



CENTRAL RAILWAY	
 	
<u>TENDER DOCUMENT</u>	
E-Tender No:	BSL-N-SNT-14-2026-27
Name of Work:	Telecom work in connection with: A) Provision of Communication Facilities, B) UTS/PRS and shifting of Cable and C) Provision for shifting of Cable and Provision of Railnet Connectivity at Devlali, Nashik Road, Odha, Kherwadi and Kasabe Sukene Stations for Kumbh Mela 2027 on Bhusawal Division of Central Railway.
Tender Document Cost:	Nil

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CHAPTER-I

Instructions to Tenderers

1.0	<u>Tender Notice:</u>	
	E-TENDER No. BSL-N-SNT-14-2026-27	
	Divisional Railway Manager (S&T), Central Railway, Bhusawal for and on behalf of President of India, invites Open E-tender through website www.ireps.gov.in for following work :-	
	Name of Work	Telecom work in connection with: A) Provision of Communication Facilities, B) UTS/PRS and shifting of Cable and C) Provision for shifting of Cable and Provision of Railnet Connectivity at Devlali, Nashik Road, Odha, Kherwadi and Kasabe Sukene Stations for Kumbh Mela 2027 on Bhusawal Division of Central Railway.
	Cost of the work	Approx. Rs. 13,19,21,774.97/-/- (Rupees Thirteen Crore Nineteen Lakh Twenty One Thousand Seven Hundred Seventy Four and Ninety Seven Paise Only.)
	Bid Security	Rs. 26,38,400/- (Rupees Twenty Six Lakh Thirty Eight Thousand Four Hundred Only.)
	Cost of Tender Document	Nil
	Completion Period	06 Months
	Validity of Offers	90 Days from the date of closing of tender.
	Closing date for Submission of tender	15.00 hrs. on 03.07.2026
	The prospective tenderers are requested to visit the website www.ireps.gov.in for all the details of tender from time to time before the date of closing for submission of tender to note any changes / updates / corrigenda, if any.	
	Tenderer should participate electronically only in above E-tender through website www.ireps.gov.in & submission of manual offers against E-tender is not allowed. Manual offers, if submitted shall neither be opened nor be considered.	
	The bidders will have to make payment towards Bid Security & Tender Document Cost (TDC) against E-tenders through online payment (Payment Gateway) modes like net banking, debit/credit cards etc. available on website https://www.ireps.gov.in portal.	
	For any enquiry, may contact at our office address – Sr.DSTE (Co) Bhusawal, Ist Floor DRM Office Central Railway, Bhusawal-425201.	
1.0.1	<u>ELIGIBILITY CRITERIA:</u> Applicable for tenders having advertised cost of work more than Rs.50 lakhs. (As per PART-I Clause 10 of GCC APR-2022 and latest correction slips)	
	The work covered by this tender is technical in nature and only the firms having sufficiently skilled and experienced staff with them fulfilling the following eligibility criteria need quote against this Tender.	
	(i)	Technical Eligibility Criteria: (As per PART-I Clause 10.1 of GCC APR-2022 and latest correction slips)
	(ii)	Financial Eligibility Criteria: (As per PART-I Clause 10.2 of GCC APR-2022 and latest correction slips)
	(iii)	Special Financial Eligibility Criteria:

		Special Condition :- Bid Capacity: The tender/technical bid will be evaluated based on bid capacity formula detailed as Annexure-VI of GCC April 2022 and latest correction slips.
		NOTE:
1.0.2		In terms of Para 1.0.1 (i) & (ii) of the eligibility conditions, the tenderer shall submit attested copies of the supportive documents / certificates from the organizations with which they have worked / are working. The Tenderer who does not submit any documentary proof for meeting the eligibility criteria shall be considered as incomplete and shall be liable to be rejected. It is expected that the tenderer submits adequate documentary proof of having fulfilled those eligibility criteria.
		In reference to the sub Para-1 of the eligibility criteria (1.0.1) above in the table please refer GCC-2022 and latest amendments "Explanation for Para 10 of the Tender Form (Second Sheet) including Para 10.1 to 10.5 – Eligibility Criteria"
		<u>The similar single work means:</u>
		Work of supply &/ or installation, testing and commissioning / provision of Railnet/Computer networking. OR Any telecom work including supply, installation testing & commissioning / provision of Railnet/Computer networking.
		<u>As per Railway Board's letter no.2017/Trans/01/ Policy dated 08.02.2018:</u>
	A	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.
	B	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.
	C	In case the contents of the certificate submitted by us are found to be false/forged at any time during process for evaluation of tenders/after the award of the contract, it will lead to termination of the contract, along with forfeiture of Bid Security/Security Deposit and Performance guarantee and may also lead to any other action provided in the contract including banning of business for a period of upto two year.
	D	The validity period of offer is 90 days for the present tender being Two Packet System of tendering.

1.1	Rules & General Instructions:
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	A	<p>The Tender Document includes "Instructions to Tenderers", "Special Conditions of Contract (SCC)", "Technical Specifications & Requirements", "Tender Schedule" and "Annexure / Formats / Drawings, if any" together with any addendum and corrigendum issued. In case of contradiction between Tender conditions, instructions to the Tenderer, the General conditions of the contract and the special conditions of the contract, the latter will prevail.</p> <p>Any additional information/ Clarification regarding the tender, if required by any tenderer may be obtained from the Sr.DSTE(Co) Bhusawal, Bhusawal Division, Central Railway, Bhusawal, and having its principal office at DRM office Bhusawal</p>
	B	The submission of the Tender shall be deemed to have been done after careful study and examination of the Tender Document with full understanding of the implications thereof. Any clarifications required by the Tenderer shall be obtained from the Office of the Tender Inviting Authority on any working day during office hours.
	C	The Tenderer should read the conditions/instructions carefully and also see the schedule of works, technical specification etc. before submitting the offer and also ascertain site conditions and the magnitude of works involved.
	D	Conditional tenders will generally not be considered and are liable to be rejected. Railway however reserves the right to reject such tenders summarily without assigning any reasons whatsoever. The Railway also reserves the right to reject any special conditions stipulated by the Tenderer as considered unacceptable to the Railway. Only such special conditions/specifications stipulated by the tenderer/s, which are having nil financial repercussion and which have been specially approved by Railways in writing shall be deemed to have been accepted by the Railways and shall form part of the contract agreement. The tenderer/s conditions/stipulations which are at variance with the tender conditions/ codal provisions and not approved/accepted by Railways, shall be withdrawn by the tenderer/s.
	E	If it is found at any stage of the finalization of the tender or during actual execution of the work that the information furnished in this tender including clarification, is incorrect, the tenders are likely to be rejected. The Railway reserves the right to cancel the tender without assigning any reason.
	F	All the relevant documents shall be uploaded online in the space provided along with tender form as per terms and condition of tender.
1.2		<u>Local Conditions:</u>
		It will be imperative on each Tenderer to fully acquaint him with all the local conditions and factors, which would have any effect on the performance of the contract and cost of the work. The Railway shall not entertain any request for clarifications from the Tenderer regarding such local conditions. No request for change of price will be entertained after the offer is accepted by the Railway on account of any local condition or factor. The tenderer(s) shall inspect the proposed site of work and acquaint himself/themselves with the site conditions, working hours, layout of land, trees and shrubs that he/they will have to cut, type of strata likely to be met within the borrow pits, stacking space for materials, approach roads, path ways available etc. and all relevant items connected with the execution of the work. No claim shall be entertained for the contractor(s) making his/their own arrangements for approaches/approach road from outside Railway land and contractor(s) will bear entire expenses such as road taxes, payment for right of way, etc. to outsiders and for Construction of approaches/approach roads, etc.
1.3		<u>Documents to accompany the offer:</u>

		The scanned copies of following documents shall invariably accompany the offer, failing which the offer can be treated as invalid and liable to be summarily rejected without any correspondence with the tenderer. Hence, the tenderer is well advised to ensure that all the minimum documents are attached (Uploaded) with their offer –
	A	Documentary proof regarding their financial status & ability to carry out the work as an independent experienced reliable contractor.
	B	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.
	C	List of works on hand indicating description of work, contract value, and approximate value of balance work yet to be done and date of award should also be given.
		Note: In case of Sr.No. (B) & (C) above, supportive documents / certificates from the organizations with whom they worked / are working should be enclosed. Certificates from private individuals for whom such works are executed / being executed will not be accepted.
	D	List of Personnel, organization / technical staff available on hand and proposed to be engaged for the subject work, with their designation and experience.
	E	List of Plant & Machinery available on hand (own) and proposed to be inducted (own and hired to be given separately) for the subject work.
	F	Testimonials/Credentials/documentary evidence and performance record in support of any other documents the Tenderer may like to submit in support of their credential/scheme.*
	G	Last audit report from registered Chartered Accountant.*
	H	The tenderer shall clearly specify whether the tender is submitted on his own (Proprietary Firm) or on behalf of a Partnership Firm / Company/LLP(Limited Liability Partnership / Joint Venture (JV) / Registered Society / Registered Trust / HUF etc. The tenderer(s) shall enclose documents as per clause no. 14 & 15 of GCC April-2022. *
	J	(i) Power of Attorney, (if any), in acceptable form duly notarized from Magistrate *
	K	Tenderer/s who is/are not borne on the approved list of contractors of this Railway or who have not satisfactorily completed any such work before on this Railway must supply the following information in addition to the above.*
	L	A statement of the set-up of their firm and if they are partnership firm, the names of Partners, their addresses and other particulars with regard to their business etc.*
	M	Certified copies of testimonials and other references in connection with previous experience of the Tenderer in the capacity of the contractor for similar and other works.*
	N	As the work is a safety work, requiring highly skilled technical expertise, the firm is required to establish that it possess the requisite skill, technical expertise, technical and skilled manpower and all their equipment are of high quality, able to withstand the rigorous/intensive usage in Railway signalling application.*
		Note:
		1) * indicates 'Whenever required'. 2) Tenderer should make sure that the uploaded scanned documents, if any, should not be corrupted and should be clearly visible. At the time of opening of E-tender, if the document submitted (Uploaded) is not opened being corrupted, offer shall be summarily rejected.

		3) Railway Administration may ask for the attested copy of original document of the financial & technical credentials for verification and contractor should submit the original documents within the period of one week, on demand of the same otherwise the offer shall be summarily rejected.
1.4		General Instructions:
	A	No Counter conditions will be accepted to any of the clauses contained in the tender document. Any clause contrary to the Railway's Tender Conditions will be ignored and the offer will be evaluated as though the tenderer has accepted all the Railway's Clauses in TOTO.
	B	Railway's decision in regard to acceptability of Technical Suitability of the offer shall be final.
	C	As far as possible the Tenderer's bid should not have any condition or specification or assumption contrary to the provisions in these tender documents on which the Tenderer/s bid is based. Tenderer's Special conditions, not in conformity with the tender specifications/drawings are required to be listed separately with details of exact financial implications, if any. Railways may not take cognizance of conditions/variations from the tender documents or drawings etc. It needs to be emphasized that only such conditions/stipulations which are at variance with the tender conditions codal provision stipulated in the tender documents need be mentioned, in case Tenderer's choose to stipulate such special conditions taking into account the restrictions mentioned elsewhere in the tender document. Only such special conditions/specifications stipulated by the Tenderer's which have been specifically approved by the Railways in writing shall be deemed to have been accepted by the Railways and shall form part of the Contract Agreement. The Tenderer/s conditions/stipulations which are at variance with the tender conditions/codal provisions and not approved / accepted by Railways shall be withdrawn by the Tenderer/s.
		NOTE: OFFER NOT FULFILLING ABOVE CONDITIONS WILL BE SUMMARILY REJECTED.
1.5		Partnership Deeds, Power Of Attorney:
	A	The tenderer shall clearly specify whether the tender is submitted on his own or on behalf of a partnership concern. If the tender is submitted on behalf of partnership concern, he should submit the certified copy of partnership deed along with the tender and authorization to sign the tender documents on behalf of partnership firm. If these documents are not enclosed along the tender documents, the tender shall be treated as having been submitted by individual signing the tender document. Railway will not be bound by Power of Attorney granted by the tenderer or by the changes in the composition of the firm made subsequent to the execution of the contract. It may, however, recognize such powers of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contractor.
	B	The tenderer whether sole proprietor, a limited company or a partnership firm if they want to act through agent or individual partner(s) should submit along with the tender or at a later stage, a 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 submit the tender, sign the agreement, receive money, witness measurements, sign measurement books, compromise, settle, relinquish any claim(s) preferred by the firm and sign "No Claim Certificate" and refer all or any disputes to arbitration.
	C	The charges have been fixed at Rs.200/- payable by the tenderer at the time of submitting the Partnership Deed / Power of Attorney / Performance Bank Guarantee for scrutiny and legal advice.

	D	No power of attorney in favour of any individual person will be acceptable if it is irrevocable except when it is in favour of bank. In case where the power of attorney/partnership deed has not been executed in Hindi or English, the true and authenticated copies of the translation of the same by advocate, authorized translators of Courts and Licensed petition writers should be supplied by the contractor (s) while tendering for the work.
1.6		<u>System of Quoting Rates:</u>
	A	Estimated rates for each item of schedule have already been indicated by Railways on the Tender schedule.
	B	For each items of Schedule A, B & C tenderer has to quote item wise rates.
	C	The rates quoted for the tender by the Tenderer will be inclusive of all kind of taxes such as excise duty, service tax, sales tax, octroi, interstate tax, works contract tax, transport, loading, other incidental charges, unloading charges etc. or any Tax (after roll out of GST as per provisions made) wherever leviable. Octroi exemption certificates / forms for concessional Sales tax and any other statutory duties shall be issued by the Railway on demand in the name of contractor only, subject to this being permissible under prevailing relevant rules. No additional payment will be made, if the octroi exemption certificate is not honored by the concerned authorities.
	D	Price variation clause is not applicable for this Tender.
	E	All the bidders / tenderers should ensure that they are GST compliant and their quoted tax structure / rates are as per GST Law.
	F	Tenderers will examine the various provisions of the Central Goods & Services Tax Act, 2017 (CGST) / Integrated Goods & Services Tax Act, 2017 (IGST) / Union Territory Goods & Services Tax Act, 2017 (UTGST) / Respective State's State Goods & Services Tax Act, 2017 (SGST) also, as notified by Central / State Govt. and 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.
	G	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.
	H	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.
1.7		<u>Rates during Negotiation:</u>
		The Tenderer/s shall not increase his/their quoted rates in case the Railway Administration negotiate for reduction of rates, such a negotiation shall not amount to cancellation or withdrawal of the original offer and the rates originally quoted will be binding on the Tenderer/s.
1.8		<u>Validity of Offer:</u>
	A	The tenderer shall keep the offer open for a minimum period of 90 days from the date of closing of tender. Within that period, the tenderer cannot withdraw his offer subject to the period being extended further if required by mutual agreement from time to time. Any contravention of the above condition will make the tenderer liable for forfeiture of his Bid Security
	B	It is understood 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 as Bid Security for the due performance of the above stipulation shall be forfeited by the Railways.
1.9		<u>Closing of Tender submission:</u>
		The tender cannot be submitted, beyond the day and time as described in NIT or as per corrigenda.
1.10		<u>Errors, Omissions & Discrepancies in the tender document:</u>
		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 who may send a written instruction to all tenderers. It shall be understood that every endeavour has been made to avoid any error which can materially affect the basis of the tender and the successful tenderer shall take upon himself and provide for the risk of any error which may subsequently be discovered and shall make no subsequent claim on account thereof. 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 mis-interpretation shall be entertained.
1.11		<u>Rights of Railway to deal with Tenders:</u>
		The authority for the acceptance of the Tenderer will rest with the Railway administration on behalf of President of India, who shall not be bound to accept the lowest or any tender or to assign any reason for declining to consider, non-acceptance or rejection of a tender. The Railway administration reserves the right to accept any tender in respect of the whole or any portion of the work specified in the tender 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. Railway administration also reserves the right to cancel any or all tenders at any stage and in such case cost of tender document shall not be refunded.
1.12		<u>Acceptance of Tender, issue of LOA, Submission of Performance BG Bond and commencement of Contract by the successful Tenderer:</u>
		A letter of acceptance (LOA) of the offer shall be issued by the Railway Administration to the successful Tenderer that his offer has been accepted, on receipt of which he shall submit a Performance Guarantee (PG) bond as described in Clause No.2.3 of Chapter-II, Special Conditions of Contract and shall execute a formal Contract Agreement with the President of India acting through the Sr.DSTE(Co) Bhusawal, 1st Floor DRM Office, Bhusawal, Central Railway, -425201 for carrying out the work according to terms and conditions of this tender including "General Conditions of Contract" of Railway and "Special Conditions / Specifications of this tender". Upon issuing of LOA the contract for the work shall be deemed to have been awarded to the Tenderer and accordingly the completion period will be reckoned from the date of issue of LOA irrespective of the date of signing of contract agreement subsequently.
1.13		<u>Signing of Contract Agreement:</u>
	A	The successful Tenderer shall be required to present himself or his duly authorized representative at the office of the Sr.DSTE(Co) Bhusawal, 1st Floor DRM Office, Bhusawal, Central Railway, -425201 to execute the aforesaid Contract Agreement, within 15 days after receipt of notice that the said documents are ready.
	B	The Tenderer whose tender is accepted shall be required to appear in person at the office of Sr.DSTE(Co) Bhusawal, 1st Floor DRM Office, Bhusawal, Central Railway, - 425201 as the case may be, or if tenderer is a firm or corporation, a duly authorized representative shall appear (there would be no

		<p>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.</p> <p>Failure to do so shall constitute a breach of the agreement effected by the acceptance of the Tender in which case, the Railway may determine that such Tenderer/s has/have abandoned the contract and there upon his/their tender and the acceptance thereof shall be treated as cancelled and the Railway shall be entitled to forfeit the full amount of the Bid Security and to recover the liquidated damages for such default, without prejudice to any other rights or remedies.</p>
1.14		Commencement of work by Submission of Programme for execution:
	A	The successful tenderer upon receipt of LOA shall commence the work by way of submitting a detailed time schedule for completion of work within the allowed completion period.
	B	The Contractor shall have a competent project team with adequate resources to execute the work so that the entire work is completed within the completion period.
	C	The Contractor is expected to have worked out a tentative programme for execution of the work well before issue of "Letter of Acceptance", by Railway. Within 15 days of the date of issue of the LOA, contractor shall commence the work by way of submitting a Detailed Time and Activity Schedule for the execution of work aiming at completing the entire work within the stipulated completion time. The schedule shall thereafter be approved by the Engineer-In-Charge normally within 5 working days.
	B	Railway reserves the right to modify the activity schedule while approving the same as well as at any stage during execution if situation so warrants. Once approved, in the event of any slippage from the time schedule especially when resulting into time over-run of the work the contractor shall submit revised schedule duly justifying the circumstances without any delay. The revised schedule shall be approved by the Engineer-In-Charge only when considered justified in his opinion otherwise it will attract penal action on the contractor as per provision of this contract.
1.15		CHANGE IN ADDRESS:
		Any change in the address of the contractor shall be forthwith intimated in writing to the Railway. The Railway will not be responsible for any loss/ inconvenience suffered by the Contractor on account of his failure to comply with this.
1.16		Bid security Deposit:
		The tender must be accompanied with requisite Earnest money mentioned in the tender notice, as per item 2.1 of chapter-II
1.17		Scope of the Work :
		The scope of the work against which tenders are invited is furnished in Clause No. 2.01 of Chapter-II (Special Conditions of Contract) of this Tender document. Tenderers are advised to study the same carefully and submit their

	offers for the complete scope of the work failing which it will be treated as incomplete and dealt with accordingly.
1.18	<u>General Conditions of Contract (GCC-2022):</u>
	<i>Booklet of General conditions of Contract (GCC) April-2022 It may be accessed through the path: www.indianrailways.gov.in/railwayboard >> "About Indian Railways" >> "Railway Board Directorates" >> "Civil Engineering" >> "IR General Conditions of Contracts" >> IR General Condition of Contracts- 2022.</i>
1.19	NOTE- This tender complies with '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.

CHAPTER-II

SPECIAL CONDITIONS OF CONTRACT

Name of work: Telecom work in connection with: A) Provision of Communication Facilities, B) UTS/PRS and shifting of Cable and C) Provision for shifting of Cable and Provision of Railnet Connectivity at Devlali, Nashik Road, Odha, Kherwadi and Kasabe Sukene Stations for Kumbh Mela 2027 on Bhusawal Division of Central Railway.

Special conditions are to be read along with following important instructions/conditions and General Conditions of Contract (GCC-2022).

2.0	<u>SPECIAL CONDITIONS OF CONTRACT:</u>	
	a.	The Tender shall be governed by the following Special Conditions of Contract (SCC) and technical specifications etc. (Chapters III, IV & V) in addition to the General Conditions of Contract of Railway (hereinafter called as GCC although meant for civil engineering works but will also be applicable to this work) with latest amendments. Where there is any conflict between the instructions to Tenderer, conditions of tendering, special condition of contract, Tender forms, Annexure etc. on one hand and GCC on the other, the former (SCC) shall prevail.
	b.	Any Special conditions stated by the Tenderer in the covering letter submitted along with the tender shall be deemed to be part of the Contract to such extent only as have been explicitly accepted by the Railway.
	c.	These specifications / documents describe the material to be supplied, work to be Performed and the method of construction, for the complete installation in strict accordance with the drawings and specifications mentioned here and such instructions as may from time to time be given by the Railway. The contractor shall quote for the work giving all information after close scrutiny of the plans/ drawings and site survey. If contractor finds that some drawing/specification is missing from the tender document it shall point out immediately before the opening date of the tender. If this issue is raised after signing of the contract then Railway's decision shall be final about the drawings/ specifications for material and execution.
2.0.1		Scope of work: The work comprises installation, fixing, wiring, configuration, testing, and commissioning of various telecom equipment for provision of communication facilities, UTS/PRS, Railnet connectivity, and utility shifting in connection with Kumbh Mela 2027 at Devlali, Nashik Road, Odha, Kherwadi, and Kasbe Sukene stations. The scope of work includes telecom infrastructure works such as trenching for cable laying and associated civil works, laying, shifting, and protection of S&T cables including OFC and underground telecom cables, along with termination, jointing/splicing, testing, and commissioning of various S&T cables. The work also includes provision and commissioning of communication facilities for operational communication and RPF posts to ensure reliable communication systems during Kumbh Mela operations. Further, the work covers provision, installation, testing, and commissioning of UTS/PRS systems and Railnet connectivity at all nominated stations. The cable laying works include laying of PIJF cables, switchboard cables, 6-fiber OFC, CAT-6 cables, and power cables along with installation of PVC pipes/ducts for cable protection and proper dressing, routing, and termination of all cables. The scope also includes installation of UPS systems, fixing of 6U, 9U, and 42U racks, and mounting/integration of telecom equipment within the racks. In addition, networking equipment such as routers and switches are to be installed, configured, tested, and commissioned for UTS/PRS and Railnet connectivity. The work further involves shifting/diversion of existing telecom and OFC cables as required during execution to ensure safety and continuity of train operations.
2.1		<u>Bid Security:</u> (As per PART-I Clause(5) of GCC APR-2022 and latest correction slips)
2.2	A	<u>Security Deposit:</u> (As per PART-I Clause(16.1) of GCC APR-2022 and latest correction slips)

	B	Refund of Security Deposit: (As per PART-I Clause(16.2 (i)) of GCC APR-2022 and latest correction slips)
	C	Forfeiture of Security Deposit: (As per PART-I Clause(16.2 (ii)) of GCC APR-2022 and latest correction slips)
	D	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.
2.3		<u>Performance Guarantee: (As per PART-I Clause(16.4) of GCC APR-2022 and latest correction slips)</u>
2.4		<u>Location of the Site:</u>
		This work is to be executed at Devlali, Nashik Road, Odha, Kherwadi and Kasabe Sukene or any stations of Bhusawal Division. ANY ADDITIONAL INFORMATION ABOUT THE LOCATION OF THE SITE CAN BE KNOWN FROM RAILWAY TIME TABLE OR RAILWAY MAP.
2.5		<u>Technical Specifications (* Wherever Applicable):</u>
	A	The Site locations covered by this tender are located in both 25 KV AC Electrified Section. The equipment and installation practices of signaling system will have to be in line with the requirement of AC Electrified section as specified in manual of instructions of installation and commissioning of S&T equipment in 25 KV AC Electrified section.*
	B	The work to be carried out in accordance with tentative Roll Plan / Interlocking Plans issued by the Railways. These Roll Plans / IP's are tentative and minor variation/alteration may take place. The Tenderer should be ready to carry out corrections / alterations / additions in design of circuits and other works arising out of these changes without any additional cost. The railway's decision in this regard will be final and binding.* a. The work is to be carried out in accordance with relevant RDSO specifications with latest amendments. * b. Circuit designed by the Tenderer will have to be altered or modified as suggested by Sr. Divisional Signal and Telecom Engineer, Central Railway, Bhusawal or his authorized representative to meet the safety requirements / specifications and Central Railway practices in vogue. Such alteration, modifications etc. will have to be carried out by the Tenderer, free of cost.* c. All the drawing shall be drawn on AutoCAD and the Tenderer should submit the original CD for all the drawings along with tracings, prints and plastic folders.* d. All the tracings shall be drawn on good quality "Gateway" brand 95 GSM tracing paper. No change shall be made in any of the approved drawings without permission of Chief Signal & Telecom Engineer or his Authorized representative.* e. All the drawing shall include the name of the work, as given by the Railways blocks, for signature of Railways officials and contractor.* f. The entire drawings shall be signed by the contractor or his authorized Representative.* g. All the drawing should be drawn as per the standard practice of Central Railway.* Note: For circuit design, contractor will be required to authorize a person for designing the circuits. The name of such person should appear on all sheets with signature. The mistakes in circuit design will attract a token penalty over and above the penalty/L.D. as provided in GCC. The penalty shall be recovered at the rate of Rs.200/- per sheet, if the number of mistakes is above 2%. Decision of Railway about mistakes shall be final.
	C	It should be specifically noted that some of the detailed drawing may not have finalized by the Railway & will therefore be supplied to the contractor as & when they are finalized on demand. No compensation whatsoever on this account shall be payable by the Railway Administration.
	D	No claim whatsoever will be entertained by the Railway on account of any delay or hold up of the work(s) arising out of delay in approval of drawings, changes, modifications, additions, omission & site lay out plan or detailed drawings & design & or late supply of such materials as are required to be arranged by the Railway or due to any other factor on Railway account.

	E	Tenderer has to perform various tests in association with Railway representative and the contractor will arrange wiremen to assist Railway officials to carry out the various works in NI working.
	F	The installation practices of all signaling gears should be as per the Signal Engg Manual July 2021 and to suit latest relevant correction slips and Central Railway practice.
	G	Tenderers are advised to inspect the site and assess the actual requirement before quoting for the work.
		<u>Contractor's scope of work:</u>
		The contractor's scope of work includes installation, fixing, wiring, configuration, testing, and commissioning of various telecom equipment for provision of communication facilities, UTS/PRS systems, Railnet connectivity, and utility shifting in connection with Kumbh Mela 2027 at Devlali, Nashik Road, Odha, Kherwadi, and Kasbe Sukene stations. The contractor shall carry out trenching for cable laying and all associated civil works, laying, shifting, protection, termination, jointing/splicing, testing, and commissioning of S&T cables including OFC and underground telecom cables. The contractor shall provide and commission communication facilities for operational communication as well as RPF posts to ensure reliable telecom connectivity during Kumbh Mela operations. The scope further includes provision, installation, testing, and commissioning of UTS/PRS systems and establishment of Railnet connectivity at all nominated stations. The contractor shall lay PIJF cables, switchboard cables, 6-fiber OFC, CAT-6 cables, and power cables along with installation of PVC pipes/ducts for cable protection, including proper dressing, routing, and termination of all cables. The contractor shall also install UPS systems, fix 6U, 9U, and 42U racks, and mount/integrate telecom equipment within the racks. Additionally, the contractor shall install, configure, test, and commission routers and switches required for UTS/PRS and Railnet connectivity. The scope also includes shifting/diversion of existing telecom and OFC cables as required during execution to ensure safety and uninterrupted continuity of train operations.
2.6		Contractor's Responsibility to arrange Tools, Plants, Machinery etc.:
	A	The contractor shall make his own arrangements for all plant and machinery other facilities equipments, tools, including spare parts, fuel and consumable stores, and all labour and other facilities required to ensure efficient methodical execution of the work. The rates quoted and accepted shall be deemed to be inclusive of all charges of such items. If, however, the plant and machinery/other facilities, equipments, and tools requisitioned by the contractor are not available in Railway's stock or the Railway decides not to supply the same for reasons whatsoever, neither the Railway shall be bound to arrange for the supply thereof nor will the Railway's inability to supply them be accepted as an excuse for delay in the completion of the works/or for any claims thereof.
	B	The contractor(s) shall supply along with his/their offer a list of special tools, plants and equipments required for proper Inspection/maintenance of work. The detailed descriptions/specification of these with full cost of each and the sources of availability thereof shall be indicated along with the offer.
	C	Either at the contractor/s request or suo-moto in order to prevent possible delay in the execution of the work or due to contractor/s inability to make adequate arrangements for plant or machinery tools and other equipments or due to any other reasons, the Railway may give such plant and machinery, tools and other equipments on hire as can be readily made available and as can be conveniently spared from Railway's Stock on usual hire charges but this is not binding on the railway.
	D	The decision of the Engineer in regard to hiring of equipment will be final and binding on the Contractor/s and the non-supply of such equipment shall not be entertained as a reason for delay in the execution of works or the cause of any claims.
2.7		The contractor shall submit all the details/drawings before, during and after the commissioning of the installation as mentioned below
	2.7.1	SUBMISSION OF DRAWINGS AND RECORDS:
	A	The contractor shall submit all the details/drawings for all items pertaining to this work before, during and after the commissioning of the installation as mentioned:
	B	Detailed technical description and design of the systems offered.
	C	Detailed Operating Instructions of the systems offered.

	D	Details of test accessories, test and measuring instruments required. Test facilities required for the installation, testing & commissioning maintenance of the system along with a write-up of testing and troubleshooting procedures.
2.7.2		Following Indoor Installation Documents to be Submitted Before and During Installation (If applicable)
	A	Route Section Plan
	B	Control Panel Diagram
	C	Locking Table
	D	Selection Table
	E	Square sheet
	F	Wiring Diagram
	G	Relay Rack/ Relay Arrangement
	H	Bus Bar Details
	I	Fuse Analysis
	J	Contact Analysis
	K	Panel Tag-block Analysis
	L	Power Panel Diagram
	M	Auto change-over Diagram
	N	Power Equipment with Program Switches
	O	K-Rack Details
	P	K-Rack Tag-block Analysis
	Q	Block Circuits Wiring Details etc
2.7.3		Following Outdoor Installation Documents to be Submitted Before and During Installation (If applicable):
	A	Track Circuit Insulation Plan
	B	Cable Route Plan
	C	Cable Chart
	D	Cable Core Chart
	E	Junction Box Details etc.
	F	Frequency plans for AFTCs
	G	DP plans for DAC
2.7.4		Following test reports made available after testing of the Signaling Installation before commissioning of the system: (If applicable)
	A	For Indoor:
	I	One Wire / Two Wire Test record.
	II	Contact break test Record [In WD after soldering (applicable to Metal to Metal)]
	III	Simulation test Record for
	IV	Locking Test (as per Locking Table)
	V	Selection Test (as per Selection Table)
	VI	Sub-route release (Short train/ Long Train)
	VII	Back Locking Test
	VIII	Approach Locking Test (as per Selection Table)
	IX	Track Locking of Points.
	X	Indication Locking of Points.
	XI	Emergency Operation of Points with controlling track Circuits failed.

	XII	Square Sheet test Record.
	XII I	Cascading of Signal Aspect.
	XIV	Aspect Control test (as per Control Chart in Signalling Plan)
	XV	Red Lamp Protection.
	B	For Outdoor :
	I	Cable Test Reports of Main Cable/ tail cable.
	II	Earth Test Record.
	III	Track Circuits Parameters.
	IV	Operating parameters of Points and Correspondence Test.
	V	Cable Test reports of Tail Cable Including TL-JB/ Boot Leg cable.
	C	For Power Equipments :
	I	Load / No Load Currents and Voltages of Power Equipments and all its modules.
	II	Battery History records.
	2.7 .5	Pre commissioning checklist jointly signed by Railways and OEM's representative and Contractor's representative for DAC.
	2.7 .6	After commissioning of station, six sets of Documents/drawings along with two copies of tracings, four set of soft copy in CD shall be submitted within 15 days.
	2.7 .7	All the drawings shall be supplied in a good quality folder for each station. During installation, a folder containing all the drawings, testing procedures, commissioning procedure shall be kept at the stations.
	2.7 .8	Fault diagnostic Chart: Important aspect of trouble shooting & adjustments along with parameters & its range shall be prepared in colored A1 size in glossy paper & framed to be displayed in Relay room. Above chart shall be provided in the Relay room & SI/ESM duty room at least one day in advance of commissioning. Contractor shall obtain the approval of Railways before supplying the same. 5 copies of the charts shall be submitted for each station.
	2.7 .9	For all type of electronic system like EI, DAC, UFSBI, MUX, Data-logger, FAS, Fuse Monitoring & change over system, Earth leakage detector etc. following documents shall essentially be provided in six copies.
	A	Manual for installation, Testing, Commissioning and maintenance of the system for Technicians/Jr. Engineers (Installation & Maintenance level).
	B	Technical & system module for diagnostic & trouble shooting for repair centre (Engineers level).
	C	Functioning and system overview, Manufacturer's System Manual in soft and Hard copy. (Higher management level). Detailed technical description and design of the systems offered Detailed Operating Instructions of the systems offered.
2.8		Other contractor scope of work
	A	Any critical item which is essential for commissioning of the Systems but not included in the Tender Schedule has to be provided by contractor free of cost as per original scope of work.
	B	Contractor has to collect materials to be supplied by Railways from various stores Depots or as nominated in Bhusawal region by Railway with own arrangement.
	C	Materials released from site will be transported [with loading & unloading] to the nominated Railway's Scrap Depot by contractor with own arrangement.
	D	Work has to be executed in multiple sections simultaneously / progressively to complete the work within completion period.
	E	Material shall be supplied by contractor in batches (not whole quantity at a time) as per site requirement, progress of work and as per instructions of Railway's Engineer incharge.

