge	Signaling				26%	74%
31	03_12	Installation of 230V Class B & Class C Surge Protection Device. This includes transportation of materials to site. Installation to be carried out as per the direction of Railway Engineer. Necessary copper wire for Power Wiring and connecting the earth to be supplied as part of the schedule. All other miscellaneous materials required for installation shall be supplied by the contractor.	Signaling				100 %	

32	04_2	Supply of 12-Channel Earth Leakage Detector as per RDSO Specifications RDSO/SPN/256/2002 or latest. - 16 channel	Signaling					100%
33	04_5	Supply of DC-DC Converter of Capacity 110V DC/24-40V, 5A as per RDSO Specifications RDSO/SPN/165 /2012 Ver 3.0 or latest	Signaling					100%
34	04_6	Supply of DC-DC Converter of Capacity 110V DC/24-40V, 10A as per RDSO Specifications RDSO/SPN/165 /2012 Ver 3.0 or latest.	Signaling					100%
35	04_21	Supply and Fabrication of Power Equipment Stand at stations/Huts/Power room at station. As per drawing enclosed.	Signaling				26%	74%
36	04_30	Supply of Stackable type VRLA batteries 2V, 200Ah - 1 cell as per RDSO Specifications IRS S: 93/96 with Amnd 1 or latest.	Signaling					100%
37	04_32	Supply, installation and wiring of 230/24V -1A transformer rectifier conforming to RDSO spec. IRS S 91/2014 with latest Amendment in power room for LVR.	Signaling				26%	74%
38	04_35	Supply of IPS to suit 6 Line RE station as per RDSO Specifications RDSO/SPN/165 or latest (This schedule does not include Batteries) As per drawing enclosed.	Signaling	100%				

39	04_40_b	Supply of Low maintenance secondary cells of the following capacities with necessary inspection as per specification/ drawing/ description enclosed in this document. b)Supply of Secondary cells - 2V-80AH capacity.	Signaling					100%
40	04_40_e	Supply of Secondary cells - 2V-300AH capacity.	Signaling					100%
41	04_41	Supply of track feed battery charger IRS:S 89–2013	Signaling					100%
42	04_42	Supply of 'B type choke IRS:S 65–83	Signaling					100%
43	04_51	Supply, fabrication and provision of suitable power equipment stand in the power room at stations (with more than 5 roads) using M.S. Angles 65mm x 65mm x 8mm and MS flats 50mmx6mm covered with 100mmx50mm hardwood reapers, installation of power equipments and wiring the same using wire PVC 7/1.4mm and 3/0.75mm copper as per approved wiring diagram, fabrication and installation of Power panel Box type using powder coated 16G MS sheet with inbuilt locking facility with a power distribution board fitted inside made of Phynolic synthetic industrial fibre base fine weave cotton fibre sheet of size 1200mm	Signaling				26%	74%

		X 1200mm X10mm. Terminations using circuit breakers, HRC fuse blocks and PBT terminals shall be provided on the phynolic sheet. DIGITAL Voltmeters, ammeters and by pass switches shall be fitted on the front side of the MS power panel. This work includes installation of power distribution diagram board using phynolic sheet 6mm thick of size 1800mm x 1200mm with Aluminium grooved channel frame in the relay room.						
		The particulars shall be digitally using good quality laminated gum sheet.(Supply of power equipments is not covered in this schedule).[MS angles 65mmx65x8mm, Phynolic synthetic industrial fibre base fine weave cotton fibre sheet of size 1200x1200x10mm, Hard Wood planks for reapers 100x50mm, Power coated 16G MS sheet, teakwood base planks 25mm x 150mm and 50mm x 50mm for fixing cables,50mm, bolts & nuts required for manufacturing power panel & power rack, circuit breakers, HRC Fuses with base and carrier, ammeters, voltmeter- 3 Nos., bypass switches for stabilisers-63A capacity - 3 Nos., power distribution diagram board using phynolic sheet - 6mm thick of size 1200X1800mm with Aluminium grooved						

		channel frame, paints, wire PVC 7/1.4mm and 3/0.75mm copper, and all other miscellaneous materials required shall be supplied by the Contractor.						
44	04_52	Supply, fabrication and provision of suitable power equipment stand in the power room at stations (up to 5 roads) using M.S.Angles 65mmx65mmx8mm and MS flats 50mmx6mm covered with 100mmx50mm hardwood reapers, installation of power equipments and wiring the same using wire PVC 7/1.4mm and 3/0.75mm copper as per approved wiring diagram, manufacture of power panel using phynolic sheet 1200mm x 1200mm x 10mm and erecting it using MS angles 25mm x 25mm x 6mm and fixing of meters, stabilizer and ammeter by pass switches, HRC fuse blocks, PBT terminals	Signaling				26%	74%
		60mm centre and connecting the power equipments to the power panel as per approved power diagram, in the power room.This work includes installation of power distribution diagram board using phynolic sheet 6mm thick of size 1200mm x 1200mm with Aluminium grooved channel frame in the relay room. The particulars shall be digitally using good quality						

		laminated gum sheet.(Supply of power equipments like battery charger, transformers, transformer rectifiers, voltage stabilisers, DC-DC convertor, invertors etc., is not included in this schedule).						
45	04_53	Supply of Modular terminal block as per RDSO specification No 18/2004 or latest which consists as per following: a) 2 Conductor disconnect type terminal block as per Model No wago 280-870 or similar - 6 Nos b) End Plate type 280-374 suitable for disconnect terminal of Model No wago 280-870 or similar - 1 No c) End Stop terminal block type as per model no wago 249-117 or similar - 2 Nos d) Shorting Links (16A) as per Model wago 280-402 or similar - 1 No	Signaling					100%
46	04_54	Supply of Modular Terminal Block of 2.5sq.mm 2 IN 2 OUT type disconnect type of Wago/Phoenix make or similar along with accessories as per RDSO Spec.No. RDSO/SPN/189/2004/ rev 2 or latest.	Signaling					100%
47	04_55	Supply of FUSE terminals block with LED indication upto 2.5sq.mm screw type 1 IN 1 OUT (Suitable 400mA, 630mA, 1A, 1.6A, 2A, 4A, 6.3A, & 10A) (Without Fuse) as per RDSO Spec.No.RDSO/SPN/189/2004/ rev 2 or latest.	Signaling					100%

48	04_56	Supply of DIN channel for the terminal	Signaling					100%
49	04_57	Supply of END plates for modular terminal block.	Signaling					100%
50	04_58	Supply of END clamp for modular terminal block.	Signaling					100%
51	04_59	Supply of Shorting Link insulated Grey in color.	Signaling					100%
52	04_60	Supply of operating tool, screw driver and stripper for modular terminal. These tools shall be of Wago/Phoenix make or similar and model suitable for the modular terminal supplied.	Signaling					100%
53	04_61	Supply of FUSE links of (400mA, 630mA, 1A, 1.6A, 2A, 4A, 6.3A & 10A)	Signaling					100%
54	04_63	Supply of Distilled water for topping of secondary cells to be supplied at site, IS 1106.	Signaling					100%
55	04_64	Supply of distilled water plant similar to `KILBURN' make capacity 3.5 to 4.5 Lits. per hour, with two detachable heating elements of 1500W each to work on 230VAC, single phase, fitted with automatic cut-outs and removable connectors, with Stainless Steel boiling chambers, condenser pipe, toughened glass lid; Distilled water plant, tank 200 Litres capacity similar to sintex make, GI pipe 25mm dia, power plug with socket, regulating valves, jelly, cement, sand and	Signaling					100%

		other materials shall be supplied by the Contractor.						
56	04_65	Installation of distilled water plant with provision of water supply connection from water tap to water tank, water tank to distilled water plant using G.I Pipes 25mm dia and with regulating valves, provision of separate power supply socket and wiring. This work includes fixing of 2 Nos. of rails on the wall and grouting as instructed by Railway representative at site. (Cut rails will be supplied by Railways).	Signaling				100 %	
57	04_67	Installation of 12-Channel Earth Leakage Detector. This includes transportation of materials to Site location and provision of cable trough arrangements including connection to the BRC earth. Also includes carrying out of pre-commission checklist.	Signaling				100 %	
58	04_71	Installation of Power Panel for IPS Room.	Signaling				100 %	
59	04_72	Commissioning of IPS, this schedule includes arrangement of OEM engineer for checking the Installation and carrying out adjustments of IPS modules and submission of Pre-commissioning checklist.	Signaling				100 %	

60	04_73	Installation, wiring and testing of IPS as per RDSO Specification No. RDSO /SPN /165 or latest. This work includes transporting the IPS from the Stores by loading without any damages and installation of the same at site. This also includes wiring of all modules, proper earthing of equipments and all other works connected for testing and commissioning of the same. Necessary powdered coated Aluminium ladder arrangements including cable trench, pipes, bolts, and other accessories is included in this schedule. [Earthing is not covered under this schedule]	Signaling				26%	74%
61	04_77	Fixing of Modular terminal block/fuse block along with accessories with provision of fixing holes on hylam sheet/side angles of Location Box and fixing by Galvanized nuts and bolts. This includes fixing of DIN channel for cable termination on Modular terminal.	Signaling				100 %	
62	05_1	Supply of 24 Corex1.5 Sq.mm PVC insulated Armoured, unscreened underground Railway Signalling copper cable as per IRS: S-63/2014 REV.4	Signaling			100 %		
63	05_2	Supply of 12Cx1.5 SQMM PVC insulated Armoured, unscreened underground Railway Signalling copper cable as per IRS: S-63/2014 REV.4	Signaling			100 %		

64	05_4	Supply of 2x2.5 sq.mm PVC insulated Armoured, unscreened, underground Railway Signalling Copper cable as per spec IRS.S.63/2014(Rev.4.0) or latest	Signaling			100 %		
65	05_7	Supply of 2x0.5 Sqmm (16/0.20) Flexible Annealed Tinned Copper (ATC) PVC Insulated Twin Twisted Un Sheathed Cable IRS:S: 76/89 with all latest amendments (Red & Black).	Signaling			100 %		
66	05_8	Supply of 1x0.5 Sq.mm (16/0.20mm) Flexible ATC PVC Insulated Unsheathed Single Core Cable as per IRS:S: 76/89 with all latest amendments.	Signaling			100 %		
67 68	05_11 05_12	Supply of 16 Sq.mm multistrand Flexible APC PVC insulated copper cable as per IS 694. Supply of 35 Sq.mm multistrand Flexible APC PVC insulated copper cable as per IS 694.	Signaling			100 %		
69	05_13	Supply of 70 sq. mm multi strand Flexible APC PVC insulated copper cable as per IRS:S: 76/89 with all latest amendments.	Signaling			100 %		
70	05_15	Supply of 60Cx1 mm Solid PVC Insulated, Binder Taped and PVC Sheathed Unarmoured Cable as per IRS:S:76/89 with all latest amendments	Signaling			100 %		

71	05_16	Supply of Underground jelly filled 6 QUAD, 0.9MM Dia as per spec IRS:TC 30-05 with amd 5 or latest	Signaling			100 %		
72	05_17	Supply of 24 Fibre armoured OFC cable as per RDSO Specification RDSO/SPN/TC/ 110/2020 Rev. 0 or latest.	Signaling			100 %		
73	05_18	Supply of 48 Fibre armoured OFC cable as per RDSO Specification RDSO/SPN/TC/ 110/2020 Rev. 0 or latest	Signaling			100 %		
74	05_20	Supply of Polythene Insulated Polythene Sheathed armoured Jelly Filled Telephone Cable with Poly-AL Moisture Barrier, 20 Pairs, 0.63 MM Conductor Diameter as per RDSO Specification No. IRS:TC-41/97 with amendment 1 or latest.	Signaling			100 %		
75	05_21	Supply of Polythene Insulated Polythene Sheathed armoured Jelly Filled Telephone Cable with Poly-AL Moisture Barrier, 50 Pairs, 0.63 MM Conductor Diameter as per RDSO Specification No. IRS:TC-41/97 with amendment 1 or latest.	Signaling			100 %		
76	05_22	Supply of FCPC To SCPC 5 meter long patch cords with 0 db adaptors as TEC spec G/OJC-O1/03 JAN 99 or latest.	Signaling					100%
77	05_23	Supply of OFC Patch cord (FC-PC/SC-PC/LCPC to FC-PC/SC-PC/LC-PC so as to suit for switches and FMS supplied).	Signaling					100%

78	05_25	Supply of switch board cable, finolex/Deltron make or better 0.5mm, 20 pair conforming to IRS/TC/24-91.	Signaling			100 %		
79	05_27	Supply of UTP Cable /CAT6/6A cable ETL or UL or CE3P certified panduit or Systimax or R&M or AMP or Molex or Krone Or D-Link Makes.	Signaling			100 %		
80	05_28	Supply of PVC insulated, unsheathed, Flame retarding type Single core flexible wire 16/0.2 mm dia. With annealed, tinned copper conductor of colour code (Red =50% ,Black=50%,) as per IRS-S-76/89 Amd-3(with amdt. upto date if any).	Signaling			100 %		
81	05_30	Supply and fixing of 20 pair Krone module housed in MS box and termination of Cables.	Signaling			100 %		
82	05_32	Supply and fixing of 20 pair CT box and termination of cables.	Signaling			100 %		
83	05_36	Supply of 10way Annunciator with Push button switches and having conference facility. Model No AM-10 similar to Epsilon, Telelinks or better.	Telecom		100%			
84	05_37	Supply and provision of normal joint using Thermo shrink jointing kit (RDSO specs No TC/77/2012 (Rev.3) with amendment No.1&2 or latest. & jointing kit to be inspected by RDSO) for 4/6 quad cable	Signaling				26%	74%

		normal joint. The work includes excavation of joint pit of size 1mX1.5mX1.5m and closing the same after completion of cable joint as per the instruction of Railway representative at site.						
85	05_38	Supply and provision of derivation joint complete for 6 Quad cables using thermoshrink jointing kit for LC's/stations	Signaling		74%		26%	
86	05_39	Supply and installation of 24 Fibre Joint enclosure for armoured optical fibre cable conforming to RDSO spec.RDSO/SPN/TC/68/2014 rev2.0 or latest.	Signaling		74%		26%	
87	05_40	Supply and installation of 48 fibre Joint enclosure for armoured optical fibre cable conforming to RDSO spec.RDSO/SPN/TC/68/2014 rev2.1 or latest.	Signaling		74%		26%	
88	05_41	Supply of RCC cable markers (Supply of RCC cable markers as per drawing No.CSTE/CN/OFC/1. The lettering on the cable marker shall be "SIG"/"TELE"/"OFC" as per the instructions of Railway representative at site.) as per drawing enclosed	Signaling					100%
89	05_42	Preparation of Cement concrete for covering of GI Pipes/cables. Providing & Laying in position cement concrete of specified proportion including cost of cement, centering and shuttering with 1:3:6 composition 1 Cement: 3	Signaling				24%	76%

		Sand: 6 grade stone aggregate 25mm nominal size) (Cement, M-Sand, stone jelly of 25mm and all other misc materials required for the work should be supplied by Contractor).						
90	05_43	Laying of STP/OFC/Power Cable/ switch board (10 pair/ 20 pair/50 pair) Cables in 1" PVC conduit/case caping and clamping on the wall/Roof tops/ Shelters with suitable clamping and hose to be provided where ever bends/ curves (PVC conduit/ Case capping and other accessories to be supplied by the contractor)	Signaling				100 %	
91	05_44	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 1.0 Mtrs and to a width of 0.3 Mtrs. (Laying of cables is not included in this schedule)	Signaling				100 %	
92	05_45	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 0.5 Mtrs and to a width of 0.3 Mtrs. (Laying of cables is not included in this schedule.)	Signaling				100 %	
93	05_46	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 1.0 Mtrs and to a width of 0.5 Mtrs. (Laying of cables is not included in this	Signaling				100 %	

		schedule.)						
94	05_47	Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 0.5 Mtrs and to a width of 0.5 Mtrs. (Laying of cables is not included in this schedule.)	Signaling				100 %	
95	05_50	Breaking of Platform concrete having 0.3 feet thickness - 0.5 feet thickness and to a width of 0.3 Mtr using cutter machine and removal of RCC slabs on the Passenger Platform, trenching to a depth of 0.6m to accommodate the additional cables, replacing the slabs removed after the cables are laid and replastering with cement mortar, refilling the trench by ramming and consolidating it as per the instructions of Railway Representatives at site. (Laying of cables is not included in this schedule).	Signaling				100 %	
96	05_51	Excavation of trench along route of existing cable duct, opening the slabs to accommodate additional cable laying, REPOSITIONING the slabs removed after the cables are laid and PLASTERING with cement mortar, and refilling the trench by ramming and consolidating it as per the instructions of Railway Representatives at site. (Laying of cables is not	Signaling				100 %	

		included in this schedule.) [Cement, M Sand and all other miscellaneous materials required for the work shall be supplied by the Contractor].						
97	05_52	Excavation of trench to a depth of 1 Mtr. for track crossing of cables, refilling of trench by ramming and consolidating it as per the instructions of Railway representative at site after laying of DWC/RCC pipes. During excavation of trench, it has to be ensured that the excavated soil does not mix with the ballast available. The depth of 1m trench shall be from the bottom of sleepers for track crossings. Laying of cables and DWC pipes is not included in this schedule. (Supply of DWC/RCC pipes with couplers/collars is not included in this schedule).	Signaling				100 %	
98	05_53	Excavation of trench to a depth of 1 Mtr. for road crossing of cables, laying of DWC/ RCC pipes with collar/ coupling, refilling of trench by ramming and consolidating it and resurfacing it to the original position. Laying of cables is not included in this schedule. (Supply of DWC/RCC pipes with couplers/collars is not included in this schedule).	Signaling				100 %	
99	05_54	Provision of GI pipes (50/100mm dia) for cable laying with offset at both ends and with couplings over RCC bridges, drainage,	Signaling				100 %	

		culverts, and girder bridges. For RCC bridges, drainage, and culverts, the pipes shall be mounted on concrete masonry supports of size 300mm x 300mm x 300mm at an interval of 2 meters. For girder bridges, the pipes shall be fixed on suitable MS clamps at an interval of 2 meters. The ends of the pipes shall be closed with brick masonry abutments to ensure that no cable is exposed. The work shall be carried out as per the instructions of the Railway representative at the site. (Supply of GI pipes with couplings and laying of cables is not included in this schedule).Stone jelly (20/25mm size), bricks, sand, cement, MS angles, flats, bolts,nuts for manufacturing and fixing clamps, bricks, M sand, cement, and other miscellaneous materials for the work shall be supplied by the contractor.						
100	05_56	Provision of GI pipes 50mm/100mm dia on excavated trenches/platforms/over the ground without abutments and supports.	Signaling				100 %	
101	05_58	Provision of GI pipes (50/100mm dia) for cable laying in hard rocky area with off sets at both ends duly supported by concrete blocks of size 300mm x 300 mm x 300 mm at an interval of 2m. The ends of the pipes shall be closed with	Signaling				100 %	

		brick masonry abutments work so that no cable is exposed, The work shall be carried out as per the instructions of Railway representative at site. (Supply of GI pipes with couplings and laying of cables is not included in this schedule). [Stone jelly of size 20/25mm, bricks, sand, cement, and all other miscellaneous materials required for the work shall be supplied by the Contractor].						
102	05_59	Laying of signaling/power/telecommunication cables as per cable plan in cable trenches, masonry ducts, RCC Pipes, DWC pipes, GI Pipes etc. (Supply of cables is not included in this schedule).	Signaling				100 %	
103	05_63	Refilling of cable trench 1m depth by 0.3m width throughout, with earth after laying of cables, and consolidating the trench by ramming and levelling.	Signaling				100 %	
104	05_64	Refilling of cable trench 0.5m depth by 0.3m width throughout, with earth after laying of cables, and consolidating the trench by ramming and leveling.	Signaling				100 %	

105	05_65	Refilling of cable trench 1m depth by 0.5m width throughout, with earth after laying of cables, and consolidating the trench by ramming and levelling.	Signaling				100 %	
106	05_66	Refilling of cable trench 0.5m depth by 0.5m width throughout, with earth after laying of cables, and consolidating the trench by ramming and levelling.	Signaling				100 %	
107	05_68	Digging of pit to a depth of 800mm of size 300mmX300mm, casting of concrete foundation of size 300mmX300mmX300mm and Placing of RCC cable markers on top of the foundation and refilling the pit and consolidating it by ramming. The cable markers shall be provided at an interval of 20 Mtrs. within station limits and 50 Mtrs. outside station limits throughout the cable route, diversions and also at every track/road crossing.	Signaling				100 %	
108	05_69	Excavation of cable coil pit to a size of 1.5mx1.5m and depth as instructed by Railway representative at site, for coiling the cables in rear of relay rooms/ AFTC huts, apparatus cases etc. The work includes coiling the underground cables and placing closely one layer of country bricks of size approx. 220mm x 100mm x 60mm breadth wise above the cables to cover all the cables in the cable pit,	Signaling				100 %	

		closing and consolidating the pit by ramming and levelling. [Country bricks of size 220mmx100mmx60mm (approximately) shall be supplied by the Contractor].						
109	05_71	Cutting of rock to a depth of 200 mm and width of 200 mm where rock is visible from surface to a depth more than 300 mm up to 550mm, excavation of trench with width 300mm above rock concreting 200mmx200mm after laying of cable with/1cement: 2sand : 4graded stone aggregate 20mm nominal size and curing of concrete to the required number of days, refilling with excavated soil ramming and consolidation except in bridges, culverts, level crossings, track crossings, cable pits, rocky soil including marking of cable alignment, clearing of debris etc., complete to the finished item of work as directed by site in charge. Drg No.SK/CN/NEW/3. All the material is to be arranged by contractor	Signaling				100 %	
110	05_72	Road crossing/ Track Crossing through Horizontal Drilling at approximately depth of 1.5 to 2m below the formation level of the earth including insertion of HDPE pipe/DWC pipe along with couplers, drawl of cable (or) direct drawl of cables etc. (Note: The pilot used for HDD should be of sufficient size to suit	Signaling				100 %	

		insertion of HDPE /DWC pipe of size 120mm (outer dia.) or direct drawl of three cables (Signalling/Power/Quad/OFC) or three nos.of 40mm dia HDPE pipe or any other combination as directed by the site engineer) (Supply of HDPE pipe is not covered in this schedule)						
111	05_74	Blowing/Drawing of OFC cable/Power cable/Signalling cable inside permanently solid lubricated HDPE Pipe already laid. This work includes necessary duct integrity test for solid lubricated HDPE pipe. (This includes Transportation of materials from nominated stores to site)	Signaling				100 %	
112	06_1	Supply of Main LED Signal Aspect - Green as per RDSO Specifications No.RDSO/SPN/199/2010 Rev1.1 or latest	Signaling	100%				
113	06_2	Supply of Main LED Signal Aspect - Yellow as per RDSO Specifications No.RDSO/SPN/199/2010 Rev1.1 or latest	Signaling	100%				
114	06_3	Supply of Main LED Signal Aspect - Red as per RDSO Specifications No.RDSO/SPN/199/2010 Rev1.1 or latest	Signaling	100%				
115	06_5	Supply of subsidiary Signal Aspect - Route LED as per RDSO Specifications	Signaling	100%				

		SPECIFICATION NO. RDSO/SPN/153/2023 Revision 5.0 or latest						
116	06_6	Supply of subsidiary Signal Aspect - Calling on LED as per RDSO Specifications SPECIFICATION NO. RDSO/SPN/153/2023 Revision 5.0 or latest	Signaling	100%				
117	06_7	Supply of subsidiary Signal Aspect - Shunt LED as per RDSO Specification SPECIFICATION NO. DSO/SPN/153/2023 Revision 5.0 or latest	Signaling	100%				
118	06_9	Supply of Multi Lamp Route indicator (LED Double Digit) from 1 to 9 with white LED (With Housing) as per technical specification.	Signaling	100%				
119	06_14	Supply and provision of Screening arrangement for Signals in RE area as per standard practice. The work comprises of providing MS angle frame and wire mesh in order to avoid close proximity of OHE wires. The work also includes provision of earthing wire using 4 SWG GI wires from the screening arrangement up to surface base as per the instructions of Railway representative at site. [All materials required for this work shall be supplied by the Contractor].	Signaling				24%	76%
120	06_15_a	Supply of Colour light Signal pole 140mm dia, 4.6m/3.6m tall with necessary inspection as per specification/drawing/description enclosed in this document.	Signaling					100%

		a)Supply of colour light Signal pole 4.6m tall and 140 mm dia(Galvanised)						
121	06_15_b	Supply of colour light Signal pole 3.6m tall and 140 mm dia (Galvanised)						100%
122	06_16	Supply of surface base to suit CLS Signal pole 140mm dia with necessary inspection as per specification/drawing/description enclosed in this document.	Signaling					100%
123	06_17_a	Supply of ladder with platform and shoes to suit CLS pole 4.6m/3.6m tall, with necessary inspection as per specification/drawing/ description enclosed in this document. a) Supply of ladder with platform (4.6m) for CLS(Galvanised)	Signaling					100%
124	06_17_b	Supply of ladder with platform (3.6m) for CLS(Galvanised)						100%
125	06_18	Supply of post type shunt signal - complete with hood etc., with necessary inspection as per specification/drawing/description enclosed in this document.	Signaling					100%
126	06_19	Supply of Ground type shunt signal - complete with surface base, signal pole, hood etc., with necessary inspection as per specification/drawing/ description enclosed in this document.	Signaling					100%

127	06_20_a	Supply of Colour Light Signal Multi Unit type - complete for 4/ 3/ 2 aspect with mounting socket, with necessary inspection as per specification/drawing/description enclosed in this document. a)Supply of colour light Signal unit (4 aspect)	Signaling					100%
128	06_20_b	Supply of colour light Signal unit (3 aspect)	Signaling					100%
129	06_20_c	Supply of colour light Signal unit (2 aspect)	Signaling					100%
130	06_21_a	Supply of Junction type route indicator – 5 unit arm – 1/2/3/4/5/6 way with mounting sockets, with necessary inspection as per specification/ drawing/description enclosed in this document. a)Supply of Junction type route indicator - 1 way	Signaling					100%
131	06_21_b	Supply of Junction type route indicator - 2 way	Signaling					100%
132	06_21_c	Supply of Junction type route indicator - 3 way	Signaling					100%
133	06_22_a	Supply of Calling On Signal / 'A' marker light - complete with necessary inspection as per specification/drawing/ description enclosed in this document. a)Supply of Calling On Signal	Signaling					100%
134	06_23_a	Supply of Off-set brackets - large/small made of cast iron with necessary inspection as per specification/drawing/ description enclosed in this	Signaling					100%

		document. a)Supply of Off set bracket - large						
135	06_23_b	Supply of Off set bracket - small	Signaling					100%
136	06_24	Supply of cable termination box (FRP type) with necessary inspection as per specification/ drawing/ description enclosed in this document.	Signaling					100%
137	06_27	Supply of Signal post telephone with facility of paging and talk-back including voice communication equipment with suitable switching arrangement at the Signal post and at SM's room as per specification enclosed in this document. This includes drawl of tail cable through GI pipe 25mm dia and 2 mtrs long duly clamped to Signal post with bend as required at site, termination of tail cable at one end in the apparatus case and other end in the console. In the SM's room, console shall be fixed on a table top. The wiring shall be done using wire PVC 16/0.2mm copper. [Talk-back equipment complete including housing box, wire PVC 16/0.20mm and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Signaling	100%				

138	07_1	Supply of plug-in type, Style QL1, Magnetically Latched Neutral Line 24V DC, 11F/4B contacts Relay complete with plug board (base plate), connectors and retaining clips and conforming to BRS 935A and RDSO Spn. No IRS S-34 and S-23 or latest. The interlocking code for this unit shall be "ABDEG"	Signaling					100%
139	07_3	Supply of Relay Non – AC immune plug in type Style 'QN1K' DC neutral line, 24V 1000 ohms 6F.6B contacts front contacts metal to carbon & back contacts metal to metal/carbon complete with plug board retaining clip and connectors conforming to BRS:930, IRS:S- 34 & IRS:S-23 and RDSO Spec. STS/E/Relays/UEA(PI) dt. 30.5.97 (Annexure-1) (as applicable). The interlocking code for this unit shall be BDEKX.	Signaling					100%
140	07_6	Supply of Relay, AC Immune, plug-in-type, Style 'QNA1K', DC Neutral line, 24V, 1000 ohms 6F.6B, contacts, front contacts metal to carbon and back contacts metal to carbon, complete with plug board, retaining clip & connectors conforming to BRS:931A, IRS:S60, IRS:S 34, IRS:S 23 & RDSO Spec. No. STS/ E/Relays/UEA (PI) dt.30.05.97 (Annexure-II) (as applicable). The interlocking code for this unit shall be CDEKY.	Signaling					100%

141	07_7	Supply of Plug in Type Q-Series Relay QBAT (2F/2B)(Miniature, Tractive armature, AC Immune, D.C Biased Track Relay) A.C. immunity level of 80 Volt A.C, coil nominal resistance of 9 Ohms, confirming to BRS spec no. 939A & 966F2 and RDSO specification No. 84/88 or latest. The interlocking code for this unit shall be "ABEJX"	Signaling					100%
142	07_8	Supply of KLCR relays 24V, ACI (Supply of Key Lock Checking Relay (KLCR) with one number K-50 neutral Relay to work on 24V DC non AC immunized as per specification No.RDSO/SPN/219/2016 Ver 1.0 with Amdt-1 or latest (with one extra ward plate and with case) contact configuration-4F/4B and as per IRS:S-23, IRS:S:34, IRS:46 or latest.	Signaling					100%
143	07_11	Supply of Relay, Non-AC Immune, plug-in type, Style 'QN1', DC neutral line, 24V, 8F.8B contacts front and back contacts metal to carbon with plug board, retaining clip & connectors confirming to BRS:930, IRS:S 34 & IRS:S 23 or latest. The interlocking code for this unit shall be ABDEF.	Signaling					100%
144	07_13	Supply of Relay, AC Immune, plug-in-type, Style 'QNA1', DC Neutral line, 24V, 8F.8B contacts, front and back contacts metal to carbon, with plug board, retaining clip and connectors confirming to	Signaling					100%

		BRS:931A, IRS:S 60, IRS:S 34 and IRS:S 23 or latest. The interlocking code for this unit shall be ABDGH.						
145	07_17	Supply of Relay rack universal type as per drg.No.S&T/ MFT/ 291 with scaffolding, POWDER COATED with stainless steel nuts and bolts for fixing the racks. Supporting angles, frame mounting triangle base with 'J' bolts and insulation of required numbers complete to suit QN1 / K-50 pre wired tag blocks with suitable inner frames. b) 2 way	Signaling					100%
146	07_18	Supply of electronic time delay units (120/60 secs) with plug boards, connectors and retaining clips with necessary inspection as per specification/ drawing/ description enclosed in this document.	Signaling					100%
147	07_19	Supply of lamp proving relays (QECX-61) for LED aspects with plug boards, connectors and retaining clips with necessary inspection as per specification/	Signaling					100%
148	07_20	Supply of QBCA1 - heavy duty contact relays with necessary inspection as per specification/	Signaling					100%
149	07_21	Supply of Computer based Relay Testing Kit suitable for testing all types of Relays.	Signaling					100%

150	07_22_a	Manufacture and supply of M.S. relay frames of suitable size to hold up to 4/8/12/ 20 relays/plug in type as required by Railways and fixing them in apparatus cases for all types of signal control circuits, LC gate control circuit and Point control circuits, fixing of plug boards, relays, resistors and electrolytic condensers on Phynolic synthetic industrial fibre base fine weave cotton fibre sheet - 6mm thick to IS specification 2036 - 1995 - Type F5, wiring and termination as per approved circuit diagram and painting the particulars. [Wire PVC copper, 3/0.75mm and 16/0.2mm copper, Phynolic synthetic industrial fibre base fine weave cotton fibre sheet - 6mm thick to IS specification 2036 - 1995 - Type F5, for fixing resistors and condensers, MS flats 25mmx6mm brass bolts and nuts, paints, soldering materials, resistors, condensers and all other miscellaneous materials required for the work shall be supplied by the contractor].a. Wiring of Signal/point/LC control circuit (up to 4 relays/Plug in type)	Signaling					100%
151	07_22_b	b.Wiring of Signal/Point/ LC control circuit (up to 8 relays/plug in type)	Signaling				100 %	

152	07_22_c	c.Wiring of Signal/ Point/ LC control circuit (up to 12 relays/plug in type)					100 %	
153	07_22_d	d.Wiring of Signal/ Point/ LC control circuit (up to 20 relays/plug in type)					100 %	
154	07_23	Supply of QTA2 - track relays with plug boards, connectors and retaining clips with necessary inspection as per specification	Signaling					100%
155	07_24	Supply of QSPA1 type relays with plug boards, connectors and retaining clips with necessary inspection as per specification/drawing/	Signaling					100%
156	07_26	Supply of relay rack to hold 168 relays, with necessary inspection, as per specification/drawing.	Signaling					100%
157	07_27	Supply of powder coated FTOT of 500 capacity	Signaling					100%
158	07_28	Supply of powder coated FTOT of 210 capacity.	Signaling					100%
159	07_32	Fabrication and Supply of box suitable for 8 Nos of KLCRs.	Signaling					100%
160	07_33	Fabrication and Supply of box suitable for 4 Nos of KLCRs.	Signaling				74%	26%
161	07_34	Erection of Relay Rack 1way/2way/4way with scaffolding suitably concreting tri-pod bases using J-bolts, fixing rack supporting of size 50x50x6mm on to the wall. Reel insulators are to be provided for insulating the rack from the scaffolding & tri-pod bases. (Payment based on number of equivalent 1way relay	Signaling				74%	26%

		racks) (per Unit = Per 1way Relay Rack)						
162	07_36_a	Concreting and erection of cable termination rack 500/210/140 Terminals capacity on teakwood base frame of size 50mmx150mm of suitable length and width with rectangular slot in the centre for taking in the cables and painting as per standard practice. (Supply of cable termination racks are not included in this schedule). [Foundation bolts and nuts with washers, cement, sand, stone jelly, teak wood base frame 50mmx150mm of suitable length and breadth, paint, varnish and all other miscellaneous materials required for the work shall be supplied by the contractor]. a)Concreting and erection of cable termination rack 140/210 capacity.					74%	26%
163	07_36_b	Concreting and erection of cable termination rack -500 terminal capacity					74 %	26%

164	07_37_a	Fixing of PBT terminal block/ PBT fuse block, rubber grommets, clamping of cables using teakwood cable clamps and base planks, termination of cables, provision of ND type fuses of required capacities, provision of copper bus bar for supply terminals, wiring, provision of termination particulars diagram board using plywood of thickness 12mm - teakwood finish of size 1800mm x 1200mm with Aluminium grooved channel frame in the relay room. The blank spaces over the top of the cable termination rack shall be covered with phynolic sheet of thickness 3mm wherever required. The termination and cable core particulars shall be painted on the PVC/ nylon sleeves. The work also includes identification of cables using aluminium tags provided on each cable with letters punched neatly.	Signaling				74 %	26%
		(Supply of PBT terminal blocks 25mm & 60mm centers and PBT Fuse blocks is not covered in the schedule) [Wire PVC 3/0.75mm copper, brass bolts and nuts and washers, for fixing PBT terminal/Fuse Block, other fixing bolts and nuts, rubber grommets, PVC/ Nylon sleeves, copper bus bars, teakwood 50mm x 50mm for cable clamps, 25mmx 100mm for base planks, phynolic sheet 6mm						

		thick of size 1200mm x 1800mm with aluminium grooved channel frame, phynolic sheet 3mm thick, paint and all other miscellaneous materials shall be supplied by the Contractor]. a) Fixing of PBT terminal blocks (25mm/60mm centre) and termination						
165	07_37_b	Termination using PBT fuse block in cable termination rack.					74 %	26%
166	07_38_a	Concreting and erection of Relay racks-168/56 relay capacity using 'J' type bolts and painting of relay rack as per the instructions of Railway representative at site.(Supply of relay rack is not covered in this schedule). ['J' type bolts and nuts with washers, nylon bushes, concreting materials, paint and all other miscellaneous materials required for the work shall be supplied by the Contractor].a)Concreting and erection of relay rack - 168 capacity	Signaling				74 %	26%
167	07_39	Fixing of plug boards, 50 way terminal blocks with 2BA terminals, and wiring of relays as per the approved circuit diagram using wire PVC 16/0.2mm copper. Suitable wire supporting tray with cover made of PVC shall be provided horizontally and vertically in the relay racks.. While running the wires on the aluminium ladder					74 %	26%

		proper care shall be taken to provide smooth materials like rubber beading in the openings on Phynolic sheets, to avoid damage to wires. The work also includes wiring of contacts for data logger and terminating them in tag blocks, provision of relay index board. (Supply of relays, plug boards, connectors and retaining clips is not covered in this schedule). [Wire PVC 16/0.2mm copper, tag blocks, 2BA terminals, hard wood plank of size 600mmx 900mmx25mm with decolum finish, MS angles of size 25mmX25mmX6mm, relay fixing bolts and nuts, teakwood plank 25mm thick for fixing resistors and condensers, phynolic sheet 6mm thick of size 1200mmX1800mm with aluminium grooved channel frame for relay index board, paints, soldering materials, bunching thread, wire wound resistance, condenser, wire supporting tray with cover of suitable size made of PVC, paint, varnish and all other miscellaneous materials required for the work shall be supplied by the Contractor].						