	F	Contractor need to arrange vehicle for site inspection of Railway officials as and when required.
	G	Alteration in existing EI system as per given SIP is the responsibility of the contractor. Contractor has to ensure that EI items provided are sufficient to commission the work as per SIP attached. If any material is found short during execution or any new material is required, its has to be given by contractor without any additional payment.
		All the works shall be executed conforming to the specifications and drawings mentioned in Tender Schedule of work and as per Technical Specifications mentioned in Chapter-III & Chapter-IV chapter V & Chapter- VI(Annexures) . All the relevant clauses which are applicable to the items of schedule of material and works shall be adhered to.
2.9		Railway's scope of work:
	A	Provision of site for temporary accommodation for keeping contractor's men and material, subject to availability of site within Rly. Premises and construction for making temporary accommodation will have to be done by the Tenderer at his own cost.
	B	Supervision of each and every activity.
	C	Supervision, during fault localization, joint testing and rectification.
	D	Co-ordination with other departments of Rlys. and arranging approval for track crossing, road crossing, cable across bridges, culverts etc.
	E	Provide Approved Signalling Plan
	F	As per requirement and scope of work, 6-Quad Cable, 12 Core, 6 Core Signaling Cable (contractor should collect this cable from Senior Section Engineer (Telecom) Nashik Depot or any other Depot as per availability of cables.
	G	Electric Power Supply 230V AC 50 Hz. will be provided as per extant rules. IPS required for the work will be provided by Railways.
	H	Provide Building for the Installations if not covered in the schedule of materials and work.
	I	IPS system if need to be installed.
2.10		<u>PROGRAMME OF WORK EXECUTION:</u>
	A	The Contractor shall have a competent project team with adequate resources to execute the work so that the entire work is completed within the completion period as mentioned in Clause 2.5 above (Chapter II, Special Conditions of Contract).
	B	The Contractor is expected to have worked out a tentative programme for execution of the work well before issue of "Letter of Acceptance", by Railway. Within 15 days of the date of issue of the LOA Contractor shall commence the work by way of submitting a Detailed Time and Activity Schedule for the execution of work aiming at completing the entire work within the stipulated completion time. The schedule shall thereafter be approved by the Engineer-In-Charge normally within 5 working days.
	C	Railway reserves the right to modify the activity schedule while approving the same as well as at any stage during execution if situation so warrants. Once approved, in the event of any slippage from the time schedule especially when resulting into time over-run of the work the contractor shall submit revised schedule duly justifying the circumstances without any delay. The revised schedule shall be approved by the Engineer-In-Charge only when considered justified in his opinion otherwise it will attract penal action on the contractor as per provision of this contract.
2.11		<u>Quantum of Work, Recommended , Spares & Optional Items:</u>
	A	The estimated quantities of various items required to be installed and commissioned are mentioned in the Tender Schedule. It should be clearly noted that the items and the quantities mentioned have been worked out by Railways as per the estimated requirements. However if the Tenderer feels that the desired features cannot be achieved or some of the essential features cannot be obtained through the quantities provided in the Tender Schedule, then quantity as required for the work in the opinion of the Tenderer shall be quoted as additional items and/or quantity. In such cases, Tenderer shall give, full

		justification for such variation, clearly mentioning the consequences of procuring the quantities suggested by the contractor instead of quantities indicated in schedule.
	B	Similarly for any other item(s) necessary for satisfactory completion/functioning of the tendered work in accordance with the objective of requirement, rates and quantities of such item(s) shall be quoted separately, along with detailed justification for the need of the item(s) to achieve end objective.
	C	Costs for additional items mentioned above shall be quoted separately wherever necessary which shall not be taken into account for evaluation criteria of the offers.
	D	Railway reserves the right to include any of the additional items which shall be binding on the contractor.
2.12		<u>Records & Registers:</u>
	A	The Contractor/s shall maintain accurate records, plans and charts showing the dates and progress of all main operations and the Engineer shall have access to this information at all reasonable times. Records of tests made shall be handed over to the engineer's Representative after carrying out the tests. The following registers will be maintained at site by the Contractor/s, which should be seen and signed by the Contractor or his authorized representative on daily basis for compliance of instructions recorded therein for satisfactory completion of work.
	B	<u>Site order Register:</u> The Contractor/s shall properly sign in site order register, orders given by the Engineer or his representative or his superior officers and comply with them. The Contractor/s shall report the compliance to the Engineer in good time so that it can be checked.
	C	<u>Labour Register:</u> This register will be maintained to show daily strength of labour in different categories by the contractor/s.
	D	<u>Daily progress register:</u> It shall indicate daily progress of work done by the contractor shall be got signed at least once in three days from Engineer in token of acceptance. The format of the Register will be advised by the Engineer.
	E	Any other register considered necessary by the Engineer shall be maintained at site in which the representative to the Engineer and the Contractor/s or his/their authorized representative will have to sign. The registers, programs, charts etc. will be the property of the Railway.
2.13	A	DEALING WITH STORES BY THE CONTRACTOR:
	I	All materials mentioned in the schedule of material and works required for the execution of the contract, shall be arranged and supplied by the Contractor in the stores Depot. of the consignee as defined in clause 2.55'C' of chapter-II or as advised by the Engineer In charge to realize the end objective.
	II	The material mentioned in the schedule shall be delivered by the Tenderer at various locations depending on requirement, which is to be issued by Engineer In charge at appropriate time on receipt of a written request from the contractor.
	III	Once the material is issued to the contractor, the contractor shall be responsible for the security of material irrespective of the fact that the material is kept in Railway premises. The contractor shall make adequate arrangements at site as deemed necessary for guarding the same from the thefts by outsiders or his labour or damage of any sort. The contractor will be responsible for the safety of the material at site from the date of issue to the date of return of the unutilized material.
	IV	Authorized representative(s) of engineer in-charge will keep record of material on day-to-day basis in summarized form and shall convey monthly position of store supplied by and issued to the contractor to the engineer in-charge of the work.
	V	The cost of stores lost shall be realized by the Railway out of any payments due to the contractor in this contract or from any other contract executed by Govt. of India.
	VI	The contractor shall transport the material required from Railways' store or any other place in the BSL division to the work site by its own means of transportations.
	VII	After commissioning of works the contractor shall return all the leftover material to the Railways' store by its own transportation.
	VII I	The material released as per the schedule of material and works shall also be handed over back to the consignee incharge with the contractor's own means of transportations.

		Released material shall be handed over to Consignee in systematic manner Proper care should be taken while releasing & transporting the stores.
	IX	The cost of transit insurance required as per rules will be borne by the tenderer.
2.14		ROYALTIES AND PATENTS RIGHTS:
	A	The Contractor is forbidden to use any patents or registered drawings, processor patterns in fulfilling his contract without the previous consent in writing of the owner of such patents drawings, patterns or trademarks, except where these are specified by the purchaser himself. Royalties where payable for the use of such patented processes, registered drawings or patterns shall be borne exclusively by the Contractor. The Contractor shall advise the purchaser of any proprietary rights that may exist on such Processes, drawings or patterns which he may use of his own accord.
	B	The contractor shall defray the cost of all Royalties fees and other payment in respect of patents, patent rights and licenses which may be payable to patentee, +licenser or other person or corporation and shall obtain all necessary licenses. In case of any breach (whether will fully or inadvertently) by the contractor on this provision, the contractor shall indemnify the Railway and their officers, servant and representative against all claims, proceeding, damages, cost charges, expenses, loss and liability which they or any of them may sustain, incur or be put to, by reason or in consequence, directly or indirectly of any such breach and against payment of any royalties, damages or other moneys, which the Railway may have to make, to any person or holder entitled to patent rights in respect of the users of any machine, instruments, process, article, matter or thing, constructed, manufacturing supplied or delivered by the contractor or to his order under this contract. The tenderer is deemed to have accepted this clause, in regard to indemnifying the railway as stated above, when his tender has been submitted to the Railway.
	C	In the case of patents taken out by the Contractor of the drawings or patterns registered by him, or of those patents, drawings or patterns for which he holds a license, the signing of the contract automatically gives the Purchaser the right to repair by himself the purchased articles covered by the patent or any person or body chosen by him and to obtain from any sources he desires the component parts required by him for carrying out the repair work. In the event of infringement of any patent rights due to above action of the purchaser, he shall be entitled to claim damages from the contractor on the grounds of any loss of any nature which he may suffer.
2.15		MATERIALS & QUALITY ASSURANCE DOCUMENTATION (FOR SUPPLY OF MATERIALS):
	A	The Tenderer shall submit the quality control plan along with the tender including full details of in-house quality assurance organization, procedures and documentation. During the manufacturing process, proper record shall be maintained for the purpose of inspections and all the tests should be carried out according to that.
	B	The equipments / materials as per RDSO specifications are to be procured from the RDSO approved sources only. The guidelines stipulated for stores procurement will hold good for procuring these items from RDSO approved Part "I" and Part "II" sources, where both sources are available. The major / bulk procurement shall be done from RDSO approved Part "I" and only education orders should be placed on RDSO approved Part "II" Present stipulations states that maximum 15% of the total quantities can be procured from RDSO approved part "II" source. The items so procured from RDSO approved Part "I" and Part "II" firm in 17:3 proportion should strictly match in their specification, size, quality, configuration so that they are interchangeable / replaceable. The equipments / materials as per RDSO specifications can be taken fully from RDSO Part "II" approved sources only if there are no Part "I" RDSO approved sources for the same. However, the distribution of quantities between Part "I" and Part "II" sources shall be ascertained by the Contractor as per latest guidelines before placing the order.
	C	RDSO has a recommended list of vendors for the supply of Mechanical items/equipments. Mechanical items to be supplied by the tenderer for which RDSO has recommended vendors, should essentially be procured from these vendors only. Any relaxation with respect to procurement / inspection shall be with the prior approval of the competent authority. The Railways' decision shall be final and binding on the contractor.
	D	In the event of Railways waving off the inspection, all tests provided in the test schedules approved by Railways shall be carried out by the quality assurance organization and proper

		record of all such tests and results thereof shall be maintained and supplied to railways on demand along with the supply.
	E	It is desirable that Tenderer has to submit detail list of acceptance test & procedure, method of test required to be carried out by the railway for the assurance of the quality and real functionality of the system.
2.16		FUTURE AVAILABILITY OF SPARES AND ADDITIONAL PARTS:
		This clause is applicable to the highly technological items like EI, Axle Counters, AFTC, UFSBI, MUX etc.
	A	The Contractor / manufacturer shall ensure the availability of all components/ sub systems, if required by the Railways from time-to-time on mutually agreed terms and conditions after warranty is over.
	B	The manufacture shall guarantee that spare parts for the system shall be available for a minimum of ten years after expiry of the warranty period and thereafter at least two years notice shall be given to the Railways before any equipment or components are discontinued or phased out from the manufacturing plans. This will enable the Railways to assess the lifetime requirement of spares needed and order in sufficient quantity prior to stoppage of the manufacture.
	C	The successful tenderer shall further guarantee that if OEM goes out of production, he shall supply the specifications of materials at no cost to the purchaser, if and when required in connection with the equipment to enable the purchaser to fabricate or procure from other sources.
	D	The contractor shall undertake to supply on payment of all maintenance spares and tools required for the equipment during lifetime. He shall also undertake to supply additional equipment required for replacement or expansion of the network; that may become necessary due to additional traffic requirements. The price variation formula adopted in pricing such maintenance spares and additional supply that may be ordered in future shall be provided by mutual discussion.
2.17		<u>Materials & Workmanship:</u>
	A	All the materials and workmanship used in this work shall be of extremely good quality and high class in every respect and is expected to give trouble free service.
	B	The equipment/materials as per RDSO specifications are to be procured from the RDSO approved sources only. The guidelines stipulated for stores' procurement will hold good for procuring these items from RDSO approved sources.
	C	Equipment/material in the schedule as per IS specification shall be procured from BIS licensed firms only. In case there are no BIS licensed firms for the scheduled item, the equipment/material are to be procured from manufacturers of repute/their authorized dealers after approval of Engineer-in-charge before supply.
	D	Equipment/material in the schedule where RDSO/IS specification has not been stipulated, shall be procured from manufacturers of repute/their authorized dealers approved by the Engineer-in-charge before supply.
	E	All the materials should be strictly as per the Specifications indicated. All the materials to be supplied by the Tenderer are to be supplied at the nominated Consignee depot. The loading, unloading and transportation of these materials from the Depot to the site of work at a later stage will have to be done by the Tenderer at his own cost. Alternatively, if the site of work is ready and work is in progress, physically, the materials can be brought to the site directly. The security of the material brought to the site of work will remain with the Tenderer till the material taken over are duly erected and accepted by the Railway.
	F	Materials required to carry out this work if supplied by the Railways, will be issued at the nominated Consignee depot for Senior Section Engineer (Telecom) Nashik on specific requisitions by the Contractor and as per requirement consistent with the progress of works and/or progress of supply of fabricated materials to the Railway. The contractor will have to load, transport these materials to the site of work and unload at his own cost. Empty cable drums and balance materials after completion of work, if any should be returned back at the nominated Consignee depot.
2.18		CONSIGNEE'S RIGHT OF REJECTION:
	A	Not with standing any approval which the inspecting officer may have given in respect of the stores or any materials or the work or workmanship involved in the performance of the

		contract (Whether with or without any test carried out by the contractor or the Inspecting officer or under the direction of the Inspecting officer) and notwithstanding delivery of the stores where so provided to the interim consignee, it shall be lawful for the consignee, on behalf of the purchaser, to reject the stores or any part, portion of consignment thereof within a reasonable time after actual delivery thereof to him at the place or destination specified in the contract. If such stores or part, portion of consignment thereof is not in all respects in conformity with the terms and conditions of the contract whether on account of any loss, deterioration or damage before dispatch or delivery or during transit or otherwise whatsoever.
	B	When any stores delivered at the consignee's depots are rejected, this shall be removed by the contractor within 15 days from the date of rejection. Such rejected stores shall lie at the contractor's risk from the date of rejection. If the stores are not removed by the contractor within this period, the purchaser or his nominee shall have the right to dispose of such stores, as deemed fit, at the contractor's risk and account.
	C	The Railways shall also be entitled to recover from the contractor, handling and ground rent/demurrage and any other charges for the period the rejected stores are not removed after the aforementioned period.
	D	Stores that have been dispatched by rail and rejected after arrival at destination may be taken back by the contractor either at the station where they were rejected or at the station where they were dispatched. If the contract is placed for delivery F.O.R. station of dispatch, the contractor shall pay the carriage charges on the rejected consignment at Public Tariff Rates from the station of dispatch to station where they were rejected. If the contractor prefers to take back the goods at the station from which they were dispatched, the goods shall, in addition, be booked back to him, freight to pay at Public Tariff Rates and at owner's risk.
2.19		CONSEQUENCES OF REJECTION:
		If on the stores being rejected by the Inspecting Officer or Consignee at the destination, the contractor fails to make satisfactory supplies within the stipulated period of delivery, the purchaser shall be at liberty to: -
	A	Request the contractor to replace the rejected store forthwith but in any event not later than period of 21 days from the date of rejection and the contractor shall bear all the cost of such replacement, including freight, if any, on such replacing and replaced stores but without being entitled to any extra payment on the or any other account.
	B	Purchase or authorize the purchase of quantity of the stores rejected or others of a similar description (when stores exactly complying with the particulars are not readily available, in the opinion of the purchaser, which shall be final), without notice to the contractor action will be taken as per GCC-2022 clause.
	C	Cancel the contract and purchase or authorise the purchase of the stores or others of a similar description (when stores exactly complying with the particulars are not readily available, in the opinion of the purchaser, which shall be final) and action will be taken as per as per GCC-2022 clause.
2.20		MOBILIZATION ADVANCE:
		No mobilization advance shall be paid to the contractor.
2.21		RIGHT TO RAILWAY TO KEEP BACK FROM THE CONTRACT OR ANY PORTION OF THE WORK:
		The successful tenderer will however, have no claim or right in the execution of work which in the opinion of the Engineer should be carried out departmentally or otherwise and the Railway reserves the right that any time after acceptance of the tender, to keep back from the contract and carry out the work or any portion of work, through any other agent. No claim for compensation/loss or whatsoever on this account will be entertained by the Railways.
2.22		SUBLETTING AND ASSIGNMENT:
		As per GCC-2022 clause with latest amendments.
2.23		PROGRESS REPORTING:

		The Contractor shall submit the periodic progress reports at regular intervals regarding the state and progress of work to the Railways. The details and Performa of the report will mutually be agreed after award of the contract. Such reports shall be for daily manpower, equipment and plant development, weekly work progress and monthly progress review reports. All actions as directed by Railways, pursuant to such reports shall be promptly attended to by Contractor.
2.24		INSPECTION OF WORKS:
	A	The responsibility of providing facilities for inspection lies with the contractor. He shall be responsible for providing required facilities i.e. tools, equipments for inspection at the place of work, for which no additional payments shall be made. The contractor will also provide facilities for carrying Railways supervisors to the site of work and back when convenient train is not available. For the purpose of inspection, the contractor shall make a written request for inspection of sites to be done next day.
	B	The completed installation at all stages shall be subjected to checks and test as decided by Railways and the contractor shall be liable to remedy such defects as discovered during these checks and test and make good all deficiencies brought out. However, complete installation will be taken over finally on completion of the full system. It will be the responsibility of the contractor to rectify any discrepancy noticed within a period of one month from the date the complete system is taken over. For the purpose of taking over, joint inspection will be carried out by DSTE / ADSTE and Section Engineer/Jr. Engineer. The contractor should make himself or his representative available at the time of joint inspection. The decision of the Engineer shall be final in the matter.
	C	The contractor will be called upon to pay all the expenses incurred by the Railway in respect of any work found to be defective or of inferior quality, adulterated or otherwise unacceptable.
	D	During the execution of the contract, samples may be taken for the purpose of test and/or analysis under the conditions laid down in specification, such samples to be prepared for testing and forwarded free of all cost to the Railway.
	E	The contractor will keep a logbook at the work site. The inspecting officer of the Railway may in addition to oral instruction to the representative of the contractor at the work site, enter such instruction as he deems fit in this logbook. The contractor will be responsible to note necessary action and remedy the defects and ensure that the instructions either oral or written are complied with. His non-noting the logbook entries shall not be considered sufficient grounds for non-compliance of the instructions.
2.25		TEST & MEASURING INSTRUMENTS, SPECIAL TOOLS AND INSTALLATION MATERIAL:
	A	All tests and measuring instruments and other arrangements required for all the acceptance tests shall be made available by the contractor free of cost for conducting the tests.
	B	Special tools required for installation and maintenance of all the equipment's shall be arranged by the contractor in adequate quantities. The contractor shall provide all installation material for complete commissioning of the system.
2.26		INSPECTING OFFICER – POWER OF REJECTION:
	A	To reject any items submitted as not being in accordance with the tendered technical specification.
	B	To reject the whole of the installation offered for inspection, if after inspection the inspection authority is satisfied that the material offered for inspection is unsatisfactory.
	C	To mark the rejected stores with a rejection mark, so that they can be easily identified if resubmitted.
	D	The inspecting officer's decision as regards the rejection shall be final and binding on the contractor.
2.27	A	Material Bank Guarantee/Indemnity Bond: The Contractor will have to furnish an Indemnity Bond for all the value of materials (as of chapter-VI) for the Security of the Railway material issued to him. Indemnity Bond will be released after commissioning of work and when all balance material is returned by contractor; i.e. after signing the final material statement for closing the contract. The security of the material brought to the site of work will remain with the Contractor, till commissioning of the complete structure and same is handed over to Railway's nominated representative of Engineer-in-charge. However, at any stage the value

		of the material issued to the Tenderer and not utilized / installed / fixed should not exceed the value of the Bank guarantee. The value of such B.G. bond will be increased at the direction of Engineer in-charge of work depending upon the quantity of materials issued at a time.
	B	The cost of transit insurance required as per rules will be borne by the Tenderer.
	C	The material to be supplied by the contractor as per tender schedule shall normally be supplied by contractor as per progress of work envisaged by Engineer in charge, however in critical situation where it is expected delay in supply due to inspection by third party or strike/pandemic/exigency of work/any other grave situation, the material can be given by Railways on specific request of contractor and as per final decision of engineer in charge considering the target of work and availability of the same with Railways. In such a special circumstance, the material will be given by Railways only after receiving indemnity bond against the supply of item and only after the contractor submit copy of order placed by him for that particular item.
2.28		<u>Inspection:</u>
	A	As per critical list attached as Annexure A
	B	The Electrical Signalling materials, other than those included in the critical list of items mentioned above, to be supplied by tenderer and are as per RDSO's specifications/drawings will have to be procured from RDSO approved firms only and will be supplied duly inspected by RDSO/RITES if the total value of the item is more than Rs.5.00 Lakh as per Railway Board's letter no.2000/RS(G)/379/2 dated 06.09.2017.
	C	Inspecting agency of RDSO / RITES / CONSIGNEE for items to be supplied is given in schedule against each item.
	D	Signalling items not inspected by RDSO/RITES for any reason, will be inspected by the Consignee / Authorized Representatives of Railways.
	E	Whenever equipment/material as per IS specification in schedule are inspected by Authorized Representatives of the Railways/Consignee, the Tenderer will be required to furnish manufacturer's Guarantee Certificate along with test certificates in addition to his own warranty certificate.
	F	For equipment/material as per IS specification, if the consignee, after verifying all the documentary evidence, visual inspection, measurement of dimensions/key electrical parameters as applicable and any other checks as per facility available with him, is not fully satisfied and if he considers necessary, he can direct the samples to be tested with approval of Engineer-in-charge, as per the specifications given in the schedule in a laboratory. The laboratory will be approved by Engineer-in-charge and shall be a BIS approved laboratory.
	G	All expenses towards test charges shall normally be borne by Railways. However, if the samples are found inferior when compared to stipulated specification/drawing, the test charges shall be borne by the contractor.
	H	All other equipment/material, where neither RDSO/IS specifications are stipulated, and which are to be supplied with consignee inspection shall be procured from manufacturers of repute/their authorized dealers approved by the Engineer-in-charge before supply. In such cases, if the tenderer is not able to furnish manufacturer guarantee certificate and test certificate for e.g. for items being procured through open market, the tenderer shall furnish his guarantee & warranty for these items.
	I	The Railway shall have full power to reject any material that it may consider to be defective or inferior in quality, workmanship or otherwise not in accordance with the Specification and the Railway's decision shall be final, even though they might have been inspected by RDSO/RITES. The Tenderer shall remove forthwith any such material rejected and replace them promptly at his own cost.
	J	Inspection Charges of RDSO and RITES will be borne by the Railways.

	K	The Tenderer shall furnish guarantee of materials/equipment supplied by him for a period of one year after commissioning for trouble-free performance. Any defects noted during this period will have to be rectified by him promptly at his own cost.
	L	On specific circumstances if due to delay in inspection by RITES/RDSO or any other unforeseen reason like transporters strike, strike in manufacturer's factory etc., the material to be supplied by the contractor is delayed; such material can be issued to the contractor on purely loan basis if available in the concerned depot. However, this will not be contractor's right to get material on loan. Railway reserves the right to refuse to give the material on loan. Any delay in giving material on loan by the railway or refusal should not cause any delay in progress of work and the contractor cannot escape from his responsibilities in such case. Material on loan should be given only in exceptional cases, if decided by site engineer. If the contractor fails to return such material, the cost of such material will be recovered from the contractor as per railway rules.
2.29		<u>Completion Period:</u>
	A	Time is the essence of this contract and time schedule shall be strictly adhered to. The entire work as per the Contract will have to be completed within <u>06 months from date of issue of Letter of Acceptance (LOA) on a progressive basis</u> . The Tenderer will be responsible for progress of work on progressive basis from the date of issue of acceptance letter. Since the progress of the work is critically related to the supply of material by the contractor, he will have to supply materials on a progressive basis, so that the work can be completed within stipulated time period.
	B	It should be clearly borne in mind that the works which are not dependent upon the receipt of material duly inspected by RDSO/RITES or on Railway's own share of works, are to be progressed and completed by the contractor well before the final date of completion to avoid accumulation of works towards the fag end. If for any unforeseen reason, the work is delayed on railway's account, and then suitable extension to the completion period shall be granted without liquidated damages.
	C	The Tenderer shall make his own arrangements at his own cost for all plant and machinery, equipment, tools, fuel & consumable stores and other facilities including spare parts required to ensure efficient methodical execution of the work and shall deploy sufficient technical, non-technical manpower and labour to complete the work within specified time to the entire satisfaction of Engineer in-charge. The rates quoted and accepted shall be deemed to be inclusive of all charges of such items. If, however, the plant and machinery/other facilities, equipment, and tools requisitioned by the contractor are not available in Railway's stock or the Railway decides not to supply the same for reasons whatsoever, neither the Railway shall be bound to arrange for the supply thereof nor will the Railway's inability to supply them be accepted as an excuse for delay in the completion of the works/or for any claims thereof.
2.30		<u>Maintenance Period:</u>
		<u>12 (Twelve) months</u> from the date of actual completion of work.
2.31		<u>Warranty:</u>
	A	The contractor shall warrant that everything to be furnished here under shall be free from all defects and faults in material, workmanship and manufacture and shall be the highest grade and consistent with the established and generally accepted standards for materials of the type ordered in full conformity with the contract specifications, drawings, or samples, if any and shall if operable, operate properly.
	B	The Contractor shall, if required, replace or repair the goods or such portion thereof as is rejected by the Railway free of cost at the ultimate destination or at the option of the Railway and contractor shall pay to the Railway value thereof at the contract price and such other expenditure and damages as may arise by reasons of the breach of the condition herein, specified.
	C	All replacement and repairs that Railway shall call upon the contractor to deliver or perform under this warranty shall be delivered and performed by the contractor promptly and satisfactorily, if the contractor so desires the replaced parts can be taken over by him, or his representative in India for disposal as he deems fit within a period of three months from the date of replacement of goods / parts. At the expiry of this period, no claim whatsoever shall lie on the Railway.

	D	If the replacement or renewals are of such a character as may affect the efficiency of the system, the purchaser shall have the right to give the contractor within one month from such replacement or renewal notice in writing that test on completion will be carried out at his cost. Should such tests show that the plant sustains the guarantee in the contract; the cost of the tests shall be borne by the purchaser. Should the guarantees not be sustained, the cost of the tests shall be borne by the contractor.
	E	Until the final certificate shall have been issued, the contractor shall have the right to entry with permission of Railways, at his own risk and representatives, whose names shall have previously been communicated, in writing, to the purchaser at all reasonable working hours upon all necessary parts of the works for the purpose of inspecting the working and the records of the plant and taking notes there from and if he desires at his own risk and expense, making any tests, subject to the approval of the purchaser which shall not be unreasonably withheld.
	F	The warranty of the system/item shall start from the date of commissioning of that particular system/item.
	G	Generally, the warranty shall be of 12 months from the date of commissioning of that particular system/item, however for items like EI and any other items, the warranty shall be for the period as defined in the RDSO specifications.
2.32		Progress Reporting:
		The Contractor shall submit the periodic progress reports at regular intervals regarding the status and progress of work to the Railways. The details and Performa of the report will mutually be agreed after award of the contract. Such reports shall be for daily manpower, equipment and plant development, weekly work progress and monthly progress review reports. All actions as directed by Railways, pursuant to such reports shall be promptly attended to by Contractor.
2.33		Measurement Of Works:
	A	<p>i] For Supply portion:-</p> <p>Senior Section Engineer (Telecom) Nashik & Test check by ADSTE/Works or any other field officer/ Supervisor, nominated by the Competent Authority.</p> <p>ii] For Execution portion:-</p> <p>Concerned SSE Telecom In charge shall submit the measurement of the work their respective section, duly countersigned & test checked by concerned ADSTE, to Senior Section Engineer (Telecom) Nashik & Test check by ADSTE/Works or any other field officer/ Supervisor, nominated by competent Authority, for recording measurement in M.B.</p>
	B	Payments for the works shall be made in accordance with approved designs and drawings and measured in relevant units. The measurements will be made generally in accordance with standard engineering practice and in conformity with the General Condition of Contract. All the measurements taken shall be jointly recorded and signed by the contractor's and Railway's representatives in the measurement books. Bills shall be prepared on the basis of these measurement books.
	C	The contractor will obtain written approval of the supervision after completion of the various sub-items of each work mentioned in the Schedule wherever applicable).
	D	The contractor shall sign the measurement as a token of acceptance of the measurement entered by the supervisor in-charge of the work (wherever applicable).
	E	The contractor should ensure that measurement has been recorded for such work, which is not possible to measure subsequently after completion of the activity and shall remain hidden. For example:
	I	After trenching is done
	II	After RCC trunking is placed in trench and properly aligned.
	III	After the above is laid properly
	IV	After the earth is filled
	V	After brick/slab/capping is laid
2.34		Terms of Payment:
	A	Payment of on account bill for the Tendered work will be arranged by the Sr. Divisional Signal & Telecom Engineer, Engineer in-charge of the work through the associate Accounts Officer.
	B	<p>For Supply items –</p> <p>(i) 80% of the accepted cost of material supplied will be paid when the materials are</p>

		<p>supplied subject to furnishing of Inspection certificate and receipt order by the nominated consignee.</p> <p>(ii) 10% of the accepted cost (in addition to the 80% released above) shall be paid after installation / erection of the particular equipment.</p> <p>(iii) The balance 10% of the cost of the material supplied for each station, shall be paid after commissioning of each station each station/installation AND submission of OEM's Site Installation Certificate (as per Annexure XIV of Chapter VI) prior to Commissioning for EI, AXLE COUNTERS, UFSBI/BPACs, IPS, DATA LOGGER.</p> <p>(iv) 100% will be paid for spares and for items, which are not required to be erected by the contractor, on receipt of the equipment and no loss certificate by the Consignee.</p> <p>(v) However, the balance (10%) payment can be release against bank guarantee of equal amount on the discretion of the competent authority, if commissioning is held up on Railway's account for a period of more than 3 months after the installation is tested and kept ready for commissioning by the contractor to the full satisfaction of the railways.</p>			
	C	<p>For EXECUTION ITEMS of schedule</p> <p>For the item of designing / installation / erection, 100% payment will be made after completion of the activity, acceptable to the Railways.</p> <p>for EI, AXLE COUNTERS, AFTCs UFSBI/BPACs, IPS, DATA LOGGER, 90% of the accepted cost of execution items shall be made on the basis of the measurements recorded.</p> <p>The balance 10% of the accepted cost of execution items shall be paid after the commissioning of system AND submission of OEM's Site Installation Certificate (as per Annexure XIV of Chapter VI).</p>			
	D	For mixed items where supply & erection cost is taken together under Schedule, 64% of the accepted cost shall be paid after supply of material, 26% of the accepted cost shall be paid on the installation of the item and balance 10% will be paid after commissioning of system/ completion of work.			
	E	On account / final payments as per above mentioned conditions will be made on the basis of measurements recorded in Measurement Book (MB) by the Consignee.			
	F	Wherever the Central/State makes it obligatory for the Railway to deduct any amount towards sales tax, works contract tax or any Tax (after roll out of GST as per provisions made) same will be deducted in addition to the income tax remitted to concerned authority.			
	G	Income tax as applicable on date or levied subsequently by the Government during the currency of the contract on the gross amount payable to the contractor will be recovered from all bills in terms of section 194(c) of the Income Tax Act, 1961 as introduced with Finance Act, 1972 unless the exemption certificate issued by the Income Tax Department is produced during the currency of the contract. Deduction of Income Tax from each contract bill will be made – @ 2% for Company / Partnership Firms and @ 1% for Non-Company (Individual).			
	H	The Railways reserve the right to vary, if required, the quantity of each item of work / supply up to 25% at the same rate and on the same terms and conditions.			
	I	The Railway reserves the right to split / delete certain items of the tender without assigning any reason.			
	J	<u>Taxes</u>			
		Taxes applicable as per GCC-2022 clause & latest amendments.			
2.35		<u>Payment through RTGS/NEFT:</u>			
		Payment will be made through Electronic Fund Transfer system (RTGS/NEFT) only. Tenderer is requested to give their Bank Details in the enclosed PROFORMA as <i>Annexure-IX of CH VI</i> for making payment through RTGS/NEFT. Tenderer should upload/attach the scan copy of this PROFORMA, duly filled, signed and stamped at the time of submission of online tender (E-tender).			
2.36		<u>Conservancy Cess Charges:</u>			
		In terms of Railway Board's letter no. F(x)I/95/1/1 dated 07.09.2021, Tenderer should note that the revised Conservancy Cess charges will be recovered from contractual bills as applicable depending upon the number of labour appointed by the contractor for completion of work. The number of labour appointed for such particular work will be certified by the Consignee / Concerned Supervisor and is to be sent along with Measurement Book (MB) for further processing. Conservancy cess charges as per following table will be deducted from the Contractor's running bills –			
		<table border="1"> <tr> <td>SN</td><td>Average number of labours or</td><td>Conservancy Cess charges to be</td></tr> </table>	SN	Average number of labours or	Conservancy Cess charges to be
SN	Average number of labours or	Conservancy Cess charges to be			

			workman employed per day	recovered PER MONTH	
		1	1 to 5	Rs.159/-	
		2	6 to 10	Rs. 312/-	
		3	11 to 25	Rs. 785/-	
2.37	A	Contractor is to abide by the provisions of various labour laws in terms of above clause 54, 55, 55-A and 55-B of Indian Railways Standard General Conditions of Contract. In order to ensure the same, an application has been developed and hosted on website 'www.shramikkalyan.indianrailways.gov.in'. Contractor shall register his firm/company etc. and upload requisite details of labour and their payment in this portal. These details shall be available in public domain. The registration / updation in Portal shall be done as under:			
	B	<p>(a) The contractor once registered on the portal, shall provide details of his Letter of Acceptance (LOA)/Contract Agreement on Shramik kalyan portal within 15 days of issue of any LOA for approval of concerned engineer. Engineer shall update (if required) and approve the details of LOA filled by contractor within 7 days of receipt of such request.</p> <p>(b) Contractor once approved by any Engineer, can create password with login ID (PAN No) for subsequent use of portal for all LOAs issued in his favour.</p> <p>(c) After approval of LOA by Engineer, contractor shall fill the salient details of contract labours engaged in the contract and ensure updating of each wage payment to them on Shramik kalyan portal on monthly basis.</p> <p>(d) It shall be mandatory upon the contractor to ensure correct and prompt uploading of all salient details of engaged contractual labour & payment made thereof after each wage period.</p>			
2.38		General:			
	A	The Bank guarantee, if any, submitted by the Tenderer against the security of the material issued to him for execution of work shall be released only after the commissioning of the work.			
	B	The rates quoted by the Tenderer should be firm. Price variation clause is not applicable for this Tender.			
	C	All the consumables and sundry installation materials required for execution of this work like Nut and Bolts, Welding Rods, Sleeves, Lugs etc., and not listed as per the detailed schedule will have to be brought by the Tenderer at his own cost.			
	D	Cement & Steel for use in the works should be procured by the Tenderer at their own cost from the main producers /their authorized dealers /authorized stock-yards which should confirm to IS specification. Individual rates quoted by the Tenderer should be inclusive of cost of Cement / Steel wherever applicable.			
	E	Cement shall of 43 grade Portland conforming to IS Specn. 8112 (latest) of L&T/ Birla/ ACC/ Raymond/ Jaypee/ Grasim/ Ambuja/ Lafarge/ Century make. The cement will be in bags and bear the following information in legible markings: (i) Manufacturers name, (ii) Regd. trade mark of manufacturer, if any, (iii) Type of cement, weight of each bag in Kgs. or nos. of bags / ton, (iv) Date of manufacture generally marked as week of the year/year of manufacture			
	F	The Tenderer shall make his own arrangement for accommodation, for his staff during testing and commissioning period. Water for drinking purpose if available at the station will be given. However, Railways take no guarantee for this facility. Free power will be given for installation work including battery charging, wherever available. Non-availability of Power will not be a reason for the slow progress of work. If power is not available, the contractor shall make his own arrangement for portable Genset / electrical power.			
	G	The Tenderer shall do no work that may interfere with train traffic until adequate protection has been arranged as per the instruction of the Site in charge.			
	H	All the tools & Measuring Instruments, required for installation & Testing will have to be brought by the Tenderer at his own cost.			
	I	The Railway Officers / staff will be associated with the Testing & commissioning of the work.			
	J	Installation practices of all signalling gears should be as per the Signal Engineering Manual (New) and to suit the latest correction slips and C. Rly practices in vogue.			
	K	The Tenderer having more than 20 labour, is required to obtain the labour license from the licensing Officer under Provision of Contract Labour (Regulation and abolition) Act 1970 read			

		with Contract Labour (Regulation and abolition) Central Rules 1970. <u>They should obtain a proper and valid labour license for the concerned work from the concerned Asst. Labour Commissioner or licensing officer of the area and the photo copy of the labour license must be submitted to Railway for records. Failure to do so, will attract legal action against the Tenderer.</u>
	L	Tenderer should strictly follow the provisions of Employees Provident Fund (EPF) & Miscellaneous Provisions (MP) Act, 1952. In this connection, Tenderer is requested to obtain PF Code number and submit the details of the same to this office. Tenderer is also requested to submit the declaration to this office before passing of every bill that 'PF deductions, wherever applicable, have been made and deposited with the EPFO along with prescribed contribution'.
	M	The Tenderer has to issue identity card to each and every person employed by him and deployed for execution of the contract work at his own cost (Proforma enclosed as Annexure-X).
	N	Tenderer has to submit the certificate that there is no relative being an employee of Central Railway (Proforma enclosed as Annexure-XI).
	O	The Railway Officers / staff will be associated with the Testing & commissioning of the work. Contractor should make adequate arrangement for the inspection of concerned work site for Railway officer.
	P	EMPLOYMENT OF TECHNICAL STAFF: Tenderer shall employ following Qualified Engineers during execution of the allotted work: i. One Qualified Graduate Engineer when cost of work to be executed is Rs.200 lakhs and above , and ii. One Qualified Diploma Holder Engineer when cost of work to be executed is more than Rs.25 lakhs, but less than Rs.200 lakhs . Further, in case the contractor fails to employ the Qualified Engineer, as aforesaid in Para 85 above, he, in terms of provisions of Clause 26A.2 of GCC-2022 to the General Conditions of Contract, shall be liable to pay an amount of Rs.40,000/- or Rs.25,000/- for each month or part thereof for the default period for the provisions, as contained in Para (i) and (ii) above respectively.
	Q	SUPERVISION & LABOUR:
		As Per GCC-2022 Clause and latest amendments
	R	Compliance of Labour Laws:
		As Per GCC-2022 Clause and latest amendments
	S	SAFETY OF WORK & TRAINS:
		As Per GCC-2022 Clause and latest amendments
2.39		Variation in quantities of items of contracts – Limits & Rates:
		The procedure detailed below shall be adopted for dealing with variations in quantities during execution of works contracts:
	A	Unless otherwise specified in the special conditions of the contract, the accepted variation in quantity of each individual item of the contract would be up to 25% of the quantity originally contracted, except in case of foundation work. (ii) The Contractor shall be bound to carry out the work at the agreed rates and shall not be entitled to any claim or any compensation whatsoever upto the limit of 25% variation in quantity of individual item of works. (iii) In case an increase in quantity of an individual item by more than 25% of the agreement quantity is considered unavoidable, then same shall be executed at following rates 1. Quantities operated in excess of 125% but upto 140% of the agreement quantity of the concerned item, shall be paid at 98% of the rate awarded for that item in that particular tender; 2. Quantities operated in excess of 140% but upto 150% of the agreement quantity of the concerned item shall be paid at 96% of the rate awarded for that item in that particular tender; 3. Variation in quantities of individual items beyond 150% will be avoided and would be permitted only in exceptional unavoidable circumstances and shall be paid at 96% of the rate awarded for that item in that particular tender.

		<p>4. Variation to quantities of Minor Value Item: The limit for varying quantities for minor value items shall be 100% (as against 25% prescribed for other items). A minor value item for this purpose is defined as an item whose original agreement value is less than 1 % of the total original agreement value.</p> <p>d.(i) Quantities operated upto and including 100% of the agreement quantity of the concerned minor value item, shall be paid at the rate awarded for that item in that particular tender;</p> <p>d.(ii) Quantities operated in excess of 100% but upto 200% of the agreement quantity of the concerned minor value item, shall be paid at 98% of the rate awarded for that item in that particular tender;</p> <p>d.(iii) Variation in quantities of individual minor value item beyond 200% will be avoided and would be permitted only in exceptional unavoidable circumstances and shall be paid at 96% of the rate awarded for that item in that particular tender.</p> <p>(iv) In case of earthwork, the variation limit of 25% shall apply to the gross quantity of earthwork and variation in the quantities of individual classifications of soil shall not be subject to this limit.</p> <p>(v) In case of foundation work, no variation limit shall apply and the work shall be carried out by the Contractor on agreed rates irrespective of any variation.</p> <p>(vi) As far as SOR items are concerned, the limit of 25% would apply to the value of SOR schedule as a whole and not on individual SOR items. However, in case of NS items, the limit of 25% would apply on the individual items irrespective of the manner of quoting the rate (single percentage rate or individual item rate).</p> <p>All variation clause applicable as per GCC-2022 & latest amendments</p>
2.40		FORCE MAJEURE CLAUSE:
		As per GCC-2022 Clause and latest amendments
2.41		Arbitration and SETTLEMENT OF DISPUTES:
		As per GCC Clause and latest amendments
2.42		<u>DEDUCTION FROM ON ACCOUNT PAYMENT BILLS:</u>
	A	All costs, damages or expenses, which Railways may have paid or incurred, which under the provisions of contract are Contractor's obligations will be deducted by Railways from progress payment Bills/Invoice of Contractor, as and when it is understood that such an expenses has been incurred or paid for.
	B	All such claims of Railways shall, however, be duly supported by appropriate and certified vouchers, receipts or explanations as are available to enable the Contractor to identify such claims.
2.43		<u>CONTRACTOR'S LIABILITIES FOR COSTS AND DAMAGES</u> <u>WITHHOLDING AND LIEN IN RESPECT OF SUMS CLAIMED As Per GCC clause and latest amendments.</u>
	A	Whenever any claim or claims for payment of a sum of money arises out of under the contract against the contractor, the Purchaser shall be entitled to withhold and also have lien to retain such sum or sums in whole or in part from the security, if any, deposited by the contractor and for the purpose aforesaid the purchaser shall be entitled to withhold the said cash security deposit or the security, if any, furnished as the case may be and also have lien over the sum pending finalization or adjudication of any such claim.
	B	In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the Contractor, the purchaser shall be entitled to withhold and have lien to retain to the extent of such claim amount or amounts referred to spura, from any sum or sums found payable or which at any time thereafter may become payable to the Contractor under the same contract or any other department of the Central Government pending finalization or adjudication of any such claims.
	C	It is an agreed term of the contract that sum of money or moneys so withheld or retained under the lien referred to by the purchaser till the claim arising out of or under the contract is determined by the Arbitrator. (If the contract is governed by the Arbitration clause) or by the competent court as the case may be and that the contractor will have no claim for interest of damages whatsoever on any account in respect of such withholding or retention under the lien referred to spura and duly noted as such to the Contractor.
	D	For the purpose of this clause, where contractor is a partnership firm or a limited company, the purchaser shall be entitled to withhold and also have a lien to retain towards such

		claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company, as the case may be, whether in his individual company or otherwise.
2.44		EXCEPTED MATTERS:
		All measurements, method of measurement, meaning and intent of specifications and interpretation of special conditions of contract, given and also made by the Railway or by the Engineer on behalf of the Railway shall be final and binding and shall be considered "Excepted Matters" in terms of condition No.63 of the General Conditions of Contract and will Strictly stay outside purview of any arbitrations limit and will not be arbitrable.
2.45		EMERGENCY WORKS:
		In the event of any accident or failure occurring in or about the work or arising out of or in connection with the construction, completion or maintenance of the works which in the opinion of the Engineer requires immediate attention, the Railway may bring its own workmen or other agency to execute or partly execute the necessary work or carry out repairs if the Engineer considers that the contractor/s is/are not in a position to do so in time and charge the cost thereof, as to be determined by the Senior Divisional Signal & Telecom Engineer to the contractor.
2.46		NIGHT WORK:
		As Per GCC-2022 Clause and latest amendments
2.47		POWER SUPPLY:
	A	Testing of installation / equipments, Battery charging etc. shall be done under supervision of Railway officials or by Railway officials themselves, from the electric supply to be provided by the Railways. However, for any installation activity, like drilling, soldering etc., contractor, if so desires, to use tools / machines, electric power supply (230V) can be arranged by the Railways on usual payment, as per extant procedure of CR.
	B	Non-availability of electricity will not be a reason for the slow progress of work. If power is not available, the contractor shall make his own arrangement for portable Generator set / electrical power.
2.48		PLYING OF ROAD VEHICLES IN RAILWAY LAND ADJOINING TO RUNNING LINES:
	A	The Contractor shall not allow any road vehicle belonging to him or his suppliers etc. to ply in railway land next to the running line. If for execution of certain works viz. earthwork for parallel railway line and supply of ballast for new or existing rail line, gauge conversion etc., road vehicles are necessary to be used in railway land next to the railway line, the contractor shall apply to the engineer-in-charge for permission giving the type and no. of individual vehicles, names and license particulars of the drivers, location, duration and timings for such work/movement. The engineer-in-charge or his authorized representative will personally counsel examine and certify, the road vehicle drivers, Contractor's flagmen and supervisor to be deployed on the work, location, period and timing of the work. This permission will be subject to the following obligatory conditions:
	B	The road vehicles will ply only between sunrise and sunset.
	C	Nominated vehicles and drivers will be utilized for work in the presence of at least one flagmen and one supervisor certified for such work.
	D	The vehicles shall ply 6m clear of track. Any movement/work at less than 6m and up to minimum 3.5m clear of track center shall be done only in the presence of Railway employee authorized by the Engineer-in-charge. No part of the road vehicle will be allowed at less than 3.5m from track center. Cost of such Railway employee shall be borne by the Railway.
	E	The Contractor shall remain fully responsible for ensuring safety and in case of any accident, shall bear, cost of all damages to his equipment and men and also damages to railway and its passengers.
	F	The vehicles and equipments of contractors can be drafted by Railway administration in case of accidents / natural calamities involving human lives.
	G	Engineer-in-charge may impose any other condition necessary for a particular work or site.
2.49		Use of Railway Land/ Private Land:

	A	Use of Railway land required by the contractor(s) for constructing temporary offices, quarters, hutments, etc. for the staff and for storing materials, etc. will be permitted to him/them free by Railway, if available. The location of these offices, hutments, stores etc., will be subject to the approval of the engineer or his representative. The land will be restored to Railway by the contractor(s) in the same condition as when taken over or in vacant condition as desired by the engineer, after completion of the work or at any earlier day, as specified by the Engineer. The failure to do so will make the contractor(s) liable to pay the cost incurred by the Railway for getting possession of land. Any structure if available can be given on license fees in force at the time of giving the structure for use.
	B	The Contractor will have to make his/their own arrangements for use of private land, outside Railway limits for due fulfillment of contract or for borrow pits, approaches, etc., directly with the land owners or local authority and to pay such rents if any as are payable as may be mutually agreed upon between them.
2.50		Land, Service Roads, Approaches:
	A	The rates for all items of the schedule shall be inclusive of the cost of all arrangements for crossing obstructions to be crossed in the course of the work over land or across water and the cost of providing and maintenance of approach and/or service roads that may be necessary for bringing and removing the plants, machinery and material to and from the site of work including rent for use and /or compensation for damage if any to intervening private land reversed by such approach/service roads, and including cost of acquisition of land, if required for the purpose. The contractor will be permitted to make use of available service roads of the Railways free of cost. Railway reserves the right to make use of the contractor service road without paying any charges to him.
	B	After completion of the work, the Contractor shall clear all the land under his temporary occupancy to useable condition without any cost to Railway and over to the concerned parties before the completion of Maintenance period.
2.51		INTERRUPTION OF WORKS DURING MONSOON:
		The contract period may extend over a few monsoon seasons. Normal period of monsoon in the area is from 15th June to 14th October with local variation. The contractor should therefore, plan and program his work bearing this fact in mind. However, the contractor shall not take a plea for not adhering to the programme of work and completion period due to the seasonal variations or any interruptions due to monsoon etc.
2.52		Rescind of contract
		As per GCC clause and latest amendments.
2.53		FINAL SETTLEMENT:
		Security deposit and Performance bank Guarantee will be released as per clause 2.2 and 2.3 of chapter –II Special Conditions of Contract respectively, after adjustment of any dues payable by the Contractor.
2.54		<u>COMPLETION CERTIFICATE / PROVISIONAL ACCEPTANCE:</u>
		<u>As per GCC clause (48) 1,2,3 and latest amendments.</u>
		The completion certificate shall not be issued until all the pre commissioning check lists has been jointly signed by the representatives of Railways, contractor and OEM.
2.55		<u>Appendix To Special Conditions Of Contract:</u>
	A	Sr.DSTE (Co) Bhusawal Division, Central Railway, Bhusawal, will be the Engineer in-charge of the work.
	B	Senior Divisional Finance Manager/Bhusawal will be the Associate Finance Officer.
	C	Senior Section Engineer (Telecom) Nashik will be the nominated depot and Consignee for the material.
	D	The Engineer in charge of the work will nominate the Field Supervisor.
	E	If any contract is terminated under clause 62 of GCC-2022 on Contractor's fault, then that Contractor shall be temporarily debarred from participation in any tender in the division for one year, if so decided by the Tender Accepting Authority.
2.56		Determination of Contract owing to Default of Contractor shall be as per clause no. 62.(1) of GCC-2022.

2.57	Letter of Credit
	<p>(i) For all the tenders having advertised cost of Rs 10 lakh or above, the contractor shall have the option to take payment from Railways through a letter of credit (LC) arrangement.</p> <p>(ii) For all the tenders having advertised cost of Rs 10 lakh or above, the contractor shall have the option to take payment from Railways through a letter of credit (LC) arrangement.</p> <p>(iii) This option of taking payment through LC arrangement has to be exercised in IREPS (Indian Railway Electronic Procurement System - the e-application on which tenders are called by Railways) by the tenderer at the time of bidding itself, and the tenderer shall affirm having read over and agreed to the terms and conditions of the LC option.</p> <p>(iv) The option so exercised, shall be an integral part of the bidder's offer.</p> <p>(v) The above option of taking payment through LC arrangement, once exercised by tenderer at the time of bidding, shall be final and no change shall be permitted, thereafter, during execution of contract.</p> <p>(vi) In case tenderer opts for payment through LC, following shall be the procedure to deal release of payment through LC:</p> <p>(a) The LC shall be a sight LC.</p> <p>(b) The contractor shall select his Advising/Negotiating bank for LC. The incidental cost towards issue of LC and its operation thereof shall be borne by the contractor.</p> <p>(c) SBI, New Delhi, Main Branch will be the nodal branch for issue of LCs based on online requests received from Railway Accounts Units for tenders opened in financial year 2018-19. SBI branches where the respective Railway Accounts Office has its Account (local SBI branch) will be the issuance/reimbursing branch for LC issued under this arrangement. The Bank shall remain same for this tender till completion of contract. The incidental cost @0.15% per annum of LC value, towards issue of LC and operation thereof shall be borne by the contractor and shall be recovered from his bills.</p> <p>(d) The LC shall be opened initially for duration of 180 to 365 days in consultation with contractor. The LC shall be extended time to time as per the progress of the contract, on the request of the contractor. The value of LC to be opened initially as well as extended thereafter shall be finalised by the engineer in consultation with the contractor on the basis of expected progress of work.</p> <p>(e) The LC terms and conditions shall inter-alia indemnify and save harmless the Railway from and against all losses, claims and demands of every nature and description brought or recovered against the Railways by reason of any act or omission of the contractor, his agents or employees, in relation to the Letter of Credit (LC). All sums payable/borne by Railways on this account shall be considered as reasonable compensation and paid by contractors</p> <p>(f) The LC terms and conditions shall inter-alia provide that Railways will issue a Document of Authorisation (format enclosed as <i>Annexure-xiii</i>) after passing the bill for completed work, to enable contractor to claim the authorized amount from their bank.</p> <p>(g) The acceptable, agreed upon document for payments to be released under the LC shall be the Document of Authorisation.</p> <p>(h) The Document of Authorisation shall be issued by Railway Accounts Office against each bill passed by Railways.</p> <p>(i) On issuance of Document of Authorisation, a copy of Document of Authorisation shall be posted on IREPS for download by the contractor. A digitally signed copy of Document of Authorisation shall also be sent by Railway Accounts Office to Railway's bank (Local SBI Branch).</p> <p>(j) The contractor shall take print out of the Document of Authorisation available on IREPS and present his claim to his bank (advising Bank) for necessary payments as per LC terms and conditions. The claim shall comprise of copy of Document of Authorisation, bill of exchange and Bill.</p> <p>(k) The payment against LC shall be subject to verification from Railway's Bank (Local SBI Branch).</p> <p>(l) The contractor's bank (advising bank) shall submit the documents to the Railway's Bank (Local SBI Branch).</p> <p>(m) The Railway's bank (issuing bank) shall, after verifying the claim so received w.r.t. the digitally signed Document of Authorisation received from Railway Accounts Office, release the payment to contractor's bank (advising bank) for crediting the same to contractor's account.</p>

		(n) Any number of bills can be dealt within one LC, provided the sum total of payments to contractor is within the amount for which LC has been opened. (o) The LC shall be closed after the release of final payment including PVC amount, if any, to the contractor. (p) The release of performance guarantee or security deposit shall be dealt directly by railway with the contractor i.e., not through.
		Sr. DSTE (Co) Bhusawal Division, Central Railway, Bhusawal will be the in-charge of the work and in the event of all kinds of disputes, his decisions will be binding on the contractors.

END OF CHAPTER-II

Chapter III

Technical and functional requirements

Telecom Work in connection with Provision of Communication Facilities, UTS/PRS, Railnet connectivity and utility shifting **at Devlali, Nashik Road, Odha, Kherwadi and Kasbe Sukene in connection with Nashik Simhastha 2027.**

The Supply, Installation, Commissioning and Testing of all Schedule Items must be as per specifications in the Tender Schedule, Tender Documents and as per extant practices of Central railway and to the complete satisfaction of Railways.

Any other items which are not included in the schedule but required for smooth functioning of system to be supplied and installed by the contractor at no any additional cost.

3.0 General

The subject work is very sensitive in nature and critical to successful conduct of **Nashik Simhastha 2027 and envisages** provision of various Communication facilities, UTS PRS, Railnet connectivity and utility Shifting.

For ensuring protection against hacking and other types of threats and vulnerabilities for vital equipments, the bidders while selecting OEMs of equipments and hardware (proposed to be supplied against this tender) are advised to avoid those products and/or OEMs which are suspected to have clandestinely embedded spyware/malicious code either in embedded form or in application software to hack or intercept data and intrude into the network.

In this context the bidders are requested to refer advisories of bodies like CERT-IN and also reports published in various international media, technical journals, trusted websites etc.

The subject work should be carried out at passenger platforms and station area of DVL, NKRD, OD, KW, and KBSN or any other Railway station on Bhusawal Division of Central Railway. The items of the tender schedule having RDSO's specifications unless otherwise mentioned shall be conforming to various clauses of the aforesaid specifications and shall fully comply the scope of work described in clause 2.2 in chapter 2 of Special Condition of Contract (SCC) of the tender document.

All the materials and workmanship used in this work shall be of extremely good quality and high class in every respect and is expected to give trouble free service. The equipment/materials as per RDSO specifications are to be procured from the RDSO approved sources only. The guidelines stipulated for store procurement will hold good for procuring these items from RDSO approved Part-I and Part -II sources, where both sources are available. The major /bulk procurement should be done from RDSO approved Part-I and only educational orders should be placed on RDSO approved Part -II sources. The Item so procured from RDSO approved Part-I and Part-II Firms in 17:3 proportion should strictly in their specification, size, quality, configuration so that they are interchangeable /replaceable. The equipment /material as per RDSO Specifications can be taken fully from RDSO Part-II approved sources only if there are no Part-I RDSO approved sources for the same. However, the distribution of quantities between Part-I & Part-II sources shall be ascertained by the Contractors as per latest guidelines before placing the order. Equipment's/material in the schedule as per IS specification shall be procured from BIS licensed firms only. In case there are no BIS licensed firms available for the schedule item, the equipment/material are to be procured from manufacturers of reputed/their authorized dealers after approval of Engineers-in-charge before supply. Equipment/material in the schedule where RDSO/IS specification has not been stipulated, shall be procured from manufactures of reputed/their authorized dealers approved by the Engineer-in-charge before supply.

However, the bidder shall strictly follow the Preference to make in India and STQC as per RB letter No. 2020/Tele/15(18)/4(3317053) Dt. 10.02.2026 for procurement of all the equipments to ensure the specifications.

As per letter RDSO-TELEOLKO(TECH)/8/2020 Dt: 09.02.2024 it is mandatory For four items i.e. LTE e-Node-B, cell site routers, switches and the IP/MPLS routers irrespective of the specification whether it is VSS, IP MPLS Router or VoIP Based TCCS shall be got cleared through TTP Trusted Telecom Portal before the supply of equipment.

Further, all applicable provisions and guidelines issued vide Ministry of Communications (Department of Telecommunications) Notification No. 5-2/2024-TC/TEC (Pt.1) dated 25.02.2025 shall be complied with.

In addition, MTCTE Certification, wherever applicable, shall also be submitted in accordance with DoT letter No. 6-6/2024-TC/TEC dated 16.04.2026.

However, the bidder shall strictly follow the Preference to make in India and STQC as per RB letter No. 2020/Tele/15(18)/4(3317053) Dt. 10.02.2026 for procurement of all the equipments to ensure the specifications.

The contractor shall comply with the "Guidelines for Eligibility of a Bidder from a Country which shares a Land Border with India", wherever applicable.

The provisions contained in the following orders issued by the Department of Expenditure, Ministry of Finance, Government of India, shall be strictly adhered to:

1. Order (Public Procurement No. 1) dated 23.07.2020

2. Order (Public Procurement No. 2) dated 23.07.2020

3. Order (Public Procurement No. 3) dated 24.07.2020

The above orders are available on the website of the Department of Expenditure, Ministry of Finance, (<https://doe.gov.in/procurement-policy-divisions>)

IN CASE OF ANY CONFUSION BETWEEN THE DRAWING AND INSTRUCTIONS OR BETWEEN ANY TWO CLAUSES OF THE TENDER DOCUMENT THE DECISION OF ENGINEER IN CHARGE SHALL BE FINAL.

3.1 Specification for Supply of Megaphone complete with batteries (Minimum 10 watts) (Sch. A Item No. 01).

This item shall be Megaphone complete with batteries (Minimum 10 watts) each. megaphone speaker light weight bull horn, Adjustable volume control, handheld megaphone with recording facility, 01 x USB port and Memory Card Slot, USB and Memory. MAKE--BM-21 SU HITONE BOSS or Higher/ equivalent model of reputed make.

The sample shall be supplied before supplying the material.

3.2 Specification for Supply of 1000 Watt Announcement Amplifier (Sch. A Item No. 02).

- a) The PF Announcement Amplifier shall have 1000 Watts high Wattage PA Mixer Amplifier with recording facilities.
- b) It shall have 8 × Mic 0.8mV/4. 7kΩ, 3 × Aux 100mV/50 kΩ, 1 × Aux 250mV/50 kΩ, 1 × Line 1V/50 kΩ.
- c) Box Speaker/Driver Unit selector switch.
- d) Resettable circuit breaker for protection against overload and short circuit.
- e) Signal to Noise Ratio: 60 db.
- f) Tone Control Bass: ±10dB at 100Hz, Treble: ±10dB at 10kHz.
- g) Speaker Out :2Ω, 4Ω, 70V & 100V for each zone.
- h) Power Supply: AC: 220-240V 50/60Hz DC: 48V.
- i) Line Input / Auxiliary Input for connecting the output from any external mixer or permitting SSA-10000 to be used as a Booster Power Amplifier.
- j) At least 01 USB Port.
- k) The PA Amplifier shall be Model SSA-10000 of make Ahuja or equivalent model of make Shure OR Bosch OR Studio Master OR Ahuja OR Barry John OR PHILLIPS OR Equivalent OR Higher.

3.3 Specification for Supply of 160 W PF Announcement Amplifier (Sch. A Item No. 03).

1. Amplifier of 160W
2. Minimum 3 Mic & 2 Aux Inputs.
3. Built-in MP3 player with remote control for USB, SD/MMC card reader.
4. Preamplifier and Line Output for connecting to a Booster Amplifier and for recording the programme.
5. Line Input for connecting the output from any external mixer or permitting SSA-160DP to be used as a Booster Power Amplifier.
6. At least 01 USB Port.
7. Resettable circuit breaker for protection against overload and short circuit.
8. Instant transfer to DC power (Car Battery) if AC power fails.
9. Box Speaker/Driver Unit selector switch. Bass boost defeated at Driver Unit position for safer operation of driver units.
10. 5 LED array for output level monitoring.

11. Make of Amplifier shall be: Model SSA-160 of Ahuja OR Equivalent OR Higher models of Shure OR Bosch OR Studio Master OR Ahuja OR Barry John OR PHILLIPS OR Equivalent OR Higher.

3.4 Specification for Supply of PA horn speaker (Sch. A Item No. 04).

This item shall be versatile PA horn speaker 30W with 100V LMT Taps 15, 10 and 5W of make Philips/Ahuja/AKG OR Equivalent OR Higher.

3.5 Specification for Supply of caller ID telephone (Sch. A Item No. 05).

The item shall be caller ID telephone with speaker and mute facility make Panasonic model No. KX-TS880 BX or higher model of make Uniden or Siemens or reputed brand. Sample of item shall be approved by Rly Site In-charge before supply.

3.6 Specification for Supply of Dual band GSM fixed wireless FCT phone (Sch. A Item No. 06).

Supply of Dual band GSM fixed wireless FCT phone supporting 4G SIM with VoLTE facility, battery and extendable battery charger/adaptor with 230V AC input and 3.8V DC output, model F3-4G. Make: Beitel or Motorola or Matrix or higher make and model. Sample of item shall be approved by Rly Site In-charge before supply.

3.7 Specification for Supply of 2 Core PVC insulated shielded wire PA cable (Sch. A Item No. 07).

This item shall be 2 Core PVC insulated shielded wire PA cable 24 strand copper conductors, as per IS Spn. No.694/1900. Make - Brimson OR Delton OR Network OR Equivalent.

3.8 Specification for Supply of 8 Inch Multi Touch Screen Video Phones. (Sch. A Item No. 09).

This item shall be 8-inch Multi Touch Screen Video Phones with 01 year or more brand warranty. Brand or Make: Yealink or equivalent for Officers Chamber. The phone should be fully compatible to GM Intercom installed at Main Exchange CR. Railway Bhusawal. Note: One sample may get approved by consignee before supply. MAKE: Yealink, VP59 OR Equivalent OR Higher.

3.9 Specification for Supply of DSS-60 Key suitable for Digital phone type DTK-24D-BK-TEL(DT500) (Sch. A Item No. 10).

This item shall be DSS of 60 Keys suitable for Digital Phone DTK-24D-BK-TEL(DT500) /IP Phone. Item shall be compatible to existing digital phones on Bhusawal Division Make -Matrix OR NEC OR Panasonic OR Equivalent. Sample of this item shall be approved by Rly Site In-charge before supply.

3.10 Specification for Supply of NEC 24 key Digital phone type DTK-24D-BK-TEL(DT500) (Sch. A Item No. 11).

This item shall be 24 Key Digital Phone. Item shall be compatible to existing exchange on Bhusawal Division Make DTK-24-BK-TEL OR Matrix OR Panasonic. Sample of item shall be approved by Rly Site In-charge before supply.

3.11 Specification for Supply of Hand Wireless Microphone (Sch. A Item No. 12).

This item shall be **Hand Wireless Microphone Make Sure OR** Philips OR Bosch OR Sennheiser OR Equivalent OR Higher., equivalent model of Shure SLXD24/B58 Hand Wireless Microphone OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.12 Specification for Supply of Professional Handheld Wireless Microphone (Sch. A Item No. 13).

This item shall be **Professional Handheld Wireless Microphone Make Sennheiser OR Sure OR** Philips OR Bosch OR Equivalent OR Higher., equivalent model of Sennheiser Ew-dx 835-s Set Professional Handheld Wireless Microphone OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.13 Specification for Supply of Wired Electret Condenser Microphone with Integrated Desktop Base (Sch. A Item No. 14).

This item shall be **Wired Electret Con denser Microphone with Integrated Desktop Base Make Sure OR** Sennheiser **OR** Philips OR Bosch OR Equivalent OR Higher., equivalent model of Shure Centravere CVG18D Wired Electret Condenser Microphone with Integrated Desktop Base OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.14 Specification for Supply of Head worn Wireless Microphone System (Sch. A Item No. 15).

This item shall be **Head worn Wireless Microphone System Make Sure** OR Sennheiser **OR** Philips OR Bosch OR Similar, equivalent model of Shure SVX14/PGA31 Head worn Wireless Microphone System OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.15 Specification for Supply of portable microphone (Sch. A Item No. 16).

This item shall be **portable microphone Make** Sennheiser **OR Sure OR** Philips OR Bosch OR Equivalent OR Higher., equivalent model of SENNHEISER Model EW-DP-ME2 set OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.16 Specification for Supply of Dual Wireless Mic (Sch. A Item No. 17).

This item shall be **Dual Wireless Mic Cardioid pattern for Vocal singing, Speech and Live | up to 10 channels on single frequency & 120 feet Range Make** Sennheiser **OR Sure OR** Philips OR Bosch OR Equivalent OR Higher., equivalent model of SENNHEISER Model Black XSW 1-825 DUAL-A OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.17 Specification for Supply of Handheld Wireless microphone system (Sch. A Item No. 18).

This item shall be **Handheld Wireless microphone System Make** Sennheiser **OR Sure OR** Philips OR Bosch OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.18 Specification of Supply of 2 core shielded Microphone Cable, make Finolex, Beldon, Sommer or Equivalent OR Higher. (Sch. A Item No. 19).

This item shall be the 2-core shielded Microphone Cable, make Finolex, Beldon, Sommer or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.19 Specification of Supply of Loudspeaker Load line cable - 2 core 2.5 Sq.mm, make Finolex, Beldon, Sommer or Equivalent OR Higher. (Sch. A Item No. 20).

This item shall be the Supply of Loudspeaker Load line cable - 2 core 2.5 Sq.mm, make Finolex, Beldon, Sommer or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.20 Specification of Supply of HDMI Cable 15 Mtrs MAKE-GGT INDIA or Equivalent OR Higher. (Sch. A Item No. 21).

This item shall be the Supply of HDMI Cable 15 Mtrs MAKE-GGT INDIA or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.21 Specification of Supply of HDMI Cable 5 Mtrs MAKE-GGT INDIA or Equivalent OR Higher. (Sch. A Item No. 22).

This item shall be the supply of HDMI Cable 5 Mtrs MAKE-GGT INDIA or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.22 Specification of Supply of HDMI Splitter 2 IN x 8 Out make- MX or Equivalent OR Higher. (Sch. A Item No. 23).

This item shall be the supply of HDMI Splitter 2 IN x 8 Out make- MX or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.23 Specification of Supply of 4 PORT 3.0 USB HUB with 1 Mtrs. or more cord length. (Sch. A Item No. 24).

This item shall be the supply of 4 PORT 3.0 USB HUB with 1 Mtrs. or more cord length. Sample of item shall be approved by Rly Site In-charge before supply.

3.24 Specification of Supply of Tripod Speaker Stand. (Sch. A Item No. 25).

This item shall be the Tripod Speaker Stand of reputed Brand OR Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.25 Specification of Supply of Tripod TV Stand -Portable TV Stand for 37-85 Inch LED LCD OLED Flat Screen TVs Height Adjustable Display Floor TV Stand, Holds up to 110lbs PSTM2. (Sch. A Item No. 26).

This item shall be the Tripod TV Stand -Portable TV Stand for 37-85 Inch LED LCD OLED Flat Screen TVs Height Adjustable Display Floor TV Stand, Holds up to 110lbs PSTM2. Sample of item shall be approved by Rly Site In-charge before supply.

3.26 Specification for 4G DONGLE USB WITH WIFI (Sch. A Item No. 27).

This item shall be LAPCARE 4G DONGLE USB WITH WIFI of Make LAPCARE **OR** reputed Brand or Equivalent OR Higher.

3.27 Specification for Supply of Wireless Access Points (Sch. A Item No. 28).

This item shall be Supply of Wireless Access Points Make TP-Link CPE710 5GHz or CISCO or D-Link. Or of make reputed Brand or Equivalent OR Higher. Sample shall be approved from consignee before supply.

- 3.28 Specification for OFC PATCH CORD SC TO LC, LC TO LC, SC-TO SC 5 Mtrs. (Sch. A Item No. 29).**
This item shall be OFC PATCH CORD SC TO LC, LC TO LC, SC-TO SC 5 Mtrs in length and as per site requirement and as per Railway site Engineer of reputed make. Sample of item shall be approved by Rly Site In-charge before supply.
- 3.29 Specification of RJ-45 UTP patch cords 03 Mtrs. (Sch. A Item No. 30).**
This item shall be LAN cable with both sides RJ-45 Connectors factory Crimped with the 03 Mtrs length of reputed make. Sample of item shall be approved by Rly Site In-charge before supply.
- 3.30 Specification for Supply of E1 to ethernet converter. (Sch. A Item No. 31).**
This item shall be E1 to ethernet converter, Make and Brand TEAMLINK 3101 EE or Cygnus or Mrotek or Techroute or RAD or Equivalent OR Higher. One E1 interface & four Ethernet interface. AC and DC Ordering options. Sample of item shall be approved by Rly Site In-charge before supply.
- 3.31 Specification for Supply of Supply of 4K HDMI Splitter 1 Inputs and 4 Output. (Sch. A Item No. 32).**
This item shall be Supply of 4K HDMI Splitter 1 Inputs and 4 Output Make - Cadyce or Equivalent OR Higher. Model - CA-4HDSP Plus or of reputed brand or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.
- 3.32 Specification of supply of portable handheld programming console for retrieval of the recording from the VHF recorder. (Sch. A Item No. 33).**
This item shall be the portable handheld programming console for retrieval of the recording from the VHF recorder along with all necessary cables, connectors and chargers as well as all required software, suitable for real-time data processing, User-friendly interface for configuring settings, 12th Generation Intel® Core™ i5 processor, FHD (1920 x 1080), IPS, three-sided micro-edge, anti-glare 8 GB DDR4-3200 MHz RAM (1 x 8 GB) 256 GB PCIe® NVMe™ M.2 SSD, or Equivalent OR Higher. or **Equivalent OR Higher. to Pro 4th Gen (2022) 27.96 cm (11-inch) Wi-Fi 512 GB Tab.** Sample of item shall be approved by Rly Site In-charge before supply.
- 3.33 Specification for Optic Fiber PATCH CORD (FC-FC, FC-LC, FC-SC, SC-LC) for terminations/ extension of ofc cables of various lengths and connectors as per site conditions. (Sch. A Item No. 34).**
This item shall be **Optic Fiber PATCH CORD (FC-FC, FC-LC, FC-SC, SC-LC) for terminations/ extension of ofc cables of various lengths and connectors as per site conditions** and as per site requirement and as per Railway site Engineer of reputed make. Sample of item shall be approved by Rly Site In-charge before supply.
- 3.34 Specification of RJ-45 UTP patch cords 02 Mtrs. (Sch. A Item No. 35).**
This item shall be LAN cable with both sides RJ-45 Connectors factory Crimped with the 02 Mtrs length. Sample of item shall be approved by Rly Site In-charge before supply.
- 3.35 Specification of RJ-45 LAN connector. (Sch. A Item No. 36).**
This item shall be RJ-45 LAN connector of make D-link OR Digisol OR Spectra or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.
- 3.36 Specification for DATA EQUIPMENT RECK 42U. (Sch. B Item No. 01).**
This item shall be DATA EQUIPMENT RECK 42U WITH 6 TRAY, CABLE MANAGER, POWER SUPPLY ARRANGEMENT. Sample of item shall be approved by Rly Site In-charge before supply. Size of Rack shall be 800 mm (W) Front x 900 mm (B) x 2000 mm (H) with glass door, for housing Data Equipments with all sides can be detachable.
- It should be a standard 19" closed floor mounted Data rack of 42U height.
 - The depth of the rack shall be in. Size 800 mm (W) x 900 mm (B) x 2000 mm (H) with glass door.
 - The rack should be provided with three horizontal cable managers and at two vertical cable managers installed on both the front sides of the rack.
 - The rack and its accessories shall be made of CRCA steel sheet with minimum gauge of 1.5 mm and shall have perforated front and rear doors.
 - Suitable dust filter should be provided at the air inlet in the rack to reduce the dust inside the rack.
 - 1 copper Earthing Bar/strip with Tin plating of cross section 1" X ¼" to be provided horizontally on the rear side of the rack full length of 19" width with suitable tapping to be supplied with each rack.
 - The rack should be nano-ceramic coated and powder coated with textured polyester light grey colour to 80-120 microns.