168	07_40	Fixing of additional plug boards, 50 ways terminal blocks and wiring of additional relays as per the approved circuit diagram using wire PVC 16/0.2mm copper. Additional wire supporting tray with cover made of PVC shall be provided wherever required. Alterations to Relay particulars shall be incorporated in the relay Index board. (Supply of relays, plug boards, connectors and retaining clips and 50 way terminal boards is not covered in this schedule).[Wire PVC 16/0.2mm copper, 2 BA terminals, teakwood plank 25mm thick for fixing resistors and condensers, soldering materials, bunching thread, wire wound resistance, condenser, wire supporting tray with cover of suitable size made of PVC, paint, varnish and all other miscellaneous materials required for the work shall be supplied by the Contractor]	Signaling				74 %	26%

169	07_41	Carrying out alterations to the existing relays in the relay racks/apparatus cases as per the approved circuit diagram using wire PVC 16/0.2mm copper. The work includes painting alterations and releasing the unwanted wires carefully without disturbing the existing wiring. [Wire PVC 16/0.2mm copper, soldering materials, bunching threads, condensers, resistances and teakwood plank for fixing them and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Signaling				74 %	26%
170	07_42_b	Provision of Interconnections between relay racks, cable termination racks, SM's control panel, battery room, power room, termination and wiring. The work involves laying of underground cables in the duct as well as with clamping arrangements on the walls, supply and fixing of aluminium ladders and supports with 3mm thick phynolic sheet for running the cables in the relay room. Interconnection shall be carried out with signaling multi core cable (skinned/ unskinned) and power cables as per the instructions of Railway representative at site. The work also include termination of the	Signaling				74 %	26%

		interconnection cables on 50 way terminals in the relay rack/ control panel, cable termination rack etc. After the interconnection cables are laid, the ducts shall be filled with M sand and closed.						
		Wherever required the cables shall be taken to other floors in the building by clamping them on MS angles and flats grouted on the walls. (Supply of interconnection cables is not included in this schedule). [2BA terminals, Aluminium ladder arrangements using 37mmx37mmx5mm aluminium angles and 25mmx6mm aluminium flats, aluminium supports, phynolic sheet - 3mm thick for bottom of aluminium ladders, MS angles and flats, bolts and nuts, concreting materials, and all other materials required for the work shall be supplied by the contractor]. b) Provision of interconnection - more than 5 roads (same floor)						
172	7_42_c	c) Provision of interconnections -more than 5 roads (different floors)					74 %	26%
173	08_1	Supply of aspiration type smoke detector. Highly sensitive smoke aspiration system for Monitoring of rooms and equipment's for earliest possible fire detection For Relay	Signaling	100%				

		rooms as per RDSO spec No.RDSO/SPN/217/2021 Ver.3.0 or latest.						
174	08_2	Supply of single Loop Analog addressable Fire Alarm system with loop capacity of connecting maximum 50 devices. The panel shall have a built in power supply and battery charger RDSO Spec. No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
175	08_3	Supply of Multi Sensor detector Dual Optical/ Thermal as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
176	08_4	Supply of Addressable Single action indoor manual call point with back box (RED) as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
177	08_5	Supply of Sounder having range of 81 dbA to 92 dbA as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
178	08_6	Supply of Intelligent addressable Monitor module as per RDSO specifications No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
179	08_7	Supply of Intelligent addressable control module as per RDSO specifications No.RDSO/SPN/217/2021	Signaling	100%				

		Ver.3.0 or latest.						
180	08_8	Supply of Auto-dialer for SMS alarm generation & routing in case of Fire Alarm to concerned persons as per RDSO No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
181	08_9	Supply of 2core 1.5sq.mm FRLS Copper unarmoured cable as per RDSO specificationsNo.RDSO/SPN /217/2021 Ver.3.0 or latest.	Signaling			100 %		
182	08_10	Supply of LHS Cable RDSO Spec. No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling			100 %		
183	08_11	Supply of LHS control module.RDSO Spec. No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
184	08_12	Supply and Installation of Air sampling CPVC Pipes with all required accessories for Aspiration system)	Signaling				26%	74%
185	08_15	Supply of BIS listed Semi-automatic Stainless Steel preventive device with UL approved clean gas with Auto manual Reverse Stainless Steel valve 'NASA 400 MAR' or similar having capacity of 4kg, and made of stainless steel 304 grade with Indian Railway logo put on each unit.	Signaling					100%
186	08_17	Supply of movable tender at doorstep with UL approved having capacity of 10kgs made of SS 304 grade with Indian Railway logo put on each unit and clean	Signaling					100%

		gas shelf life with 10 years warranty for leakage. Note: Warranty of OEM and Test certificates of any NABL approval LAB for clean gas along with the offer						
187	08_18	Supply of Relay Module as per RDSO specification No.RDSO/SPN/217/2021 Ver.3.0 or latest.	Signaling	100%				
188	08_19	Supply of TCIP Module /Networking card for interfacing the Fire Alarm and Detection systems.	Signaling	100%				
189	08_20	Supply, installation, configuring, testing and commissioning of remote monitoring software along with license for 99 control panels as per No.RDSO/SPN/217/2021 Ver.3.0 or latest.. This includes necessary gateway card and network interface card for the system fully functional as desired by railways. (software suitable for 8 stations)	Signaling	74%			26%	
190	08_21	Installation, testing and commissioning charges of fire alarm system including programming of devices and fire alarm panel	Signaling				100 %	
191	08_22	Supervision, programming, testing & Commissioning of Aspiration smoke detection	Signaling				100 %	
192	09_1	Supply of Handheld True RMS Multi Meter, as per Technical specification.	Signaling	100%				
193	09_2	Supply of Handheld True RMS clamp Meter, as per Technical specification.	Signaling	100%				

194	09_4	Supply of OTDR (mini) with standard accessories for 1310/1550nm with all standard accessories as per TEC specification GR/OTD-02/02 Jan 2005 or latest, (this item should have valid TEC approval certificate) as per Technical specification.	Signaling	100%				
195	09_6	Supply of Digital Insulation tester (Megger) 50V-500V/1000 mega ohm battery operated with all complete accessories, as per Technical specification	Signaling	100%				
196	09_7	Supply of Cable Route Tracer as per Technical specification	Signaling	100%				
197	09_8	Supply of Portable Cable Fault Locator as per Technical specification	Signaling	100%				
198	09_11	Supply of Digital Earth clamp Tester as per Technical specification.	Signaling	100%				
199	09_13	Supply of Hand Held Thermometer, as per Technical specification.	Signaling	100%				
200	09_14	Supply of OFC Power Meters, as per Technical specification.	Signaling	100%				
201	09_17	Supply of Laser source and Power meter with accessories as per Technical specification.	Signaling					100%
202	09_23	Supply of Rodometer as per Technical specification.	Signaling					100%
203	09_24	Supply of Battery Tester as per Technical specification	Signaling					100%
204	09_25	Supply of Hydrometer	Signaling					100%

205	10_1	Supply of Double walled corrugated pipe - 103.5mm inner dia & 120mm outer dia conforming to specification No. IS 14930 (Part 2): 2001 with one coupler for every 6m of pipe as per Technical specification	Signaling					100%
206	10_2	Supply of GI pipes - 50mm dia -3.65mm thick as per Technical specification.	Signaling	100%				
207	10_3	Supply of GI pipes - 100mm dia-4.5mm thick as per Technical specification	Signaling					100%
208	10_5	Supply of High-Density Polyethylene Pipes (HDPE) of 110 mm Outer Dia, 10 mm Wall Thickness, along with one coupler for every 6 Meters as per specification No. IS 4984: 2016 with latest amendments and Material Grade:PE 80.	Signaling					100%
209	10_6	Supply and laying of PVC Warning Tape colour Orange, width of 250mm (10") by printing with black letters 'Indian Railway Signal/Telecom/OFC Cable' on both sides.	Signaling				26%	74%
210	10_7	Supply of Electronic Cable Route Marker 3M make or similar, Model: RFID (1421) and installation, cable detection of capacity to detect the cable upto 5 feet depth.	Signaling	74%			26%	
211	10_8	Supply of HDPE Pipe 40mm (outer dia)/33 mm (inner dia) with couplers	Signaling					100%
212	10_10	Supply and Installation of Wall/Rack mountable 24	Telecom				26%	74%

		Fibre management system (FMS) conforming to RDSO/SPN/TC-37/2000(rev-3 amdt-1 or latest similar to COMMSCOPE make or better, suitable for splicing and front patching 24F cable with all accessories and terminating the optical fibre cable with splicing and front patching in FMS in the Location Box. This includes Supply and Provision of 4 nos of Patch cords of required length (All other materials required for splicing are to be supplied by contractor)						
213	10_11	Supply and Installation of Wall/Rack mountable 48 Fibre management system (FMS) conforming to RDSO/SPN/TC-37/2000(rev-3 amdt-1 or latest similar to COMMSCOPE make or better, suitable for splicing and front patching 48F cable with all accessories and terminating the optical fibre cable with splicing and front patching in FMS in the Location Box. This includes Supply and Provision of Wooden Plank, L clamps and 4 nos of Patch cords of required length (All other materials required for splicing are to be supplied by contractor)	Telecom				26%	74%
214	10_13	Supply and Installation of 19", 6U rack of size 600mm x 600mm with complete accessories.	Telecom					100%
215	10_14	Supply and Installation of surface Wall mountable	Telecom					100%

		type 19 inch 12U network Rack with front glass door with lock and rack fixing multipoint AC Power trip & all accessories (Power extension board with one set of MCB, exhaust fan, cable manager)						
216	10_15	Supply and Installation of covered 19inch racks of size 1950mm x600mm x 600mm or higher (Make: HCL/ Vero/President/ Rittal/ Puncom or better) complete with all fittings including DC Fans (24V/48V)-2nos, separator sheet/ plate to keep testing equipment-1no and AC power distribution panel (Horizontal fitting) with power sockets and fuse protection (min 6 nos of 230V – 15/5A combined and other accessories	Telecom					100%
217	10_16	Supply of machine nylon Insulations for IRS point machine.	Signalling					100%
218	10_18	Supply of track lead junction box - FRP type with 4 terminals and stumps with necessary inspection as per specification/ drawing/ description enclosed in this document.	Signalling					100%
219	10_19	Supply of Track Feed Resistance	Signalling					100%
220	10_20	Supply of Bond Pins (pack of 100)	Signalling					100%
221	10_22	Supply of gauge Tie Plate Insulation	Signalling				26%	74%

222	10_25_a	Supply of PBT terminals 25mm/60mm centre and PBT Fuse blocks with necessary inspection as per specification/drawing/ description enclosed in this document. a)Supply of PBT terminals 25mm centre.	Signalling					100%
223	10_25_b	Supply of PBT terminals 60mm centre.	Signalling				26%	74%
224	10_25_c	Supply of PBT fuse block without ND fuse	Signalling					100%
225	10_26_a	Supply of apparatus cases (full/ half/ quarter size) to suit Southern Railway standard with necessary inspection as per specification/ drawing/ description enclosed in this document. a)Supply of apparatus case - Full size	Signalling					100%
226	10_26_b	Supply of apparatus case - Half size	Signalling					100%
227	10_35	Supply and installation of yard layout diagram board in the station master's room. The board shall be made of Phynolic synthetic industrial fibre base fine weave cotton fibre board (matt finish) 6mm thick size 1800mmX1200mm with aluminium channel frame. The yard layout shall be neatly painted and fixed as instructed by Railway representative at site. [All materials required for the work shall be supplied by the Contractor].	Signalling				26%	74%

228	10_36	Manufacture and supply of teak wood tool box of size 1000X750X100mm made of 25mm thick teak wood persplex sheet fronted 6mm (Colourless) fixed on the wall at a convenient location as instructed by Railway representative at site. The board should have provision of pad lock and locking arrangements and shall be equipped with the following tools[reputed make]: a. Digital Mulltimeter similar to Model No. Rish Multi 18S with suitable carrying case and test probes. b. Centre zero ammeter 30-0-30 Amps -1 No. c. Screw drivers of different types and sizes with common handle - 1 set d. Spanner double ended 33mm - 1 No. e. Spanners double ended 3/8x1/2" - 1 No. f. Spanners double ended 5/8x3/4" - 1 No. g. Spanners double ended 7/8x1" - 1 No. h. Hammer 1 1/2 lbs ball pane - 1 No.	Signalling				26%	74%
		i. Hacksaw frame - 1 No. j. Adjustable screw spanner 12" - 1 No. k. Insulated cutting pliers- 1 No. l. Insulated nose plier- 1 No. m. Electric soldering iron 230V 60W Soldron/Philips make - 1 No. n. Electric soldering iron 110V 35W Soldron/Philips make - 1 No.							

		o.Megger 500V/ 500Mohms. with Probe - 1 No. The above tools shall be purchased from Reputed manufacturers only in consultation with the Railway representative at site. [Teak wood tool box made of 25mm teak wood plank, perspex sheet, all the tools mentioned above, padlock and other miscellaneous items shall be supplied by the Contractor].						
230	10_37	Supply of magneto telephone handle type and supply of Ni-cad power pack 4V-2.2AH with charger to work on 110VAC	Signalling				74%	26%
231	10_38	Supply and installation of teakwood glass fronted box of size 300mm x 600mm x 75mm with hooks to keep various keys with description engraved on the tags. [TW Glass fronted box of size 300mmx600mmx 75mm with built in lock, hooks, engraved tags and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Signalling				100 %	
232	10_40	Supply of 3/0.75mm or 4 Sq.mm Copper cable(per coil=100 mtrs) APC.	Signalling			100 %		
233	10_43	Supply of ND Fuse of various capacities	Signalling				74%	26%

234	10_45	Supply and provision of Rubber mat of not less than 6mm thick and with an insulation to withstand 650VAC, on the floor of relay room etc at places as indicated by railway representative at site.	Signalling				74%	26%
235	10_48	Supply of External Solid state Drive (SSD) of 1TB capacity.	Signalling	100%				
236	11_1	Excavation of pit, erection of cable termination boxes on rails and concreting as per Drg. No.SG/CN/02/8, drilling of suitable holes in the box, fixing of 2 Nos. of GI pipes 32mm dia and 300mm long at the bottom with clamp nuts - 12 mm thick, one at the inner side and another at the outer side for each pipe for cable entry and one GI pipe 150mm long 32mm dia for drawl of jumper wires for Point machines etc., fixing of hardwood plank 37mm thick on the bottom, provision of one EWS lock, and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints.	Signalling				74%	26%
237	11_2	Installation of combined type point machine - IRS type and connecting all ground connections including wiring and termination in point machine and interconnections between point machine and CT box through PVC hose pipe with	Signalling				74 %	26%

		3/0.75mm and 7/1.40mm copper wire and painting. This work includes provision of insulation to stretcher bars, throw bar lug and "D" bracket wherever required, cutting of notches on the point machines covers to suit crank handle configuration. (Combined type point machine with ground connection, uninsulated stretcher bar, throw bar lug and 'D' brackets will be supplied by Railways. [All types of insulations connected to point work, coal bengal, all type of bolts and nuts, washers spring/flat wire PVC 7/1.4mm copper, PVC hope pipe, paints, PVC/nylon sleeves and all other miscellaneous materials required for the work shall be supplied by the Contractor].						
238	11_3	Installation of Signal post telephone (paging and talk back)	Signalling				74 %	26%
239	11_4	Fixing and wiring of platform repeaters. The work involves fixing of platform repeater using suitable fixing arrangements at places indicated, wiring the same and painting as per the instructions of Railway representative at site. The signal shall be connected to the apparatus case using cables neatly clamped. The work also includes provision of one EWS lock. (Laying of	Signalling				74 %	26%

		cable is not included in the scope of this work.)(Supply of repeater signals and cables is not included in this schedule). [Wire PVC 3/0.75mm copper, paint, EWS lock and all other miscellaneous materials required for the work shall be supplied by the Contractor].						
240	11_6	Filling earth around location boxes/ signal foundations for a width of 0.5m on all sides, up to a level 150mm below the foundation top. This work includes consolidation of earth by watering and ramming. The earth shall be taken from Railway premises as instructed by Railway representative at site.					74 %	26%
241	11_7	Excavation of pit, casting concrete foundation as per Drg.No.SG/CN/02/9 using metallic templates, for erection of colour light signals up to 4 aspects. [Foundation bolts, cement, M sand, stone jelly of size 20/25mm dia and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Signalling				74 %	26%

242	11_8	Erection of surface base, signal pole, mounting of colour light signal up to 4 aspects complete on Signal pole/ Off-set bracket, (for LED/ filament bulbs) with lenses, triple pole lamp holder, filament switching units, CLS transformer, current regulators (whichever is applicable), fixing of ladder with platform complete and concreting of ladder shoe, fixing of number plates, marker board, lens guard, fixing of speed limit board wherever necessary, termination of tail cables, wiring of signal unit with PVC wire 3/0.75mm copper, provision of EWS locks, and painting of one coat of red oxide and two coats of aluminium/ enamel paints. When the aspect is fixed on Offset bracket using 'U' bolts and nuts, a through bolt shall be provided by drilling a hole in the signal pole to prevent the offset bracket from sliding down.	Signalling				74 %	26%
		(Supply of surface base, Offset bracket, CLS pole, CLS aspects complete, ladder with shoes and platform, Speed limit board, LED aspects, current regulators, lamp holders, lamps, filament switching unit and CLS transformer is not covered in this schedule).['U' bolts and						

		nuts, through bolts and nuts, cement, stone jelly 20/25mm dia, M sand, Signal Collar Rings, wire PVC 3/0.75mm copper, lens-guard, all fixing bolts and nuts, lead wool, paints PVC/Nylon sleeves, enameled number plates. enameled marker boards, EWS locks, and all other miscellaneous materials for the work shall be supplied by the Contractor].						