- The rack should be equipped with Six horizontal shelves (Tray) to house data communication equipment. The height where the shelves shall be installed in the rack shall be adjustable.
- A sliding key board tray shall be fitted at a suitable height inside the rack so that key board can be easily taken out of the rack.
- Provision on the top and bottom of the rack shall be available for proper cable entry.
- The rack should be equipped with a vertical power distribution unit (PDU) having 5 sockets of 5A along. The rack should also have 5 numbers MCB for providing power to the PDU suitably mounted in the rack or with the PDU.
- One packet of mounting hardware shall also be supplied with the rack.
- The rack shall have swivel handles on the front as well as the rear door with a key lock.
- The rack should be of reputed make and the manufacturer should be ISO 9001, ISO 14001 and ISO 18001 certified.
- The rack must be IP54 certified in conjunction with solid gland plate.
- The rack shall be certified for the General Requirements for Safety of Information Technology Equipment by UL 60950-1.
- Sample of item shall be approved by Rly Site In-charge before supply.

3.37 Specification for 19 inch 9U Rack (Sch. B Item No. 02).

This item shall have following specifications:

This item shall be Wall Mountable 19 inch 9U Rack.

The cabinet made up of steel and powder coated and glass door with locking arrangement.

This item shall include 5 Sockets PDU, and complete accessories.

This item shall be of make: - HCL OR President OR Valrack OR Mass Rack OR 3M OR Equivalent OR Higher.

3.38 Specification for supply of 24 x 10/100/1000 BASE-T PoE ports • 4 x 1G (minimum) single fiber SFP+ ports. (Sch. B Item No. 03).

The LAN switch shall be conforming to RDSO specification No. RDSO/SPN/TC/83/2020 Rev. 2.1 or later.

The LAN switch shall be standalone / rack mountable. Gigabit Ethernet LX Mini-GBIC SFP Transceiver-4 Nos. All 24 ports shall be POE type. It should be of 24Port 10/100/1000 + 4 x 10G SFP port with module mounted stackable. Switching capacity min. 56Gbps, IPV6, 16K MAC, 4K VLAN. with 4 No of Optical SFP with single fiber module installed in it. make- Zyxel or HP or Digisol or Equivalent OR Higher.

The total required quantity shall be supplied with a combination of 230V AC operated units and 48V DC operated units. The exact distribution of voltage ratings shall be as directed by the Railway Site In-Charge during execution of the work as per site requirements.

Sample of item shall be approved by Rly Site In-charge before supply.

3.39 Specification for four port LAN Extenders, 2 Mbps GSHDSL. (Sch. B Item No. 04).

The item shall be **four port LAN Extenders, 2 Mbps GSHDSL** as per RDSO Specifications RDSO/SPN/TC/82/2020 Ver 2.0. or latest. Make- Team link 3002 LE, Team Engineer/ Mrotec /Cygnus or equivalent.

3.40 Specification for Supply of 4 port router as per RDSO SPECIFICATION: RDSO/SPN/TC/84/2008, REV.0 or later with accessories (Sch. B Item No. 05).

This item shall be a 4 port router as per RDSO SPECIFICATION: RDSO/SPN/TC/84/2008, REV.0 or Latest with accessories AS: 4 port on board Giga Ethernet, 4 PORT SERIAL WAN interface card, 2E HWIC SLOTS, 1 ISM SLOTS, 256MB CF DEFAULT, 512MB RAM, IP BASE, 2 NOS.V35 cable, DTE MAKE TO smart serial 10 feet length with required cable & connection Make: TECHROUTE/TSR-2900-20 ROUTER+ 2x HIC-2TB or Make:- CISCO MODEL No. ISR 4221/K9 or Make - CISCO (Router Model - C8200L-1N-4T) or Equivalent OR Higher. and accessories.

3.41 Specification for Supply of 2 MBPS Leased Line Modem as per Specification No. RDSO/SPN/TC/80/2020 Rev.2.0 or latest with all accessories. (Sch. B Item No. 06).

This item shall be a 2 MBPS Leased Line Modem as per Specification No. RDSO/SPN/TC/80/2020 Rev.2.0 or latest each pair Consisting of one G.703 & V.35 Unit with all accessories. Make/Brand-D-Link/Digisol or Equivalent OR Higher. Nomus Gateway e/2M/2W/G.703/V.35.

3.42 Specification for Supply of CAT-6E Networking Cable (Sch. B Item No. 7).

This item shall have identification marks and length marks at regular intervals.

This item shall be of reputed make D-Link OR Finolex OR Sterlite OR DigiLink OR Equivalent OR Higher.

Type	STP CAT-6E Cable, Twisted Pair, Category 6, ANSI / TIA - 568-C.2 complied
Conductors	23 AWG solid bare copper
Insulation	Polyethylene
Separator	Cross shaped separator between pairs.
Jacket	Flame Retardant PVC - Must for Safety Compliance
Packing	Box of 305 meters

3.43 Specification for Online 2.0 KVA UPS for single phase AC input Output (Sch. B Item No. 08).

1. The item shall be

- I. The UPS shall be pure sine wave online UPS of capacity 2.0 KVA. The output power factor shall be 0.9.
- II. Both the rectifier and the Inverter shall be IGBT based.
- III. It should work for input frequency from 40HZ-60Hz. IV. The UPS shall work with the input of normal Indian power supply, single phase with 180V-270VAC at 50Hz.
- V. The output frequency shall be 50Hz and 230V AC with +/- 1% regulation.
- VI. The AC-AC efficiency shall be better than 85%.
- VII. It should have 4No. of Indian sockets for connecting the load.
- VIII. The UPS shall be supplied with maintenance free batteries to provide a backup of 60 minutes at full load.
- IX. The UPS should have a proper LCD display to show various status of the working of the UPS.
- X The UPS shall be supplied along with all accessories required for installation.
- XI Following minimum indications shall be available on the UPS
 - a) Main ON
 - b) Load on Battery
 - c) Battery on Charge
 - d) Battery Low

3.44 Specification for 1.0 KVA UPS for single phase AC input Output (Sch. B Item No. 09).

1. The item shall be

- I. The UPS shall be pure sine wave online UPS of capacity 1.0 KVA. The output power factor shall be 0.9.
- II. Both the rectifier and the Inverter shall be IGBT based.
- III. It should work for input frequency from 40HZ-60Hz. IV. The UPS shall work with the input of normal Indian power supply, single phase with 180V-270VAC at 50Hz.
- V. The output frequency shall be 50Hz and 230V AC with +/- 1% regulation.
- VI. The AC-AC efficiency shall be better than 85%.
- VII. It should have 4No. of Indian sockets for connecting the load.
- VIII. The UPS shall be supplied with maintenance free batteries to provide a backup of 60 minutes at full load.
- IX. The UPS should have a proper Indication to show various status of the working of the

UPS.

2. Following minimum indications shall be available on the UPS

- a) Main ON
- b) Load on Battery
- c) Battery on Charge
- d) Battery Low

3.45 Specification for Supply of online 6 KVA UPS (Sch. B Item No. 10).

This item shall be online 6 KVA UPS of Emerson make or Equivalent OR Higher., consists of 16 Nos. 12 V /65 AH Battery of make Exide or Equivalent OR Higher. with battery stand, MAKE BRAND – BPE OR Equivalent OR Higher.

1. The item shall be

- I. The UPS shall be pure sine wave online UPS of capacity 6.0 KVA. The output power factor shall be 0.9.
- II. Both the rectifier and the Inverter shall be IGBT based.
- III. It should work for input frequency from 40Hz-60Hz. IV. The UPS shall work with the input of normal Indian power supply, single phase with 180V-270VAC at 50Hz.
- V. The output frequency shall be 50Hz and 230V AC with +/- 1% regulation.
- VI. The AC-AC efficiency shall be better than 85%.
- VII. It should have 4No. of Indian sockets for connecting the load.
- VIII. The UPS shall be supplied with maintenance free batteries to provide a backup of 60 minutes at full load.
- IX. The UPS should have a proper LCD display to show various status of the working of the UPS.
- X The UPS shall be supplied along with all accessories required for installation.
- XI Following minimum indications shall be available on the UPS
 - a) Main ON
 - b) Load on Battery
 - c) Battery on Charge
 - d) Battery Low

3.46 Specification for 12 Port LIU Rack mountable LIU. (Sch. B Item No. 11).

This item shall be provided for terminating the Optic Fibre cables. It shall provide minimum bending radius and the splice trays shall function as a splice cover for pigtail splicing. Cable glands shall be provided for secured anchoring of incoming cables, Rubber grommets shall be provided at the cable entry point for tight sealing. LIU shall be fitted in 19" Rack. LIU Shall have sufficient numbers of splicing Trays and other accessories as per requirement Nos. of fiber to be terminated. At least 12 fibers. The splice tray shall be made of ABS materials, along with the Optic Fiber Pigtails SC/ST of 1 Meter length with push-pull mechanism or as per site requirement and required 12 nos. of LC to LC/SC patch cords of 10 mtr. length for connecting LIU to switch of same make of LIU.

LIU should be of reputed make D-Link OR 3M OR DigiLink OR MOLEX OR Equivalent OR Higher.

3.47 Specification for Optic Fiber Pigtails for termination of OFC cables. (Sch. B Item No. 12).

Pigtail should be single mode SC/ST type with push-pull mechanism or as per site requirement and fully in compliance with latest industry standard.

Optic Fibre Pigtails shall be used for termination of OFC cables into the LIU

Pigtail should be single mode SC/ST type with push-pull mechanism or as per site requirement and fully in compliance with latest industry standard.

Pigtail shall have length of 2 meters at least.

Pigtails shall have SC Connector at one end and the other end shall be loose for splicing.

Optic fibre pigtails should be of reputed make D-Link OR 3M OR DigiLink OR MOLEX OR Equivalent OR Higher.

3.48 Specification for PLB HDPE Pipe (Duct) (Sch. B Item No. 17).

This item PLB HDPE Pipe (40 mm Dia outside) (Duct) shall be conforming to as per RDSO Specification No. RDSO/SPN/TC/45/2013 Rev 2.0 with Amendment 3.0 or later, for OFC cable of size 24/48 fibre armoured in length of 1000 mtrs/roll. Duct to be supplied from TEC approved sources.

All required accessories viz. End Plugs, Cable Sealing Plugs and Press fit type couplers shall be supplied in adequate quantities along with every coil of the PLB HDPE Duct. Contractor has to supply HDPE in different colours as per site plan.

3.49 Specification for Supply of Managed SDH (STM-1 Add/Drop MUX and Upgradeable to STM-4) fully wired for 2 X 63 MB and equipped for 21E1s and with STM1 (L1.1) aggregate interface (Sch. B Item No. 19).

This item shall be Supply of Managed SDH (STM-1 Add/Drop MUX and Upgradeable to STM-4) fully wired for 2 X 63 MB and equipped for 21E1s and with STM1 (L1.1) aggregate interface. Including power supply, order wire, Ethernet card, sub rack, inbuilt DDF, Installation material and all Other accessories, manuals etc. as per TEC. Specification GR SDH 04/02, March 02 or with latest Amendment. The contractor will supply all other accessories as mentioned in the above said TEC Specifications and system will have provision of different redundancy cards as per the

TEC Specifications Note: It shall be possible to increase capacity from 21E1 to 63 E1s by adding / inserting tributary cards. This includes connecting all pig tails, optical patch cords etc. to the SDH equipment. This also includes Connecting the SDH equipment with all cards to the 48V Bus including supply of wires and connectors. Termination of all E1s on DDF taking PVC cable over runway or a wall. Make: -TEJAS or Equivalent OR Higher. **Compatible with existing Tejas TJ1400 over Bhusawal Division.** Make/Brand: TEJAS NETWORKS LIMITED/GURUGRAM or similar.

3.50 Specification for Gateway for Emergency communication at HQ and at stations. (Sch. B Item No. 20).

The Gateway for Emergency communication at HQ and at stations as per requirements shall be as per RDSO specification No. RDSO/SPN/TC/99/2023 Rev.3 or latest. Control IP telephones shall be conforming to the Cl. No. 9 & 10 of the RDSO specification. Sample of item shall be approved by Rly Site In-charge before supply.

1. This gateway shall be provided at way side stations for the purpose of providing interface to emergency communication circuit working on 0.9 mm/1.4 mm conductor diameter underground twisted pair quad cable.
2. This gateway shall have minimum 4 number 4 wire ports.
3. Since there is no off-hook/on-hook condition on the emergency phone, the ports may be required to be active all the time. However, IP packets shall be generated only when there is actual voice communication taking place.
4. The gateway shall be compatible with 4/6 quad cable. The transmission characteristic of 4/6 quad cable shall be as defined in RDSO specification No. IRS: TC 30-05 with latest revision and amendments.
5. The gateway shall be compatible with Emergency phone which shall be plugged at site. The emergency telephone shall be as per RDSO specification IRS: TC 78-2000 & IRS: TC 75-99 with latest revision and amendments.
6. The gateway shall be able to work satisfactorily when the emergency telephone is plugged at any distance up to at least 10 km. The transmission parameters of the port of gateway connected to quad cable shall be specified by the vendor.
7. Communication protocol: SIP
8. It shall have features of Voice activity detection, silence suppression, comfort-noise generation, Echo cancellation, error concealment, adaptive Jitter Compensation as applicable. It shall be possible to disable VAD and/ or silence suppression on selected end points.
9. Network protocols: TCP IP, UDP, RTP, RTCP, HTTP, ARP, RARP, DHCP, NTP, ICMP
10. Power supply: It shall work on nominal -48 V DC supply.
11. Network Interface 10/100/1000 Mbps Ethernet port auto sensing.
12. Codecs G.711 A-Law and either G.729a or iLBC.

Interoperability:

13. The subscriber of one TCCS shall be able to make normal telephony call to subscriber of other TCCS. The system shall act as a tandem switch also to route the calls from the Railway exchange received through FXO port or SIP Trunk to TCCS systems of other sections and vice versa.
14. The PC provided for a section as Desktop client PC/Portable Maintenance Terminal for Communication and voice record server can be used for other section's TCCS also.
15. The installed system (system components/software/NMS etc.) along with common server/server cluster as defined in Cl. No. 2.1.1 shall be interoperable to cater the future expansion.

3.51 Specification for Supply of 20 Pair CT Box Wago Type (Sch. C Item No. 01).

This item shall be 20 Pair CT Box Wago Type, made up of at least 18 SWG galvanised MS sheet, spray painted Gray Colour, locking arrangement, Termination of 0.9 mm U/G Quad cable, it includes supply of Hylum Sheet 12mm thick, Nuts, Bolts, suitable size of GI Pipe for Fixing on the wall for U/G Quad Cable, with disconnection facility.

3.52 Specification of thermo shrink Jointing kit (Reinforced) (Sch. C Item No. 02).

This item shall be thermo shrink Jointing kit (Reinforced) for quad cable/PIJF cable conforming to RDSO Specification No. IRS: TC 77-2012, Rev. 3 with amendment 3 or later

3.53 Specification for Supply of 48 fiber OFC Splice enclosure (Sch. C Item No. 05).

Supply of 48 fiber OFC Splice enclosure FIBRE OPTIC FIBRE SPLICE STRAIGHT JOINT ENCLOSURE (SJC) completes with all accessories as per RDSO/SPN/TC/68/2025, rev. 2 or specs for 24/48 fiber ofc cable with later amendment. The quantity of splices trays in the joint enclosure shall be supplied as per the number of fibers in a particular cable. Total number of **splice trays: 4** and Each tray holds **12 fiber splices**.

3.54 Specification for PLB HDPE Pipe (Duct) (Sch. C Item No. 10).

This item shall be Permanently Lubricated HDPE Telecom duct of size 50/42 mm and accessories as per latest Specification "TEC 72030:2025 dt 12-02-2026 with latest amendment" for OFC cable of size 48 fibre armoured in length of 1000 Mtrs/roll. Duct to be supplied from TEC approved sources.

All required accessories viz. End Plugs, Cable Sealing Plugs and Press fit type couplers shall be supplied in adequate quantities along with every coil of the PLB HDPE Duct. Contractor has to supply HDPE in different colours as per site plan.

3.55 Specification for GI pipe medium grade (Sch. C Item No. 12).

This item shall be of medium grade B-Class, 100 mm nominal bore (Inner Dia) with suitable sockets and fitting etc

This item shall be conforming to IS Specification, IS-1239PT-1/2004(or later, with one snap fit coupler and 'O' ring with each piece of pipe, Non-Metallic, normal duty, fire resistance and anti-rodent.

Clamps/ fittings item shall be made of mild steel having length and breadth as per site requirement and having proper thickness to be fixed on girder bridges/ rocky area on GI pipes/ couplers with requisite numbers of nuts and bolts. All items shall be pre- approved by Railway engineer at site.

3.56 Specification for Supply of DWC HDPE Pipe (Sch. C Item No. 14).

This item shall be with one snap fit coupler and 'O' ring all fixing material Non-Metallic, normal duty fire resistant, antirodent, in 6mtr length of size 120 mm outer & 100 mm inner dia DWC HDPE Pipe as per RDSO /SPN /204/2011/Ver 1.1 with Amdt 1 or latest. Each pipe to be supplied in length 6 Meters.

3.57 Specification for 19 inch 9U Rack (Sch. C Item No. 17).

This item shall have following specifications:

This item shall be Wall Mountable 19 inch 9U Rack.

The cabinet made up of steel and powder coated and glass door with locking arrangement.

This item shall include 5 Sockets PDU, and complete accessories.

This item shall be of make: - HCL OR President OR Valrack OR Mass Rack OR 3M OR Equivalent

OR Higher.

3.58 Specification for supply of 24 x 10/100/1000 BASE-T PoE ports • 4 x 1G (minimum) single fiber SFP+ ports. (Sch. C Item No. 18).

The LAN switch shall be conforming to RDSO specification No. RDSO/SPN/TC/83/2020 Rev. 2.1 or later.

The LAN switch shall be standalone / rack mountable. Gigabit Ethernet LX Mini-GBIC SFP Transceiver-4 Nos. All 24 ports shall be POE type. It should be of 24Port 10/100/1000 + 4 x 10G SFP port with module mounted stackable. Switching capacity min. 56Gbps, IPV6, 16K MAC, 4K VLAN. with 4 No of Optical SFP with single fiber module installed in it. make- Zyxel or HP or Digisol or Equivalent OR Higher.

The total required quantity shall be supplied with a combination of 230V AC operated units and 48V DC operated units. The exact distribution of voltage ratings shall be as directed by the Railway Site In-Charge during execution of the work as per site requirements.

Sample of item shall be approved by Rly Site In-charge before supply.

3.59 Specification for four port LAN Extenders, 2 Mbps GSHDSL. (Sch. C Item No. 19).

The item shall be **four port LAN Extenders, 2 Mbps GSHDSL** as per RDSO Specifications RDSO/SPN/TC/82/2020 Ver 2.0. or latest. Make- Team link 3002 LE, Team Engineer/ Mrotek /Cygnus or equivalent.

3.60 Specification for 1.0 KVA UPS for single phase AC input Output (Sch. C Item No. 20).

1. The item shall be

I. The UPS shall be pure sine wave online UPS of capacity 1.0 KVA. The output power factor shall be 0.9.

- II. Both the rectifier and the Inverter shall be IGBT based.
- III. It should work for input frequency from 40HZ-60Hz.
- IV. The UPS shall work with the input of normal Indian power supply, single phase with 180V-270VAC at 50Hz.
- V. The output frequency shall be 50Hz and 230V AC with +/- 1% regulation.
- VI. The AC-AC efficiency shall be better than 85%.
- VII. It should have 4No. of Indian sockets for connecting the load.
- VIII. The UPS shall be supplied with maintenance free batteries to provide a backup of 60 minutes at full load.
- IX. The UPS should have a proper Indication to show various status of the working of the UPS.

2. Following minimum indications shall be available on the UPS

- a) Main ON
- b) Load on Battery
- c) Battery on Charge
- d) Battery Low

3.61 Specification for Supply of OFC to Ethernet Media Converter (Sch. C Item No. 21).

The media converter shall be conforming to RDSO Specification no. RDSO/SPN/TC/103/2013 Rev 3.0 or later

This Media converter shall be of reputed make. Sample shall be approved from Consignee/ Engineer In charge before supply.

- 1. The media converter shall have 01 no. of Optical Port equipped with 1000 BASE-LX10 (SM) single fibre with SFP preferably SC type connectors
- 2. The media converter shall have 04 nos. of Ethernet Ports 10/100 BASE T, RJ-45 supporting port isolation (all ports non-POE).
- 3. The media converter shall have to work on AC 230 V Mains supply.

3.62 Specification for Supply of TP-Link 3000 Gigabits per Second 5 GHz WiFi 6 AX3000 Smart WiFi (Sch. C Item No. 22).

This item shall be Supply of **TP-Link 3000 Gigabits per Second 5 GHz WiFi 6 AX3000 Smart WiFi** or of make CISCO or D-Link. Or make of reputed Brand or Equivalent OR Higher. Sample shall be approved from consignee before supply.

3.63 Specification for 6 core OFC Cable Arial (Armoured). (Sch. C Item No. 23).

This item shall have following specifications: 6 core SM 9 /125 m double scratch, CSTA, uni tube, outdoor Optical Fibre cable (armoured) as per ITU-T. Recommendation G.652 Approved ISO 11801. Make -D-Link OR Molex OR MG OR D-Link or Equivalent OR Higher.

3.64 Specification for 12 Port LIU Rack mountable LIU. (Sch. C Item No. 24).

This item shall be provided for terminating the Optic Fibre cables. It shall provide minimum bending radius and the splice trays shall function as a splice cover for pigtail splicing. Cable glands shall be provided for secured anchoring of incoming cables, Rubber grommets shall be provided at the cable entry point for tight sealing. LIU shall be fitted in 19" Rack. LIU Shall have sufficient numbers of splicing Trays and other accessories as per requirement Nos. of fiber to be terminated. At least 12 fibers. The splice tray shall be made of ABS materials, along with the Optic Fiber Pigtails SC/ST of 1 Meter length with push-pull mechanism or as per site requirement and required 12 nos. of LC to LC/SC patch cords of 10 mtr. length for connecting LIU to switch of same make of LIU.

LIU should be of reputed make D-Link OR 3M OR DigiLink OR MOLEX OR Equivalent OR Higher.

3.65 Specification for Optic Fiber Pigtails for termination of OFC cables. (Sch. C Item No. 25).

Pigtail should be single mode SC/ST type with push-pull mechanism or as per site requirement and fully in compliance with latest industry standard.

Optic Fibre Pigtails shall be used for termination of OFC cables into the LIU

Pigtail should be single mode SC/ST type with push-pull mechanism or as per site requirement and fully in compliance with latest industry standard.

Pigtail shall have length of 2 meters at least.

Pigtails shall have SC Connector at one end and the other end shall be loose for splicing.

Optic fibre pigtails should be of reputed make D-Link OR 3M OR DigiLink OR MOLEX OR Equivalent OR Higher.

3.66 Specification of PVC Switch board cable 05 Pair (Sch. C Item No. 28).

This item shall be 05 Pair 0.5mm Dia twisted pair PVC insulated, PVC sheathed ATC Copper conductor as per Tech. Spec. no. GR/WIR-06/03. MAR 2002 or latest makes Bharat Cab OR Delton Cable OR Network Cable OR equivalent of reputed brands.

3.67 Specification of PVC Switch board cable 10 Pair (Sch. C Item No. 29).

This item shall be 10 Pair 0.5mm dia twisted pair PVC insulated, PVC sheathed ATC Copper conductor as per Tech. Spec. no. GR/WIR-06/03. MAR 2002 or latest makes Bharat Cab OR Delton Cable OR Network Cable OR equivalent of reputed brands.

3.68 Specification of PVC Switch board cable 20 Pair (Sch. C Item No. 30).

This item shall be 20 Pair 0.5mm dia twisted pair PVC insulated, PVC sheathed ATC Copper conductor as per Tech. Spec. no. GR/WIR-06/03. MAR 2002 or latest makes Bharat Cab OR Delton Cable OR Network Cable OR equivalent of reputed brands.

3.69 Specification of PVC Casing/Capping with fixing accessories size 50X50 mm (Sch. C Item No. 31).

The item shall be of size 50 mm X 50 mm

This item shall be conforming to IS 14927 Precision cat.No.PT 2538 and shall be of make Precision OR Presto Plast OR Presto Teak OR Poly Extrusions OR Orient OR equivalent of reputed brands.

3.70 Specification of Supply of Industrial Grade Imbedded fanless operator console PC, 10th generation intel i7 latest processor or better as per RDSO's TAN No. STS/E/TAN/3007, dated: 02.11.2012. (Sch. C Item No. 33).

The item shall be Industrial Grade Imbedded fanless operator console PC, 10th generation intel i7 latest processor or better as per RDSO's TAN No. STS/E/TAN/3007, dated: 02.11.2012.

3.71 Specification of Supply of MODEM compatible with existing UFSBI system to work on back up media. (Sch. C Item No. 34).

The item shall be MODEM compatible with existing UFSBI system to work on back up media either VF channel on OFC P/Mux or 2 Mbps E1 channel from STM or direct dark single mode optic fibre cable up to 30 Km distance.

3.72 Specification for Supply of 24 fiber Straight Joint closure (SJC)OFC Splice enclosure (Sch. C Item No. 36).

Supply of 24 fiber OFC Splice enclosure FIBRE OPTIC FIBRE SPLICE STRAIGHT JOINT ENCLOSURE (SJC) completes with all accessories as per RDSO/SPN/TC/68/2025, rev. 2 or specs for 24 fiber ofc cable with later amendment. The quantity of splices trays in the joint enclosure shall be supplied as per the number of fibers in a particular cable. Total number of **splice trays: 4** and Each tray holds **6 fiber splices**.

3.73 Specification for Supply of Safety Jacket (Sch. C Item No. 37).

This item shall be supply of Safety Jackets required for Railway employee as per Railway norms of reputed Brand.

Sample shall be approved from consignee before supply.

3.74 Specification for Supply of cable route locator/tracer set suitable for detecting underground Armoured S&T Cables. (Sch. C Item No. 38).

This item shall be cable route locator/tracer set suitable for detecting underground armoured optic fiber cable (OFC) and signalling cables with LCD Graphic Display active/passive modes and depth range. Supply of high precision IP65 rated advanced Cable Route Tracer cum cable locator with 10-watt transmitter, with 500mA signal current output, active frequencies of 640Hz, 8kHz, 33kHz, or more, locating accuracy $\pm 3\%$ or better, receiver with 5 antennae or more, 360° compass, left-right guidance arrows, automatic current and depth measurement, Dynamic Overload Protection, Receiver & transmitter should have rechargeable battery and receiver clamp (cable identifier) Make STLOC10/ RD7200 or equivalent or Higher.

Sample shall be approved from consignee before supply.

3.75 Specification for Supply of Digital Cross Talk Meter measuring set as per SPN IRS C: 45/88 with latest amendment. (Sch. C Item No. 39).

This item shall be Digital Cross Talk Meter measuring set as per SPN IRS TC: 45/88 with latest amendment Make Anu Vidhut, Aplab or Equivalent OR Higher.

Sample shall be approved from consignee before supply.

3.76 Specification for Supply of Microcontroller based universal Quad Cable Conductor's Earth Resistance Sensing Unit, for 24 nos. conductors with metering facility for one

conductor at a time AC/DC. As per RDSO/SPN/256/2002 Ver 2.0 with latest amendments. **(Sch. C Item No. 40).**

This item shall be Microcontroller based Quad Cable Conductor's Earth Resistance Sensing Unit, for 24 nos. conductors with metering facility for one conductor at a time **AC/DC.** As per RDSO/SPN/256/2002 Ver 2.0 with latest amendments.

Sample shall be approved from consignee before supply.

3.77 Specification for FXO/FXS gateway 16 port. (Sch. C Item No. 49).

This item FXO/FXS gateway 16 port shall be provided as per site requirements, as per Railway site Engineer and conforming to clause 8 & 10 as per RDSO/SPN/TC/99/2023 Ver 3 or latest

a) **2 wire Control Telephone:** Existing Control Telephone or Commercially available 2 wire Telephone shall be used as control Telephone by the ASM. FXS gateway shall be used to achieve this function with IP Backbone.

b) **Ringer Circuit:** A separate Ringer may be used to give a ring for incoming call even if the telephone is in conversation or "Off Hook" or defective. One port of FXS gateway may be used for separate ringer.

3.78 Specification of Layer 2 manageable, 28 Port Switch 24 x 1G SFP Ports P10/100/1000 + 4 x 10Gig SFP port stackable with equipped SFP optical interface. (Sch. C Item No. 50).

The LAN switch shall be conforming to RDSO specification No. RDSO/SPN/TC/83/2020 Rev. 2.1 or later.

The LAN switch shall be standalone / rack mountable. Gigabit Ethernet LX Mini-GBIC SFP Transceiver-4 Nos. All 24 ports shall be POE type. It should be of 24Port 10/100/1000 + 4 x 10G SFP port with module mounted stackable. Switching capacity min. 56Gbps, IPV6, 16K MAC, 4K VLAN. with 4 No of Optical SFP with single fiber module installed in it. make- Zyxel or HP or Digisol or Equivalent OR Higher.

The total required quantity shall be supplied with a combination of 230V AC operated units and 48V DC operated units. The exact distribution of voltage ratings shall be as directed by the Railway Site In-Charge during execution of the work as per site requirements.

Sample of item shall be approved by Rly Site In-charge before supply.

3.79 Specification for Supply of self-survivable media gateway 48 ports with cards/hardware of 24 Ports X 2 (Sch. C Item No. 51).

It should be wired up to 48 port as per technical specification (should works on 48V DC)

Comprising of Analog Media Gateways having minimum 24 FXS Ports each

Gateway should have min 24 FXS ports and should be from the same OEM of telephony system.

- Voice Processing – voice codecs: G.711, G.729A, G.723.1, GSM, iLBC; echo cancellation: G.168 with 64msecho tail; dynamic jitter buffer; voice activity detector (VAD)
- Call Handling – configurable dialing plan, up to 500 routing rules
- Fax Processing – T.38 fax relay , G.711 pass through
- DTMF – RFC 2833, SIP INFO, audio
- Gateway Configuration – Web based user interface
- User Features – caller ID, call forward, call transfer, call forking, hotline, speed Dialing, busy tone detection
- Protocol – SIP (RFC3261, etc.)
- Standards – caller ID detection (FSK/DTMF), configurable call progress tone plan
- Primary and Backup – the gateway can be configured and controlled in server clusters
- LED indicators– power, system status, network status, line status
- FXS Connector – RJ-45
- Connectivity : Ethernet RJ45
- Power Input – Single -48 VDC power supply Power Supply in redundancy

24 port analogue extension cards shall be suitable for Analog Media Gateway (Type-1). Analog extension should work minimum 2 KM on 0.5 mm copper cable.

The item shall be compatible with the existing system installed over the Bhusawal division. The sample shall be supplied before supplying the material.

3.80 Specification of Push button telephone with caller ID (Sch. C Item No. 52).

This item shall be conforming as per specification No. GR/TEL-07/02 JUL 2004 with amendment No. 1 dated 14/08/2006 or latest amendment if any.

This item shall be in different attractive colours with Tone/Pulse mode, Re-dialing facility, LED indicator, Speaker.

This item shall be of Make ' Pramod Telecom Pvt. Ltd. OR BEETEL MODEL NO.M53 OR ORPAT OR

Equivalent.

3.81 Specification of Analog Extension with hardware (Sch. C Item No. 53).

Supply and Installation of Analog Extension with hardware and license without analogue phones as per technical specification. 24 port analogue extension card should be suitable for Analog Media Gateway (Type-1). Analog extension should work minimum 2 KM on 0.5 mm copper cable. Necessary required license should also be provided along with the hardware.

3.82 Specification for Control IP telephones without hands free and gooseneck operation for way side station. (Sch. C Item No. 54).

The Control IP telephones without hands free and gooseneck operation for way side station shall be as per RDSO specification No. RDSO/SPN/TC/99/2023 Rev.3 or latest. Control IP telephones shall be conforming to the Cl. No. 8.2 of the RDSO specification. Sample of item shall be approved by Rly Site In-charge before supply.

A control telephone with handset to be used by the ASM for communication with section controller and other controllers.

Facility shall be there to program control telephone such that as soon as ASM lifts the phone it should connect to respective controller. It will be in "Lift and Listen" mode. It shall be capable of achieving push-to-talk facility by using "star" button as per user requirement.

1. **IP Control Telephone:** The ruggedized industrial grade IP Telephone shall be from reputed manufacturers. The specification of Way side IP control telephones shall be as given below:
2. Communication protocol SIP or latest platform.
3. PoE as per IEEE 802.3af standard class 2 or better and 230 V AC (through adapter). Battery back-up of minimum 4 hrs. shall be provided to power control Telephone (along with the LAN switch if used), in case of power failure.
4. Network protocols; TCP IP, UDP, RTP, RTCP, HTTP, ARP, RARP, NTP, ICMP.
5. Audio compression: G.711A law, G 722 and either G 729a or iLBC.
6. It shall have features of Voice activity detection, silence suppression, comfort-noise generation, Echo cancellation, error concealment, adaptive Jitter Compensation as applicable. It shall be possible to disable VAD and/ or silence suppression on selected end points.
7. Full Duplex.
8. Hands free operation as per User requirements. In case of hands free operation, Internal Microphone or External Gooseneck Microphone with specification in clause No. 6.16 may be acceptable as per user requirements.
9. Caller ID display.
10. Call History Received calls, outgoing calls and missed calls.
11. Phone Book, Volume Adjustment, phone book search.
12. Dual Ethernet ports in switch mode 10/100 Mbps auto sensing shall be provided.
13. It shall show current time in 24 hrs. format.
14. The sample shall be supplied before supplying the material.

3.83 Specification of SIP extension license (Sch. C Item No. 55).

Supply and Installation of SIP extension license suitable for SIP phone (Type-I) should be supplied, as per site requirement and as per instructions of Railway Engineer

3.84 Specification of 200 Pair MDF with IPM (Sch. C Item No. 56).

- a) 200 pair MDF and 200 Pair IDF should be supplied.
- b) IDF should be fulfilled with IPM module.
- c) The MDF/IDF shall be of Krone only, complete with all its accessories for Interconnecting and jumpering the various terminations to and from EPABX
- d) The MDF/IDF shall be so designed that it should be easy to work with.

3.85 Specification of 21U Rack 600 mm x 600mm with all standard accessories for Gateways (Sch. C Item No. 57).

- a) It should be a standard 21 U rack.
- b) The size of rack is suitable to install the IP Enterprise Telephone Exchange in the rack.
- c) The rack should be provided with three horizontal cable managers and at two vertical cable managers installed on both the front sides of the rack.

- d) The rack and its accessories shall be made of CRCA steel sheet with minimum gauge of 1.5mm and shall have perforated side and rear doors. The front door should of glass.
- e) Suitable dust filter should be provided at the air inlet in the rack to reduce the dust inside the rack.
- f) 1 copper Earthing Bar/strip with Tin plating of cross section 1" X ¼" to be provided horizontally on rear side of the rack full length with suitable tapping to be supplied with each rack.
- g) The rack should be nano-ceramic coated and powder coated with textured polyester light grey colour to 80 -120 microns.
- h) Provision on the top and bottom of the rack shall be available for proper cable entry.
- i) One packet of mounting hardware shall also be supplied with the rack.
- j) The rack shall have swivel handles on the front as well as the rear door with a key lock.
- k) The rack should be of reputed make and the manufacturer should be ISO 9001, ISO 14001 and ISO 18001certified.
- l) The rack must be IP54 certified in conjunction with solid gland plate.
- m) The rack shall be certified for the General Requirements for Safety of Information Technology Equipment by UL 60950 -1.
- n) The sample shall be supplied before supplying the material.

3.86 Specification of 12U Rack 600 mm x 600 mm with all standard accessories for Gateways. (Sch. C Item No. 58).

- a) It should be a standard 12 U rack.
- b) The size of rack is suitable to install the IP Enterprise Telephone Exchange in the rack.
- c) The rack should be provided with three horizontal cable managers and at two vertical cable managers installed on both the front sides of the rack.
- d) The rack and its accessories shall be made of CRCA steel sheet with minimum gauge of 1.5mm and shall have perforated side and rear doors. The front door should of glass.
- e) Suitable dust filter should be provided at the air inlet in the rack to reduce the dust inside the rack.
- f) 1 copper Earthing Bar/strip with Tin plating of cross section 1"X ¼" to be provided horizontally on rear side of the rack full length with suitable tapping to be supplied with each rack.
- g) The rack should be nano-ceramic coated and powder coated with textured polyester light grey colour to 80 -120 microns.
- h) Provision on the top and bottom of the rack shall be available for proper cable entry.
- i) One packet of mounting hardware shall also be supplied with the rack.
- j) The rack shall have swivel handles on the front as well as the rear door with a key lock.
- k) The rack should be of reputed make and the manufacturer should be ISO 9001, ISO 14001 and ISO 18001certified.
- l) The rack must be IP54 certified in conjunction with solid gland plate.
- m) The rack shall be certified for the General Requirements for Safety of Information Technology Equipment by UL 60950 -1.

3.87 Specification for Supply of All in One Multi-Function Laser Printer (Sch. C Item No. 59).

This item shall be All in One Multi-Function Laser Printer Print Scan Copy Monochrome laser multi-Function centre with Automatic 2-sided printing and wireless networking make/Brand Canon/ HP/Epson/Brother. The sample shall be supplied before supplying the material.

3.88 Specification for Supply of online 10 KVA UPS (Sch. C Item No. 60).

This item shall be online 6 KVA UPS of Emerson make or Equivalent OR Higher., consists of Battery of make Exide or Equivalent OR Higher. with battery stand.

1. The item shall be

- I. The UPS shall be pure sine wave online UPS of capacity 10.0 KVA. The output power factor shall be 0.9.
- II. Both the rectifier and the Inverter shall be IGBT based.

- III. It should work for input frequency from 40Hz-60Hz. IV. The UPS shall work with the input of normal Indian power supply, single phase with 180V-270VAC at 50Hz.
 - V. The output frequency shall be 50Hz and 230V AC with +/- 1% regulation.
 - VI. The AC-AC efficiency shall be better than 85%.
 - VII. It should have 4No. of Indian sockets for connecting the load.
 - VIII. The UPS shall be supplied with maintenance free batteries to provide a backup of 60 minutes at full load.
 - IX. The UPS should have a proper LCD display to show various status of the working of the UPS.
 - X. The UPS shall be supplied along with all accessories required for installation.
 - XI. Following minimum indications shall be available on the UPS
 - a) Main ON
 - b) Load on Battery
 - c) Battery on Charge
 - d) Battery Low
- 3.89 Specification for Supply of 75 Inch Commercial Display 4K UHD 3,840 x 2,160 Resolution, Refresh Rate 60Hz, Connectivity HDMI, USB, WI-FI, Bluetooth, 2 Channel Speaker. (Sch. C Item No. 61).**
This item shall be 75 Inch Commercial Display 4K UHD 3,840 x 2,160 Resolution, Refresh Rate 60Hz, Connectivity HDMI, USB, WI-FI, Bluetooth, 2 Channel Speaker. Make – LG OR SONY OR SAMSUNG. The sample shall be supplied before supplying the material.
- 3.90 Specification for Supply of Intel Core i7 15.6 Inch Laptop (Windows 11 Professional). (Sch. C Item No. 62).**
This item shall be Intel Core i7 15.6 Inch Laptop (Windows 11 Professional) With HD IPS display with Intel Arc Graphics 16 GBDDR5 -5600 RAM, 512 GB SSD Hard Drive, HP true Vision 1080p FHD Camera with all relevant software required for office work. The sample shall be supplied before supplying the material.
- 3.91 Specification for Supply of Desktop Computer i7 - Core i7 12700, 16 GB RAM, 2TB, HDD,256 GB with 27 inch monitor Windows. (Sch. C Item No. 63).**
This item shall be Desktop Computer i7 - Core i7 12700, 16 GB RAM, 2TB, HDD,256 GB with 27 inch monitor Windows with all relevant software required for office work. Make Dell OR HP OR Equivalent OR Higher. The sample shall be supplied before supplying the material.
- 3.92 Specification for Supply of cupboard (Plain storewel) size 4' x 3'. (Sch. C Item No. 64).**
This item shall be cupboard (Plain storewel) size 4' x 3' Godrej make or Equivalent OR Higher. The sample shall be supplied before supplying the material.
- 3.93 Specification for Supply of Almira (Godrej) full size. (Sch. C Item No. 65).**
This item shall be Almira (Godrej) plane size 1980mm x 915mm x 450 mm. The sample shall be supplied before supplying the material.
- 3.94 Specification for Supply of Table Model No. T-102(Godrej). (Sch. C Item No. 66).**
This item shall be Working table Model WT 102 of Godrej or Equivalent OR Higher. IKEA make or Equivalent OR Higher. brand. The sample shall be supplied before supplying the material.
- 3.95 Specification for Supply of Revolving chair Godrej Make Model No. PCH 7001 or Equivalent OR Higher. (Sch. C Item No. 67).**
This item shall be Revolving chair Godrej Make Model No. PCH 7001 or Equivalent OR Higher. of reputed brand. The sample shall be supplied before supplying the material.
- 3.96 Specification for Supply of steel Stool Godrej make. (Sch. C Item No. 68).**
This item shall be Square Stainless-Steel Stool, Fixed with Foot Rest and Without Back rest, four legs size of Top-411x 411mm, height-522mm. make - Godrej make GODREJ INTERIO or Equivalent OR Higher. of reputed brand. The sample shall be supplied before supplying the material.
- 3.97 Specification for Deployment of manpower like unskilled labour. (Sch. C Item No. 69).**
The deployment of manpower like unskilled labour to work in emergencies or as required during cable shifting, finding the existing cable route, shifting and placing of material in depot etc. shall be as per requirement of site and as per Railway site engineer.
- 3.98 Specification for manpower like skilled labour for supervision and technical support. (Sch. C Item No. 70).**
The deployment of manpower like skilled labour for supervision and technical support in emergencies or as required during cable shifting, finding the existing cable route etc. shall be as per requirement of site and as per Railway site engineer.

3.99 Specification for Supply of Indoor Video Wall Display size 8 x 10 feet. (Sch. C Item No. 71).

This item shall be Supply of Indoor Video Wall Display size 8 x 10 feet, Brightness – Calibrated Minimum 800 Nits, IP40 comprised of SMD Display, Aspect Ratio 16:9 Maximum Pixel Pitch (mm) 1.5 mild steel frame, body with power supply and required connectors, with video controller and fixing accessories. The sample shall be supplied before supplying the material.

3.100 Specification for Supply of 4.5 kg CO2 type fire extinguisher along with all accessories. (Sch. C Item No. 72).

This item shall be Supply of 4.5 kg CO2 type fire extinguisher along with all accessories, extinguisher testing certificate has to be supplied along with. - Supply of ISI marked Carbon diOxide type (BC) fire extinguisher of 4.5 Kg capacity confirming to IS 2878: 2004 from seamless cylinder, with ISI marked control value, high pressure mtr., Long discharge hose and horn complete with initial gas charged with carrying handle and wall mounting bracket etc. as required by site Engineer.

3.101 Specification for Supply of PPTC Fuse GP 250-185UL-94 Certification (24V/4A) TPR Circuit). (Sch. C Item No. 73).

This item shall be Supply of PPTC Fuse GP 250-185UL-94 Certification (24V/4A) TPR Circuit). Make: LITTLEFUSE, FUZETEC, TYCO, BOURN, RAYCHEM etc.

3.102 Specification for Supply of in-built GNSS based cable route cable route tracer set suitable for detecting underground Armoured S&T Cables. (Sch. C Item No. 74).

This item shall be cable in-built GNSS based cable route cable route tracer with 10W, 500 mA, 85V transmitter suitable for detecting & mapping underground cables with accuracy which can up to 3-5 cm or better, with current direction up/down arrows, Remote calibration check feature. Supply shall include inbuilt RTK enabled receiver, transmitter, compatible dual Bluetooth android phone with RTK mobile application pre-installed in android device along with minimum 5 years subscription, compatible with NTRIP and RTCMv3.Xmessaging standards and holder & standard accessories. Make/Model: Radio detection RD8200SG or Stanley or Equivalent OR Higher.

3.103 Specification for Supply of Cable Fault locator suitable for underground Railway cable. (Sch. C Item No. 75).

This item shall be Supply of Cable Fault locator suitable for underground Railway cable. Make & model Stanley Sidekick Plus Model No. RI-10M2 or Equivalent OR Higher. of reputed brand. The sample shall be supplied before supplying the material.

3.104 Specification for Supply of Automatic Fusion Splicing Machine along with all accessories. (Sch. C Item No. 76).

This item shall be Supply of Automatic Fusion Splicing Machine along with all accessories Make Model No. FUJIKURA 88R12 or Higher version. Make FUJIKURA or Higher version of reputed Brand.

3.105 Specification for Supply of LASER JET PRINTER EQUIVALENT OR HIGHER. TO HP CP 1525N LASERJET COLOUR PRINTER. (Sch. C Item No. 77).

This item shall be Supply of LASER JET PRINTER EQUIVALENT OR HIGHER. TO HP CP 1525N LASERJET COLOUR PRINTER. Make and model 178nw or Higher model of reputed brand.

3.106 Specification for Supply of Logitech Wireless Presenter R400 (Black). (Sch. C Item No. 78).

This item shall be Supply of Logitech Wireless Presenter R400 (Black) or Higher model of reputed brand.

3.107 Specification of Industry Grade Server (Sch. C Item No. 79).

Supply and Installation of Industry Grade Server with IP telephony Linux operating system, **as per valid Latest Type Tech TEC Spec No.: TEC/60030:2016.** Certificate to be attached (servers in duplication i.e.1+1) in Hot redundancy (Active-Active Only) of minimum 5000 ports & expandable above 15000 ports.

3.1.1 The Gateways shall be modular in nature.

3.1.2 All licenses to be perpetual in nature.

3.1.3 All Software including Communication Software, Operating Systems etc. must be licensed and copies to be

provided on CD/DVD

3.1.4 Certificate from OEM for providing technical support for offered hardware and software items for at least 07

years is to be submitted along with offer failing this, offer will be summarily rejected.

3.1.5 All required manuals including System Manuals, Installation Manuals and Training Manuals to be provided in

Hard copies and Soft Copies on CD/DVD/Pen drive (15 no's).

- **IP Telephony System Architecture:**

The IP telephony system must be based on a pure IP technology that is a software-only solution.

The IP telephony system must support Unified Communication (UC) Server & Gateways Architecture for SIP, Digital and Analog trunks connectivity. The system must be capable of supporting Analog, Digital, IP Telephones, and SIP based video desk phones. SIP phones and SIP trunks should directly register on the Telephone server. Card based solution for SIP phone and SIP trunk registration is not preferred.

The communication servers must work in an Active-Active Redundancy mode. It should be possible to define servers in load balancing mode. All servers should work together in load balancing mode with defined user capacity. i.e., all servers should be active with call processing with predefined SIP phones / gateways register on any of the server for load distribution. If any Server fails in the Cluster adjacent server should automatically take over the load of the failed sever along with load of all associated Gateways and End points without breaking on-going calls. Redundant Server/Hot stand-by mode of working is not acceptable.

All servers must be provided in a cluster mode. If one cluster server fails, one of the other cluster servers in the network must be able to take the complete load of the calls automatically (without any manual intervention) and without dropping any existing calls (IP, TDM & PRI) or data (CDR, CTI). Management of all servers in cluster should be from same web page. All servers should have same database.

The telephony system must be able to register SIP phones/SIP video phones directly to it.

The New IP PBX system with redundancy server in active – active mode is going to be installed at 2 different locations in Geo-Redundancy. One Server will be placed at Bhusawal and other Server will be placed at any station decided by Railway Engineer. Both Servers will share load in real time and should provide active – active redundancy all the time without breaking on-going calls.

Bidder should supply 90 number of SIP trunks for connectivity to inter-connect proposed IP-PBX with existing IP-PBX systems of various makes available on Central Railway. The proposed system must have facility of load balancing and database sharing in case of either server failover, so that to monitor IP PBX system from all the mentioned location in a cluster configuration.

It is desirable to install Telephony system in VMware EXSi 6.5 or higher.

All Data (Numbers, COS, Routing, Applications) should reside in all the Servers. Database replication in all servers should be automatic and real time. Should support N+1 Redundancy Architecture as well as 1+1 redundancy Architecture and also should support Remote Survival Nodes. In case of failure of one server, the SIP Phones, SIP trunk, SIP Gateways should register with second Server automatically. System Diagnostics should be done in Server. Hot Standby for SIP Phones, trunks and Gateways i.e. SIP Phones, trunks and Gateways should register automatically to next available communication server. COTS - commercial off-the-shelf Servers should be used for telephony system. OEM made or proprietary servers are not preferred. Card based processor servers or PCM/TDM legacy systems with card-based processor systems are also strictly not preferred. Telephony system should preferably use standard, reputed make Operating System. System should support CSTA phase III Protocol. Full continuation for call signalling and media must be supported. Calls must not be disconnected and control must remain throughout the swap to an alternate server including full call control (transfer, conference actions, continuation of CDR data for the existing call).

Load Balancing of end points must be possible by the administrator. There must be no restriction on the number of endpoints being backed up in case of one server failure. UC platform servers must provide full failover and redundancy.

The tenderer must submit valid latest Type test TEC-GR (Generic Requirement) approval certificate issued by Telecommunication Engineering Centre (TEC), MOC, Govt. of India

System should be working on centralized server in duplication mode.

CDR should be centralized.

Centralized Administration must be possible. Facility to login from anywhere in the network on single IP address should be available.

System should support the following SIP RFCs:

- RFC 3261 (SIP: Session Initiation Protocol)
- RFC 3262 (Reliability of Provisional Responses in Session Initiation Protocol)
- RFC 3263 (Locating SIP Servers)
- RFC 3264 (An Offer/Answer Model with Session Description Protocol (SDP))

- RFC 3265 (Specific Event Notification)
- RFC 2327 (SDP- Session Description Protocol)
- RFC 1889 and 1890 (RTP/RTCP)
- RFC 3515 (REFER)
- RFC 2833 (DTMF over IP)

Scalability:

It should be no limit to include additional sites and users, change the software and existing configuration need not to be changed for additional users.

The system must be scalable to at least 15000 endpoints in single cluster architecture. The proof of reference document from OEM is mandatory to be submitted along with technical bid. Each server must support a minimum of 5000 endpoints.

Call Manager System must support unlimited SIP trunks within the same application with within same server.

The system must be modular, scalable and distributable.

The IP PBX system must be tested ready with IPv6 as per Govt. of India guidelines dtd. January 2021. Test certificate issued from TEC to be submitted along with a technical bid.

System Survivability:

The UC platform must consist of one or many servers where each server in the cluster provides complete 100% application functionality.

In case of a failed server, all endpoints registered with that server need to register instantly with a different server in the cluster with no interruption to on-going calls.

Media Gateways must have survival mechanisms that allow them to maintain 100% of the telephony services for their users in case of failure in the WAN/LAN links when the signalling with the call server drops.

The life cycle of the entire system being provided must be at least Ten (10) years.

The system gateway must be able to restart automatically without human intervention when the external DC power supply is resumed after complete power failure (even after the batteries are discharged).

Distributed Architecture:

The UC platform must have distributed architecture and centralized control for all the sites in the network.

The proposed solution must support Hybrid cloud solution in order to guarantee business continuity with overall survivability regardless of a failure at any single location.

The proposed solution should have provision to be installed using an image of the application

Quality of Service (QOS):

The voice and signalling frames must be marked [tagged/ labelled] in order to be recognized.

Server – Physical Attributes:

COTS – Commercial Off-the-Shelf servers to be used.

The redundant server must have separate hardware, not sharing elements like hard drives and RAM etc., to avoid a single point of failure.

The server should have AC power supply.

The system must be based on Server-Gateway Architecture with External Appliance Servers Card based processor systems / soft switch are not preferred.

The call processor must run on a standard, reputed make Operating System.

Minimum Server Specifications:

Formfactor:	1Urack
Processors:	Intel Xeon Processor E5-2600 product Family or better
Processor sockets	2 at least
Front side bus (FSB):	2 Intel Quick Path Interconnect (QPI) links: 6.4 GT/s, 7.2 GT/s, 8.0 GT/s or better
Cache:	2.5MB per core at least
Chipset:	IntelC600 or better/ later
Memory:	At least 16 GB (24 DIMM slots): DDR3
PCIe slots:	3 PCIe slots
Hard drive:	Drive bay options: Hot-plug 4 TB at least

Hard drive options:	SAS SSD or SATA
Integrated NIC should be there.	
Power Supply:	Should work on 230V AC supply.
Rack support	Ready Rails™ sliding rails with optional cable management arm for 4- post racks
Operating systems:	<ul style="list-style-type: none"> • Microsoft Windows Server R2 SP1, x64 (includes Hyper-V™ v2) OR • Microsoft Windows HPC Server OR • Microsoft Windows Small Business Server OR • Linux operating system OR Open source <p>Note Supplied Operating System must meet the requirements of UC Server and all related Software</p>
Security Software	<ul style="list-style-type: none"> • Licensed Internet Security Software with validity of 03 Years

VoIP Media Gateways:

The VoIP media gateways shall be capable of being centrally managed via the Telephony Management Application. The system should support Multiple Gateways.

- The system gateway should be able to restart automatically without human intervention when the external ac power supply is resumed after complete power failure
- The system gateways should support the following type of extensions:
 - Analog
 - Digital
 - Cordless (DECT) Extension
 - SIP/MGCP
- The system gateway should support the following type of trunks:
 - Analog: E&M (2W), E&M (4W), DC loop signalling, decadic, DTMF
 - Digital: 2Mb stream with the following signalling protocols (Digital CEPT, R2MFC)
 - Standard ISDN BRI, PRI connectivity
 - SIP and MGCP on VOIP
 - ISDN (30B+D / 23B+D / 2B+D)
 - SS7
 - ISDN QSIG (30B+D / 2B+D)
 - QSIG over IP

System Security:

Administration of the system should be using HTTPS

- It should support the Interop with leading SBC
- System should use TLS (Transport Layer protocol) to encrypt SIP, HTTP, FTP and SRTP (Secure Real-time Transport Protocol) and SRTCP to encrypt RTP and RTCP
- System Audit Logs for 30 days
- Certificate Management
- System should have auto Provisioning profiles contain pre-configured sets of features that must automatically polls and updates registered phones with the latest phone firmware and configuration files.

Mobility:

The system should have Call Back feature. If the user dials his own extension from predefined number (mobile/landline) then system should disconnect the call and then system should call the user to provide the dial tone so that user can make intercom or PSTN calls.

The system should have Call Through feature. If the user dials his own extension from predefined number then system should provide dial tone to make intercom or o/g calls.

The system should have one number (Forking, reach-me-anywhere) feature. Users should be able to receive calls on any of their phones, from almost anywhere. An incoming call rings on all or specific phones until the user answers the call. The user can transfer the call, establish a conference, and so on, whether the answering device is an internal device, an external phone, or a cellular handset. If the answering phone is an external device, the call automatically becomes an authorized mobility call.

The system should support SIP Client on smart phone for Android as well as for iOS.

SIP Endpoints:

All SIP phones must support the standard SIP protocol. No proprietary protocols are allowed to be used.

SIP phones must support the configuration of programmable buttons with functions such as Break-in, Conference call, Deflect, silent monitoring and more.

SIP phones must work in conjugation with the following applications:

1. Contact Centre (Helpdesk Phones)
2. Attendant Console
3. Managed Audio Conferencing
4. Managed Video Conferencing
5. UC clients

Automatic Call Distribution (ACD):

ACD Features are desirable.

DID

Direct Inward Dialling features should be available.

SBC (Session Border Controller) Features:

SBC (Session Border Controller) Features should be available

SBC with 10 user and 10 session licenses should be supplied.

SBC specifications as below:

- a) SBC should support for deployment in virtualized server and data centres.
- b) Should support comprehensive SBC functionality and SIP interoperability.

c) Should support high availability.

d) Specifications

e) Supported Capacity:

1. Signalling Sessions: Up to 5,000
2. Transcoding Sessions: Up to 5,000
3. SRTP-RTP Sessions: Up to 5,000
4. Max. Registered Users: up to 5,000

f) Security

j) Access Control: DoS/DDoS line rate protection, bandwidth throttling, and dynamic blacklisting

k) Encryption and Authentication: TLS, DTLS, SRTP, HTTPS, SSH, client/server SIP Dige...

System Administration:

- System administration should be web based.
- All programming of system should be done through a web-based GUI interface.
- The administrator should have Dynamic Profiles.
- The system should allow for complete multi-level administration. The administrator must be able to define at least five (5) different administration level profiles that can be applied to allow subsets of users to access and manage particular pages in the systems Web Portal

System Features:

- ANI (Caller ID) Restriction
- ARS (Automatic Route Selection)
- Auto Attendant
- Call Forward at Night/Holiday
- Call Forward Destinations
- Call Forward for Undefined Stations

- Call Forward on Busy
- Call Forward on DND (Do Not Disturb)
- Call Forward on Logout
- Call Forward on No Answer
- Caller id-based routing for individual extension
- Deflect (Divert) Call
- Digit Train Conversion
- Direct-In-Dial
- Direct-In-Line (DIL)
- Hot Line
- Interactive Voice Response (IVR)
- Least Cost Routing
- Look Ahead Routing (LAR)
- Numbering Plan
- Personal Routing Rules based on caller id and DNIS
- Predetermined Night Answer
- Toll Restriction – Digit Analysis
- Toll Restriction – Trunk Groups
- Trunk to Trunk Connection
- Trunk Transfer Restriction
- Classes of Service
- Night Answer Central Bell / UNA Pickup
- Page Queue
- Recall
- Recall / Incomplete Destination
- Second Ring back Tone
- Speed Dial Public (System) and Private
- Virtual Numbers
- Music On Hold
- each User should support up to 6 devices i.e. SIP phone / analogue phone / soft phone / mobile client etc.
- Voice Page
- Silent Monitor
- Zone Page
- Barge In
- Wake up

Extension Features:

- Answer Call Waiting by Transfer
- Auto Set Relocate
- Auto-Answer
- Automatic Disconnect
- Automatic Number Identification (ANI) Display
- Browse Personal Directory
- Busy Lamp Field
- Call Forward All
- Call Hold
- Call Log

- Call Parking and Call Pickup

- Call Waiting
- Caller ID Control
- Caller-ID Screening
- Caller id-based routing for individual extension
- Calling Number and Name
- Camp-on Idle
- Configurable DSS Buttons
- Direct Dial without Off Hook (Hands Free)
- Directed Call Pickup
- Display Automatic Number Identification (ANI)
- Display Dialed Number and Name
- Display Dynamic Call Divert Information
- Display Select Hold Display
- Display Time/Date Function
- Do Not Disturb (DND)
- DSS/BLF
- Elapsed Time Display
- Group Call Pickup
- Hands Free
- Hands-Free Announce and Reply (Idle State)
- Last Number Redial
- Login and Logout
- Message Waiting Indication
- Multi Appearance (Call Waiting)
- Multiple Line Appearance
- On-Hook Dialling
- Placing Multiple Calls on Hold
- Privacy – ANI Restriction
- Reminder/wakeup Call
- Restrictions – Station
- System Non-Exclusive Hold
- Transfer with Consultation
- Transfer without Consultation (Blind)
- Voice Page
- Emergency Pre-emption
- Listen to Paging while in a call (Busy Condition)
- ULA - User Line Appearance (ULA)

Emergency Conference Communication:

The Emergency conference communication should be supplied and installed as per below specification. Emergency conference resource should be provided from the same telephony system OEM and have the facility to automatic dial out to connect up to 120 participants in a single conference. System should also have 120 party managed meet me conference. It should be possible to further divide 120 party conference bridge into any combination like 10 X 10 party, 5 x 20 party etc. if required. The meet me conference should be secured means to enter to the conference bridge; the user should enter the password.

The UC call manager system must provide total capacity to manage conference of 120 party with single conference. The emergency communication management should be using Web Browser/HTML5 based GUI based interface from Windows PC and Touchscreen monitor. Windows 10 PC with touch screen monitor should be supplied along with the solution.

The Group Operator should have following features as below:

The Group Operator must be able to add / remove members

The Group Operator must be able to add other conference members

The Group Operator must be able to mute / unmute (User, None, All)

The Group Operator must be able to lock / unlock the conference

The Group Operator must be able to close the conference

It must be possible to dial out a pre-defined group (or multi-groups) of participants/numbers by simply pressing the pre-assigned key.

Each pre-set conference must have its own unique dial number such that when this group number is dialed; all the number stations will ring simultaneously.

Any combination of stations and external numbers must be able to be defined as members of the Group Call.

Participants may join a conference in the audible or in the mute mode, if in mute mode, the right to speak must be selectively offered to attendees per their request by a special signal sent to the Group Operator by the attendees.

Attendees must be able to be added or excluded at any time by the Group Operator

The conference must be terminated when the Group Operator leaves (auto terminate if all members left are muted).

The Group Operator must be able to barge into an existing user call based on pre-emption predefined rules.

The same Group operator should also function as operator console.

Add Department attribute to user – In the Phone Book, add a department name for the user. The Dispatcher can do a search based on the Department

Join Incoming Calls to an open Conference – When a call arrives to the Dispatcher, he can add that call to an open conference.

Change Meet me Access Code – The password of a conference can be changed by the Dispatcher to block or allow callers to join a conference

Help desk Specification:

Help Desk features are desirable.

Integrated Voice Mail Specification:

8 port voice mail system should be supplied along with the system. The user should be able to review voice message from his phone. Voice mail should support message wait indication

The Voice mail system solution should be built-in solution from same OEM of UC Call manager application.

Third party or hardware-based Voice mail should not be accepted. Voice mail solution should be provided from day1.

User should be able to listen to, delete, save, reply to, and forward through the phone

Should support below mentioned Unified Messaging Features:

- Fax-to-Mail
- Messages to email
- Multilingual Support
- MWI – Message Waiting Indication
- Voicemail Activation via Soft Keys
- Users should be able to check and handle voice messages from all devices, including the email client, Webmail client and telephone.
- Voicemail should support the following:
Microsoft Exchange and higher

3.108 Specification for Controller Console Equipment. (Sch. C Item No. 80).

The Controller Console Equipment with screen recording on server Application loaded to make Calls to stations shall be as per RDSO specification No. RDSO SPN/TC/99/2023 Rev.3. Controller Console Equipment shall be conforming to the Cl. No. 6 of the RDSO specification. This equipment should also include all software required so that same equipment can be used as Test room Console Equipment as per clause No. 7.

The controller Console Equipment shall be of Industrial grade. The controller Console Equipment shall be configurable as Section Controller, Emergency Controller, Test Room Controller Console and other controller console based on User's requirement. The Section Control Equipment consist of Touch Screen LCD with console CPU, Speaker, Power Amplifier, Microphone, Handset, Mouse, Keyboard/Keypad for Key Dialing, soft Keys and Hot Keys for selective dialing. All these components shall be of Industrial Grade. These components can be integrated either in one customized unit or may be separate attachable components as per user requirement.

Controller Console Equipment shall have the following minimum specification:

1. The Controllers console shall have an industrial grade touch screen panel having good touch sensitivity.
2. Minimum Touch Screen panel specification:
3. It shall have TFT liquid crystal display, minimum display size 15.6 inch diagonal and wide screen.
4. Screen resolution shall be 1920 x 1080.
5. Brightness shall be 400 cd/m²
6. Contrast ratio must be 500:1 or better.
7. Viewing Angle - 80 degree in all direction.
8. Touch screen type shall be capacitive.
9. It shall have dual Ethernet 10/100/1000 mbps ports.
10. The console shall have minimum storage of 128 GB SSD (Solid State Disk).
11. It shall have industrial grade components, Ethernet redundancy, redundant internal audio and controller interface.

General and Functional Requirements:

1. The console shall have software emulated programmable buttons and custom functional fields. The size of buttons and fields shall be flexible. The functions of the button shall be programmable.
- (ii) It shall be possible to send notifications in the form of messages. These messages can be prewritten messages required to be sent to predefined group. These messages could be selected and sent as email to predefined group through the IP based event notification gateway. The protocol for sending email to gateway shall be SMTP.
- (iii) It shall have programmable buttons on touch screen for direct calling way side stations or any other pre-assigned subscriber. These buttons may be organized in layered frames (minimum 2 layers for providing total minimum 100 buttons)
- (iv) The soft buttons will provide basic subscriber information like subscriber's name and present state of subscriber. The possible states are free, busy, outgoing call in progress and ring back tone, reachable, not reachable where such information is available for subscriber.
- (v) Soft buttons shall be provided for direct dialling of pre-defined groups of subscribers and calling all stations of section simultaneously.
- (vi) It shall have buttons for various subscriber services like directory services, notification service, key board, opening of various windows.
- (vii) The display also shows a status row indicating date, time, user identity and availability of main network.
- (viii) There shall be a conference window to show all the current participants of the conference.
- (ix) There shall be a dialling window showing dialling pad.
- (x) It shall be possible to attach external keyboard/keypad and mouse to be used for editing and for using as dial pad.
- (xi) The touch screen and the keyboard for controller's console shall be spill proof.
- (xii) The console shall have phone type handset with press to talk (PTT) button also for communication under noisy conditions or where privacy on controller side is

needed. Once the handset is off-hook, audio shall automatically switch to handset. Once the handset is on-hook audio shall automatically switched to Loudspeaker.

- (xiii) The console shall have an embedded gooseneck Microphone or interface for an external gooseneck Microphone.
- (xiv) It shall provide feature of recording ongoing conversation.
- (xv) It shall show current time in 24 hrs. format.
- (xvi) It shall have features of Voice activity detection, silence suppression, comfort-noise generation, Echo cancellation, error concealment, adaptive Jitter Compensation as applicable. It shall be possible to disable VAD and/ or silence suppression on selected end points.
- (xvii) It shall show call history (received calls and outgoing calls).
- (xviii) It shall provide feature of phone book (directory) search.
- (xix) Facility shall be there for controller to communicate with an IP Control Telephone as per numbering scheme define in Cl. No. 4.19. This is to achieve control communication in case of failure of Controller console.
- (xx) Numbering scheme define in Cl. No. 4.19 shall also be followed for dialling through external keyboard as per Cl. No. 6.2.10.

(b) Microphone specifications:

- (i) The microphone shall be matched with the console to give the acceptable performance when speaking from a distance of minimum 50cm.
- (ii) Protection against RF disturbance from mobile phones.
- (iii) Cardioid polar patterns.
- (iv) Provided with status indicator with LED.
- (v) It shall be kept on table and shall remain stable during use.
- (vi) The microphone shall be electret condenser microphone with maximum input 120dB sound pressure level (SPL).
- (vii) It shall have logarithmic audio amplifier with programmable gain, ambient noise suppression (noise gating) and compression ratio.

(c) Speaker Specification:

- (i) The console shall have an embedded amplifier and loudspeaker. Alternatively, loudspeaker (with left and right speaker of 10 watt each or better) with 150 Hz to 6800 Hz minimum band shall be supplied. The loudspeaker amplifier shall have with programmable gain, separately adjustable for left and right speakers.
- (ii) Switch to loudspeaker communication is controlled either via SW controls on the touch screen or should be automatic on detecting disconnection of headset. The system shall be connected to loudspeaker by default.
- (iii) Loudspeaker electronics shall be completely shielded for protection against electromagnetic interference.
- (iv) Optional Central loudspeaker of amplifier shall be capable to boost lower frequencies
- (v) For embedded speaker, the Console shall have LED status indicator for current speaker volume level.

D) Test Room Console/Equipment

1. Test room console shall be able to monitor, communicate & Test all the controller's console, way station equipment in the division for testing and maintenance purpose of VoIP TCCS system. Test room console shall be able to view all section controllers and associated ASM equipment to maintain and support.
2. The specification of Test room Equipment/console shall be same as Controller Console Equipment.
3. The test room equipment shall have feature of audio-visual alarm to attract immediate attention of the on-duty staff in case of any fault/link failure etc. The alarm should be repeated periodically at suitable intervals till fault is rectified.

3.109 Specification of 500 Pair MDF with IPM (Sch. C Item No. 81).

- 1.0 500 pair MDF and 500 Pair IDF should be supplied
- 1.1 IDF should be fulfilled with IPM module
- 1.2 The MDF/IDF shall be of Krone only, complete with all its accessories for Interconnecting and jumpering the various terminations to and from

EPABX.

- 1.3 The MDF/IDF shall be so designed that it should be easy to work with.

3.110 Specification for Supply of Microprocessor based intelligent, addressable, Fire Alarm Control Panel with LCD display complying to RDSO/SPN/217/2025 Ver 3.1 or latest. (Sch. C Item No. 82).

This item shall be Supply of Microprocessor based intelligent, addressable, Fire Alarm Control Panel with LCD display complying to RDSO/SPN/217/2025 Ver 3.1 or latest Modular, 1 loop (minimum 125 detector/devices per loop-expandable to 2 loops) with 320 character with soft keys for displaying alarm, events and operating functions, Day/Night operation function, Remote maintenance service feature etc. The panel should be multi-Protocol i.e. able to support at least 2 different makes of addressable detectors. The panel should have minimum two relay outputs & 1 Monitored Sounder Output. It should have provision to be connected to repeater panel in future. The panel shall be capable to operate on 230 volts AC power supply, automatic battery charger, 24 volts, sealed lead acid maintenance free batteries sufficient for 24 hours normal working and then be capable of operating the system for 30 minutes during emergency condition. Panel should be Vds certified.