244	11_9	Excavation of pit and casting concrete foundation as per Drg, No.SG/CN/02/10 using metallic templates, for erection of ground type colour light shunt signal. [Foundation bolts and nuts, cement, M sand, stone jelly of size 20/25mm and all other miscellaneous materials for the work shall be supplied by the Contractor]. Erection of Ground type shunt signal complete including surface base, signal pole, LED aspects/lenses, bulbs with holders (whichever is applicable), fixing of lens guards, number plate, termination of tail cables, wiring of signal unit with PVC wire 3/0.75mm copper, provision of EWS locks and painting of one coat of red oxide and two coats of Aluminium/enamel paint.(Supply of Ground type shunt signal complete including surface base, signal pole, LED aspects, holder, bulbs, and lenses is not covered in this schedule).[Wire PVC 3/0.75mm copper, lens guards, EWS locks, Enameled number plates, bolts and nuts, lead wool, paints and all other miscellaneous materials shall be supplied by the Contractor].	Signalling				74 %	26%
245	11_10	Erection of Ground type shunt signal complete	Signalling				100 %	

		including surface base, signal pole, LED aspects/lenses, bulbs with holders (whichever is applicable), fixing of lens guards, number plate, termination of tail cables, wiring of signal unit with PVC wire 3/0.75mm copper, provision of EWS locks and painting of one coat of red oxide and two coats of Aluminium/enamel paint.(Supply of Ground type shunt signal complete including surface base, signal pole, LED aspects, holder, bulbs, and lenses is not covered in this schedule).[Wire PVC 3/0.75mm copper, lens guards, EWS locks, Enameled number plates, bolts and nuts, lead wool, paints and all other miscellaneous materials shall be supplied by the Contractor].						
246	11_11	Fixing of Offset brackets using 'U' bolts and nuts, erection of Post type shunt Signals, termination of tail cables and wiring using wire PVC 3/0.75mm copper, provision of EWS lock and painting of one coat of red-oxide and two coats of aluminium/ enameled paint. The work also includes drilling suitable holes on the CLS post and provision of a through bolt with nut to prevent the Off-set bracket from slipping down.					74 %	26%

247	11_14_a	Fixing of junction type route indicators - 1 way to 6 ways - complete/fixing of additional limb to the existing route indicators, termination of tail cables, wiring as per approved circuits diagram using wire PVC 3/0.75mm copper, provision of required No of EWS locks, wire mesh, and painting. (Supply of junction type Route Indicators - complete and additional limb is not covered in this schedule). [3/0.75mm wire PVC, fixing bolts and nuts, EWS locks, wire mesh, PVC/Nylon sleeves, paints and all other miscellaneous materials shall be supplied by the Contractor]. a)Fixing and wiring of direction type route indicator - 1 way					74 %	26%
248	11_14_b	Fixing and wiring of direction type route indicator - 2 way	Signalling				74 %	26%
249	11_14_c	Fixing and wiring of direction type route indicator - 3 way					74 %	26%
250	11_15	Fixing of Offset brackets using 'U' bolts and nuts, erection of Calling On Signals/'A' marker lights, termination of tail cables and wiring using wire PVC 3/0.75mm opper, provision of EWS lock, number plates/marker boards and painting. The work also includes drilling suitable holes on the CLS post and provision of a through bolt with nut to prevent the Off-set bracket from slipping					74 %	26%

		down. (Supply of Calling on Signal/ 'A' marker light, LED aspects/holders & bulbs and Off set brackets is not covered in this schedule). ['U' bolts and nuts, through bolts with nut, wire PVC 3/0.75mm copper, EWS lock, Enameled number plates, wire mesh, PVC/Nylon sleeves, paints and all other miscellaneous materials shall be supplied by the contractor].						
251	11_16	Releasing of existing tail cables and drawl of new tail cables for colour light signals up to four aspects with or without route indicator, post type shunt signal and Calling on signals, termination of new tail cables and wiring using wire PVC 3/0.75mm copper. This work includes drawl of new tail cables into the signal post duly releasing the existing tail cables from the relevant signals and re-surfacing the earth excavated as instructed by Railway representative at site.[Wire PVC 3/0.75mm copper, paints and all other miscellaneous materials shall be supplied by the Contractor].	Signalling				74 %	26%

252	11_18	Removal of existing CLS units, fixing of new CLS units with LED aspects/ lamps, holders etc., up to four aspects, directly or using off set brackets duly drilling holes on the signal poles, provision of EWS locks wherever necessary, termination of tail cables and wiring using wire PVC3/0.75mm copper and painting of aspect. The new tail cables shall be taken through the signal poles and the unwanted cables duly released	Signalling				74 %	26%
253	11_19	Excavation of pit and construction of masonry platform as per drawing No. SG/CN/02/12 with country bricks of size 220mmx100mmx60mm (app) at the foot of signal post telephones as per the instructions of Railway representative at site. [Country bricks of size 220mmx100mmx60mm (app), cement, M sand and all other miscellaneous materials required for the work shall be supplied by the Contractor].	Signalling				74 %	26%
254	11_22	Hot dip Galvanization of signal post and ladder (4.6m tall, 140 mm dia /3.60 m tall, 140 mm dia), clamps, point roddings and other materials related to Signalling. Minimum DF thickness shall be 80 microns. Transportation of materials from site/stores to galvanization workshop	Signalling				74 %	26%

		and back to site/stores not included in this schedule. Transportation charges will be as per relevant SOR schedules. Test certificate showing the DFT, type of galvanization, materials used etc., from galvanizing firm for each batch to be submitted. (Unit is calculated based on the weight of the Signal poles, ladders, clamps, rodding's etc.,)						
255	11_23_a	Provision of DC Single/Double rail track circuit to suit RE/Non-RE areas as per approved signaling plan using Plug-in type track relays. This work includes provision of double bonding, and parallel jumpers, provision of bond wire clips, provision of track lead connections using 2c X 2.5 sq.mm cable, provision of TLD boxes 2 Nos. at Relay end, 2 Nos. at Feed end and 2 No's for parallel jumpers as necessary to suit layouts, for each Track Circuit, and termination of jumpers and tail cables in track lead junction boxes, installation of relays, track feed battery chargers to charge up to 4 cells, track feed resistance, 'B' type choke' and secondary cells - 80 AH capacity in apparatus cases and wiring with wire PVC 3/0.75mm copper. The work also includes painting of track Circuit No. with Feed end/	Signalling				74 %	26%

		Relay end details on the TLD boxes. The work also includes provision of insulations for gauge tie plates and nose crossing plates wherever required. (Provision of rail joint insulation is not covered in this schedule.)(Uninsulated gauge type plate and nose crossing plate will be supplied by Railways. Supply of track feed battery charger, 'B' type choke, track relays, un-charged secondary cells (2V - 80AH), TLD boxes with stumps,2cX2.5 sq.mm cable, is not covered in this schedule).a)Provision of track circuit in RE/Non RE area (point zone)						
256	11_23_b	b)Provision of track circuit in RE/Non RE area (other than point zone)	Signalling				74 %	26%
257	11_24_a	Alteration to existing DC Track Circuits to suit RE/Non RE standard as per approved signaling plan. This work includes provision of double bonding and parallel jumpers, provision of bond wire clips, wherever required, shifting of relay end and feed end equipments and re-wiring them, provision of track lead connections wherever necessary using 2c x 2.5 sq.mm cable a)Alteration to existing track circuits at feed end	Signalling				74 %	26%
258	11_24_b	Alteration to existing track circuits at relay end	Signalling				74 %	26%

259	11_26	Excavation of pit, casting concrete foundation and erection of apparatus case full size as per Drg. No.SG/CN/02/6 and fixing of 2 Nos. of 'E' type locks, one for the front door and another for the back door, fixing of one hard wood shelf plank 37mm thick and painting the apparatus case inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of apparatus case is not included in this schedule). [Foundation bolts & nuts, 'E' type locks, cement, M sand, stone jelly of size 20/25 mm, hardwood plank of 37mm thick, paints, varnish, fixing bolts & nuts and all other miscellaneous materials required for the work shall be supplied by the Contractor.]	Signalling				74 %	26%
260	11_28	Excavation of pit, casting concrete foundation and erection of apparatus case half size as per Drg, No.SG/CN/02/7, fixing one 'E' type lock for the front door and latching arrangement for the back door, and fixing of one hardwood shelf plank 37mm thick and painting the apparatus case inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of apparatus case is not included in this schedule). [Foundation bolts and nuts, cement, 'E'	Signalling				74 %	26%

		type locks, M sand, stone jelly of size 20/25mm, 37mm hard wood planks, latching arrangements, paints, varnish, fixing bolts & nuts and all other miscellaneous materials required for the work shall be supplied by the Contractor]						
261	11_30	Excavation of pit, erection of cable termination boxes on rails and concreting as per Drg. No.SG/CN/02/8, drilling of suitable holes in the box, fixing of 2 Nos. of GI pipes 32mm dia and 300mm long at the bottom with clamp nuts - 12 mm thick, one at the inner side and another at the outer side for each pipe for cable throughing, fixing of hardwood plank 37mm thick on the bottom, provision of one EWS lock, and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of CT boxes is not covered in this schedule. Rails of different length shall be supplied by Railways. The contractor shall cut lengthy rails wherever required.) [Cement, M sand, stone jelly of size 20/25mm, paint, varnish, GI Pipes 32mm dia with clamp nuts - 12mm thick - 2 Nos. for each pipe, fixing bolts and nuts with washers, EWS locks, paints and all other	Signalling				74 %	26%

		miscellaneous materials shall be supplied by the Contractor].						
262	11_31	Fabrication and erection of rail staging, concreting, construction of stock brick, masonry support, supply and provision of concrete slabs 3 Nos. of size 300mm x 1700mm x 80mm for platform on stage support for erecting apparatus case full size on embankment and casting concrete foundation and erection of apparatus case full size over the compacted earth and masonry , fixing 2 Nos. of 'E' type locks, one for the front door and another for the back door, supply and fixing of one hardwood shelf plank of 37mm thick and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints.	Signalling				74 %	26%

263	11_32	Fabrication and erection of rail staging, concreting, construction of stock brick, masonry support, supply and provision of concrete slabs for platform, 3 Nos. of size 300mm x 1000mm x 80mm for platform stage support for apparatus case half size on embankment and casting concrete foundation and erection of apparatus case half size over the compacted earth and masonry work , fixing 1 No. of 'E' type locks, for the front door and the latching arrangements for the back door and fixing one H.W shelf plank of 37mm thick and painting the boxes inside and outside with one coat of red-oxide and two coats of aluminium paints. (Supply of apparatus case is not included in this schedule. Rails of different lengths will be supplied by Railway and the Contractor has to cut the rails to required lengths).	Signalling				74 %	26%
264	11_33_a	Excavation of pit in and around the existing location boxes very carefully without damaging the working cables and shifting and turning the location boxes to clear of the infringement as instructed by the Railway representative at site. The work includes ensuring the safety of the signaling system, releasing the cable coils to give access for shifting/turning the location	Signalling				100 %	

		boxes. Necessary masonry work and earth work in and around the location boxes to the required level shall be done as instructed by the Railway representative at site. If the existing earth connections to the location boxes are disturbed, the earth wires shall be properly re-connected. a)Shifting of apparatus case (full)						
265	11_33_b	b) Shifting of apparatus case (half)	Signalling				74 %	26%
266	11_34	Termination of new main/tail cables on the existing terminals/ fuse blocks in apparatus cases/ battery boxes/ CT boxes/ cable termination racks as per approved circuit diagram. The terminal particulars are to be repainted /corrected on the doors of apparatus cases/ battery boxes/ cable termination boxes and FTOT index board as instructed by Railway representative at site. This work includes closing the opening created for entry of new cables in the apparatus cases with masonry brick work and sealing the bottom of the apparatus cases/ cable termination racks with cable compound.[Paints, wire PVC 3/0.75mm and 16/0.2mm copper, sealing compound, bricks,	Signalling				74 %	26%

		cement, M sand and all other required miscellaneous materials shall be supplied by thecontractor].						
267	11_35_a	Termination of main, tail, Signaling and power cables and internal wiring on terminal/ fuse blocks in new apparatus cases, cable termination boxes and in gate Lodges excluding cable termination rack at relay room. The work includes fixing of all new cables by teakwood clamp on teakwood base plank, fixing of Phynolic synthetic industrial fibre base fine weave cotton fibre board 6mm thick for terminal board to suit each apparatus case, varnishing all teakwood items, fixing of terminals/ fuse blocks on the terminal board, drilling of necessary holes, termination of cables, wiring, identification of cables using aluminium tags with letters punched neatly, as per approved circuit diagram and cable plan, painting of particulars on sleeves and also on the inner side of the doors of apparatus cases. After terminations are over, the side openings of apparatus case foundation shall be closed with brick work, cement plastered, the inter-space filled with M sand	Signalling				100 %	

		up to base level and the bottom surface shall be sealed with sealing compound. (Supply of PBT terminals and Fuse blocks is not covered in this schedule). a)Termination on 25/60mm PBT terminals (new location)(Phynolic sheet)						
268	11_35_b	Termination on PBT fuse block (new location) (Phynolic sheet)	Signalling				100 %	
269	11_36_a	Termination of main, tail, Signaling and power cables and internal wiring by fixing additional terminals/ fuse blocks on the existing terminal boards of apparatus cases, cable termination boxes etc. The work includes fixing of all new cables by teakwood clamp on teakwood base plank, varnishing all teakwood items, fixing of terminals/ fuse blocks, on the existing terminal boards, drilling of necessary holes, termination of cables, wiring, identification of cables using aluminium tags with letters punched neatly, as per approved circuit diagram and cable plan, painting of particulars on sleeves and also on the inner side of the doors of apparatus cases. After terminations are over, the side	Signalling				100 %	

		openings of apparatus case foundation shall be closed with brick work, cement plastered, the inter-space filled with M sand up to base level and the bottom surface shall be sealed with sealing compound. a)Termination of cables on 25/60mm PBT terminals (existing location)						
270	11_36_b	Termination of cables on PBT fuse block (existing location)	Signalling				100 %	
271	11_42_b	Charging and installation of secondary cells of the following capacities, on existing battery stand/ RCC slabs in the battery room. The work involves charging of secondary cells, fixing and connecting the batteries with strips, manufacture and fixing of teakwood terminal box, termination of cables, wiring with suitable wire PVC 7/1.40mm and 3/0.75mm copper through suitable PVC pipes/ casing properly clamped, provision of battery particulars board made of phynolic sheet 6mm thick of size 900mm x 1200mm with Aluminium grooved channel frame in the relay room. The particulars shall be digitally using good quality laminated gum sheet, provision of hydrometer -1 No. on a stand and battery tester-1 No. Charging of secondary cells shall be	Signalling				100 %	

		done by the contractor through reputed agencies. (Supply of secondary cells is not covered in this schedule). [Teakwood plank 25mm thick for manufacturing termination box with locking facility, wire PVC 7/1.4mm and 3/0.75mm copper, anti-corrosive paint, varnish, PVC pipes/ casing, and all other miscellaneous materials required for this work shall be supplied by the contractor]. b)Installation of 2V-200AH cell on existing stand/ slabs.						
272	11_42_d	Installation of 2V-40/80AH cell on existing stand/ slabs.	Signalling				100 %	
273	11_50	Provision of signaling arrangement during Non-Interlocked working of Signals and Points, such as erection and wiring of temporary relay racks and wiring of relays, SM's slide instruments, wiring alterations in the cable termination rack, apparatus cases, signals, Control panel etc, as per the instructions of Railway representative at site. (Supply of relay rack, relays, and SM slide instrument is not included in this schedule). [All other miscellaneous materials required for the work shall be supplied by the Contractor].	Signalling				100 %	

274	11_51	Provision of PA system and Magneto telephone communication at stations/ tents as per the instructions of Railway representative at site. The PA system and magneto telephones will be returned to the contractor after the completion of NI working. Signalling cables available may be used for the communication. (Hiring of PA system equipments and magneto telephones shall be done by the Contractor)[All other miscellaneous materials required for the work shall be supplied by the Contractor].	Signalling				100 %	
275	11_52	Hiring of tarpaulin tents and providing the same at places as instructed by Railway representative at site. The spacing inside the tent shall be app 8ft x 8 ft. Each tent shall be provided with a table, chair, tube lights and pedestal fan. Drinking water in cans. The tents shall be fixed firmly to withstand rain, strong wind etc.	Signalling				100 %	
276	11_53	Fixing of Annunciator at SM's Room as required by Railways, wiring it as per circuit diagram and painting of particulars. The work includes connecting 1 No. of magneto telephone with Ni-cad power pack 4V-2.2AH with charger to work on 110VAC and connecting the annunciator to the	Signalling				100 %	

		different telephone circuits. The particulars of the circuits and the ringing codes shall be painted on the top of the annunciator box. (Supply of annunciator is not included in this schedule).						
277	11_55	Installation of magneto telephones with Nicad pack	Signalling				100 %	
278	11_69	Casting concrete foundation and erection and painting of boards with `LEGEND' such as "Draw close if signal is at on" at the required places as per the Signalling plan. The work involves concreting of rail post to a size of 600mm x 600mm x 900mm and fixing the board to the rail using MS clamps, bolts and nuts. (Supply of boards is not covered in this schedule. Rails of different lengths will be supplied by Railways and the Contractor has to cut them to the required lengths) [Stone jelly of size 20/25mm dia, M sand, cement, M.S.flats, fixing bolts and nuts, paint and all other miscellaneous materials required for the work shall be supplied bythe Contractor].	Signalling				100 %	

279	11_72	Provision of HDPE Pipe of dia 40/33 mm	Signalling				100 %	
280	11_73	Laying of DWC/Split DWC Pipes for Track Crossing/Road Cutting/Trenches	Signalling				100 %	
281	11_74	Releasing of existing relay racks/ cable termination racks along with all the terminals, fuse blocks, relays, with jacks, holding clips etc., 50 way boards, terminals, connecting wires, cables etc., carefully without causing any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site. After releasing, the floor shall be levelled and cement plastered	Signalling				100 %	
282	11_75	Releasing of existing Route Indicators of different types including tail cables, carefully without causing any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site	Signalling				100 %	
283	11_76	Breaking of concrete and releasing of STOP board/Warning board/ LEGEND boards along with rails, accounting and stacking them neatly at a place as instructed by Railway representative at site. Also the resultant pits shall be re-surfaced and consolidating by ramming and levelling.	Signalling				100 %	
284	11_77	Releasing of existing point	Signalling				100	

		lay-out with facing point lock, split stretchers, electrical detector, lock bars, point/trap indicators cranks, rods etc., carefully without damaging the materials, accounting and stacking them neatly at a place as instructed by Railway representative at site.					%	
285	11_78	Removal of obstructing sleepers, and rails available in the path of cable trench (Above the ground)	Signalling				100 %	
286	11_79	Removal of obstructing sleepers, and rails available in the path of cable trench (buried inside ground)	Signalling				100 %	
287	11_80	Jungle cutting along with the cable route	Signalling				100 %	
288	11_83	Releasing of existing apparatus cases (Full/ Half/ Quarter size) without damage after releasing the shelf planks, Terminal blocks, Fuse Blocks, Terminal Boards, Relays of all types EKTs, Secondary Cells, power equipments, 'E' type locks, etc., and breaking the concrete foundation. After releasing, the resultant pits are to be closed and consolidated by ramming and levelling. The released materials shall be accounted and stacked at a place as instructed by	Signalling				100 %	