3.111 Specification for Supply of Analogue Addressable Multisensor Detector complying to RDSO/SPN/217/2025 Ver 3.1 or latest As per latest VDS approved/listed. (Sch. C Item No. 83).

This item shall be Supply of Analogue Addressable Multisensor Detector complying to RDSO/SPN/217/2025 Ver 3.1 or latest As per latest VDS approved/listed as required by site Engineer. Sample of item shall be approved by Rly Site In-charge before supply.

3.112 Specification for Supply of Manual call points, complying to RDSO/SPN/217/2025 Ver 3.1 or latest. As per latest VDS approved/listed. (Sch. C Item No. 84).

This item shall be Supply of Manual call points, complying to RDSO/SPN/217/2025 Ver 3.1 or latest. As per latest VDS approved/listed. Sample of item shall be approved by Rly Site In-charge before supply.

3.113 Specification for Supply of Resettable, Analogue Type Linear Heat Sensing (LHS) Cable complying to RDSO/SPN/217/2025 Ver 3.1 or latest. As per latest UL or FM or VDS or LPCB approved/listed. (Sch. C Item No. 85).

This item shall be Supply of Resettable, Analogue Type Linear Heat Sensing (LHS) Cable complying to RDSO/SPN/217/2025 Ver 3.1 or latest. As per latest UL or FM or VDS or LPCB approved/listed. Sample of item shall be approved by Rly Site In-charge before supply.

3.114 Specification for Supply of (LHS) Interface Module with all accessories for single stretch complying to RDSO/SPN/217/2025 Ver 3.1 or latest. As per latest UL or FM or VDS or LPCB approved/listed. (Sch. C Item No. 86).

This item shall be Supply of (LHS) Interface Module with all accessories for single stretch complying to RDSO/SPN/217/2025 Ver 3.1 or latest. As per latest UL or FM or VDS or LPCB approved/listed. Sample of item shall be approved by Rly Site In-charge before supply.

3.115 Specification for Supply of Aspiration (Air Sampling Type) Detection Unit complying to RDSO/SPN/217/2019 Ver 3 or latest. As per latest UL or FM or VDS or LPCB approved/listed. (Sch. C Item No. 87).

This item shall be Supply of Aspiration (Air Sampling Type) Detection Unit complying to RDSO/SPN/217/2019 Ver 3 or latest. As per latest UL or FM or VDS or LPCB approved/listed. Sample of item shall be approved by Rly Site In-charge before supply.

3.116 Specification for Supply of CPVC pipe for Aspiration Detection system complying to RDSO/SPN/217/2025 Ver 3.1 or latest shall be approved/listed by UL or FM or VDS or LPCB or tested with appropriate equivalent standard. (Sch. C Item No. 88).

This item shall be Supply of CPVC pipe for Aspiration Detection system complying to RDSO/SPN/217/2025 Ver 3.1 or latest shall be approved/listed by UL or FM or VDS or LPCB or tested with appropriate equivalent standard. Sample of item shall be approved by Rly Site In-charge before supply.

3.117 Specification for Supply of Analogue Addressable loop powered Monitor Module with inbuilt isolator complying to RDSO/SPN/217/2025 Ver 3.1 or latest. (Sch. C Item No. 89).

This item shall be Supply of Analogue Addressable loop powered Monitor Module with inbuilt isolator complying to RDSO/SPN/217/2025 Ver 3.1 or latest. Sample of item shall be approved by Rly Site In-charge before supply.

3.118 Specification for Supply of Analogue Addressable loop powered Control Module complying to RDSO/SPN/217/2025 Ver 3.1 or latest. (Sch. C Item No. 90).

This item shall be Supply of Analogue Addressable loop powered Control Module complying to RDSO/SPN/217/2025 Ver 3.1 or latest. Sample of item shall be approved by Rly Site In-charge before supply.

3.119 Specification for Supply of Hooter cum Strobe complying to RDSO/SPN/217/2025 Ver 3.1 or latest. (Sch. C Item No. 91).

This item shall be Supply of Hooter cum Strobe complying to RDSO/SPN/217/2025 Ver 3.1 or latest. Sample of item shall be approved by Rly Site In-charge before supply.

3.120 Specification for Supply of 2C 1.5sq mm twisted shielded armoured copper cable (Per Meter) with accessories complying to RDSO/SPN/217/2025 Ver 3.1 or latest. (Sch. C Item No. 92).

This item shall be Supply of 2C 1.5sq mm twisted shielded armoured copper cable (Per Meter) with accessories complying to RDSO/SPN/217/2025 Ver 3.1 or latest. Sample of item shall be approved by Rly Site In-charge before supply.

3.121 Specification for Supply of Isolator Device to isolate the circuit in case of short circuit, complying to RDSO/SPN/217/2025 Ver 3.1 or latest. (Sch. C Item No. 93).

This item shall be Supply of Isolator Device to isolate the circuit in case of short circuit, complying to RDSO/SPN/217/2025 Ver 3.1 or latest. Sample of item shall be approved by Rly Site In-charge before supply.

3.122 Specification for 6 core OFC Cable Arial (Armoured). (Sch. C Item No. 94).

This item shall have following specifications: 6 core SM 9 /125 m double scratch, CSTA, uni tube, outdoor Optical Fibre cable (armoured) as per ITU-T. Recommendation G.652 Approved ISO 11801. Make -D-Link OR Molex OR MG OR D-Link or Equivalent OR Higher. Sample of item shall be approved by Rly Site In-charge before supply.

3.123 Specification for Gateway for Emergency communication at HQ and at stations. (Sch. C Item No. 95).

The Gateway for Emergency communication at HQ and at stations as per requirements shall be as per RDSO specification No. RDSO/SPN/TC/99/2023 Rev.3 or latest. Control IP telephones shall be conforming to the Cl. No. 9 & 10 of the RDSO specification. Sample of item shall be approved by Rly Site In-charge before supply.

16. This gateway shall be provided at way side stations for the purpose of providing interface to emergency communication circuit working on 0.9 mm/1.4 mm conductor diameter underground twisted pair quad cable.
17. This gateway shall have minimum 4 number 4 wire ports.
18. Since there is no off-hook/on-hook condition on the emergency phone, the ports may be required to be active all the time. However, IPs shall be generated only when there is actual voice communication taking place.
19. The gateway shall be compatible with 4/6 quad cable. The transmission characteristic of 4/6 quad cable shall be as defined in RDSO specification No. IRS: TC 30-05 with latest revision and amendments.
20. The gateway shall be compatible with Emergency phone which shall be plugged at site. The emergency telephone shall be as per RDSO specification IRS: TC 78-2000 & IRS: TC 75-99 with latest revision and amendments.
21. The gateway shall be able to work satisfactorily when the emergency telephone is plugged at any distance up to at least 10 km. The transmission parameters of the port of gateway connected to quad cable shall be specified by the vendor.
22. Communication protocol: SIP
23. It shall have features of Voice activity detection, silence suppression, comfort-noise generation, Echo cancellation, error concealment, adaptive Jitter Compensation as applicable. It shall be possible to disable VAD and/ or silence suppression on selected end points.
24. Network protocols: TCP IP, UDP, RTP, RTCP, HTTP, ARP, RARP, DHCP, NTP, ICMP
25. Power supply: It shall work on nominal -48 V DC supply.

- 26. Network Interface 10/100/1000 Mbps Ethernet port auto sensing.
- 27. Codecs G.711 A-Law and either G.729a or iLBC.

Interoperability:

- 28. The subscriber of one TCCS shall be able to make normal telephony call to subscriber of other TCCS. The system shall act as a tandem switch also to route the calls from the Railway exchange received through FXO port or SIP Trunk to TCCS systems of other sections and vice versa.
- 29. The PC provided for a section as Desktop client PC/Portable Maintenance Terminal for Communication and voice record server can be used for other section's TCCS also.
- 30. The installed system (system components/software/NMS etc.) along with common server/server cluster as defined in Cl. No. 2.1.1 shall be interoperable to cater the future expansion.

Sample of item shall be approved by Rly Site In-charge before supply.

3.124 Specification for Supply of Managed SDH (STM-1 Add/Drop MUX and Upgradeable to STM-4) fully wired for 2 X 63 MB and equipped for 21E1s and with STM1 (L1.1) aggregate interface (Sch. C Item No. 96).

This item shall be Supply of Managed SDH (STM-1 Add/Drop MUX and Upgradeable to STM-4) fully wired for 2 X 63 MB and equipped for 21E1s and with STM1 (L1.1) aggregate interface. Including power supply, order wire, Ethernet card, sub rack, inbuilt DDF, Installation material and all Other accessories, manuals etc. as per TEC. Specification GR SDH 04/02, March 02 or with latest Amendment. The contractor will supply all other accessories as mentioned in the above said TEC Specifications and system will have provision of different redundancy cards as per the TEC Specifications Note: It shall be possible to increase capacity from 21E1 to 63 E1s by adding / inserting tributary cards. This includes connecting all pig tails, optical patch cords etc. to the SDH equipment. This also includes Connecting the SDH equipment with all cards to the 48V Bus including supply of wires and connectors. Termination of all E1s on DDF taking PVC cable over runway or a wall. Make: -TEJAS or Equivalent OR Higher. Compatible with existing Tejas TJ1400 over Bhusawal Division. Make/Brand: TEJAS NETWORKS LIMITED/GURUGRAM or similar.

Sample of item shall be approved by Rly Site In-charge before supply.

3.125 Specification for Supply of ABS E1/BER Datacom Tester- AT.2048, For Telecommunication (Sch. C Item No. 97).

This item shall be Supply of **ABS E1/BER Datacom Tester- AT.2048, For Telecommunication** with 3 years warranty. Make Albedo Telecom S.L. Model AT2048 E1 BER Datacom Tester or Equivalent OR Higher. of reputed firm.

It shall have following features/functions

- 1) Dual Port E1/T1 Generation and Analysis
- 2) 2 x port BNC (Unbalanced 75 ohm)
- 3) 2 x port RJ45 (Balanced 120 ohm)
- 4) Datacom Testing: V.11, V.24, V.35, V.36, EIA530, EIA530A
- 5) Jitter / Wander Generation and Analysis (with ITU T masks)
- 6) Pulse Mask Analysis
- 7) Monitor and Pass Through modes
- 8) Error insertion and Event logger (Histogram)
- 9) 1x USB & 1x RJ45Ports for data transfer and VNC Remote control
- 10) Report Formats: pdf/txt/csv/png

Sample of item shall be approved by Rly Site In-charge before supply.

3.126 Specification of Supply of optical power meter with Visual Fault locator OPM-50dBm FLV>10 Mv Make PDR or Equivalent. (Sch. C Item No. 98).

This item shall be Supply of optical power meter with Visual Fault locator OPM-50dBm FLV>10 Mv. Make: PDR or Equivalent. (Warranty Period: Up to 30 months from the date of supply).

Sample of item shall be approved by Rly Site In-charge before supply.

3.127 Specification for Supply of PVC flexible Pipe (Sch. C Item No. 99).

This item shall be PVC Flexible Pipe having diameter of 25 mm, with ISI Marks. Make Polycab OR Finolex OR ShriRam OR Powerfit OR Equivalent OR Higher.

Sample of item shall be approved by Rly Site In-charge before supply.

3.128 Specification of PVC Casing/Capping with fixing accessories size 25X38X1 mm (Sch. C Item No. 100).

The item shall be of size 25 mm X 38 mm X 1 mm

This item shall be conforming to IS 14927 Precision cat.No.PT 2538 and shall be of make Precision OR Presto Plast OR Presto Teak OR Poly Extrusions OR Orient OR equivalent of reputed brands.

IN CASE OF ANY CONFUSION REGARDING THE SPECIFICATIONS, DRAWING AND INSTRUCTIONS OR BETWEEN ANY TWO CLAUSES OF THE TENDER DOCUMENT THE DECISION OF ENGINEER IN CHARGE SHALL BE FINAL.

END OF DOCUMENT

Chapter IV

4.0 The work includes-

The work involves installation, fixing, wiring, configuration, testing, and commissioning of various telecom equipment for provision of communication facilities, provision of UTS/PRS, provision of Railnet and utility shifting in connection with Kumbh Mela 2027 at Devlali, Nashik Road, Odha, Kherwadi, and Kasbe Sukene stations.

The detailed scope includes the following:

1. **Telecom Infrastructure Works:**
 - Trenching for cable laying and associated civil works.
 - Laying, shifting, and protection of S&T cables including OFC and underground telecom cables.
 - Termination, jointing/splicing, testing, and commissioning of various S&T cables.
2. **Provision of Communication Facilities:**
 - Installation and commissioning of telecom equipment for operational communication and for RPF post.
 - Provision of reliable communication systems to support Kumbh Mela operations.
3. **UTS/PRS & Railnet Connectivity:**
 - Provision, installation, testing, and commissioning of Railnet & UTS/PRS systems.
 - Establishment of Railnet connectivity at all nominated stations.
4. **Cable Laying & Associated Works:**
 - Laying of telecom cables including PIJF cables, switchboard cables, 6-fiber OFC, CAT-6 cables, and power cables.
 - Installation of PVC pipes/ducts for cable protection.
 - Proper dressing, routing, and termination of all cables.
5. **Equipment Installation:**
 - Installation of UPS systems.
 - Installation and fixing of 6U, 9U and 42U racks.
 - Mounting and integration of telecom equipment within racks.
6. **Networking Equipment:**
 - Installation, configuration, testing, and commissioning of routers and switches for UTS/PRS and Railnet connectivity.
7. **Cable Shifting Works:**
 - Shifting/diversion of existing telecom and OFC cables as required during execution to ensure safety and continuity of train operations.

All the constituents of the subject work unless otherwise mentioned shall be conforming to various clauses of the aforementioned specifications/ drawings and shall fully comply with the scope of work described in clause 2.2 in chapter 2 of Special Condition of Contract (SCC) of the tender document.

All of the execution works shall be done as per extant practices on C. Railway, site conditions and instructions of the site in-charge nominated by Railways. The Contractor shall not execute the work that may interfere with train traffic until adequate protection has been arranged as per the instructions of the site in charge. Contractor will be himself responsible for the safety of his personnel during execution of work. Railway will not be responsible for making payment

for any type of compensation. The Contractor shall make his own arrangement for accommodation for his staff during execution, testing and commissioning period. Water for drinking purposes if available at the station will be given. However, Railways take no guarantee for this facility. Power supply will be given for installation work including battery charging, wherever available. Non-availability of Power will not be a reason for the slow progress of work. If power is not available the contractor shall make his own arrangement for portable Genset /electrical power.

All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

Note: All of the execution work shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways

Any other items which are not included in the schedule but required for smooth functioning of system to be supplied and installed by the contractor at no any additional cost.

- 4.1 Specification for Fixing, Installation and commissioning of all types of speakers in open area and on structures inside covered area and wiring of the same for commissioning of PA system with all materials required as per site condition (Sch. A Item No. 04).**

All types of speakers shall be fixed on metallic posts / walls outside the covered area i.e. in open area of platforms, circulating area etc. using the proper hanging arrangement as per the instructions of the Railway site In-charge.

Any other items which are not included in the schedule but required for installation to be supplied and installed by the contractor at no any additional cost i.e., at his own cost.

- 4.2 Specification for Fixing / Laying of 2 Core Shielded Copper Cable through PVC conduit/rigid pipe (Sch. A Item No. 08).**

The 2 core shielded wire shall be used to provide the connectivity between Audio Amplifier and the speakers. Fixing / laying of 2 Core shielded wire includes fixing of PVC pipe (of thickness 1 mm) on the walls, platform structures, FOB etc. using all fixtures. After fixing the PVC pipes, the 2 Core shielded wire shall be laid through the already installed PVC pipes.

All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

- 4.3 Specification for Installation, Testing and Commissioning of Handheld Wireless Mics system, Make Senheiser, Shure or Equivalent (Sch. A Item No. 18).**

Installation, Testing and Commissioning of PA Microphone dynamic is to be carried out as per instruction of Railway Engineer at site.

- 4.4 Installation of 19 inches 9U/6U rack wall mountable. (Sch. B Item No. 02).**

The installation of the 19 inches 9U rack wall mountable rack must be carried out following the instructions provided by the Railway site engineer.

The contractor is responsible for providing all necessary materials and executing the work needed for the commissioning of the system. This includes all tasks and materials not explicitly mentioned but required for the proper installation and functioning of the system. The contractor must ensure that the wiring of the entire system is neat and properly laced. This involves organizing and securing wires to maintain a clean and efficient setup.

All work must be executed according to the site engineer's instructions and adhere to any specific guidelines or standards they provided. The work shall be carried out as per the Indian Railway Telecom Manual 2021.

- 4.5 Specification for Installation of 06 KVA Uninterrupted Power Supply (UPS) (Sch. B Item No. 10).**

All the material required for Electrical wiring from Mains Board to UPS and UPS to all system shall be of Copper-wire for its superior conductivity and reliability and wiring shall be done properly using PVC casking-capping /Conduit Pipe / D-Channel and with fitting material/accessories etc protect and organize the wiring.

All execution work and material required not included in above but necessary for commissioning neatly and properly of wiring of whole system shall be carried out and shall be supplied by the contractor at his own cost.

All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

Note: All of the execution work shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways.

- 4.6 Specification for Installation and commissioning of 12 Port LIU (Sch. B Item No. 13).**

The 12 port LIU shall be used for terminations of optical fibers into the splice trays supplied with it.

The LIU shall be installed inside the 19 inch rack using all required fixing/ installation material like nuts, bolts, screws and cable ties etc. as per requirement at an contractors own cost.

The splice trays shall be placed and secured into the LIU after splicing.
The SC terminations shall be fixed and secured after splicing of the pigtails into the LIU.
It shall be ensured that the movement of the trays is easy and free of any obstructions.
All the work shall be carried out as per instruction of Railway Engineer at site.

4.7 Specification for Splicing/Dropping/Termination of each fibre/pigtail in LIU/IO BOX (Sch. B Item No. 14).

The optical fibre cables shall be entered into the rack through cable entry and using the cable guides.
The loosened ends of the fibres and pigtails shall be properly prepared for termination in to the already fixed LIU.
Each of the fibre shall be spliced with a pigtail by the method of fusion splicing using a Fusion Splicing Machine of standard reputed make.
The splicing shall be done carefully by a skilful person.
The splices shall be carefully placed and well secured in the splice trays of the LIU.
Each fiber / pigtail shall be properly marked with necessary ferrules/tags.
The extra length of the fibers / pigtails shall be coiled and placed and secured with cable ties.
The optical connectors of the pigtails shall be placed into the patch panel as per the numbering of fibers.
All of the terminated fibers shall be tested with OTDR and test report (Hard copy and Soft copy) shall be submitted to the Railways site In-charge for records.
All the work shall be carried out as per instruction of Railway Engineer at site.

4.8 Specification for Excavation of cable trench as per cable route plan shall be 1000 mm deep and 300 mm wide alongside the track in normal soil/strata. (Sch. B Item No. 15).

- A. Excavation shall be done in all type of **normal soil/strata**. The contractor shall depute proper and competent supervisor for trenching and cable laying work.
- B. Before starting the trenching works foot by foot survey shall be done along-with the Railway's representative.
- C. The cable route shall be jointly finalized by the contractor's and Railway's representatives.
- D. The proposed cable route plan shall be submitted to the Railways and it shall be got approved (also by the engineering and electrical branches).
- E. In addition to the main cable plan, a track crossing plan shall also be got approved before starting the work.
- F. The cable shall be laid at the Railway's boundary (one meter inside the outermost boundary).
- G. While trenching it shall be kept in mind the depth of the trench shall be 1000 mm deep and 300 mm wide until and otherwise specified by the engineer in charge. Whenever the dimensions of cable trenches as mentioned in the tender schedule are not easily achievable due to terrain conditions, then payment will be made on a pro-rata basis, for the dimensions achieved. The specific approval of the Divisional Signal and Telecom. Engineer will be required for such dispensation.
- H. While trenching the contractor shall clear the temporary obstructions like trees, bushes, roots of trees, if any, some foundation if any. If it is not feasible to clear the route the route shall be diverted accordingly with the prior permission of the engineer in-charge.
- I. All excavated earth shall be stacked by the contractor away from the track and not on ballast or shoulders.
- J. In case digging is to be done in between tracks the excavated earth shall be carried manually beyond the adjacent track/tracks and stacked completely outside. In case the trench gets filled up with water from the surrounding area due to rain etc, the Contractor shall have to make his own arrangement to pump it out without any extra charges payable for the same.
- K. If during the trenching, any cable markers, obstruction such as pipes or cables or any bricks or warning covers which appear to be deliberately placed in the location is noticed, the digging should be stopped immediately and the Railway Supervisor should be called. Further excavation will be done in his presence very carefully with the help of wire claws and digging can be further resumed only with the permission of the Engineer/Supervisor-in-charge.
- L. Where the cable route is on uneven ground, reasonably long section of consistent grounding shall be dug, rather than following every undulation of the ground.
- M. Before starting the trenching in the asphalted area, the contractor shall get prior approval of competent authority.
- N. During the trenching and cabling work in the asphalted areas the contractor shall cordon off the area with proper means of barricading and warning board for the user of that area.
- O. After the cabling or the laying of suitable pipes or ducts the asphalted area shall be restored back to its earlier state of surface by proper means.
- P. While restoring back, refilling back the contractor shall take care that the level of this area must match with the nearby areas.
- Q. Before the track crossing it shall be ensured that a commencement notice shall be given to P-way supervisor.
- R. During trenching the muck in the form of soil or ballast shall be filled in gunny bags and kept away from the track area.
- S. After the track crossing is done and the trench is refilled, the leftover muck shall be taken far from the track area.
- T. No muck in any form like soil shall be left in the track areas.

- U. The contractor shall keep one additional man to look for the trains while the trenching and cabling work is being done in track areas. The duties of this person shall be to look for the trains and warn the labours working in the track areas. Railway shall in any case not be responsible for any mis-happening on the track areas.
- V. The contractor shall ensure that all safety features have been arranged for its labour.
- W. The contractor shall also apply for and get issued the ID card for its labour supervisor and associated labour.
- X. Railway shall not be responsible for the staying facility of the labour during the work.
- Y. In case depth of trench is not achievable due to site conditions, proportionate payment will be made as per procedure. The depth of the trench may be measured by a rule made of pipes as per RDSO/TCDO/COP-11(a) When the surface of the ground where the trench is dug is slanting or uneven, the depth is measured with respect to lower edge.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.9 Specification for Excavation of cable trench as per cable route plan shall be 1200 mm deep and 300 mm wide alongside the track in hard soil. (Sch. B Item No. 16).

- a. Excavation shall be done in all type of **hard soil/murum**. The contractor shall depute proper and competent supervisor for trenching and cable laying work.
- b. Before starting the trenching works foot by foot survey shall be done along-with the Railway's representative.
- c. The cable route shall be jointly finalized by the contractor's and Railway's representatives.
- d. The proposed cable route plan shall be submitted to the Railways and it shall be got approved (also by the engineering and electrical branches).
- e. In addition to the main cable plan, a track crossing plan shall also be got approved before starting the work.
- f. The cable shall be laid at the Railway's boundary (one meter inside the outermost boundary).
- g. While trenching it shall be kept in mind the depth of the trench shall be 1200 mm deep and 300 mm wide until and otherwise specified by the engineer in charge. Whenever the dimensions of cable trenches as mentioned in the tender schedule are not easily achievable due to terrain conditions, then payment will be made on a pro-rata basis, for the dimensions achieved. The specific approval of the Divisional Signal and Telecom. Engineer will be required for such dispensation.
- h. While trenching the contractor shall clear the temporary obstructions like trees, bushes, roots of trees, if any, some foundation if any. If it is not feasible to clear the route the route shall be diverted accordingly with the prior permission of the engineer in-charge.
- i. All excavated earth shall be stacked by the contractor away from the track and not on ballast or shoulders.
- j. In case digging is to be done in between tracks the excavated earth shall be carried manually beyond the adjacent track/tracks and stacked completely outside. In case the trench gets filled up with water from the surrounding area due to rain etc, the Contractor shall have to make his own arrangement to pump it out without any extra charges payable for the same.
- k. If during the trenching, any cable markers, obstruction such as pipes or cables or any bricks or warning covers which appear to be deliberately placed in the location is noticed, the digging should be stopped immediately and the Railway Supervisor should be called. Further excavation will be done in his presence very carefully with the help of wire claws and digging can be further resumed only with the permission of the Engineer/Supervisor-in-charge.
- l. Where the cable route is on uneven ground, reasonably long section of consistent grounding shall be dug, rather than following every undulation of the ground.
- m. Before starting the trenching in the asphalted area, the contractor shall get prior approval of competent authority.
- n. During the trenching and cabling work in the asphalted areas the contractor shall cordon off the area with proper means of barricading and warning board for the user of that area.
- o. After the cabling or the laying of suitable pipes or ducts the asphalted area shall be restored back to its earlier state of surface by proper means.
- p. While restoring back, refilling back the contractor shall take care that the level of this area must match with the nearby areas.
- q. Before the track crossing it shall be ensured that a commencement notice shall be given to P-way supervisor.
- r. During trenching the muck in the form of soil or ballast shall be filled in gunny bags and kept away from the track area.
- s. After the track crossing is done and the trench is refilled, the leftover muck shall be taken far from the track area.

- t. No muck in any form like soil shall be left in the track areas.
- u. The contractor shall keep one additional man to look for the trains while the trenching and cabling work is being done in track areas. The duties of this person shall be to look for the trains and warn the labours working in the track areas. Railway shall in any case not be responsible for any mis-happening on the track areas.
- v. The contractor shall ensure that all safety features have been arranged for its labour.
- w. The contractor shall also apply for and get issued the ID card for its labour supervisor and associated labour.
- x. Railway shall not be responsible for the staying facility of the labour during the work.
- y. In case depth of trench is not achievable due to site conditions, proportionate payment will be made as per procedure. The depth of the trench may be measured by a rule made of pipes as per RDSO/TCDO/COP-11(a) When the surface of the ground where the trench is dug is slanting or uneven, the depth is measured with respect to lower edge.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.10 Specification for Laying of HDPE Pipe. (Sch. B Item No. 18).

The PLB HDPE pipes shall be fixed/ laid on the wall structures/ surfaces and inside the Trenches as per instructions of the Site Engineer In Charge, depending upon the site conditions, as per instructions of the Railway Engineer. All required accessories viz. End Plugs, Cable Sealing Plugs and Press fit type couplers shall be used in adequate quantities where ever necessary. The necessary clamps for fixing on wall structure shall be provided on adequate intervals at his own cost.

4.11 Specification for Making of Thermoshrink Joints (Sch. C Item No. 03).

Straight Through / derivation/Y/Branch of Joints for underground 6 Quad/ PIJF (5/10/20/50 pair) Cables shall be made using Thermo- shrinkable jointing kits and all associated material supplied by the contractor against Sch. Armor and screen continuity shall be provided outside the main enclosure for all types of joints. After jointing the cable, through test such as insulation test, Continuity, cable losses etc. to be carried out jointly with the Railway site In-charge and testing reports for this shall be supplied to Railway. If any defect or any damage observed during the jointing the contractor shall rectify the joint, free of cost including the cost of repair Kit.

Jointing of 6 Quad/ PIJF (5/10/20/50 pair) cable with heat shrinkable jointing kit for 4/6 Quad cable shall be done as per extant practice on C. Rly & instruction of Rly engineer at site.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.12 Specification Blowing/Drawing/Laying of Optical Fiber Cable (Sch. C Item No. 04).

The OFC shall be used for optical connectivity between two OFC equipments.

The OFC shall be drawn / laid through the already fixed/laid HDPE pipe/ Duct.

Any joints in the laid OFC cables shall be avoided. The locations for termination of OFC shall be decided well before starting of OFC laying work.

All work shall be carried out as per instruction of Railway Engineer at site.

4.13 Specification for Splicing/Dropping/Termination of each fiber/pigtail in Midsection Joints/TERMINAL JOINTS (24/48 Fibre Joint) (Sch. C Item No. 06).

The optical fiber cables shall be entered in to the rack/Joint/LIU through cable entry and using the cable guides.

The loosened ends of the fibres and pigtails shall be properly prepared for termination in to the already fixed LIU/Joints.

Each of the fiber shall be spliced with a pigtail by the method of fusion splicing using a Fusion Splicing Machine of standard reputed make.

The splicing shall be done carefully by a skilful person.

The splices shall be carefully placed and well secured in the splice trays of the LIU/Joints.

Each fiber / pigtail shall be properly marked with necessary ferrules/tags.

The extra length of the fibres / pigtails shall be coiled and placed and secured with cable ties.

The pigtails shall be placed into the cable tray as per the numbering of fiber.

All of the terminated fiber shall be tested with OTDR and test report (Hard copy and Soft copy) shall be submitted to the Railways site In-charge for records. If any defect or any damage observed during the splicing/jointing the contractor shall rectify the joint, free of cost including the cost of repair Kit.

All the work shall be carried out as per instruction of Railway Engineer at site.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.14 Specification for Excavation of cable trench as per cable route plan shall be 1000 mm deep and 300 mm wide alongside the track in normal soil/strata. (Sch. C Item No. 07).

A. Excavation shall be done in all type of **normal soil/strata**. The contractor shall depute proper and competent supervisor for trenching and cable laying work.

B. Before starting the trenching works foot by foot survey shall be done along-with the Railway's representative.

C. The cable route shall be jointly finalized by the contractor's and Railway's representatives.

D. The proposed cable route plan shall be submitted to the Railways and it shall be got approved (also by the engineering and electrical branches).

E. In addition to the main cable plan, a track crossing plan shall also be got approved before starting the work.

F. The cable shall be laid at the Railway's boundary (one meter inside the outermost boundary).

- G. While trenching it shall be kept in mind the depth of the trench shall be 1000 mm deep and 300 mm wide until and otherwise specified by the engineer in charge. Whenever the dimensions of cable trenches as mentioned in the tender schedule are not easily achievable due to terrain conditions, then payment will be made on a pro-rata basis, for the dimensions achieved. The specific approval of the Divisional Signal and Telecom. Engineer will be required for such dispensation.
- H. While trenching the contractor shall clear the temporary obstructions like trees, bushes, roots of trees, if any, some foundation if any. If it is not feasible to clear the route the route shall be diverted accordingly with the prior permission of the engineer in-charge.
- I. All excavated earth shall be stacked by the contractor away from the track and not on ballast or shoulders.
- J. In case digging is to be done in between tracks the excavated earth shall be carried manually beyond the adjacent track/tracks and stacked completely outside. In case the trench gets filled up with water from the surrounding area due to rain etc, the Contractor shall have to make his own arrangement to pump it out without any extra charges payable for the same.
- K. If during the trenching, any cable markers, obstruction such as pipes or cables or any bricks or warning covers which appear to be deliberately placed in the location is noticed, the digging should be stopped immediately and the Railway Supervisor should be called. Further excavation will be done in his presence very carefully with the help of wire claws and digging can be further resumed only with the permission of the Engineer/Supervisor-in-charge.
- L. Where the cable route is on uneven ground, reasonably long section of consistent grounding shall be dug, rather than following every undulation of the ground.
- M. Before starting the trenching in the asphalted area, the contractor shall get prior approval of competent authority.
- N. During the trenching and cabling work in the asphalted areas the contractor shall cordon off the area with proper means of barricading and warning board for the user of that area.
- O. After the cabling or the laying of suitable pipes or ducts the asphalted area shall be restored back to its earlier state of surface by proper means.
- P. While restoring back, refilling back the contractor shall take care that the level of this area must match with the nearby areas.
- Q. Before the track crossing it shall be ensured that a commencement notice shall be given to P-way supervisor.
- R. During trenching the muck in the form of soil or ballast shall be filled in gunny bags and kept away from the track area.
- S. After the track crossing is done and the trench is refilled, the leftover muck shall be taken far from the track area.
- T. No muck in any form like soil shall be left in the track areas.
- U. The contractor shall keep one additional man to look for the trains while the trenching and cabling work is being done in track areas. The duties of this person shall be to look for the trains and warn the labours working in the track areas. Railway shall in any case not be responsible for any mis-happening on the track areas.
- V. The contractor shall ensure that all safety features have been arranged for its labour.
- W. The contractor shall also apply for and get issued the ID card for its labour supervisor and associated labour.
- X. Railway shall not be responsible for the staying facility of the labour during the work.
- Y. In case depth of trench is not achievable due to site conditions; proportionate payment will be made as per procedure. The depth of the trench may be measured by a rule made of pipes as per RDSO/TCDO/COP-11(a) When the surface of the ground where the trench is dug is slanting or uneven, the depth is measured with respect to lower edge.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.15 Specification for Excavation of cable trench as per cable route plan shall be 1200 mm deep and 300 mm wide alongside the track in hard soil. (Sch. C Item No. 08).

- a. Excavation shall be done in all type of **hard soil/murum**. The contractor shall depute proper and competent supervisor for trenching and cable laying work.
- b. Before starting the trenching works foot by foot survey shall be done along-with the Railway's representative.
- c. The cable route shall be jointly finalized by the contractor's and Railway's representatives.
- d. The proposed cable route plan shall be submitted to the Railways and it shall be got approved (also by the engineering and electrical branches).
- e. In addition to the main cable plan, a track crossing plan shall also be got approved before starting the work.
- f. The cable shall be laid at the Railway's boundary (one meter inside the outermost boundary).
- g. While trenching it shall be kept in mind the depth of the trench shall be 1200 mm deep and 300 mm wide until and otherwise specified by the engineer in charge. Whenever the dimensions of cable trenches as mentioned in the tender schedule are not easily achievable due to terrain conditions,

then payment will be made on a pro-rata basis, for the dimensions achieved. The specific approval of the Divisional Signal and Telecom. Engineer will be required for such dispensation.

- h. While trenching the contractor shall clear the temporary obstructions like trees, bushes, roots of trees, if any, some foundation if any. If it is not feasible to clear the route the route shall be diverted accordingly with the prior permission of the engineer in-charge.
- i. All excavated earth shall be stacked by the contractor away from the track and not on ballast or shoulders.
- j. In case digging is to be done in between tracks the excavated earth shall be carried manually beyond the adjacent track/tracks and stacked completely outside. In case the trench gets filled up with water from the surrounding area due to rain etc, the Contractor shall have to make his own arrangement to pump it out without any extra charges payable for the same.
- k. If during the trenching, any cable markers, obstruction such as pipes or cables or any bricks or warning covers which appear to be deliberately placed in the location is noticed, the digging should be stopped immediately and the Railway Supervisor should be called. Further excavation will be done in his presence very carefully with the help of wire claws and digging can be further resumed only with the permission of the Engineer/Supervisor-in-charge.
- l. Where the cable route is on uneven ground, reasonably long section of consistent grounding shall be dug, rather than following every undulation of the ground.
- m. Before starting the trenching in the asphalted area, the contractor shall get prior approval of competent authority.
- n. During the trenching and cabling work in the asphalted areas the contractor shall cordon off the area with proper means of barricading and warning board for the user of that area.
- o. After the cabling or the laying of suitable pipes or ducts the asphalted area shall be restored back to its earlier state of surface by proper means.
- p. While restoring back, refilling back the contractor shall take care that the level of this area must match with the nearby areas.
- q. Before the track crossing it shall be ensured that a commencement notice shall be given to P-way supervisor.
- r. During trenching the muck in the form of soil or ballast shall be filled in gunny bags and kept away from the track area.
- s. After the track crossing is done and the trench is refilled, the leftover muck shall be taken far from the track area.
- t. No muck in any form like soil shall be left in the track areas.
- u. The contractor shall keep one additional man to look for the trains while the trenching and cabling work is being done in track areas. The duties of this person shall be to look for the trains and warn the labours working in the track areas. Railway shall in any case not be responsible for any mis-happening on the track areas.
- v. The contractor shall ensure that all safety features have been arranged for its labour.
- w. The contractor shall also apply for and get issued the ID card for its labour supervisor and associated labour.
- x. Railway shall not be responsible for the staying facility of the labour during the work.
- y. In case depth of trench is not achievable due to site conditions, proportionate payment will be made as per procedure. The depth of the trench may be measured by a rule made of pipes as per RDSO/TCDO/COP-11(a) When the surface of the ground where the trench is dug is slanting or uneven, the depth is measured with respect to lower edge.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.16 Specification for Laying of S&T Cables: - (Sch. C Item No. 09).