		Railway representative at site.						
289	11_84	Breaking of concrete and releasing the existing cable termination boxes, after releasing the base plank, Terminal blocks, Fuse Blocks, Terminal Boards, cut rails, pipes, etc., closing the resultant pits and consolidating it by ramming and levelling. The released materials shall be accounted and stacked neatly at a place as instructed by Railway representative at site.	Signalling				100 %	
290	11_86	Dismantling and releasing of existing Colour light Signals complete (upto 4 aspects) with or without Route Indicators, calling on signals, shunt signals etc., carefully without any damage to the gadgets, accounting and stacking them neatly at a place as instructed by Railway representative at site. The work includes breaking the concrete foundation, closing the resultant pit and resurfacing it by ramming and levelling.	Signalling				100 %	
291	11_87	Dismantling and releasing of existing Point machines (all types) including ground connections and other accessories available complete without any damage to the gadgets, accounting and stacking them neatly at a place as instructed by Railway	Signalling				100 %	

		representative at site.						
292	11_89	Releasing of Secondary cells and battery stands available in the battery room along with connecting strips, wires and terminal boxes carefully without causing any damage to the batteries, accounting and stacking them neatly at a place as instructed by Railway representative at site. After releasing any holes in the walls/ flooring shall be filled with cement mortar and plastered.	Signalling				100 %	
293	11_93	Releasing of existing ground type shunt signals along with surface base, signal post etc carefully without any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site. The work also includes breaking and removal of concrete foundation and refilling of the resultant pit by ramming and levelling.	Signalling				100 %	
294	11_94	Releasing of existing TLD boxes with stumps and terminals after releasing all the bond wires. The released materials shall be accounted and stacked neatly at a place as instructed by Railway representative at site.	Signalling				100 %	

295	11_95	Releasing of all power equipments including equipment stands, terminal boards, power panel etc., in the power room carefully without causing any damage to the equipments after disconnecting all the supply wires. The released equipments shall be accounted and stacked at a place as instructed by Railway representative at site. After releasing any holes in the walls/ flooring shall be filled with cement mortar and plastered.	Signalling				100 %	
296	11_97	Survey of Cable Route and Preparation of Cable Route Plan.	Signalling				100 %	
297	11_98	Provision of one skilled and 2 unskilled staff round the clock to attend the teething trouble of the installation along with SSE/JE after the installation has been brought into commissioning. The work includes routine maintenance, failure restoration as per the direction of the SSE/JE	Signalling				100 %	
298	11_99	Videography of cable Route	Signalling				100 %	
299	11_100	Providing the services of Computer oriented technical manpower to carryout works like Drawing, computation, writeup etc., using computer, using software like AUTOCAD, MS Office etc., for 08.00 hrs in a day with all expenses of	Signalling				100 %	

		transportation, accommodation, food, consumables etc., with all ascents, descents, taxes, octroi, cess, fees, duties, duties with contractors cost etc., as per special conditions/ specifications/ regulations and as directed by Engineer-in-charge. Note: The person engaged for providing the services shall be convergent with computer working knowledge in above software.						
300	11_101	Protection adjustments and re-instating of S&T gears by deputation of Helpers/ Unskilled labour for executing additional S&T portion of the works. The work can involve fixing, releasing, dismantling, replacement, excavation, clearing of vegetation, loading and unloading of material and assisting skilled persons etc as per instruction of Railway representative.	Signalling				100 %	
301	11_102	Protection, adjustment and reinstating of S&T gears by deputation of Fitter/Wireman/Painter/Welder/ Mason/Cable Jointer (Skilled Labour or Technician) etc., for executing additional S&T portion of works. The work can involve fixing, releasing, dismantling, replacement, painting or alteration of various signalling assets or parts, termination of cables,	Signalling				100 %	

		minor patch work on damages at location box, Plastering, Concreting brick work, wiring alterations, cable jointing etc as per instruction of Railway representatives at size.						
302	11_103_a	Transportation of Signalling materials by road as per the instructions of Railway representative at site. The work also includes loading and unloading of the materials. a)Transportation of Signalling materials upto 100kms	Signalling				100 %	
303	11_103_b	Transportation of Signalling materials more than 100km	Signalling				100 %	
304	11_104	Engaging mechanical excavators like JCB or other machineries for regarding and levelling the formation, dismantling any infringing structures, clearing and removing debris etc., with all leads and lifts etc., complete and as per the instruction of Railway representative at site.	Signalling				100 %	
Annexure – A2								
305	NS1	Design and supply of Electronic Interlocking system as per RDSO Specification RDSO/ SPN/203/2011 or latest on the date of tender opening for PTJ Station as per the tentative plan enclosed. This EI system shall be of Hot stand by with	Signalling	74%			26%	

		DISTRIBUTED system configuration. This system should have either relay interface or object controllers to drive field gears. If object controllers are used, it shall be installed at relay room of station and huts. This system shall be compatible for working with DUAL VDU arrangements. Data logging facilities shall conform to clause 6.2 of RDSO/ SPN/203/2011 or latest. (a)The EI Supply material (Both hardware and software) shall be suitable for yard with ONE MAIN CABIN and 4 HUTS at PTJ yard. The enclosed plan is only tentative and the exact details have to be made based on the Table of control and approved signalling plan supplied by Railways. b) DC-DC converters of N+1 mode shall be supplied separately for A & B Systems and communication arrangement as per RDSO spec.						
		Railways will provide unstabilized 230V AC for the EI Equipment and its accessories. Necessary arrangements like cable laying and other associated works for extending the 230V Supply from SM Room or from IPS Room shall be done by contractor as instructed by Railway Engineer. Supply of one set of special						

		and general purpose tools and measuring instruments for maintenance of EI.Supply of all special relays (except 24V QN1, QNA1& universal ECR relays. These relays will be supplied by railways).Designing of EI software and supply of 1 set of hard copies of Design documents (logic diagrams) for approval and supply of 2 sets of final approved copy. .						
		NOTE 1: The design of EI system should be as per the RDSO Spec: RDSO/SPN /203/ 2011 or latest on the date of tender opening. The EI system including its equipment and subsystems shall be under warranty for three years from the date of commissioning of complete system as per RDSO spec No.RDSO/SPN/203/2011. NOTE 2: a)At least 25% additional (spare) input/output ports shall be catered in the installed system hardware for facilitating minor alterations without any hardware additionsb) The system shall be equipped with and have provision for expansion to accommodate additional 25% of I/O cards. & 10% spares shall be provided for each card/module						

		NOTE 3:EI shall have user-friendly graphic based design tool to generate station specific application software to carry out future yard modifications. All the software tools required for yard modification shall be provided to the purchaser by supplier. List of such tools shall be submitted to RDSO at the time of approval. 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 Railway signalling staff for the same as per agreement with the Railway NOTE 4: Modification in the existing software like aspect changes distant/LSS/combination of aspects/Bifurcation of Track circuit or Provision of Berthing track/Engineering gate modifications/Shifting of starter /any minor changes in the SIP and Panel /VDU indication should be on free of cost.Any additional Cards/Modules required for the work will be supplied by the Railways. (Inspection by RDSO)						
306	NS2	Installation, testing and commissioning of EI equipment supplied vide sch No.NS1. This includes installation of relay racks and wiring of all types of interface relays. Non deteriorating fuses, LED	Signalling				74%	26%

		indicators for fuses, indoor cable, different wire coils, etc. required to wire the various relays will be supplied by the contractor						
307	NS3	Supply of ESSENTIAL spares @ 10% of eachcards/modules/ PCBs for EI system supplied for under NS-1 subject to a minimum of 1 number ofeach. Item wise Rates should be quoted inseparate annexure. NOTE: The rates of various modules equipments, Subassembly and otherstores shall be quoted individually with unit rate.Total cost also should be given in detail by the tenderer. (Inspection by RDSO)	Signalling	100%				
308	NS4	Supply and installation of Operator VDU 86" monitor or bigger size. The monitors should be of 4K resolution or better and suitable for 24x7 operation.(Inspection by RITES)	Signalling	100%				
309	NS5	Supply of Commercial Grade VDU of size 55 inch - Full HD (Inspection by RITES)	Signalling	100%				
310	NS6	Supply and laying of DWC split pipe of 250/217 mm dia, 2 m long in already DUG cable trenches.(Inspection by RITES)	Signalling					100%

311	NS7	Supply of 2 Amps capacity self resetting fuse made of Polymeric Positive Coefficient (PPTC) material in thin clip.(Inspection by Consignee)	Signalling					100%
312	NS8	Supply of 4 Amps capacity self resetting fuse made of Polymeric Positive Coefficient (PPTC) material in thin clip.(Inspection by Consignee)	Signalling					100%
313	NS9	Supply of 6 Amps capacity self resetting fuse made of Polymeric Positive Coefficient (PPTC) material in thin clip.(Inspection by Consignee)	Signalling					100%
314	NS10	Supply and installation of STOP BOARD (Inspection by Consignee)	Signalling				26%	74%
315	NS11	Supply and Fabrication of Table having dimensions 2.5 Mtr x 1 Mtr for accommodation of Datalogger Terminal, Maintenance Terminal including Printer arrangements. This includes supply of one chair (Godrej PCH7002DX or superior as approved by engineer in charge) (Inspection by Consignee)	Signalling				26%	74%

316	NS12	Supply of CORRKIL-E or similar (RDSO SPECFICATION NO.M&C/PCN /121/2011) Anti-corrosive chemical coating compound Top coat of Copolymeric base ,in single pack Twenty litres TIN drum containing polyethylene ,caprolactum against corrosion resulting from a wide range of industrial chemical ,gases and adverse weather conditions.(Inspection by Consignee)	Signalling					100%
317	NS13	Application of CORRKIL-E or Thermo tech or similar (RDSO SPECFICATIONNO.M&C/PCN/121/2011) Anti-corrosive chemical coating compound.	Signalling				100%	
318	NS14	Supply of Goods Warning Board (Inspection by Consignee)	Signalling					100%
319	NS15	Supply and Installation of calling on board. This work involves supply and installation of 3mm prismatic retro reflective sign board.(Inspection by Consignee)	Signalling				26%	74%
320	NS16	Supply of Block Section Limit Board.(Inspection by Consignee)	Signalling					100%

321	NS17	Design, Supply, Installation,Testing and Commissioning of Multi section Digital Axle Counters (MSDAC) complete system as per RDSO/SPN/176/2013 version 3 or with latest amendments in distributed arrangements with one central cabin and 4 huts.Tenderer shall design the scheme for provision of required number of evaluators, Trackside junction boxes, detection points, andtrack clearance relays etc..Design should have facility to reset track section by manual resetting system withcooperative type resetting features. This includes supplyof all the track side junctionboxes, required number ofEvaluators, Detection points,Track Clearance Relays (Qseries relays), Reset Panels,LV boxes, communication equipments/interface equipments for connectingevaluators, Reset Panels andLV boxes. Provision of atleast10% expansion slot in mother board all otheraccessories, includingMultiplexers, Modems, Cards, Modules etc , and any other miscellaneous materialsrequired for the work shall be supplied by the contractor.	Signalling	100%				

		This also includes supply of inbuilt cable for Axle Detector length - upto 15m. The Reset Panels and LV boxes shallhave the facility to work in Quad / OFC cables. (Railways will provide 230VAC/110V DC/24V DCsupply for the working of theMSDAC system).(Underground Quad and OFCcables will be supplied by Railways.) Total cost shall be given against the schedule. See Technical conditions for MSDAC for Full description (Any other materials not quoted in the breakup and/or any increase in quantities listed in the break up but found necessary while commissioning should be supplied free of cost by the contractor.) All the MSDAC equipment to be provided with efficient lightning and surge protections which also to be supplied along with the system.						
		The connectivity between Evaluators to Evaluators, Reset box & LV box at different location/station shall be through OFC and QUAD cable with Automatic changeover arrangements for redundancy purpose. (Inspection by RDSO)						

323	NS18	Supply of 10% essential Spares of all cards, modules and relays (minimum of 1 No.) to be supplied for Indoor and outdoor equipments of MSDAC (subject to a fractional quantity to be rounded off to next higher digit). The supply of spares required should be certified as essential by OEM.(Inspection by RDSO)	Signalling	100%				
324	NS19	Supply of Tool Kit for installation and maintenance of MSDAC as per OEM requirement comprising of 1) Portable Data Analyser for downloading event logger data for analysis and report generation - 1 No. 2)True RMS Digital Multimeter of reputed make as recommended by OEM - 1 No 3)Dummy wheel - 1 No. 4) Set of Spanners and Screw drivers including soldering iron - 1 Set 5)Adjustable Torque wrench - 1 No. 6) Marking jig for drilling-1 no Any other specialised tools and measuring equipments as per OEM requirement. .(Inspection by Consignee)	Signalling	74%				26%
325	NS20	Training of Railway personnel in MSDAC by OEM. The contractor shall provide training for Railway official in Hardware and software to enable him to install.	Signalling				100%	

326	NS21	Supply of single spike air terminals of 17 mm dia. & 2000 mm length as required and as per site conditions. The air terminal shall be manufactured with CBS & shall be as per IEC 62561-2. The air terminal shall be fixed with (Base Plate arrangement) (Inspection by RDSO)	Signalling					100%
327	NS22	Supply of 8 mm dia. Copper Bonded Steel round conductor (250 Micron) for air termination network at Roof and shall meet the requirement of IEC 62561-2.(Inspection by RDSO)	Signalling					100%
328	NS23	Supply of Roof Parapet Conductor holder for holding of 8 mm dia. round conductor (for RCC roof). The conductor holder shall be of Stainless steel and shall meet the requirements of IEC 62561-4.It should be installed at every 1 mtr.(Inspection by RDSO)	Signalling					100%
329	NS24	Supply of 16sq.mm. copper cable along with lugs, having 500mm length & as per IEC 62561-1 so as to connect air termination rod with any metallic structure on the roof.(Inspection by RDSO)	Signalling			100%		

330	NS25	Supply of Universal Connector for making straight, Tee & Cross joint of 8-10mm dia. Copper Bonded Steel Round Conductor to 8-10mm dia. Copper Bonded Steel Round conductor on parapet wall, roof and vertical facade of masonery / glass / metallic work.(Inspection by RDSO)	Signalling					100%
331	NS26	Supply of 8 mm dia Copper Bonded Steel round conductor (250 Micron) for Down conductors to be installed on vertical wall, façade of masonary / glass / metalic work. It shall meet the requirements of IEC 62561-2.(Inspection by RDSO)	Signalling					100%
332	NS27	Supply of Down Conductor holder for holding of 8 mm dia. round conductor (for RCC wall). The conductor holder shall be of Stainless steel and shall meet the requirements of IEC 62561-4.It should be installed at every 1 mtr.(Inspection by RDSO)	Signalling					100%
333	NS28	Supply of Expansion piece made of 8mm dia. Copper Bonded Steel & as per IEC 62561-2 along with 2MV clamps used as connecting accessory from both the ends. It shall be installed at every 20 mtr to maintain the flexibility to the conductor due to heat.(Inspection by RDSO)	Signalling					100%

334	NS29	Supply of Test Clamp to disconnect the 8 mm dia. Copper Bonded Steel down conductor from the 25x2mm Copper Strip of earth termination network for regular checks of the earth termination resistance value. (with enclosure). It shall meet the requirements of IEC 62561-2. (Inspection by RDSO)	Signalling					100%
335	NS30	Supply of Digital Lightning Strike counter Model: JMV/DLSC-3D for counting the number of lightning strikes and has a 3 Digit display facility and also records date and time . The Counter should be mounted on the Down Conductor. The Lightning Counter should be IP 67 rated enclosure suitable for external application. It shall meet the requirements of IEC 62561-6.(Inspection by RDSO)	Signalling	100%				
336	NS31	Supply of Earthing termination as per RDSO/SPN/197.(Inspection by RDSO)	Signalling					100%
337	NS32	Supply of 25 x 2 mm Copper Strip laid 500mm below the ground for Ring Earthing as per RDSO/SPN/197.	Signalling					100%
338	NS33	Supply of Strip holder for holding of 25x2 mm Strip (for RCC wall). The conductor holder shall be of Plastic and shall meet the requirements of IEC 62561-4.It should be installed at every 1 mtr.	Signalling					100%

339	NS34	Supply of 2D- T joint between Horizontally laid 25 x 2mm Copper strip to Horizontally laid 25 x 2mm Copper strip.	Signalling					100%
340	NS35	Supply of 2D- T joint between Horizontally laid 25 x 2mm Copper strip to 25 x 6 x 200mm Copper Bus Bar.	Signalling					100%
341	NS36	Supply of Straight joint between 25 x 2mm Copper strip to 25 x 2mm Copper strip.	Signalling					100%
342	NS37	Supply of Isolating spark Gap for lightning equi-potential bonding of different earth grids according to IEC 62561-3.(Inspection by RDSO)	Signalling					100%
343	NS38	Installation and commissioning of External Lightning Protection (ELP), ClassA.Warranty of the earthing system shall be 60 months from date of commissioning as per RDSO Lr .No TAN STS/E/TAN/3006 Ver.3.1 or latest	Signalling				100%	

344	NS39	Supply of Single Section Digital Axle Counter (Phase Reversal Type) asper RDSO Specification No. RDSO/SPN/177/2012 (Ver.3) or latestconsisting of the following:- High frequency TX Coil and RX Coil (AD-711FS) consisting of Tx = 02Nos. & Rx = 02 Nos. – 01 Set- Track side digital axle counter unit DACF-710P -2 Nos.- Vital Relay box duly wired = 2 Nos, each with 2 Nos. of 24V, 1000Ohms, “Q” type relays.- Clamp with deflector plates and hardware etc. – 4 Nos.- Reset Box –2 Nos.- Surge Voltage Protection Device – 2 Nos.-Commissioning and OEM Certification of SSDAC, The Warranty certificate should be issued from the date of commissioning.(Inspection by RDSO)	Signalling	100%				
345	NS40	Supply of Tool Kit for maintenance of Single Section Digital Axle Counter Systems.(Inspection by RDSO)	Signalling	100%				

346	NS41	Installation of SSDAC system complete with Dual sensor as per latest RDSO specification ; this work includes Testing and commissioning as per instruction of OEM and Railway representative at site. The Pre-Commissioning checklist issue by RDSO for SSDAC will be prepared by OEMs Engineer and signed jointly with Railways Site Engineer before commissioning of SSDAC. OEM will submit site installation certificate mentioning that SSDAC has been installed, wired, tested and commissioned by approved vendor of RDSO i.e., by OEM. This items also include installation of track device(rail contact) including drilling of holes if required in rails, laying of separate Double walled anti rodent corrugated pipe from Axle Detector to Digital Axle counter field unit for TX & RX cables, drawing of cables and making its terminations, fixing of deflector plates. (Double walled anti rodent pipe 103.5 / 120mm is not covered in this schedule) (Wire PVC, Copper Lugs and other consumable materials will be supplied by Contractor)	Signalling				74%	26%

Annexure – A3

347	NS42	Supply of Full HD Bullet type IP Colour Camera as per RDSO Specification No RDSO/SPN/TC/65/2021 Version 6.0 or latest. (Inspection by RDSO)	Telecom	100%				
348	NS43	Installation, Testing & Commissioning Full HD bullet type IP Colour Camera along with, Mount. All the accessories and fixing materials including mount required for this installation are to be supplied by contractor within the same cost.	Telecom				100 %	
349	NS44	Supply of Full HD Resolution Fixed dome type IP Colour Camera as per RDSO Specification No RDSO/SPN/ TC/65/2021 Version 6.0 or latest. (Inspection by RDSO)	Telecom	100%				
350	NS45	Installation, Testing & Commissioning HD Resolution Fixed dome type IP Colour Camera along with, Mount . All the accessories and fixing materials including mount required for this installation are to be supplied by contractor within the same cost.	Telecom				100 %	
351	NS46	Supply of Full HD Resolution PTZ (Pan, Tilt, Zoom) IP Colour Camera as per RDSO Specification No RDSO/SPN/TC/65/ 2021 Version 6.0 or latest. (Inspection by RDSO)	Telecom	100%				
352	NS47	Installation, Testing & Commissioning of Full HD Resolution PTZ (Pan, Tilt, Zoom) IP Colour Camera along with, Mount . All the accessories and fixing materials including mount required for this installation are to be supplied by contractor within the same cost.	Telecom				100 %	
353	NS48	Supply, Installation, Testing & Commissioning of Video Management Software with License as per RDSO Specification RDSO/SPN/ TC/65/2021 Rev 6.0 or latest	Telecom	74%			26%	

		amendment(Per camera licence means Video Management (Viewing) at multiple locations such as Station, RPF Post & Server room by same license) (Inspection by RDSO)						
354	NS49	Supply of Server Hardware for Video Management and recording along with all accessories as per RDSO Specification No RDSO/SPN/ TC/ 65/2021 Version 6.0 or latest.(Inspection by RDSO)	Telecom	100%				
355	NS50	Installation, Testing & Commissioning of Video Management & recording Server with required accessories as per RDSO spec. No: RDSO/SPN/TC/65/2021 Ver.6.0 or latest (Inspection by RDSO)	Telecom				100 %	
356	NS51	Supply, Installation, Testing & Commissioning of Video Recording Software with License as per RDSO Specification RDSO/SPN/TC/ 65/ 2021 Rev 6.0 or latest amendment (Per camera Licence means Video Recording at multiple locations such as Station, RPF Post & Server room by same license) (Inspection by RDSO)	Telecom	74%			26%	
357	NS52	Supply of Large Format LED Display Unit, 55" (inches), Full HD 1920 x 1080, Brightness: 350cd/m, contrast ratio 1100:1, HDMI &RGB/VGA/BNC port, USB port Including wall mount kit.as per clause 9.0 ofRDSO/SPN/TC /65/2021 Revision 6.0 or latest. (Inspection by RDSO)	Telecom	100%				
358	NS53	Installation, testing and commissioning of large format display monitor unit 55 with all accessories and fixing materials required for this installation are to be supplied by contractor within the same cost.	Telecom				100 %	

359	NS54	Fabrication, Supply and installation of MS sheet box of 3mm thick to accommodate 55 inch LED TV, 12F FMS,5/15A power socket terminations and Media converters etc with suitable lock and key arrangements (min 2 Nos), Polycorbonate Glass (min 4mm thick) on the front side to display TV. The box to be painted enamel black. (This includes supply of 12 F FMS (SC type) and splicing of fibres , supply of 5/15APower socket with switch - 3 Nos and termination of power cables and suitable clamps for hanging/Fixing ,miscellaneous materials including necessary interface like TV LAN adapter set required if any for functioning of TV for installation to be supplied by the contractor). The box and clamp drawing to be submitted for approval before fabrication. The cabinet shall be provided with rain hood and sealed to protect from rain water, bird guard to be provided. (This includes Transportation of materials from Nominated stores to site)(Inspection by consignee).	Telecom				26%	74%
360	NS55	Supply, installation, Testing and Commissioning of 10port Gigabit switch with POE ports-8 Nos and SFP ports-02 Nos. 10/100/1000 base -TEthernet ports 1-8 portsupports PoE+ (30W) powersupply and PoE output fullpower up to 115 W. Providing DC power and data transmission for AP, IP phone and IP camera through category 6 twisted pair. Similar to Cisco SG350-10Por latest. (Inspection by consignee)	Telecom	74%			26%	
361	NS56	Supply, Installation, Testing and commissioning of Manageable Layer-2 Switches consisting of 24 x10/100/1000 BASE-T PoE ports, 4 x10G SFP+ ports with all ports	Telecom	74%			26%	

		loaded except SFPs along with all accessories A required for the installation as per RDSO Specification No. RDSO/SPN/TC/65/2021, Rev6.0. Supply of optical SFP/SFP+ is not included in this schedule. (The to be procured from TTP Approved sources) (Inspection by RDSO)						
362	NS57	Supply, Installation, Testing & Commissioning of 10G SFP+ supports minimum of 10Km with dual fibre connectivity to suit the switches as per RDSO/SPN/TC/65/ 2021, Ver. 6 with Amdt. 1 or latest. (Inspection by RDSO).	Telecom	74%			26%	
363	NS58	Supply of Single mode single fibre 1G SFP module compatible toLayer 2 switch, Aggregate and field switch (Inspection by Consignee)	Telecom	100%				
364	NS59	Installation, testing and commissioning of single mode single fibre 1G SFP module	Telecom				100 %	
365	NS60	Supply and fixing of optical fibre termination boxes for 6 fibre and splicing of 6 fibre.(OFC pigtail patch chords of suitable length and all other materials required for splicing are to be supplied by contractor). (Inspection by Consignee)	Telecom		76%		24%	
366	NS61	Supply of OFC single mode 6 fibre unarmoured cable. Make Molex/AMP/Finolex or similar.(Inspection by Consignee)	Telecom			100%		
367	NS62	Supply of 3 core 2.5 sq mm, multi strand copper conductor, PVC insulated armoured power cable ,confirming to IS: 1554 Part-I. (Inspection by RDSO)	Telecom			100%		
368	NS63	Supply, Installation, Testing and Commissioning of External Storage System for 30 days recording at station/RPF/GRP Thana/Post along with all accessories required for installation purposes as per RDSO	Telecom	100%				

		Specification No. RDSO/SPN/TC/65/2021, Ver. 6 with Amdt. 1& 2 or latest. This is to be distributed and installed with suitable Hardware at 5locations, as per the site requirement.(Inspection by RDSO)(Unit is 1 Nos = 1TB)						
369	NS64	Supply, Installation, Testing and Commissioning of server hardware as per class 10.1.1.3, 10.1.2, 10.1.3 of RDSO spec to configure as Video Management &Recording server(to support 128 cameras)(min)/ Video Analytics Server/ Video FRS server in 1:1 redundancy with all accessories required for installation as per the Technical Specification and RDSO Specification No. RDSO/SPN/TC/65/2021Ver. 6 with Amdt. 1 or latest. Note: Unit is set consisting of two server hardware configured in 1:1 Redundancy. (Inspection by RDSO)	Telecom	74%			26%	
370	NS65	Supply, installation,testing, wiring &commissioning of Face Recognition software withlicense as per RDSOSpecification NoRDSO/SPN/TC/65/2021Version 6.0 or latestamendment. (Per camera license means videomanagement (Viewing) atmultiple locations such asstation, RPF post & serverroom by same license).(Inspection by RDSO)	Telecom	100%				
371	NS66	Supply of Client workstation for viewing cameras in multi screenmode, monitoring, system management with graphical user interface,4K UHD LED Monitor of 24" size including all required licensed software's (like OS, MS Office, Anti virus total 3years security),multifunctioning devicefor documentation,accommodate	Telecom	100%				

		PC workstation & monitor with all accessories, spike buster(minimum 5 nos 6A pointswith fuse), 500VA UPS,Mounting Rack and otherrequired materials as perRDSO spec. No.RDSO/SPN/TC/ 65/2021Version 6.0 or latest (Inspection by RDSO)						
372	NS67	Installation, testing and commissioning of PC work station with al laccessories and fixing materials required for this installation are to be supplied by contractor within the same cost.	Telecom				100 %	
373	NS68	Supply and Installation of 5KVA online UPS APC/NUMERIC/ TATALIBERT with one hour backup.(Inspection by Consignee)	Telecom	90%				10%
374	NS69	Supply , testing and commissioning of 1 KVA UPS with 1hour backup similar to the make of APC or better. (Inspection by consignee).	Telecom	90%				10%
375	NS70	Supply of Microphone with Stand, make AHUJA, Model AUD - 99MS or ACM66 or similar or higher version.(Inspection by Consignee)	Telecom		100%			
376	NS71	Supply of high power public address amplifier 500 Watt,230 VAC operation similar to model Ahuja SSA-5000EM or better (Inspection by Consignee).	Telecom		100%			
377	NS72	Supply and Provision 25W Horn Speaker in open areas for public address system of ABS plastic with 100 v line matching transformer with multiple taps/impedances easily selectable by rotating	Telecom		74%		26%	

		switch .It should meet EN-60065 standard. This works includes supply, fabrication and erecting of pole, angles, fastenings and rain hood as per the instruction of railway representative at site.(Inspection by Consignee)						
378	NS73	Supply of column speaker 15watts similar to model no. SCM 15 of Ahuja make for public address system with100 volts line matching transformer with multiple taps/impedances easily selectable by rotating switch. It should meet EN-60065 standard.(Inspection by Consignee)	Telecom		100%			
379	NS74	Supply of Duplex shielded cable for Public address wiring with 2 conductor, 30 strands/ conductor with double jacketing and shielded.(Inspection by Consignee)	Telecom			100%		
380	NS75	Supply, Installation, Testing and Commissioning of 24 port (fully loaded with 12optical and 12 electrical SFP's) manageable Layer 2 switch as per Spec. No: RDSO/SPN/TC/83/2020 Ver2.0 or latest. (Inspection by consignee)	Telecom	76%			24%	
381	NS76	Supply, Installation, Testing and Commissioning of 24 port manageable Layer 3 switch with 4 Nos of 10G SFP port (fully loaded) and 24Nos of GE port (fully loaded with 12 optical and 12 electrical SFP's) with all accessories as per Spec. No: RDSO/SPN/TC/83/2020	Telecom	76%			24%	

		Ver2.0 or latest.(Inspection by Consignee)						
382	NS77	Supply , fixing of shutter and lable type dual port face plate fitted with female keystone jacks of RJ45 along with surface mount PVC back box and termination of telecom cables for data and voice .Dlink or DAX or Krone or Panduit makes (Inspection by Consignee)	Telecom				24%	76%
383	NS78	Supply and provision of 1/2"(or) 1" PVC pipe/ channel and fixing on the wall and wiring of CAT6 UTP Cable/ telephone cable (all accessories for the work shall be supplied by the contractor).(Inspection by Consignee)	Telecom				24%	76%
384	NS79	Supply of 7 feet length of factory crimped moulded booted type UTP CAT-6/6A Patch cords. Panduit or systimax or R&M or AMP or MOLEX or Krone makes (Inspection by Consignee)	Telecom	100%				
385	NS80	Supply, Installation, testing and commissioning of Media Convertor fibre to Ethernet to supportdistance range of 20Km over single mode Fibreof D- Link / MROTEK make or better.(Inspection by consignee)	Telecom	76%			24%	
382	NS81	Cutting of trench across/ onthe platform /floor withtiles/walls for a depth of 10cm with marble cuttingmachine and filling the trenchafter cable laying	Telecom				100 %	

		andrestoring the surface withconcrete/plaster etc. to normal condition.						
383	NS82	Supply, Installation, Testing and Commissioning of Digital Clock with GPS Synchronization Single side at SM Room as per RDSO Specification No. RDSO SPN TC 62/2008 Rev.3.0 or latest (Necessary materials for installation should be supplied by contractor). (Inspection by Consignee)	Telecom	74%			26%	
384	NS83	Supply of Laser Color Printer for Fault Analysis Terminal of supplied vide SOR 2_8. Make: HP M128fn Laserjet or similar (Inspection by Consignee)	Telecom	100%				
385	NS84	Supply and Installation of wireless router similar to linksys E2500 with suitable clamps and all accessories to be supplied by the contractor. (Inspection by Consignee)	Telecom	74%			26%	
386	NS85	Supply of Ferrule Printer Canon MK3000/MK5000 similar or better. (Inspection By Consignee)	Telecom	100%				
387	NS86	Shifting of VHF(25W) from existing building to new building.	Telecom		100%			
388	NS87	Supply and provision of Outdoor signaling design Management software with GIS mapping: Design, develop and deployment of Outdoor signaling information Software for managing station-wise cable	Telecom	74%			26%	

		core allocation, asset connectivity mapping, and automated generation of cable core plans, Cable Route Plan with cable depths details and its logical paths. The software shall serve as a centralized digital platform to streamline the design, documentation,and control of outdoor signaling infrastructure in compliance with railway practices: The software shall have the following specifications: i. Location Box Management: Each location box will have a dedicated location diagram showing the Terminal arrangements, wiring details, Terminal numbering and label configuration ii. Interactive SIP and Interactive Cable core plan: Clicking on elements within a SIP (Signal, Point, Track) and Location boxes should display corresponding cable functional details.						
		iii. GIS Based asset mapping: Built-in integration with GIS platforms to plot and manage: Asset locations (Signals, Points, Cable Markers, Location Boxes) Cable routes plan and its logical paths, Bonding Plan and Power Diagram. iv. Controlled Access and Authorization: Role based access control must be enforced: General users can view data. Only authorized personnel can approve and finalize updates, and all						

		edits and approvals shall be logged via an audit trail system which will have all the details of changes that have been done and approved.						
		v. The software shall be loaded in a server or PC at Test Room as well as at the respective location in a standalone mode (The required hardware shall also be supplied along with it: Min spec: Intel i5 with 16GB RAM & 512GB SSD or similar) as per the requirements of Railway executive in charge. vi. The software shall be upgraded free of cost whenever there are changes in the design or shall do the necessary upgradation as per the Railway in charge's requirementsvii. The software shall have warranty for a period of 2 Years inclusive of the above software up gradation from the date of the commissioning of the station. The warranty shall cover rectifications of bugs or any other UI related issues.						
		viii. All the field data should be collected and the inputs for the software once provided shall be verified jointly with the Railways before delivering the final software. ix. The final cable core plan, cable route plan,Bonding plan and Power diagram shall be generated by the						

		software and the same shall be submitted in the form of hard copy of the Required size. x.The software training required to implement necessary changes in the cable core plan or route plan, in the event of any future station design modifications, shall be provided to the Railways.						
389	NS88	Alteration in existing EI at Podanur Jn. inconnection with Proposed Trip Maintenance/Advanced Inspection Centre at PTJ includes 1)Redesigning of Application Logic(for full station) as per approved SIP & TOC 2) Redesigning ofInterface Circuits as per approved SIP & TOC.3) The above circuits shall be prepared by contractor inAUTOCAD 2000 or latest in A3 size. Initially contractor has to submit one set of hard copy forchecking and approval.(All drawings including As mades shall be given for full station) 4) Contractor to arrange for Factory acceptance test for EI system. 5) Contractor to arrange for Site acceptancetest for EI system.	Signalling					100%
		6) On successful FAT & SAT contractor to arrange for Installation, Testing & Commissioning of EI system as per approved SIP & TOC 7) After execution of the work one copy of						

		the "As made" check print along with ALC(service version as uploaded at station) shall be submitted for checking. 8) On approval of "AS MADE" the contractor shall submit six sets of documents duly making neatly bound booklets along with the negatives(Tracing sheets). Out of six sets, two sets of drawings and other plans shall be kept in Transparent plastic cover(Two sheets back to back in one plastic cover) and handover to Railways. 9) Contractor has to submit the final AUTOCAD drawing , approved circuits in PDF, ALC files, VDU files, MT files as commissioned at site, DL bit list, FAT files and other soft copies as per the make of EI system in Pendrive. 10)Networking and validation of Datalogger to be ensured.						
390	NS89	HDD boring including insertion of High Density Polyethylene Pipes (HDPE) of of size 110mm outer dia in the bore drilled along with couplers required, pulling of different size of signalling cables through HDPE duct by machine as instructed by railway representative .Boring trench shall be minimum 1.5m to 2mts below the platform, Track and yard/midsection. Radio or	Signalling				74%	26%

		any other detection system should be used for avoiding damage to existing underground utilities. Minimum horizontal distance of 50m to 100m should be taken up with a launching point. Transportation of HDD machine, fuel and other materials required for boring and pulling of cable etc.(Supply of HDPE DUCT is not included).						
391	NS90	Supply of 8 port switch manageable with 2 nos 1000 baseX SM SFP optical module and 6 nos of ethernet ports Layer 2 POE switch with SPF module as per specification RDSO/SPN/TC/65/2009 Rev.4 or latest. (Inspection by RDSO)	Telecom	100%				
392	NS91	Supply of Fiber to E1 Converter.(Inspection by Consignee)	Telecom		100%			
393	NS92	Supply of 2 X 70 sq.mm Aluminium power cable as per IS:7098(part -1)/ 1988 with all amendments or latest. (Inspection by RDSO)	Signalling			100%		
394	NS93	Design , Fabricate& Supply of rack mountable modular intelligent service IP MPLS aggregator router with minimum switching speed of160Gbps , unit to supportsL2VPN ,L3 VPN,MPLS- TE ,unit to be capable to support8x10Gbe or more, 32x1GbEor more , 64xE1 ,12xSTM 1ports or 2x8 port WDM support multiple routing functions such as OSPF V3,ISIS, BGP & MP-BGP and	Telecom	74%				26%

		support LDP and RSVP - TE to dynamically establish IMPLS tunnels & PW service. It should support dual main control card redundancy design supporting 1:1 hot back up. The router should have console and SNMP interface, Fan module, control card module and Redundant 48V DC power supply modules including connection cable and fixing accessories etc. The Router should have required interface slots to accommodate 4x10Gbe ,8x1Gbe , 16 E1s and 4xSTM1 or 2x8 interface modules. The router should support all the software features, environmental standards and security features as mentioned in RDSO technical document no STT/TAN/IP-MPLS/2020 Ver1.0 or latest for the LER Router.(Inspection by RDSO)						
395	NS94	Supply of 4 port x10G SFP module card suitable for the IP MPLS router in NS22.(Inspection by Consignee)	Telecom		100%			
396	NS95	Supply of 8 port x 1GbE(4nos of optical ports and 4nos. of electrical ports)module card suitable for the IP-MPLS router in NS27.(Inspection by Consignee)	Telecom		100%			
397	NS96	Supply of 16 port channelised E1 interface card suitable for the IP-MPLS router in NS27.(Inspection by Consignee)	Telecom		100%			
398	NS97	Supply of SFPs for 1Gbe(optical)/RJ 45 ports as per the site requirement.(Inspection by Consignee)	Telecom					100%
399	NS98	Design , Fabrication & Supply of rack mountable modular intelligent service IP MPLS aggregator router with minimum switching speed of 160 Gbps, unit to supportL2VPN ,L3 VPN,	Telecom	74%			26%	