Laying of Telecom cables (PIJF/PVC) in trench, already laid DWC pipe, GI Pipe/Open space, Fixing and clamping on walls with suitable clamps with all contractor's material, and as per instructions of Railway engineer at site. All the cables shall be transported to the site by the contractor by its own means. The cables at site shall be stored properly, fully protected against harsh environmental conditions like rains etc. Safety & security of the cables after being issued to contractor is the sole responsibility of contractor & Railway will not be responsible for any loss incurred due to theft or any other reason. After laying of the cables before the terminations in the location boxes it shall be ensured that all the cables are covered with the insulating tape at their ends.

- A. Before the cables are laid, a visual inspection of cable shall be made and it shall be tested for insulation and continuity of the cores/Quad. The cable insulation should be measured using a 500V insulation Tester (Megger). If there is wide disparity between insulation of different conductors, the condition of the cable should be thoroughly checked before permitting its use. Bedding and armoring shall be

inspected to see that there has been no damage during transit or in storage. In case where the wheels are not available or the area is not convenient for rolling the wheels, along the routes, the drum shall be mounted on the axle at one end of the trench and cable payed out. It should be carried out by adequate number of men, ensuring that the insulation of the cables is not damaged and no kink/twist is formed. In no case shall the drum be rolled on the road for laying of cables and the cable dragged on the ground for laying purposes. The cables shall be laid gently into the trench and not thrown out under any circumstances. Before laying of cable in the trench, a visual inspection shall be adequate for any damage or defect throughout its length. Normally cable laying should be commenced only after OFC/Cable Hut/Location Box / apparatus cases are ready and the cable should be duly brought inside at the OFC/Cable Hut/Location /apparatus cases immediately after the cables are laid, however, if for any reasons the cable is be laid in advance, special care should be taken to ensure that the coiled cable near OFC/Cable Hut/Location Box / apparatus cases is fully protected before and during the construction of OFC/Cable Hut/Location Box / apparatus cases and during final termination. The coiled cable shall be buried well in the ground such that the depth from the ground level to the top layer of the coil shall not be less than 1 meter and shall be fully covered with a layer of bricks horizontally in its entire length and provided with adequate number of the cable markers. On no occasion, the ends of the cable should be left unsealed unless terminated properly.

- B. Cable laying shall commence after the depth and width of the cable trench, quality of bricks are jointly inspected by Railway Engineer's representative and contractor's representative and approved.
- C. Placing of Cables
 - i. When several cables of different types have to be laid down in the same trench, they shall be as far as possible in the following order starting from the track side.
 - a) Telecommunication cables.
 - b) Signalling cables.
 - c) Power cables.
 - ii. When signaling and telecommunication cables are laid in the same trench, a distance of about 100 mm. is to be maintained between them by placing bricks between them, at intervals of two meters.
 - iii. HT and LT power cables and telecommunication cables shall not be laid in the same trench.
 - iv. Cable shall not be normally taken over the running track at the time of cable laying by the contractor as this is likely to cause accident to trains and damage to cables. If at any time the cable has to be taken across the track either in full drums or in spread out conditions it shall be done only in the presence of Railway's Supervisory staff and also after safety precautions have been taken to post flagmen on all the sides as may be required to stop any trains approaching the site of the fouled line.
 - v. At each end of the main cable/tail cable an extra coil length of 4to 6 Meters should be kept.
 - vi. At the time of commissioning of the cable, the insulation values of the cable should again be checked and the value obtained. If there is wide disparity between insulation of different conductors, the condition of the cable should be thoroughly checked before permitting its use. The reading shall be recorded in a register.
 - vii. The contractor shall furnish the final as made cable plan and cable route plan as per schedule.
- D. Separation of Power Cables: - The Telecom cable shall be separated from the power cable carrying 230V or above by a row of bricks placed vertically lengthwise between them wherever required
- E. Re-Filling the Cable Trench: - After the bricks are placed over the cable without any gap between two bricks properly, the excavated earth shall be again put up in the trench. It shall be ensured that there are no stones or any sharp materials present. The refilled earth shall be consolidated and extra earth also shall be placed on the trench to compensate the shrinkage and consolidation of earth.
- F. Cable Laying on Bridges: - On bridges, the cables are to be laid through GI Pipes /DWC pipe with off-set both ends and with coupling wherever required as per Railway requirement. The pipes shall be suitably supported over the bridges/drainage/culverts with brick masonry works of size 300x300x300mm at an interval of 2M in box type bridges and suitable MS clamps at an interval of 1 metre in Girder bridges. The end of pipes will be closed with brick masonry abutments of size 0.5mx0.5mx0.5m.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

The PLB HDPE pipes shall be fixed/ laid on the wall structures/ surfaces and inside the Trenches as per instructions of the Site Engineer In Charge, depending upon the site conditions, as per instructions of the Railway Engineer. All required accessories viz. End Plugs, Cable Sealing Plugs and Press fit type couplers shall be used in adequate quantities where ever necessary. The necessary clamps for fixing on wall structure shall be provided on adequate intervals at his own cost.

4.18 Specification for Fixing /Laying of GI Pipe with Sockets and Fittings (Sch. C Item No. 13).

First all the bridges/FOB shall be surveyed before commencing this item. After surveying it shall be jointly finalized by the Railway's and contractor's representative that what are the feasible spots where angles/Clamps and channels can be provided. All the angles and channels shall not be of material (MS) having thickness less than 5 mm. While laying the cables in the pipe/troughing the corners of the bridges shall be covered with solid concreting to prevent any access of the cables to the unwanted outsiders. Concreting of ends with brick masonry at both ends as per the instruction of Rly. engineer at site. Fixing / Laying of GI Pipe with Sockets and Fittings on Culverts, Bridges, Railings and other obstructions like Walls, Station Platforms, Foundations, Open Gutters, Sewerage Pipes etc. including supply of fixing material by contractor at his own cost, Bending of Pipes at both ends (including Brick Masonry Work at both ends) required for fixing on Girder Bridges/ Railings/ Walls with suitable clamps of MS Bar at the interval of 2 meters. (Design of Clamps and sample should be approved by site in-charge) with contractors' own material. Most of the culverts are generally dry and as such the arrangement as indicated in RDSO/TCDO/COP-17(a) can be adopted. For culverts which are normally filled with water or which are having high flood level, the protection arrangement can be done as per the arrangement shown in drawing RDSO/PCDO/COP-16(a). At least 3 anti-theft perforations per meter to be made on the pipe before laying/fixing. The crossing of girder bridges of more than 12 mtrs length can be done as per the drawing No. RDSO/TCDO/COP-14(a). The arrangement for fixing of steel trough indicated in drawing RDSO/TCDO/COP-12 and RDSO/TCDO/COP-13. The work shall be carried out as per instruction of Railway Engineer at site.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.19 Specification for Laying of DWC/RCC pipes along with collars/RCC Half round pipe in trenches at places of track and road crossings, platform cuttings etc. (Sch. C Item No. 15).

All the pipes/ducts to be placed in the trenches for laying of cables shall be transported to site by the contractor by its own means.

All the trenches shall be properly and thoroughly cleaned before laying the pipes/ducts.

While laying of pipe/ducts, extreme caution & care should be taken that there is no damage to the pipe/duct due to mishandling.

If more than one pipe or duct, are to be laid in the same trench then both should be laid side by side.

The DWC Pipe along with collars shall be laid inside the Trenches and grouting the ends at either side. The required accessories for laying of DWC pipe shall be supplied by contractor at his own cost. All work should be carried out as per instruction of Railway Engineer at site. The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.20 Specification for Cutting of trench across the platform. (Sch. C Item No. 16).

Trenches having a depth of 300 mm and width of 300 mm across the platforms shall be done with a marble cutting machine. The re-filling the trenches shall be done after laying of pipe/cables. Restoring the surface shall be done with original tiles or additional material as per requirement with all contractor's material.

All work should be carried out as per instruction of Railway Engineer at site. The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.21 Installation of 19 inches 9U/6U rack wall mountable. (Sch. C Item No. 17).

The installation of the 19 inches 9U rack wall mountable rack must be carried out following the instructions provided by the Railway site engineer.

The contractor is responsible for providing all necessary materials and executing the work needed for the commissioning of the system. This includes all tasks and materials not explicitly mentioned but required for the proper installation and functioning of the system. The contractor must ensure that the wiring of the entire system is neat and properly laced. This involves organizing and securing wires to maintain a clean and efficient setup.

All work must be executed according to the site engineer's instructions and adhere to any specific guidelines or standards they provided. The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.22 Specification for Installation and commissioning of 12 Port LIU (Sch. C Item No. 26).

The 12 port LIU shall be used for terminations of optical fibers into the splice trays supplied with it.

The LIU shall be installed inside the 19 inch rack using all required fixing/ installation material like nuts, bolts, screws and cable ties etc. as per requirement at an contractors own cost.

The splice trays shall be placed and secured into the LIU after splicing.

The SC terminations shall be fixed and secured after splicing of the pigtails into the LIU.

It shall be ensured that the movement of the trays is easy and free of any obstructions.

All the work shall be carried out as per instruction of Railway Engineer at site.

4.23 Specification for Splicing/Dropping/Termination of each fibre/pigtail in LIU/IO BOX (Sch. C Item No. 27).

The optical fibre cables shall be entered into the rack through cable entry and using the cable guides.

The loosened ends of the fibres and pigtails shall be properly prepared for termination in to the already fixed LIU.

Each of the fibre shall be spliced with a pigtail by the method of fusion splicing using a Fusion Splicing Machine of standard reputed make.

The splicing shall be done carefully by a skilful person.

The splices shall be carefully placed and well secured in the splice trays of the LIU.

Each fiber / pigtail shall be properly marked with necessary ferrules/tags.

The extra length of the fibers / pigtails shall be coiled and placed and secured with cable ties.

The optical connectors of the pigtails shall be placed into the patch panel as per the numbering of fibers.

All of the terminated fibers shall be tested with OTDR and test report (Hard copy and Soft copy) shall be submitted to the Railways site In-charge for records.

All the work shall be carried out as per instruction of Railway Engineer at site.

4.24 Specification for Fixing of PVC Casing-Capping/PVC Pipe (Sch. C Item No. 32 and Item No. 35).

Fixing of PVC Casing-Capping/PVC Pipe on walls with all fixing accessories like clips, T bends & coupling etc. as per requirement and instructions of Railway engineer at site. Breaking of walls and restoration with plastering of wall shall be done by contractor with his own cost. This includes supply of all installation material by contractor at his own cost. This includes the laying of Telecom Cable in it. The work shall be carried out as per instruction of Railway Engineer at site.

4.25 Specification for Installation of Microcontroller based Quad Cable Conductor's Earth Resistance Sensing Unit for 24 nos. (Sch. C Item No. 41).

Installation of Microcontroller based Quad Cable Conductor's Earth Resistance Sensing Unit for 24 nos. shall be done as per requirement and instructions of Railway engineer at site. This includes supply of all installation material by contractor at his own cost. The work shall be carried out as per RDSO specifications & as per instruction of Railway Engineer at site.

4.26 Specification for Horizontal Boring of Cable duct of minimum 2.0 Mtrs depth. (Sch. C Item No. 42).

Horizontal boring of cable duct of minimum 2.0 mtr depth along with laying of 120 mm HDPE pipe for track crossing with minimum depth reckoned from bottom of the rail/Road crossing with minimum depth reckoned from ground level. The work shall be done as per extent practice & instruction of site engineer. Preparation of site for Horizontal boring shall be carried out in presence of Railway Representative. HDPE will be supplied by Railway. Note:- Contractor shall provide all material required for boring and adequate nos. of labours for proper laying of cable into the bore. Cable shall be laid cautiously so that it should not get damage due to rough handling & pressure on cable.

4.27 Specification for Installation, testing and commissioning of the Ring Earth. (Sch. C Item No. 43).

Installation, testing and commissioning of the Ring Earth as per RDSO specification No. RDSO/SPN/197/2008 or latest amendment and RDSO drawing no. SDO / RDSO/ E&B/001 and 002. All the consumables for mounting the copper tape/bus bar, copper lugs with stainless steel nut and bolts, copper bus bar etc. will be supplied by the contractor free of cost. Material to be procured from the RDSO approved vendor.

4.28 Specification for Connecting main earth electrode to BRC using 35 Sqmm copper cable. (Sch. C Item No. 44).

Connecting main earth electrode to BRC using 35 Sqmm copper cable shall be done as per guidelines of RDSO & extant practice on C. Rly & instruction of Rly engineer at site.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.29 Specification for Installation of 25x6 mm copper tape (bonding ring conductors) mounted on insulated standoffs. (Sch. C Item No. 45).

Installation of 25x6 mm copper tape (bonding ring conductors) mounted on insulated standoffs (1 round). shall be done as per guidelines of RDSO & extant practice on C. Rly & instruction of Rly engineer at site.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.30 Specification for Installation of 300X25X6 mm Cu equipotential Bus Bar. (Sch. C Item No. 46).

Installation of 300X25X6 mm Cu equipotential Bus Bar shall be done as per guidelines of RDSO & extant practice on C. Rly & instruction of Rly engineer at site.

The work shall be carried out as per the Indian Railway Telecom Manual 2021.

4.31 Specification for Digging of trench 1.0 M deep from road level road crossing (for LC) (Sch. C Item No. 47).

The work includes removing/breaking of existing RCC slabs on the passenger Platforms, trenching to a depth of 1000 mm x 300 mm to accommodate the pipes/ cables being laid, this includes laying of double walled corrugated (DWC) pipes (120 mm outer dia).

Covering the trench after the pipes/cables are laid, replacing the slabs removed or re-plastering with cement mortar and restoring to the original condition.

This also includes cutting of roads, such as colony roads, roads across LC Gates etc.

A. Before the **Road/Track crossing** it shall be ensured that a commencement notice shall be given to supervisor.

B. During trenching the muck in the form of soil or ballast shall be filled in gunny bags and kept away from the road area.

C. After the road crossing is done and the trench is refilled, the leftover muck shall be taken far from the road area.

D. No muck in any form like soil shall be left in the road areas.

E. The contractor shall keep one additional man to look for the vehicles/train while the trenching and cabling work is being done in road/railway line areas. The duties of this person shall be to look for the vehicles and warn the labours working in the road/railway line areas. Railway shall in any case not be responsible for any misc happenings on the road areas.

F. The contractor shall ensure that all safety features have been arranged for its labour.

G. The contractor shall also apply for and get issue the ID card for its labour supervisor and associated labour.

- H. Railway shall not be responsible for the staying facility of the labours during the work. The drawing for track crossing, road crossing platform shall be as per Drawing No. RDSO/TCDO/COP-19(a).
- 4.32 Specification for concreting for cable protection. (Sch. C Item No. 48).**
Wherever depth of 0.5 m cable trench is not feasible cable shall be protected as under: -Preparation of cement mixture 1:3:6 with contractor's own materials and spreading cement concrete mixture layer of 100 mm thick over the already laid cables in the excavated trench.
The work shall be done as per guidelines of RDSO & extant practice on C. Rly & instruction of Rly engineer at site.
The work shall be carried out as per the Indian Railway Telecom Manual 2021.
- 4.33 Specification for Installation of Layer 2 managed Switch (Sch. C Item No. 50).**
Installation, testing, programming and commissioning of Layer 2 managed Switch shall be carried out as per instruction of Railway Engineer at site. All wiring shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.
The work shall be carried out as per the Indian Railway Telecom Manual 2021.
- 4.34 Specification for Installation, Wiring, Testing and Commissioning of Tadiran Telecom make 48 ports analogue extensions gateway expandable up to 96 ports (Sch. C Item No. 51).**
The installation, Wiring, Testing and Commissioning of 48 ports analogue extensions gateway shall be done as per the Railway Site Engineer. The analogue extension testing shall be done as per the Railway site Engineer. All execution work and material required not included in above but necessary for commissioning in neat and laced of wiring of whole system shall be carried out and shall be supplied by the contractor at his own cost. The system shall be compatible to the existing Server/system over Bhusawal division Central Railway All licenses to be perpetual in nature. All Software including Communication Software, Operating Systems etc. must be licensed and copies to be provided on CD/DVD. All required manuals including System Manuals, Installation Manuals and Training Manuals to be provided in Hard copies and Soft Copies on CD/DVD/Pen drive. All the analogue extension shall be tested with the Railway Site Engineer.
All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.
Note: All of the execution work shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways
- 4.35 Specification for Installation, Testing and Commissioning of Ports wise analogue extension licenses (Sch. C Item No. 53).**
The installation, Testing and Commissioning of Ports wise analogue extension with hardware and licenses shall be done as per the Railway Site Engineer. The analogue extension testing shall be done as per the Railway site Engineer. These licenses shall be compatible and useful to the existing system over Bhusawal division Central Railway All licenses to be perpetual in nature. All Software including Communication Software, Operating Systems etc. must be licensed and copies to be provided on CD/DVD. All required manuals including System Manuals, Installation Manuals and Training Manuals to be provided in Hard copies and Soft Copies on CD/DVD/Pen drive
Note: All of the execution work shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways
- 4.36 Specification for Installation, Testing and Commissioning of Ports wise SIP extension licenses (Sch. C Item No. 55).**
The installation, Testing and Commissioning of Ports wise SIP extension with hardware and licenses shall be done as per the Railway Site Engineer. The analogue extension testing shall be done as per the Railway site Engineer. These licenses shall be compatible and useful to the existing system over Bhusawal division Central Railway All licenses to be perpetual in nature. All Software including Communication Software, Operating Systems etc. must be licensed and copies to be provided on CD/DVD. All required manuals including System Manuals, Installation Manuals and Training Manuals to be provided in Hard copies and Soft Copies on CD/DVD/Pen drive
Note: All of the execution work shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways
- 4.37 Specification for Installation, Testing and Commissioning of 200 Pair MDF with IPM. (Sch. C Item No. 56).**
The Installation, Testing and Commissioning of 200 Pair MDF with IPM shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways
All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.
- 4.38 Specification for Installation, Testing and Commissioning of 75 Inch Commercial Display. (Sch. C Item No. 61).**
The Installation, Testing and Commissioning of 75 Inch Commercial Display shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways

All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

4.39 Specification for Installation, Testing and Commissioning of Indoor Video Wall Display size 8 x 10 feet. (Sch. C Item No. 71).

The Installation, Testing and Commissioning of Indoor Video Wall Display size 8 x 10 feet shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways. All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

4.40 Specification for Installation, Testing, Programming and Commissioning of Industry Grade Server with IP telephony servers (in duplication i.e.1+1) in Hot redundancy of minimum 5000 ports & expandable above 15000 ports. (Sch. C Item No. 79).

The Installation, Testing, Programming and Commissioning of Industry Grade Server with IP telephony servers (in duplication i.e.1+1) in Hot redundancy of minimum 5000 ports & expandable above 15000 ports shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways.

All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

4.41 Installation of Controller Console Equipments (Sch. C Item No. 80)

The work shall be carried out to ensure the successful testing, commissioning, and programming with screen recording on server application, which involves making calls to stations at both the Controller and Test room as per requirements and Railway site engineer.

This shall be carried out in strict accordance with Railway requirements and under the supervision of the Railway Site Engineer.

All wiring shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

All activities shall be conducted according to site conditions and as per the instructions, conforming to RDSO SPN/TC/99/2023 Rev.3 and standards set forth by the Railway Site Engineer.

4.42 Specification for Installation, Testing and Commissioning of 500 Pair MDF with IPM. (Sch. C Item No. 81).

The Installation, Testing and Commissioning of 500 Pair MDF with IPM shall be done as per standard practices of Railways, according to site conditions and as per the instructions of site in-charge nominated by Railways.

All wiring work shall be executed with utmost attention to neatness and organization. Shabby wiring is unacceptable; all cables must be routed and secured in a professional manner to ensure safety and ease of maintenance. Details of wiring and cable particulars shall be labelled and documents for the same shall be submitted to the Railway site engineer.

4.43 Installation, Wiring, Testing and commissioning of complete Fire alarm system including all the items and accessories (Sch. C Item No. 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92 & 93).

Installation Testing and Commissioning of Fire Detection, Aspiration including flame sensor, LHS Cable flame sensor aspiration type smoke sensor as per RDSO SPN No. RDSO/SPN/217/2018 Version No.: 2.0. This includes Control module for the Control Unit, Monitor Module for the Control Unit. LHS Interface should be a microprocessor-based start point device that communicates between LHS Cable and Control Unit should be an intelligent device that will monitor LHS cable for continuity and over temperature fire signatures. This also includes supply, Installation, Testing and Commissioning of Integrated Remote Monitoring System Software for complete as per specifications, for integrating, Fire Alarm System, VESDA System for monitoring at Division head quarter.

CHAPTER-V

ACCEPTANCE TESTS

5.1		<u>Acceptance Test for the erection of relay rack and cable termination rack:</u>
	A	All the relay racks shall be installed as per the scheme approved by the engineer in charge. All the erection fittings shall be supplied by the contractor as a part of installation.
	B	It is to be ensured that all the major groups shall be installed with proper guide plates. These guide plates shall be supplied by the contractor of its own.
	C	Full hylam board shall be used for the cable termination racks to fix the multi-way isolating blocks/wago terminals.
	D	Outdoor Cable supporting rack shall be supplied (in numbers) and erected in such a manner that all the cables shall be terminated preferably in one layer. The termination can be done in maximum two layers.
	E	All the cables terminated with the cable supporting racks shall have armory earthed.
	F	The armory shall be made exposed at a point and a copper flexible twisted wire (total area 1.5 sq mm) shall be wrapped around the armory at one end and to the GI/copper rod at the other end.
	G	All the armories whether be a steel wires or GI sheets shall be bent at the end where cable is extracted so that it may not damage the cable conductors in the long run.
	H	At the cable armory end the copper wire shall be soldered in such a manner such that it is tied tightly and is not loose.
	I	At the other end also all these earth wires shall be soldered on the copper/GI rod.
	J	All these copper/GI rods shall be finally connected to the earthing terminal through 25/16sq mm copper wire through an ARA terminal.
	K	The 25/16sq mm copper wire shall be arranged by the Railway.
	L	The earthing and lacing if all the cables shall be done in such a way that each and every cable earth shall be separately identifiable.
	M	The area where all earthings of cables are terminated (i.e. area behind the CT rack) shall be filled with sand at the cable entry point. The sand shall be filled just upto bottom of cable terminations. All the earthing terminations shall be outside the sand and shall be clearly visible.
	N	Full hylam boards shall be fixed on the front side of the CT rack. The hylam boards are covered in the schedule of supply. On the hylam board the holes shall be done to suit the fixing of wago/other terminals.
	O	On the back side of the hylam board the cable conductors shall be supported by the string rod on which insulation sleeves have been provided. The string rods with insulation sleeves shall not be covered in supply items separately. The string rods with insulation sleeve shall be supplied by the contractor as a part of installation of CT rack.
	P	Sufficient space as per site in-charge shall be left between two rows of cable terminations so that description-writing work can be furnished.
	Q	All the tag blocks shall be fixed on the Racks.
5.2		<u>Acceptance Test of Running of Indoor cables, Jumpering, installation, testing and commissioning:</u>
	A	By default (iff not advised by the Railways otherwise) the wiring shall be IDF based rack wiring.
	B	All the cables (60/40 core) shall be neatly laid from the relay rack to the IDF rack.
	C	The cable supporting angles should be of sufficient length (min 250mm) to support the cables such that there is no pressure on the cables due to the short length of the angles.
	D	The tag blocks shall be installed as per the instructions of site in-charge.
	E	The wiring on the bus bar shall be done in such a manner (in looping way) that after breakage from one side the supply shall be extended from the other side.
	F	All the cables shall be dressed properly and tied with the dressing threads only. It is to be mentioned that cables wires shall not in any case be used for the dressing of cables.
	G	The capacitors shall be of RESCON make with long life features.
	H	Before starting the jumpering, jumper sheets shall be prepared.
	I	All the jumper wires shall be dressed with the dressing threads only.
	J	On the bus bar the power wires from the power room shall be terminated with the proper lugs with soldering.
	K	All the power wires shall be dressed above the Busbar terminals on L-shape angles with insulation sleeves.
	L	The soldering material shall be of standard specification. However, the soldering material shall be approved by the engineer in-charge before starting the soldering.

5.3		Acceptance Test for Digging of Trenches in the Soft Soils, Asphalted area and Track Crossings:
	A	All locations shall be erected with one coat of paint before trenching and laying of cables.
	B	The contractor shall depute proper and competent supervisor for trenching and cable laying work.
	C	Before starting the trenching foot by foot survey shall be done along-with the Railway's representative.
	D	The cable route shall be jointly finalized by the contractor's and Railway's representatives.
	E	The proposed cable route plan shall be submitted to the Railways and it shall be approved (also by the engineering and electrical branches).
	F	In addition to the main cable route plan, a track crossing plan shall also be approved before starting the work.
	G	After completion of the work, a final cable route plan shall be prepared in such a way that it give all the details like, distance of the trench from the centre of the track or any fixed structure, depth of the trench, depth of top the cable bunch after cable laying, concreting on trench, track crossing locations.etc. A duly signed copy of this cable route plan is to be submitted to Railways.
	H	The cable shall be laid at the Railway's boundary (one meter inside the outermost boundary).
	I	While trenching it shall be kept in mind the depth of the trench shall be 1 meter until and otherwise specified by the engineer in charge. Whenever the dimensions of cable trenches as mentioned in the tender schedule are not easily achievable due to terrain conditions, then payment will be made on a pro-rate basis, for the dimensions achieved. The specific approval of the Sr. Divisional Signal and Telecom. Engineer will be required for such dispensation.
	J	While trenching the contractor shall clear the temporary obstructions like roots of tree if any, some foundation if any. If it is not feasible to clear the route the route shall be diverted accordingly with the prior permission of the engineer in-charge.
	K	All excavated earth shall be staked by the contractor away from the track and not on ballast or shoulders.
	L	In case digging is to be done in between tracks the excavated earth shall be carried manually beyond the adjacent track/tracks and stacked completely outside. In case the trench gets filled up with water from the surrounding area due to rain etc, the Contractor shall have to make his own arrangement to pump it out without any extra charges payable for the same.
	M	If during the trenching, any cable markers, obstruction such as pipes or cables or any bricks or warning covers which appear to be deliberately placed in the location is noticed, the digging should be stopped immediately and the Railway Supervisor should be called. Further excavation will be done in his presence very carefully with the help of wire claws and digging can be further resumed only with the permission of the Engineer/Supervisor-in-charge.
	N	Where the cable route is on uneven ground, reasonably long section of consistent grounding shall be dug, rather than following every undulation of the ground.
	O	Before starting the trenching in the asphalted area, the contractor shall get prior approval of competent authority.
	P	During the trenching and cabling work in the asphalted areas the contractor shall cordon off the area with proper means of barricading and warning board for the user of that area.
	Q	After the cabling or the laying of suitable pipes or ducts the asphalted area shall be restored back to its earlier state of surface by proper means.
	R	While restoring back the contractor shall take care that the level of this area must match with the nearby areas.
	S	Before the track crossing it shall be ensured that a commencement notice shall be given to P-way supervisor.
	T	During trenching the muck in the form of soil or ballast shall be filled in gunny bags and kept away from the track area.
	U	After the track crossing is done and the trench is refilled, the leftover muck shall be taken far from the track area.
	V	No muck in any form like soil shall be left in the track areas.
	W	The contractor shall keep one additional man to look for the trains while the trenching and cabling work is being done in track areas. The duties of this person shall be to look for the trains and warn the labours working in the track areas. Railway shall in any case not be responsible for any mis-happening on the track areas.
	X	The contractor shall ensure that all safety features have been arranged for its labour.
	Y	The contractor shall also apply for and issue the ID card for its labour supervisor and associated labour.
	Z	Railway shall not be responsible for the staying facility of the labour during the work.
Note	-	IN CASE OF ANY CONFUSION BETWEEN THE DRAWING AND INSTRUCTIONS OR BETWEEN ANY TWO CLAUSES OF THE TENDER DOCUMENT THE DECISION OF ENGINEER IN CHARGE SHALL BE FINAL.

5.4		Acceptance Test for placing of pipes/RCC duct in trenches:
	A	All the pipes/ducts to be placed in the trenches for laying of cables shall be transported to site by the contractor by its own means.
	B	All the trenches shall be properly and thoroughly cleaned before laying the pipes/ducts.
	C	While laying of ducts it shall be utterly cared that there is no damage to the duct due to mishandling.
	D	If more than one pipe or duct is to be laid in the same trench then both should be laid side by side.
5.5		Acceptance Test for fixing of pipe on the bridges and culverts:
	A	First all the bridges shall be surveyed before commencing this item.
	B	After surveying it shall be jointly finalized by the Railway's and contractor's representative that what are the feasible spots where angles and channels can be provided.
	C	The fixing of GI/RCC/PVC pipe with contractors on clamp on culverts.
	D	As per schedule item all the concerned material that is the angles and channels required shall be supplied by the contractors along with GI fitting bolts and nuts.
	E	All the angles and channels shall not be of material (MS) having thickness less than 5 mm.
	F	The shape and size of the angles and channels shall be jointly finalized by the Railway's and contractor's representatives.
	G	It should be kept in consideration while finalizing the size of angles and channels that there should be sufficient space extra after providing the pipes.
	H	The plans and drawing, to fit the channels and angles on the bridge, shall also be approved by the bridge organization of the concerned jurisdiction.
	I	While laying the cables in the pipe/troughings the corners of the bridges shall be covered with solid concreting to prevent any access of the cables to the unwanted outsiders.
	J	All the pipes shall be properly coupled through couplers.
	K	In troughings the BITUMEN compound shall be filled as per proper procedures.
	L	IN CASE OF ANY CONFUSION BETWEEN THE DRAWING AND INSTRUCTIONS OR BETWEEN ANY TWO CLAUSES OF THE TENDER DOCUMENT THE DECISION OF ENGINEER IN CHARGE SHALL BE FINAL.
5.6		Acceptance Test for laying of Cables:
	A	All the cables shall be transported to the site by the contractor by its own means.
	B	The cables at site shall be stored properly, fully protected against harsh environmental conditions like rains etc.
	C	All the cables shall be meggered before laying of the cables and a proper record shall be handed over to the Railway's engineer in charge.
	D	Cable drums mounted on Jackscrew stand shall be used for cable laying to avoid any kinks or pressure on the cable during cable laying. Sufficient manpower should be arranged by the contractor to lay the cable manually so that it does not rub on the ground.
	E	Cable shall be laid with due caution so as not to cause any damage due to rough handling.
	F	While laying the cable, precautions shall be taken to avoid any kind of pressure on the cable.
	G	A complete record of the no. of cables laid and the length of the cables laid in any patch is to be maintained by the contractor and to be submitted to railways for store records matching and billing of execution works.
	H	After laying of the cables before the terminations in the location boxes it shall be ensured that all the cables are covered with the insulating tape at their ends.
	I	All the cables shall be taken inside the location boxes marked for the concerned cables.
	J	While entering the location boxes it shall be ensured that the pit near the location box is of sufficient size such that after coiling the cable, the uppermost portion (top) of the cables is at least 0.8 meter below the surface level.
	K	As a matter of practice, until and otherwise, not more than 1-2 meters of coils is left for all the cables as a loop after considering the length required for the termination.
	L	Before the back filling is done, the cable route markers will be provided in such a way as to keep the top portion visible after filling.
	M	The marker should be so placed as to be clearly visible and shall not project above rail level of the nearest track and shall not be more than 200 mm from the top surface of ground level.
	N	There will be one cable route marker at every thirty meters interval in addition to additional cable markers to be provided at bends and at such other locations which will be indicated by the supervisor-in-charge.
	O	One cable route marker shall be placed at the point of divergence.
	P	One cable marker at either end shall be placed at each track crossing.
	Q	One cable marker at each side of the culvert/bridge etc.
	R	When Signaling and Main Telecom cables are laid in the same trench, a distance of 100 mm is to be maintained between them.

	S	When Signaling and L.T. or H.T. power cables are placed in the same trench, they must be separated by a row of bricks (any pipe RCC/DWC) between them.
	T	In case several cables of different Categories are laid in the same trench, these should be placed in the following order starting from the main track end, so that in case of accidents the maintenance staff may easily recognize the damaged cables from sight. 1 st Main Telecom cable. 2 nd Signalling Cable. 3 rd L.T. Power cable. 4 th H.T. Power cable.
	U	IN CASE OF ANY CONFUSION BETWEEN THE DRAWING AND INSTRUCTIONS OR BETWEEN ANY TWO CLAUSES OF THE TENDER DOCUMENT THE DECISION OF ENGINEER IN CHARGE SHALL BE FINAL.
5.7		<u>Acceptance Test for Termination of the Cables:</u>
	A	As a practice until and otherwise specified by the engineer in charge, in a location not more than 20-25 cables shall be terminated.
	B	If the number of cables is more than 25, prior approval of the officer incharge shall be taken.
	C	All the cables shall be terminated on the ARA terminals/WAGO terminals as per engineer in charge.
	D	While terminating the cables it shall be ensured that the cables incoming to the location from one side shall be taken and dressed in one side (i.e. LHS or RHS) in the backside of the location.
	E	The cables going out of the locations shall be taken and dressed in the opposite side to the upper one in the back side of the location.
	F	All the cables shall be neatly dressed and terminated with help of proper support.
	G	It shall be ensured that the cable conductors shall be supported by string rods at each row of the cables in the back side.
	H	The string rods for the above shall be supplied by the contractor along-with insulation sleeves.
	I	All the conductors of the cables shall be dressed by threads also.
	J	At the bottom of the location box, all the cables shall be dressed in one row only. No jumble of cable is allowed to be formed. Each and every cable should be separately identifiable.
	K	At the bottom side the armory of all the cables shall be removed and bent outwards so that no sharp edge of the armory is in direct contact of the cable.
	L	At the folded portion of the armory a twisted copper wire (1.5 sq mm) shall be turned around and soldered (by brazing) to connect it to the earth points.
	M	All these twisted copper wires shall be connected to the GI (bonding) wire at the other end and soldered there properly for earth connections.
	N	From that GI wire a min 6 sq mm copper flexible wire shall be connected and at the other end it shall be terminated on an ARA terminal. The flexible wire and the ARA terminal shall be supplied by the Railways.
	O	This ARA terminal shall be connected to the external earth through a 12/6 core signaling cable. The signaling cable pieces shall be supplied by the Railways.
	P	After this the bottom portion of the location shall be filled with sand and a layer of PCC shall be done to prevent entry of rodents and reptiles.
	Q	All the cable cores shall be meggered at the time of terminations. A report shall be submitted to the Railways in proper format of Railways.
	R	At the front side of the location, a sufficient gap should be left between two rows.
	S	In the gap, the details of the cables shall be painted, which is a separately covered item in schedule.
	T	All the records about the cable laying and meggering shall be prepared and submitted.
5.8		<u>Acceptance Test for Digging of cable pit:</u>
	A	The cable pit shall be dug near to the room where all the cables are entering the CT rack room.
	B	The cable pit shall be of dimensions (minimum 2x2x1 meter) as per schedule of material and works.
	C	Before concreting the cable, pit shall be filled with sand.
	D	It shall be kept in consideration that the top of the cable coils shall be minimum one meter below the top of the concreting.
	E	The cables shall be coiled approximately five meters per cable.
5.9		<u>Acceptance Test for the foundation for the signal post:</u>
	A	The foundations shall be made as per drawings mentioned in <u>Annexure-XVI of Chapter VI.</u>
	B	Before starting the digging work for the foundation, the location of the foundation shall be jointly verified and signed by the representatives of Railways and Contractor.
	C	While finalizing the location of foundation it must be taken care that the schedule of dimensions is strictly adhered to and sighting and visibility of the proposed signals are to be ensured beforehand.
	D	It must be taken care that the foundation of signal shall not be in any case on the banking of the terrain.
	E	If it is not feasible at site for the foundation to be on the bank portion, the signal foundation should be shifted on the RHS of the concerned track.