		MPLS-TE , unit to be capable to support8x10Gbe or more , 48x1GbE or more , 64xE1 or more ,12xSTM1 ports or 2x8 port WDM support multiple routing functions such as OSPF, ISIS,BGP & MP-BGP and support LDP and RSVP - TE to dynamically establish MPLS tunnels & PW service. It should support dual main control card redundancy design supporting 1:1 hot backup. The router should have console and SNMP interface, Fan Module , Redundant control card modules and Redundant48V DC power supply modules including connection cable and fixing accessories etc. The Router should have required interface slots to accommodate8x10Gbps interface modules. The router should support all the software features, environmental standards and security features as mentioned in RDSO technical document no STT/TAN/IP-MPLS/2020 Ver1.0or latest for the LSR Router.(Inspection by RDSO)						
400	NS99	Supply of 8x10Gbps SFP module card suitable for the IP-MPLS in NS27.(Inspection by Consignee)	Telecom		100%			
401	NS100	Supply of SFP + 10G (40 Km)SMF,1550nm for 40KM transmission working on single or dual fibre as per site requirement.(Inspection by Consignee)	Telecom		100%			
402	NS101	Supply of Channelised STM1/4(4 Port STM-1 or one port STM-4) card or 2 Nos of 4/8 port X 10Gbps WDM interface module card suitable for the above in NS27 & NS 32 along with 2nos of SFP's(1.2Gbps or 2.5Gbps)as per the site requirement.(Inspection by Consignee)	Telecom		100%			

403	NS102	Supply of covered 19" Racks of size 2200 mm X 600 mm X600 mm (WQ/Vero President/Rittal/APC make)complete with all fittings including DC Fans (48 V) - 2Nos, seperator sheet/plate to keep testing equipments - 1No and AC Power distribution panel (horizontal fitting) with power sockets and fuse/MCB protection (minimum 6 Nos of 230V- 15A/5A. combined)and other accessories. Rack should have compatibility with all equipment conforming to DIN 41494 or equivalent EIA/ISO/EN standard, Manufacture must certify that products are complied with DIN41494 or equivalent EIA/IISO/EN/CEA/UL standards(Inspection by Consignee)	Telecom					100%
404	NS103	Supply of SMPS based powerplant with 48v/25A SMRFR/FC modules in 2+1configuration compatible with VLRA battery bank of 48V DC/ 300AH, suitable for incoming power supply of single phase 165V - 260V AC conforming to RDSO spec.No. RDSO/SPN/TC/23/1999Ver.4 with latest amendments. (Inspection by RDSO).	Telecom	100%				
405	NS104	Supply of DC Power distribution panel to cater DC power requirements of IPMPLS/STM Multiplexers/PD MUX / EOW / Fans to be fixed in 19" rack (Minimum 8 Nos of DC distribution arrangement with MCB's of suitable rating) for -ve .Connecting copper strip for +ve. (Inspection by Consignee)	Telecom	100%				
406	NS105	Installation of IP MPLS Router and switches, with power distribution panel and all accessories in the Rack (19"42 U) , DDF, Aluminium runway ladder, patch cord etc and their testing and commissioning.	Telecom				74%	26%

		This includes termination of all E1's on DDF, connection of pigtails, optical patch cords and 48 Vbus to the IPMPLS equipment including supply of wires and connectors. It also includes proper mounting of rack, provision of Aluminum runway ladder, casing andcapping and conduit pipe asper requirement at each station, other materials from stores supplied by Railways for installation. (Conduit pipe/ casing and capping,aluminium runway ladder and all other miscellaneous materials should be supplied by the contractor).						
407	NS106	Installation. wiring and testing of battery sets and battery chargers for optic fibre circuits. This includes installation of AC and DC power supply distribution board with MCB's of suitable rating, wiring of external alarm contacts, Fixing arrangements for battery and charger in the equipment room with 25 sq.mm Multistrand single core Copper cable PVC insulated from Battery charger to Battery with suitable copper lugs crimped/soldered to it ,16 sq.mm Multistrand single core Copper cable PVC insulated from battery charger to power distribution panel in the rack with suitable copper lugs crimped/soldered to it.Connection from Battery Charger body and battery +ve terminal to Earth terminal by16 Sq.mm Multistrand single core Copper cable PVC insulated seperately with suitable copper lugs crimped/soldered to it and Extension of AC 230V power supply wiring through PVC pipe with 6 sqmm cu. wire for phase & neutral and 1 sqmm cu .wire for earth to the 19"rack (Copper cables , 20Ametal clad with MCB for AC supply to fix in the wall ,conduits and other miscellaneous materials	Telecom				74%	26%

		required for the work should be supplied by the contractor. This work also includes transportation of materials from stores/supplied by Railways for installation.						
408	NS107	Integration, Testing and Final commissioning of equipments at each station for all the equipments confirming with the approved system design including end to end testing for realization of optical fibre system. This also includes supply of all as made documents for the entire section (six copies) plus technical, maintenance and installation manuals for IPMPLS , NMS, Charger and Power Supply unit.	Telecom				100 %	
409	NS108	Training of Railway staff at the factory premises of manufacturer of IP-MPLS equipment (or) at a reputed training institution as approved by railway executive in charge. This includes boarding and lodging charges. (Travel expenses will be borne by the railways).	Telecom				100 %	
410	NS109	Alteration in existing EI at Podanur Jn.,CBE & IGU Yard inconnection with Proposed new By-Pass line and creation of new Cabin at PTJ. includes 1)Redesigning of Application Logic(for full station) as per approved SIP & TOC 2) Redesigning ofInterface Circuits as per approved SIP & TOC.3) The above circuits shall be prepared by contractor inAUTOCAD 2000 or latest in A3 size. Initially contractor has to submit one set of hard copy forchecking and approval.(All drawings including As mades shall be given for full station) 4) Contractor to arrange for Factory acceptance test for EI system. 5) Contractor to arrange for Site acceptancetest for EI system.	Signalling				74%	26%

		6) On successful FAT & SAT contractor to arrange for Installation, Testing & Commissioning of EI system as per approved SIP & TOC 7) After execution of the work one copy of the "As made" check print along with ALC(service version as uploaded at station) shall be submitted for checking. 8) On approval of "AS MADE" the contractor shall submit six sets of documents duly making neatly bound booklets along with the negatives(Tracing sheets). Out of six sets, two sets of drawings and other plans shall be kept in Transparent plastic cover(Two sheets back to back in one plastic cover) and handover to Railways. 9) Contractor has to submit the final AUTOCAD drawing , approved circuits in PDF, ALC files, VDU files, MT files as commissioned at site, DL bit list, FAT files and other soft copies as per the make of EI system in Pendrive. 10)Networking and validation of Datalogger to be ensured.						
411	NS110	Supply of Microprocessor based Distributed Electronic Interlocking System (Hot standby only) for one OC HUT to suit the existing EI at PTJ yard as per RDSO Spec.RDSO/SPN/192/2019 Ver 2.0 asper technical conditions enclosed This schedule includes supply as per RDSO specifications • Microprocessor Equipment, Interface Equipment, Interconnecting cables, Relay Racks, Fixtures, Mounting arrangements and other Accessories necessary to make the EI System installed and functional• All special relays shall be supplied by tenderer,	Signalling	100%				

		except QNA1, QECX, QUCX and QN1 having different operatingvoltages i.e., 24V DC, 50V DC, 60VDCetc.,. which is in the scope of Railways• Operator console (Without PowerSupply & Earthing) - Note:Supply of Operator VDU table for SM, Table for Maintenance Terminal & Datalogger,and General Purpose tools for EI maintenance are not covered in this schedule						
		Supply of DC-DC converters in N+1 mode individually for A&B systems is not covered under this schedule. • Accessories such as managed Ethernet switch, RS232,isolator etc. as required to interface EIwith VDU shall covered under this schedule. • The system shall have provision for 1) At least 20% additional(spare) input/output ports shall be catered in the installed system hardware for facilitating minor alterations without any hardware additions. 2) The system shall be equipped with and have provision for expansion for accommodating additional 25% of I/O cards in the form of unused I/O cards slots or the unused bits in installed cards. NOTE: Required materials has to be supplied by the Contractor. The paralleling of DC track with MSDAC should be done in the EI application logic only.The Electronic Interlocking (EI) systems in the OC hut must be interfaced with the Main Cabin.(Inspection by RDSO)						
412	NS111	Excavation of OFC cable joint pit and provision of RCC joint/ loop chambers of 1.2m dia, 60cm height and 50mm thickness with 2 pieces top and bottom cover with holes for drainages (reinforcement as per DRG No. OFC/2009/17). This	Telecom				100 %	

		includes filling up of sand complete in the joint chamber after cable laying, back filling and consolidation of soil around the chamber, disposal of excess soil as per plan or as advised by railway engineer at site as well as transportation of joint chamber to site at every KM in the section.						
413	NS112	Supply of trunking and capping as per drawing No.Proj/SG/MS/ 55A/2006.(Inspection by RITES)	Signalling					100%
414	NS113	Placing of Trunking to a depthof 500 mm and capping.Excavation of trench to a depth of 500 mm and to awidth suitable for accommodating the trunking and capping in all kinds of soilexcept hard rocky areasclearing of roots withoutcausing damage to theexisting cables, placing of RCC ducts (Trunking),plastering the inner spacing between ducts.	Signalling				100 %	
415	NS114	Supply of Ethernet Tester of Stanlay make NETCATPRO2.(Inspection by Consignee)	Telecom	100%				
Annexure- A4								
416	NS115	1st Year AMC for PTJ (Inclusive of GST)	Signalling	NA				
417	NS116	2nd Year AMC for PTJ(Inclusive of GST)	Signalling					
418	NS117	3rd Year AMC for PTJ(Inclusive of GST)	Signalling					
419	NS118	4th Year AMC for PTJ(Inclusive of GST)	Signalling					

420	NS119	5th Year AMC for PTJ(Inclusive of GST)	Signalling	

Chapter – III
Annexure-B1

Materials to be supplied by Railways

1. Rails of different lengths for fixing CT Boxes, etc.
2. Point machines with ground connections.

Annexure-B2
Materials to be supplied by the Contractor
WITH RDSO INSPECTION

1) Underground Signaling Cable, Quad Cable, UG OFC and Power Cables.
2) Station Masters Block panel for Single line SSBPAC as per RDSO specification RDSO/SPN/175/2005 along with block phone as per RDSO/SPN/191/2005 or latest.
3) Microprocessor based SSBPAC(D)as per RDSO /SPN/175/2005 or latest.
4) Supply of Single Section Digital Axle Counter (Phase Reversal Type)
5) Essential spares for SSDAC
6) GPS double face clock with GPS synchronisation as per RDSO Spec. No. RDSO/SPN/TC/62/2008 Rev. 4.1 or latest.
7) Double Faced Coach Guidance Display Boards as per RDSO Specification No.RDSO/SPN/TC/108/2019 or latest.

8) Daisy chain junction box for running on OFC and Ethernet copper as per RDSO Spec .RDSO/SPN/TC/108/ 2019 Ver.0.0 with Amndt 1 or latest
9) Rack mountable modular intelligent service IP MPLS aggregator router
10) LED aspects for main signals, shunt signals, calling on signals, route indicators and 'A' marker lights with current regulators.
11) IPS Equipment
12) Electronic Interlocking Equipment as per RDSO Specification RDSO/ SPN/203/2011 or latestwith latest amendment
13) Spares for Electronic Interlocking Equipment
14) MSDAC Equipment as per RDSO specification No .RDSO /SPN/176/2013 Ver 3 with latest amendment.
15) Spares for MSDAC Equipment
16) Datalogger /RTU as per Specification No. IRS/S-99/2006 or latest.
17) Power equipments for EI like IPS, Battery chargers and Batteries.
18) All special relays which are used along with EI.
19) Wiring materials like PVC 16/0.2mm, 3/0.75mm and 7/1.4mm copper or any other cables which is used along with EI or its accessories.
20) PBT fuse block
21) Power equipments viz., Battery chargers, transformers, transformer rectifier, Inverters, Voltage stabilizer, DC-DC convertor etc., as described in the schedules.
22) QN1,QNA1,QTA2, QSPA1 and QBCA1 relays with plug boards, fixing bolts & nuts, connectors and retaining clips.
23) Earthing & bonding system as per RDSO Spec No. RDSO/SPN/197/2008 – Materials to be procured from and installation to be carried out under the supervision of RDSO approved sources and Certification thereof.

WITH RITES INSPECTION

1) Surge Protection Devices for 24 VDC, Class - D for SSBPAC
2) Supply and Installation of bullet type HD, IP Colour camera
3) Supply of trunking and capping
4) Supply of 48V Managed media converter (Integrated Access Device supporting)
5) Supply of 110V Managed media converter (Integrated Access Device supporting)
6) Supply of Field IOT Devices

7) Supply of non intrusive type current sensors
8) Supply of galvanically isolated voltage transducers or voltage sensor or voltage sensing channel
9) Supply of vibration sensors for point machine
10) Supply of station gateway equipment system with Edge Computing
11) IOT device for sensing 110V DC
12) DWC split pipe of 250/217 mm dia, 2 m long in already DUG cable trenches
13) FTOT
14) RCC Ducts as per Drg No :Proj/SG/MS/55A/2006
15) FRP cable termination box with cover
16) Double walled corrugated pipe - 103.5mm inner dia & 120mm outer dia conforming to specification No. IS 14930(Part 2) : 2001 with socket/ coupler.
17) Track lead junction box – FRP type
18) HDPE Pipes as per RDSO/SPN/TC/45/2013 rev 3.0 or latest
19) GI Pipes 100mm dia, 4.50mm thick and 150mm dia 4.8mm thick conforming to IS-1239 amended up to date, with coupling and bends for cable laying.
20) RCC cable markers

WITH CONSIGNEE INSPECTION

1) Tool Kit for installation and maintenance of MSDAC as per OEM requirement
2) Digital Clock with GPS Synchronization Single side at SM Room as per RDSO Specification No. RDSO SPN TC 62/2008 Rev.3.0 or latest
3) Voice logging LC gate telephone system as per RDSO Spec. No. RDSO/SPN/TC/51/2011 or latest
4) Legend Boards.
5) 5KVA online UPS APC /NUMERIC/ TATALIBERT with one hour backup
6) 25W Horn Speaker in open areas for public address system of ABS
7) 4 port x10G SFP module card suitable for the IPMPLS router
8) 8 port x 1GbE(4 nosof optical ports and 4 nos. of electrical ports) module card
9) 16 port channelizedE1 interface card suitable for the IP-MPLS router
10) SFPs for 1Gbe (optical)/RJ 45ports
11) Dual port voice modem card
12) Maintenance Monitoring System
13) Laser Color Printer for fault analysis terminal
14) Fonzel Almirah Steel shelving cabinets
15) Cement.

16) Self resetting fuse made of Polymeric Positive Coefficient

17) Commercial Grade VDU of size 55 inch - Full HD

18) Supply and Fabrication of Table having dimensions 2.5 Mtr x 1 Mtr for accommodation of Datalogger Terminal, Maintenance Terminal including Printer arrangements.

19) Insulations for Points and crossings

20) Foundation bolts, nuts & washers for Colour light Signals 24mmx915mm conforming to Drg.No SA 116 A/M.

21) Foundation bolts, nuts & washers for apparatus cases of size 20mmx460mm to Drg.No.SA 112 A/M

22) G.I. Pipes 35mm dia with check nuts for CT Boxes.

23) G.I. wire for earthing and as per schedules.

24) Electric soldering iron 230V 60W Soldron/Philips make - 1 No.

25) Items not covered by RDSO spec, RDSO Guidelines and RITES Guidelines

Note:

(i) All materials have to be supplied as per specification and drawings referred in chapters in chapter V, Volume.II.

(ii) The inspection of materials will be governed by para.19 of special conditions of Contract chapter-I, volume.II.

(iii) The dimensions of teakwood, hardwood, plywood and termite proof particles board are for finished products only.

(iv) The item nos. 1, 2 & 3 under RITES Inspection shall be supplied directly if procured from CWM/S&T/PTJ Workshop.

(v) As per the latest Railway Board Letter No: 2000/RS(G)/379/2 dated 06/09/2017, RDSO/RITES won't inspect the materials if its value is less than Rs. 5,00,000/-. If the value of any of the materials mentioned against RDSO/RITES inspection as above is less than Rs. 5,00,000/-, the same shall be supplied with Consignee Inspection except those mentioned in Clause 19.5 under Special Conditions of Contract, Chapter I, Volume-II of the tender document.

Clause 19.5 under Special Conditions of Contract, Chapter I, Volume-II of the tender document:

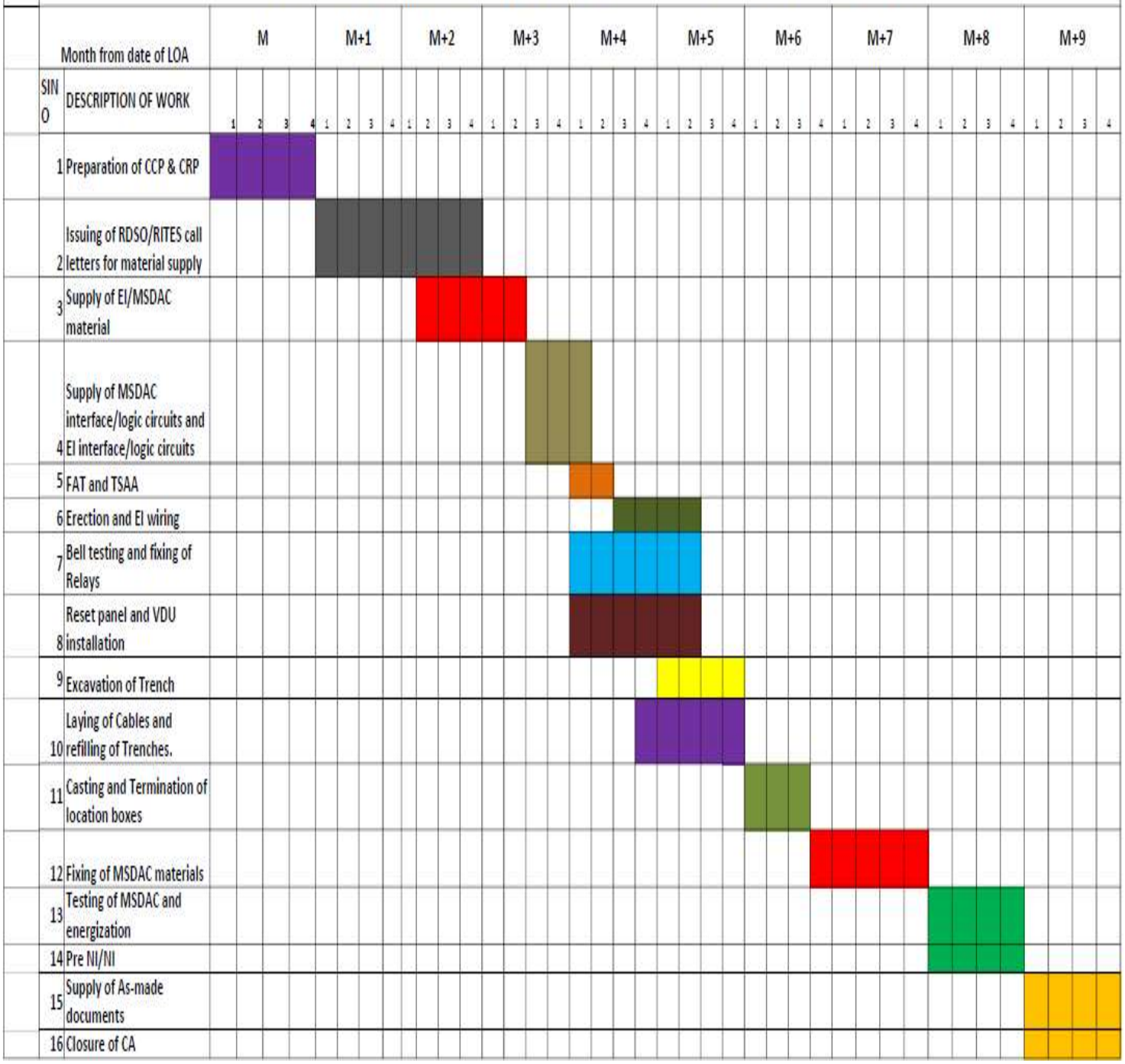
The following critical items will continue to be inspected by RDSO irrespective of its value:

(a) All types of signalling relays
(b) Block instruments
(c) Axle Counter equipments
(d) Signal machines
(e) Point machines
(f) Colour Light Signal transformers

(g) Electrical signal lamps
(h) Voltage stabilizers and other power supply equipment
(i) Electric key transmitter
(j) Fuse, Fuse block &Terminal blocks (PBT type)
(k) Electric Point and lock detector

Annexure-C
Milestone

Milestones of Electronic Interlocking Signalling Arrangements (Both Indoor and Outdoor) at PTJ Yard



Chapter – IV

SCOPE OF WORK

Name of Work:Provision of Electronic interlocking signalling arrangements (Both Indoor and Outdoor) and Telecommunication arrangements at Podanur Junction in connection with 1) New coaching terminal at PTJ 2) Creation of Trip Maintenance/Advance inspection Centre at PTJ 3)Interlocking of stabling line with new EI and by-pass line between CBE-IGU and 4) Development of coach maintenance facilities at PTJ.

Executive in-charge: **DY CSTE/CN/TBM**

1. Stores depot from where the materials supplied by Railways are to be collected by the Contractor: Stores at Perambur/ Tambaram/ Podanur.

2. **Scope of work:**

4.1 The scope of this work is broadly for provision of indoor and outdoor signalling arrangements with Trenching as per Cable Route Plan, Laying of OFC/ Signalling and Telecom cables as per Cable Core Plan, Erection of colour light signals, Apparatus cases, erection of cable termination racks and relay racks in the new Relay room/ hut, Termination of cables in cable termination rack and apparatus cases, Wiring of relays in the relay racks and apparatus case, Installation and wiring of point machines, Installation of power supply arrangements and batteries, Supply of Signal equipments, Matching of new cables at existing locations, Releasing of existing Signalling gadgets, Testing and Commissioning the entire installation.

4.2 The work involves Supply, Installation, Testing and Commissioning of the Electronic Interlocking system, as per Technical Specifications prescribed by RDSO Specification RDSO/SPN/192/2019/Ver 2.0 or latest with latest amendment on the date of tender opening and as per approved signalling plans .

4.3 The work will include supply and execution of all items of supply required for the installation of EI, Relay Racks, Relay fixing and wiring up to Cable Termination Rack and to EI Equipment rack. The tenderer/ contractor has to transport all required equipments to the site of installation.

4.4 Only unstabilized 230V AC supply shall be provided for powering the EI equipment. The tenderer/ Contractor shall make necessary arrangements like cable laying and other associated works for extending the 230V Supply from SM Room/IPS Room/Power Room to the EI System, Object Controllers, VDU and MT as instructed by Railway Engineer.

4.5 Design, Supply, installation, Testing and Commissioning of Dual Detection Multi Section Digital Axle Counter (MSDAC) complete system as per RDSO Specification No. RDSO/SPN/176/2013 (version 3) or latest

4.6 Supply and provision of Fire alarm system.

4.7 Supply and provision of SMPS based Integrated power supply

4.8 MSDAC SPARES: The following mandatory spares shall be supplied for **each installation**:

- 10% for modules, detectors, and loop cards, subject to minimum of one number for each installation.

- The CPU card and Power Supply card, minimum one number as spare shall be provided for every five installations, subject to a minimum of one number for less than five installations.

Technical specification for Portable data analyzer to be supplied along with MSDAC toolkit :

- Processor: Intel i7 or better
- Operating System: Pre-loaded Windows 10 with lifetime validity
- Display: 15.6-inch screen with (1920X1080) full HD display, anti-Glare technology
- Memory and Storage: 16GB RAM, Storage: 1 TB HDD
- Ports and CD Drive: 3 USB 3.1 Ports, HDMI, ethernet, audio and microphone combo
- Graphics card: NVIDIA GeForce GTX 1050 or similar
- 1year warranty
- HP or Dell make

FORMNo.I

STATEMENT OF DEVIATIONS

PROFORMA FOR STATEMENT OF DEVIATIONS

1. The following are the particulars of deviations from requirement of the Instructions to Tenderers, General & Special Conditions of Contract.

1.1 Instructions to Tenderers

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

1.2 General Conditions of Contract.

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

1.3 Special Conditions of Contract.

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

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

(Separate statement for each specification)

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

Note:

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

****

FORMNo .II

PROFORMA FOR FURNISHING EXPERIENCE CERTIFICATE

Name and address of Department Name and address of Unit Name and Address of Contractor Name and Type of Work Nature of work executed	Agreement No.& Date Value of Agreement Original Currency Actual date of completion No. of extensions granted.

S.No.	Nature of work (major sub work) Details of work (tick items which are applicable)	Value as per Agreement (*)	Value as per actual execution (based on payments made so far) (*)	Remarks

1.	Cable laying and jointing.
1.1	Signalling cable
1.2	OFC
1.3	Quad 4/6
1.4	PUF cable
2.	Signal Installation
2.1	Mechanical/Relay Interlocking.
2.2	MACLS/Mechanical MAUQ/LQ
3.	Track Circuiting
3.1	DC
3.2	Axle Counter
3.3	AFTC
4.	Point gear installation
4.1	Point machine
4.2	Mechanical FPL
5.	Interlocking of LC gate
6.	Interlocking of Siding point
7.	Installation of OFC indoor equipment
8.	Designing of Signalling circuits
9.	Whether any penalty is imposed
10.	General Remarks about performance
(*)	Details under relevant columns are to be filled up.

Place:
Date: Signature & Seal of Authority issuing Certificate

FORM No. III

GUARANTEE BOND TOWARDS PERFORMANCE OF CONTRACT

B.G No._____
Date _____
Value _____
Valid upto _____

In consideration of the President of India (herein after called "The Government") having agreed to exempt Shri _____ (herein after "The said Contractor") from the demand, under the terms and conditions of the Agreement under execution between the President of India acting through the Chief Signal & Telecommunication Engineer/Construction/Southern Railway/Egmore/Chennai – 600008 and _____ ("the said Contractor") in terms of Agreement No._____ (name of works) by the said Contractor of the terms and conditions contained in the said Agreement on production of Bank Guarantee for Rs._____(in words) as a security towards satisfactory performance of the work from the said Contractor for compliance of his obligations in accordance with the terms and conditions in the said Agreement, We, _____ (name of Bank and address) ("hereinafter called the Bank") do hereby undertake to pay to the Government an amount not exceeding Rs._____ (in words) against any loss or damage caused to or suffered by or would be caused or suffered by the Government by reasons of any breach by the said Contractor of any terms and conditions in the said Agreement towards performance of the Contract assigned.

2) We, _____ (name of Bank) do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs._____(in words).

3) We further undertake to pay to the Government any money so demanded not withstanding any disputes or dispute raised by the said Contractor 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 us under this Bond shall be a valid discharge of our liabilities for payment thereunder and the said Contractor shall have no claim against us for making such payment.

4) We, _____ (name of Bank) agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement including the maintenance period and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till the Chief Signal & Telecommunication Engineer/Construction/Southern Railway/Egmore/ Chennai – 600008 certified that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor and accordingly discharges this Guarantee. Unless a demand or claim under this Guarantee is made on us in writing on or before the expiry of _____ (date), we shall be discharged from all liability under this Guarantee thereafter.

5) In the event of the period of contract being extended and the Contractor fails to extend the validity of this Guarantee for a further period to cover the extended period of contract before the validity date of this Guarantee, a mere demand or claim made on the Bank by the Government on or before that date of discharge of this Bond to the effect that the Contractor has failed to extend the validity of this Bond can be conclusive as regards the amount due and payable by the Bank under this Guarantee unless the Contractor extends the validity and the Bank shall pay the amount forthwith to the Government.

6) We, _____ (name of Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without effecting in any manner our obligations hereunder to vary any of the terms and conditions from time to time or to postpone from time to time any of the powers exercisable by the Government against the said Contractor and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reasons of any such variation, or extensions being granted to the said Contractor or for any forbearance, act or omissions on the part of the Government or any indulgence by the Government to the said Contractor or by any such matter or thing, whatsoever under the law relating to sureties would, but for this provision, have effect of so relieving us.

7) This Guarantee will not be discharged due to any change in the Constitution of the Bank or of the said Contractor.

8) We, _____ (name of Bank) lastly undertake not to revoke this Guarantee except with the previous consent of the Government in writing.

9) This Guarantee shall be valid upto_____ (date), being the tentative completion period of the contract including the maintenance period unless extended or demanded by the Government.

Notwithstanding anything contained herein,

(g) Our liability under this Bank Guarantee shall not exceed Rs._____ (in words).

(h) This Bank Guarantee shall be valid only upto_____ (date)

(i) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if you serve upon us and we receive a written claim or demand on or before _____ (date), being the expiry of the validity period of Performance Guarantee Bond. Our liability under this Bank Guarantee shall be fully discharged beyond the validity period and you shall not have any claim against this Bank Guarantee.

In witness where of We, _____ (name of Bank with address) hereby affix our hand and seal on this the _____ day of _____ 20 .

Authorized Signatory of the Bank
with seal

FORM No. IV

NATIONAL ELECTRONIC FUND TRANSFER /ELECTRONIC CLEARING SERVICE (CREDITCLEARING)MODEL MANDATE FORM

(Investor's/Customer's option to receive payments through Credit Clearing Mechanism)

NAME OF THE SCHEME AND THE PERIODICITY OF PAYMENT

Unique Contractor / Vender Code:

1. Investor/Customer's Name and Address:

2. Particulars of Bank Account:

a) Name of the Bank :

b) Name of the Branch :

Address :

Tele No :

c. 9Digit Code number of the Bank and Branch appearing on the MICR cheque Issued by the Bank:

d) IFSC Code of the branch:

e) Type of Account (Current/Savings/ Cash credit with code10/11/13) :

f) Ledger and ledger folio no. :

g) Account number (appearing on cheque Book) :

h) PAN No. :

i) GST Registration No. :

(Inlieu of the bank certificate to be obtained as under, please attach a bank cancelled cheque or photo copy of a cheque or front page of your saving pass book issued pass book issued by your bank for verification of the above particulars)

3.Date of effect:

I hereby declare that the particulars given above are correct and complete. If the transaction is delayed or not effected at for reasons of the incomplete or in correct in formation. I would not hold the user institution responsible. I have read the option in vitiation letter and agree to discharge the responsibility expected of me as a participant under the scheme.

Date: Signature of the Investor/ Customer

Certificate that the particulars furnished above are correct as per our records.

Bank's stamp/ Signature of the authorized Official of the Bank

CHECK LIST TO THE TENDER

Name of work: Provision of Electronic interlocking signalling arrangements (Both Indoor and Outdoor)and Telecommunication arrangements at Podanur Junction in connection with 1) New coaching terminal at PTJ 2) Creation of Trip Maintenance/Advance inspection Centre at PTJ 3)Interlocking of stabling line with new EI and by-pass line between CBE-IGU and 4) Development of coach maintenance facilities at PTJ.

CHECKLIST OF ITEMS TO BE COMPLIED BY THE TENDERERS

SL.No	Description of Item	Compliance	Remarks
1	Have you submitted your bid online on IREPS keeping in mind that your Technical Bid documents will be evaluated independent of your Financial Bid and only if your offer is found technically eligible financial components of your offer will be considered?	**Yes/No**	
2	Have you submitted Offer letter complete along with Original/ Downloaded Tender document including tender forms (First Sheet & Second Sheet) duly signed with your digital signature?	**Yes/No**	

SL.No	Description of Item	Compliance	Remarks
3	Have you submitted requisite Bid Security (EMD) online or uploaded scanned bank Guarantee bond?	**Yes/No**	
4	Have you submitted the document pertaining to participation in tender as Sole Proprietor/Partner/ Director/JV	**Yes/No**	
5	Have you submitted you Complete Postal Address	**Yes/No**	
6	Have you uploaded the Tender Documents and its addendum/ Corrigendum duly signed digitally	**Yes/No**	
7	Have you uploaded the credential to establish the eligibility? The documents required for ascertaining **Technical & Financial capability as Specified in Qualifying Criteria**.	**Yes/No**	

SL.No	Description of Item	Compliance	Remarks
8	Have you furnished Completion & Performance Certificate regarding meeting Eligibility Criteria for satisfactory and physical completion similar work from the executive of user Railway? (with contact details of FAX, phone and E-Mail of issuing authority) (Duly filled & signedForm1.ThisFormshouldbeaccompanied with certificate.	**Yes/No**	
9	Have you furnished the details of year-wise contractual payment received during the last Three financial years & current year onForm-2regardingmeeting Eligibility Criteria?	**Yes/No**	
10	Whether the details of contractual amount received have been duly certified by Employer/Client or Chartered	**Yes/No**	
11	Have you furnished the details of year wise turnover and balance sheet from registered Chartered Accountant for the last three Financial Years?	**Yes/No**	
12	Have you furnished Certified copy of JV agreement (MOU) in enclosed format (Annexure-1),in case of offers from JV firm?	**Yes/No**	

SL.No	Description of Item	Compliance	Remarks
13	Have you enclosed Power of Attorney, Partnership Deed if any, Constitution of firm & copies connected to legal	**Yes/No**	
14	Have you kept the offer valid for a minimum period of 21 DAYS from the date of opening of tender?	**Yes/No**	
15	Have you quoted completion period	**Yes/No**	
16	Have you furnished a copy of Schedule of Works & Supplies **with price blankout along with Technical Bid?(Note: Rate shall be offered Only in Financial Bid in IREPS)**	**Yes/No**	
17	Have you enclosed a declaration that the tenderer accept all the terms and conditions of Railways? In case of deviations, have you furnished—Statement of Deviations as per Form-3?	**Yes/No**	

18	Documentary evidence necessary to establish that tenderer possesses the requisite skill, technical expertise ,technical and skilled manpower and necessary equipment to execute complete work covered in the schedule with stipulated	**Yes/No**	

SL.No	Description of Item	Compliance	Remarks
19	Have you enclosed List of Personnel, Organization available on hand and proposed to be engaged for the subject work?	**Yes/No**	
20	Have you submitted the List of Works Done and List of Works on hand	**Yes/No**	
21	Have you submitted the copy of Certificate as per Form9	**Yes/No**	
22	Have you submitted the NEFT Mandate form	**Yes/No**	
23	Have you noted the applicability Of GST ACT 2017 for this tender	**Yes/No**	
24	Have you read and agreed to the terms and conditions of the LC(Letter of Credit) in case Tenderer opted for LC mode of	**Yes/No**	
25	Have you read and agreed to Payment of wages Act	**Yes/No**	
26	Tenderer to note that payment /advances /releasing of PG and SD will be done only whether required details are entered in Shramik Kalyan Portal	**Yes/No**	
27	Did you ensure that while uploading the technical bid document pertaining to Packet-I, no financial implications with rates were enclosed.Otherwise The offer will be rejected.	**Yes/No**	

SL.No	Description of Item	Compliance	Remarks
28	All the financial implications with rates and the quoting of schedules has to be done in FIN.OFFER.	**Yes/No**	
29	Have your certificate regarding employment of Retired Gazetted officer	**Yes/No**	
30	Have your read that the tender consideration is based on sub-section clause	**Yes/No**	

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