	F	While shifting the signal foundation to the RHS of the concerned track, the schedule of dimensions must be strictly adhered to. The outermost portion/part of the complete signal shall be minimum 2.36 meter away from the centre of tracks of both sides.
	G	While erecting the signal foundation the GI bolts of proper size should be grouted.
	H	Items include curing and plastering with 1 : 4 cement – sand mixture (Aggregate not exceeding 3 : 8 cm).
	I	Aggregate, cement, sand and holding down bolts, nuts shall be supplied by the contractor.
	J	Due to local conditions in very special circumstances if the size of the foundation for all the above items required to be increased / decreased, the extra payment /deduction for variation of the CC work shall be calculated on volumetric basis and paid to the contractor from the schedule of cement concreting.
5.10		<u>Acceptance Test for the Prefabricated RCC foundations of the location box</u>
	A	It shall be as per the railway drawing no. RST -12125 & RST-12126.
	B	After excavation for the location foundation, prefabricated RCC location foundation blocks are to be stacked one over the other aligning the galvanized bolts at the corner of the foundation.
	C	After stacking the prefabricated blocks, nuts are to be tightened on all the four bolts along with the washer.
	D	After erection, plastering around the foundation is to be done for proper finish.
	E	In a day, at least 2-3 location foundations are to be erected.
5.11		<u>Acceptance Test for the installation of all types of apparatus Case/location box:</u>
	A	The apparatus case shall be first rubbed to remove the rust in a complete way both inside, outside and all the interiors and corners.
	B	Then one coat of red oxide shall be painted on the complete body of the apparatus case including the base area.
	C	The apparatus case shall be fixed properly carefully without damaging it.
	D	Slotted angles (drawing is mentioned in Annexure-XVI of CH VI) shall be properly fixed for complete length of the apparatus case with the help of angles and clamps.
	E	One coat of silver paint on the outer side of the walls of the apparatus case and one coat of white/silver paint on the interior sides shall be painted before fixing the hylam board/strips.
	F	Both E-type locks shall be fitted before the painting.
	G	If somehow both E type locks are not covered in schedule due to some reason, the other side shall be covered with a GI sheet of minimum 3mm thickness to prevent entry of rodents and other reptiles. The piece of sheet shall be supplied by the contractor.
	H	The holder and location lighting switch shall be supplied and fixed on a piece of hylam sheet by the contractor. This piece of hylam sheet shall be supplied by the Railways.
5.12		<u>Acceptance Test for Installation of signal post and Unit:</u>
	A	The signal poles shall be first cut into the required lengths. For loop line starter, advanced starter and Distant signal the length is 3.5 meters. For the main line starter and home signal the length is 4.5 meters. For the Home signals on the curve the length is 5.5 meters.
		The signal post shall primarily be erected as per the drawings issued to the contractor.
	B	The cable shall be inserted in such a way that it is not bent sharply.
	C	The armory of the cable shall be peeled off at the base of the signal unit. After that all the conductors shall be terminated on the ARA terminals.
	D	From these ARA terminals the colour coded flexible wires shall be taken to the respective LED unit/signal lamp. The flexible wire shall be provided by the Railways.
	E	All the clamps and angles shall be as per the standard drawings of Signal Units or as advised by the engineer in charge.
	F	The ladder should be grouted in the ground properly.
	G	Maintenance platform shall be fixed as per the engineer in charge of the work.
	H	The signal unit shall be fixed on the signal poles with all of its fixtures and clamps with the help of pulley and supporting pipe.
	I	The maintenance platform shall be supplied and fixed as per the site in charge; it shall be kept in mind that this platform shall be away from the track side to avoid any infringement to the SOD.
	J	If found necessary the signal unit shall be installed with the offset bracket to improve the visibility of the signal.
	K	The calling on, A- sign and the shunt signal as required at the site shall be fixed and installed with proper clamps and fixtures. The clamps and fixtures shall be supplied as a part of commissioning.
	L	All the LED lighting units shall be installed in the signal units by the contractor as per the instructions of the site incharge.
		‘X’ arms to be provided by the contractor till the signals are introduced.
5.13		<u>Acceptance Test for the various Boards/ Markers and Number Plates:</u>

	A	All the boards, number plates and marker plates/boards shall be supplied as per the drawings mentioned in Annexure-XVI of CH VI
	B	For Good's warning board the referred drawing as per Annexure-XVI of CH VI or latest with latest amendments.
5.14		<u>Acceptance Test for the fixing and wiring of QNA1 relays for cutting-In purposes:</u>
	A	The relays shall be fixed in the locations in the TOP rows.
	B	The relays shall be fixed in a manner that there should be a gap of one relay after every two relays.
	C	The relays shall be fixed on square bars which shall be supplied by the contractor as a part of this item.
	D	For the wiring the flexible wires (16/0.2) shall be supplied by the contractor i.e. the contractor shall carry out the wiring with his own wires.
	E	All the contacts used shall be made parallel with one additional contact.
	F	The fixing material like square bars, nut/bolts etc shall be supplied by the contractor.
5.15		<u>Acceptance Test for Painting, Varnishing and writing works:</u>
	A	All the equipments which need painting shall be fixed/installed with coating of Red Oxide i.e. Red Oxide should be coated before fixing/installation.
	B	After fixing/installations one coat of paint shall be applied on all the location boxes, signal units, signal posts and fittings, apparatus cases, point machines etc.
	C	The final coat of paint shall be applied just before the commissioning.
	D	The description writing work shall be carried out before the commissioning of the station.
	E	This description writing work includes writing the details in the Relay Room. This also includes varnishing, letter writing on terminal Nos. apparatus cases, point machine, Signal Nos. and other details as per S.E.M. part II
	F	All the location boxes and the signal posts shall be painted with the distance of installation from the centre of the track.
5.16		<u>Acceptance Test for the Earthing of the Power Equipment room:</u>
	A	The earthing arrangements shall be provided as per RDSO specifications no. RDSO/ SPN/197/2008 or latest with latest amendments.
	B	The value of the earthing is to be recorded and kept in record. Also, the value of earthing is to be printed on the enclosure of the pit along with the date of measurement.

CHAPTER-VI

Annexure / Formats / Forms etc.

ANNEXURE-I

INSTRUCTIONS FOR SUBMITTING THE TENDERS AS JOINT VENTURE FIRMS

On Non-judicial stamp of Rs. 100/-

MEMORANDUM OF UNDERSTANDING FOR JOINT VENTURE AGREEMENT

1. This memorandum of understanding executed this _____ day of _____ 20____ between _____ (Name of Co.) _____ a company registered under the Companies Act 1956 having its registered office at _____ represented through its Director / Authorized Representative _____ (hereinafter referred to as _____ which expression shall unless repugnant to the context thereof includes its successors) of the **FIRST PART.**
AND / OR

M/s. _____ a partnership firm constituted under the Indian Partnership ACT 1932, having its registered office at _____, represented through its partner Shri _____ / Authorized Representative Shri _____ (hereinafter referred to as _____ which expression shall unless repugnant to the context thereof includes its successors) of the **FIRST PART.**
AND / OR

M/s. _____ a proprietary concern having its registered office at _____ represented through its sole proprietor Shri _____ (hereinafter referred to as _____ which expression shall unless repugnant to the context thereof includes its successors) of the **FIRST PART.**

Whereas, the party of the First part i.e. M/s. _____ details to be supplied of the expertise in their field.

Whereas, the party of the Second part M/s. _____ details to be supplied of the expertise in their field.

Whereas, the party of the third part M/s. _____ details to be supplied of the expertise in their field.

AND whereas parties to this MOU have agreed to co-operate with each other to associate jointly and to form a Joint Venture Firm to participate in the CR Tender of Indian Railways.

Now, therefore, in consideration of the promises and mutual promises and of the undertaking contained herein, it is hereby agreed between the parties of the MOU as follows:

1. **The purpose of MOU**-M/s. _____, _____ and _____ agree to Co-operate with each other for the purpose of joint participation in the CR Tender and in the event, the contract is awarded, to jointly

execute the contract. The broad interfaces and scope of work of each party is set forth below:

2. The name of the Joint Venture firm shall be _____

3. The parties, hereto, represent that:

a) They are in possession of all approvals and valid authorization for the purpose of execution of this MOU.

b) They have not entered into any agreement / MOU of equal or similar nature with any third party for the CR Tender.

That each of the parties of JV, agrees and undertake to place at the disposal of the JV, benefits of its individual experience, technical knowledge and skill and shall in all respects bear its share of the responsibility, including the provision of information advice and other assistance required in connection with the works. The share and the participation of the partners in the JV shall broadly be follows:

M/s. _____ %

M/s. _____ %

M/s. _____ %

“That M/s. _____ shall be the lead member of J.V. firm who shall have a majority (at least 51%) share of interest in the JV firm. The other members shall have a share of not less than 20% each (in case of JV firm with up to three member) / The other members shall have a share of not less than 10% each (in case of JV firm with more than three members). In case of JV firm with foreign member(s), the lead member has to be an Indian firm with a minimum share of 51% (strike out which is not applicable)

And all right, interest, liabilities, obligations, work experience and risks (net profits or net losses) arising out of the contract shall be shared or borne by the Parties in proportionate to these shares. Each of the parties shall bound by guarantees, sureties required for the work as well as its proportionate share in working capital and other financial requirements.

4. The parties to this MOU undertake:

- a) That after submission of the tender, the MOU shall not be modified / altered/terminated during the validity of the tender including extension and maintenance period except when modification becomes inevitable due to succession laws etc., but in no case the minimum eligibility criteria would be vitiated.
- b) That after the contract is awarded the constitution of the J.V. Firm shall not be altered during the currency of contract except when modification becomes inevitable due to Succession Law etc., “but in no case the minimum eligibility criteria would be vitiated”.
- c) That with respect of the CR Tender neither party, nor any subsidiary company of either Party, not any joint venture company or any other entity, in which the party / parties, is or are in any way interest, shall complete together with or through any third party, nor shall be parties advise, consult for, engage in or otherwise assist in
- d) any way person or entity or any affiliate thereof in respect of any orders or contracts related to this tender.
- e) That none of the members of joint ventures is black listed and / or debarred by the Railways or and other ministry or department of Govt. of India / State Govt. from participation in contract / under in the past either in individual capacity or the JV Firm or partnership firm in which they were / are members / partners.

5. Joint & Several Liability.

In respect of the CR Tender, all commercial terms shall comply each part on back-to basis specifications of the CR Tender or any other mutually agreed terms with the Owner Customer. The Parties hereto shall, if awarded the contract for the project for which the Joint Venture is formed, be jointly and severally liable to the Indian Railways for execution of the project in accordance with the contract. The Parties hereto also undertake to be liable jointly and severally for the loss, damages caused to the Indian Railways in course of execution or due to non-execution of the contract or part thereof arising out of the contract.

6. Shri _____ be authorized partner / person on behalf of the Joint Venture to deal with tender, to 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 CR tender / Contract. All notices /correspondence with respect to the contracts would be sent only to this authorized partner / person of the J.V. firm.

7. Notwithstanding anything herein, in respect of the CR Tender, with regard to the internal relationship, the inter se liabilities between the parties shall be in proportion to their respective scope of work and shall be subject to the provisions of this MOU.

8. Responsibility.

Each Party shall assume and accept full responsibility for its Scope of Work and the obligations imposed in the Contract and in this MOU as if it was, with regard to this Scope of Work, an independent partner contracting individually with the Customer. In the event of any defect and damage or any claim arising from the Customer under the Contract or any third party in relation to or as a consequence of any failure to meet the performance specification the Party, within whose Scope of Work the claim arises, shall be entirely responsible for the claim and shall indemnify and hold harmless the other Party from any liability, demand, claim burden cost, expense attorney's fees and costs arising from thereof.

9. Assignability

No party to the Joint Venture has right to assign or transfer the interest, right or liability in the contract without the written consent of the other party and that of the Railway.

10. Use of Machinery, Instruments, Labour Force etc.

The Parties here to undertake that whatever the machinery, instruments, Labour force (including unskilled, skilled, inspectors, Engineers etc.) they possess at the time of entering into joint Venture Agreement or which subsequently shall come in their possession and if such machinery, instruments, labour force is required for the speedy and efficient execution of the work, the Party / Parties having the control over the said machinery, instrument, labour force etc. without having any regard to their share of profit and loss agreed to between the Parties in Joint Venture Agreement shall hand over the same at the disposal of the other party who is actually executing the work for the purpose of execution of the contract without any hindrances and obstacle.

11. Duration of MOU

It shall be valid during entire currency of contract including the period of extension, if any and also till the maintenance period is over or till all the contractual liabilities including warranty /guarantee obligations are discharge completely.

12. Applicable Law.

The MOU and any arrangement /agreements regarding the performance shall be construed and interpreted in accordance with and governed by the Laws of India and shall be subject to the exclusive jurisdiction of the courts at the place where MOU is executed / signed between the parties.

13. Settlement of Disputes.

In the event of disputes arising from the MOU, the Parties to the MOU undertakes to Endeavour to settle the said disputes amongst them amicably. However, if the parties fail to resolve the disputes amongst them amicably, the said disputes arising out of or in connection with the present MOU shall be resolved through Arbitration as per the

provisions enshrined under the Arbitration and Conciliation Act, 1996 or /and statutory modifications made thereafter.

14. All communications or notices provided for herein shall be in the English language and be delivered, mailed, or tele-faxed to the Parties addresses as indicated below:-

M/s. _____

M/s. _____

All correspondence and notices to the Joint Venture firm shall be addressed to the Lead Member i.e.

M/s. _____ /Shri _____ at the address stated herein below:-

M/s. _____

Such communication or notices shall be deemed to have been duly given when so delivered or, if mailed, when received at destination.

15. Each Part shall have full and sole responsibility to bear the expense of and effect the payment of any taxes, duties, special insurance, fees or assessments of any nature whatsoever (including personal income taxes levied or imposed or any of its employees or personnel or any of its sub-contractor's employees or personnel) including penalties and interest, if any, levied in connection with the execution of this MOU.

In witness whereof, the Parties have caused this MOU to be executed by their respective authorized representative on the date and year mentioned herein above.

Signature:-

Signature:-

Signature:-

Shri _____ of Shri _____ of Shri _____ of M/s. _____ M/s. _____
M/s. _____

Witnesses:

1) Name: _____ Address:- _____

2) Name: _____ Address:- _____

**For Senior Divisional Signal & Telecom Engineer,
Central Railway, Bhusawal-425201**

For and on behalf of the President of India.

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

Tender No. _____

Name of Work _____

To _____

The President of India

Acting through the CPM Gati Shakti, Bhusawal Division

Central Railway, Bhusawal.

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

(a) I/We do not submit the Performance Guarantee within the time specified in the Tender document;

(b) I/We do not execute the contract documents within seven days after receipt of notice issued by the Railway that such documents are ready; and

(c) I/We do not commence the work within fifteen days after receipt of orders to that effect.

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

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

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

Signature of Witnesses:	_____
(1) _____	Signature of Tenderer(s)
(2) _____	Date _____
	Address of the Tenderer(s)

ANNEXURE III**PROFORMA FOR PREVIOUS EXPERIENCE OF CONTRACT/CREDENTIALS**

				Time taken for completion of work
--	--	--	--	-----------------------------------

E-Tender No. BSL-N-SNT-14-2026-27

Sr. No.	Name of similar work carried out in the past or being executed at present	Place & with which authority	Tender Cost	As stipulated in the Contract	Actual Time taken
1	2	3	4	5	6

Signature _____

Please fill in the questionnaire below:-

Give details of your previous experience in the manufacture and how long you have been manufacturing the stores as listed in this tender.

Give particulars of the present production capacity of the factory where the stores would be manufactured. (Please give details of license and the capacity for which you are licensed by Government).

Give the names of your Bankers and their reference.

Give details of the registration number, if you are registered for supply to Indian Railways (or any other Railway), DG S&D and NSIC, and the class of stores for which you are registered.

NOTE: This form shall be filled precisely and with full details.

PROFORMA FOR STATEMENT OF DEVIATIONS

(1) The following are the particulars of deviations from the requirements of the instructions to Tenderers, General and Special Conditions of contract-(Chapter-II)

Clause	Deviation	Remarks (including justification)

(2) The following are the particulars of deviations from the requirements of the tender specification.(Chapter-III & IV)

Clause	Deviation	Remarks (including justification)

Signature and seal of the Manufacturer/Tenderer.

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

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

1. I/we the tenderer (s) am/are signing this document after carefully reading the contents.
2. I/We the tenderer(s) also accept all the conditions of the tender and have signed all the pages in confirmation thereof.
3. I/we hereby declare that I/we have downloaded the tender documents from Indian Railway website www.ireps.gov.in . I/we have verified the content of the document from the website and there is no addition, no deletion or no alteration to the content of the tender document. In case of any discrepancy noticed at any stage i.e. evaluation of tenders, execution of work or final payment of the contract, the master copy available with the railway Administration shall be final and binding upon me/us.
4. I/we declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.
5. **I/We also understand that my/our offer will be evaluated based on the documents/credentials submitted along with the offer and same shall be binding upon me/us.**
6. **I/We declare that the information and documents submitted along with the tender by me/us are correct and I/we are fully responsible for the correctness of the information and documents, submitted by us.**
7. I/we certify that I/we the tenderer(s) is/are not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of submission of bids, either in individual capacity or as a HUF/ member of the partnership firm/LLP/JV/Society/Trust.
8. I/we understand that if the contents of the affidavit 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 ~~besides~~ **and may also lead to any other action provided in the contract including** banning of business for a period of upto ~~five~~ **two** year. Further, I/we (insert name of the tenderer) ** _____ and all my/our constituents understand that my/our offer shall be summarily rejected.
9. I/we also understand that if the contents of the affidavit certificate submitted by us are found to be false/forged 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~~ **and may also lead to** any other action provided in the contract including banning of business for a period of upto ~~five~~ **two** year.
10. I/We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India and certify that I am/We are not from such a country or, if from such a country, have been registered with the competent Authority. I/We hereby certify that I/we fulfil all the requirements in this regard and am/are eligible to be considered (evidence of valid registration by the competent authority is enclosed)

SEAL AND SIGNATURE

OF THE TENDERER

Place:

Dated:

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

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

ACS-1, 14.07.2022

ACS-2, 13.12.2022

ACS-3

ACS-4

ANNEXURE-V(A)

Reference -Para 6.1 of ITT

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

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

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

SEAL AND SIGNATURE
OF THE CONSTITUENT FIRM/CONSTITUENT PARTNER

Place:

Dated:

ACS-2, 13.12.2022

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

For tenders having advertised value more than ~~Rs.20 crore~~ **Rs. 10 Crore** wherein eligibility criteria includes bid capacity also, the tenderer will be qualified only if its available bid capacity is equal to or more than the total bid value of the present tender. The available bid capacity shall be calculated as under:

$$\text{Available Bid Capacity} = [A \times N \times 2] - 0.33 \times N \times B$$

Where,

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

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

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

ACS-1 14.07.2022 (ACS-11)

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: -----

The President of India,
Acting Through the
Senior Divisional Finance Manager,
Bhusawal-425201.
Central 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)*

ANNEXURE – VII

Reference Para 17B

Registered Acknowledgement Due

PROFORMA FOR TIME EXTENSION

No. _____

Dated: _____

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

(ii) Acceptance letter no. _____

(iii) Understanding/Agreement no. _____

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

Dear Sir,

1. The stipulated date for completion of the work mentioned above is _____. From the progress made so far and the present rate of progress, it is unlikely that the work will be completed by the above date (or 'However, the work was not completed on this date').

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

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

4. The above extension of the completion date will also be subject to the further condition that no increase in rates on any account will be payable to you.

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

6. Please note that in the event of your declining to accept the extension on the above said conditions or in the event of your failure after accepting or acting upto this extension to complete the work by _____ *(here mention the extended date)*, further action will be taken in terms of Clause 62 of the Standard General Conditions of Contract.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – VIIA
(Reference Clause 40(A))

Registered Acknowledgement Due

**PROFORMA OF 14 DAYS NOTICE FOR OFFLOADING OF PART OF CONTRACT
WORK**

RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

In spite of repeated instructions to you by the subordinate offices as well as by this office through various letters of even no. _____, dated _____; you have failed to show adequate progress of work so as to complete the contract within the original / extended date of completion of contract and part(s) of contract work are yet to be started/ still lagging behind the agreed program of work, listed as under:

(Details of part(s) of work which is delayed and can be executed independently, to be mentioned).

2. Your attention is invited to this office/Chief Engineer's office letter no. _____, dated _____ in reference to your representation, dated _____.

3. As you have failed to abide by the instructions issued to commence the work /to show adequate progress of work, you are hereby given 14 days' notice in accordance with Clause 40A of the Standard General Conditions of Contract to deploy adequate resources i.e. *(the details of resource requirement, to be mentioned)* and commence / to make good the progress for part(s) of works detailed above, failing which action as provided in Clause 40A of the Standard General Conditions of Contract shall be commenced after expiry of 14 days' notice period viz. to offload few/ all part(s) of work mentioned above to any of the existing or new contractor without your participation and at your Risk & Cost, not exceeding the value of Performance Guarantee of this contract, which may please be noted.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – VIIB
(Reference Clause 40(A))

Registered Acknowledgement Due

NOTICE FOR PART OF CONTRACT WORK OFFLOADED

RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

1. Fourteen days' notice under Clause 40A of the Standard General Conditions of Contract was given to you under this office letter of even no., dated _____; but you have taken no/inadequate action to deploy adequate resources to commence the part(s) of work/show adequate progress of the part(s) of work, mentioned therein.

As you have failed to abide by the instructions issued to commence the part(s) of work/show adequate progress of the part(s) of work even at the lapse of 14 days' notice period under Clause 40A of the Standard General Conditions of Contract, few part(s) of the work under the contract have been offloaded and being executed by other mode(s) at the cost detailed below:

Or,

1. Please refer your request letter no..... dated, wherein it was requested under clause 40 A of the Standard General Conditions of Contract to offload part(s) of works at your risk & cost. The details of part(s) of the work under the contract which have been offloaded and being executed by other mode(s) at the cost detailed below:

(List of Part(s) of work offloaded, Details of mode of execution of such offloaded work alongwith approximate cost thereof to be mentioned)

2. The final measurement of work(s) already executed for above part(s) of work recorded as per clause 45 (A) or/and 45 (B) of the Standard General Conditions of Contract is enclosed herewith.

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

4. The additional cost in execution of offloaded work through mode(s) mentioned in para (1) above is determined as Rs. _____, over& above the cost of execution under this contract (including the PVC amount payable as per contract, as on the date of issue of this notice). This additional cost shall be recovered from your next on account bill(s) or any other dues payable to you under contract.

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

6. You are requested to continue with the balance work in the contract subsequent to off loading of above part(s) of work.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

CERTIFICATE OF FITNESS

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

I certify that he/she is fit for employment in a factory or on a work requiring manual
labour as an adult/child.
9. Reasons for :
(a) Refusal to grant certificate, or _____
(b) Revoking the certificate _____

Signature or left hand
Thumb impression of the person examined.

Signature of Certifying Surgeon

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

ANNEXURE – IX

(Reference Clause 62. (1)

Registered Acknowledgement Due

**PROFORMA OF 7 DAYS NOTICE FOR WORKS AS A WHOLE/ IN PARTS
(DETAILS OF PART OF WORK TO BE MENTIONED)**

RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

In spite of repeated instructions to you by the subordinate offices as well as by this office through various letters of even no. _____, dated _____; you have failed to start work/show adequate progress and/or submit detailed programme for completing the work/ part of work (details of part of work to be mentioned).

2. Your attention is invited to this office/Chief Engineer's office letter no. _____, dated _____ in reference to your representation, dated _____.

3. As you have failed to abide by the instructions issued to commence the work /to show adequate progress of work you are hereby given 7 days' notice in accordance with Clause 62 of the Standard General Conditions of Contract to commence works / to make good the progress, failing which further action as provided in Clause 62 of the Standard General Conditions of Contract viz. to terminate your Contract and complete the balance work without your participation will be taken.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – X

Reference Para 62(1)

Registered Acknowledgement Due

PROFORMA OF 48 HRS. NOTICE FOR WHOLE WORK

RAILWAY

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

Seven days' notice under Clause 62 of the Standard General Conditions of Contract was given to you under this office letter of even no., dated _____; but you have taken no action to commence the work/show adequate progress of the work.

2. You are hereby given 48 hours' notice in terms of Clause 62 of the Standard General Conditions of Contract to commence works / to make good the progress of works, failing which and on expiry of this period your above contract will be rescinded and the work under this contract will be carried out independently without your participation and your Security Deposit shall be forfeited and Performance Guarantee shall also be encashed and any other consequences which may please be noted.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – XI
Reference Para 62.(1)

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

PROFORMA OF TERMINATION NOTICE

RAILWAY

(Without Prejudice)

No. _____

Dated _____

To _____

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

Forty eight hours (48 hrs.) notice was given to you under this office letter of even no.,
dated _____; but you have taken no action to commence the work/show adequate
progress of the work.

Since the period of 48 hours' notice has already expired, the above contract stands rescinded in
terms of Clause 62 of the Standard General Conditions of Contract and the balance work under this
contract will be carried out independently without your participation. Your participation as well as
participation of every member/partner in any manner as an individual or a partnership firm/JV is hereby
debarred from participation in the tender for executing the balance work and your Security Deposit shall
be forfeited and Performance Guarantee shall also be encashed.

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

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

*ACS-8

ANNEXURE – XII

Reference Para 62.(1)

Registered Acknowledgement Due

**PROFORMA OF 48 HRS. NOTICE FOR PART OF THE WORK.....
(DETAILS OF PART OF WORK TO BE MENTIONED)**

_____ **RAILWAY**

(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

1. Seven days' notice under Clause 62 of the Standard General Conditions of Contract was given to you under this office letter of even no., dated _____; but you have taken no action to commence the work/show adequate progress of the part of work.....(details of part to be mentioned).

2. You are hereby given 48 hours' notice in terms of Clause 62 of the Standard General Conditions of Contract to commence works / to make good the progress of works, failing which and on expiry of this period your above part of work.....(Details of part to be mentioned) in contract will be rescinded and the work will be carried out independently without your participation.

3. Your full Performance Guarantee for the contract shall be forfeited and you shall not be issued any completion certificate for the contract. However, no additional Performance Guarantee shall be required for balance of work being executed through the part terminated contract.

4. The contract value of part terminated contract shall stands reduced to

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

ANNEXURE – XIII

Reference Para 62.(1)

Registered Acknowledgement Due

**PROFORMA OF TERMINATION NOTICE FOR PART OF THE WORK.....
(DETAILS OF PART OF WORK TO BE MENTIONED)**

RAILWAY

(Without Prejudice)

No. _____

Dated _____

To _____

M/s _____

Dear Sir,

Contract Agreement No. _____

In connection with _____

1. Forty eight hours (48 hrs.) notice was given to you under this office letter of even no., dated _____; but you have taken no action to commence the work/show adequate progress of the part of work.....(details of part to be mentioned).
2. Your above part of work in contract(details of part to be mentioned) stands rescinded in terms of Clause 62 of the Standard General Conditions of Contract and the same will be carried out independently without your participation. Your participation as well as participation of every member/partner in any manner as an individual or a partnership firm/JV is hereby debarred from participation in the tender for executing the balance work
3. Your full Performance Guarantee for the contract shall be forfeited and you shall not be issued any completion certificate for the contract. However, no additional Performance Guarantee shall be required for balance of work being executed through the part terminated contract.
4. The contract value of part terminated contract stands reduced to

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the President of India

FINAL SUPPLEMENTARY AGREEMENT

1. Articles of agreement made this day _____ in the year _____ between the President of India, acting through the _____ Railway Administration having his office at _____ herein after called the Railway of the one part and _____ of the second part.
2. Whereas the party hereto of the second part executed an agreement with the party hereto of the first part being agreement Number _____ dated _____ for the performance _____ herein after called the 'Principal Agreement'.
3. And whereas it was agreed by and between the parties hereto that the works would be completed by the party hereto of the second part on _____ date last extended and whereas the party hereto of the second part has executed the work to the entire satisfaction of the party hereto of the first part.
4. And whereas the party hereto of the first part already made payment to the party hereto of the second part diverse sums from time to time aggregating to ₹ _____ including the Final Bill bearing voucher No. _____ dated _____ of value _____ duly adjusted as per price variation clause, if applicable (the receipt of which is hereby acknowledged by the party hereto of the second part in full and final settlement of all his /its claims under the principal agreement.

And whereas the party hereto of the second part have received sum of ₹ _____ through the Final Bill bearing voucher No. _____ dated _____ duly adjusted as per price variation clause (PVC), if applicable (the receipt of which is hereby acknowledged by the party thereto of the second part) from the party hereto of the first part in full and final settlement of all his/its disputed claims under principal agreement.

Now, it is hereby agreed by and between the parties in the consideration of sums already paid by the party hereto of the first part to the party hereto of the second part against all outstanding dues and claims for all works done under the aforesaid principal agreement excluding the Security Deposit, the party hereto of the second part have no further dues of claims against the party hereto of the first part under the said Principal Agreement. It is further agreed by and between the parties that the party hereto of the second part has accepted the said sums mentioned above in full and final satisfaction of all its dues and claims under the said Principal Agreement.

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

Or

And whereas the party hereto of the first part already made payment to the party hereto of the second part diverse sums from time to time aggregating to ₹ _____ through various On Account Bills (the receipt of which is hereby acknowledged by the party hereto of the second part).

And whereas the party hereto of the second part have received sum of ₹ _____ through various On Account Bills (the receipt of which is hereby acknowledged by the party thereto of the second part) from the party hereto of the first part and party hereto of the second part have accepted final measurements recorded on Page No..... to Page No.... of Measurement Book No.....and corresponding Final Bill duly adjusted as per price variation clause (PVC), if applicable, for full and final settlement of all his/its disputed claims under principal agreement.

Now, it is hereby agreed by and between the parties in the consideration of sums already paid through various On Account Bills and sums to be paid through Final Bill duly adjusted as per price variation clause (PVC), if applicable, based on accepted final measurements including the Security Deposit by the party hereto of the first part to the party hereto of the second part against all outstanding dues and claims for all works done under the aforesaid principal agreement, the party hereto of the second part have no

further dues of claims against the party hereto of the first part under the said Principal Agreement.

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

5. It is further agreed and understood by and between the parties that the arbitration clause contained in the said principal agreement shall cease to have any effect and/or shall be deemed to be non-existent for all purposes.

Signature of the Contractor/s
Witnesses

for and on behalf of the President of India

ADDRESS: _____

ANNEXURE-XV

Reference Para 64.3 & 64.6

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

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

Brief of claim:

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

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

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

Signature of Claimant_____ Signature of Respondent

Agreement under Section 31(5)

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

.

Signature of Claimant_____ Signature of Respondent_____

*Strike out whichever not applicable.

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

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

Or

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

Or

I have past or present relationship with or interest in any of the parties whether financial, business, professional or other kind, which is likely to give rise to justifiable doubts as to my independence or impartiality in terms of The Arbitration and Conciliation Act-1996. The details of such relationship or interests are as under:
8. There are no concurrent Circumstances which are likely to affect my ability to devote sufficient time to the arbitration and in particular to finish the entire arbitration within twelve months.

Or

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

Insurance Surety Bond for Performance Security

Name of the issuer of surety bond:

President of India

Acting

Through.....,

.....

Railway.

Date:.....

.....

Surety Bond No: Issue

Date:.....

Amount of Bond:..... Expiry

Date:.....

WHEREAS, In consideration of the President of India acting through..... (*Destination & address of contract signing authority*),.....Railway,, (hereinafter called “The Railway”) having accepted the bid of M/s. XXXXX hereinafter called the contractor, for the work of XXXI” under invitation for bids No XXXXX, Vide Letter of Acceptance No.....

AND

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

SB No:

Date:

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

1. KNOW ALL MEN by these present that I/We, the undersigned [*Insert name(s) of authorized representatives of the surety*], being fully authorized to sign and incur obligations for and on behalf of the Surety, confirm that the Surety, hereby, unconditionally and irrevocably Bond to pay the Railway the full amount in the sum of XXXX (**Rupees XXXX Only**) as above stated.
2. The Surety undertakes to immediately pay on presentation of demand by the Railway any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Railway on the Surety shall be final, conclusive and binding, absolute and unequivocal not with standing any disputes raised/pending before any Court, tribunal, arbitration or any authority or any threatened litigation by the Bidder or Bank.
3. On payment of any amount less than aforementioned full amount, as per demand of the Railway, the Bond shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Railway.
4. The Surety shall pay the amount as demanded immediately on presentation of the demand by Railway without any reference to the contractor and without the Railway being required to show grounds or give reasons for its demand or the amount demanded.
5. The Surety Bond shall be unconditional and irrevocable.
6. The Bond hereinbefore shall not be affected by any change in the constitution of the Surety or in the constitution of the Contractor.
7. The Surety agrees that no change, addition, modifications to the terms of the Contract Agreement or to any documents, which have been or may be made between the Railway and the Contractor, will in any way release us from the liability under this Bond; and the Surety, hereby, waives any requirement for notice of any such change, addition or modification to the Surety.
8. This Bond is valid and effective from the date of its issue, which is [insert date of issue]. The Bond and our obligations under it will expire on XXXX (*Expiry Date*). All demands for payment under the Bond must be received by us on or before that date.
9. The Surety agrees that the Railways right to demand payment of aforementioned full amount in one instance or demand payments in parts totalling up to the aforementioned full amount in several instances will be valid until either the aforementioned full amount is paid to the Railway or the Bond is released by Railway before the Expiry date.
10. The Surety agrees that its obligation to pay any amount demanded by the Railway before the expiry of this Bond will continue until the amount demanded has been paid in full.
11. The expressions Surety and Railway hereinbefore used shall include their respective successors, administrators and assigns.
12. The Surety hereby undertakes not to revoke the Bond during its currency, except with the previous consent in writing of the Railway. This Bond is subject to the Uniform Rules for Demand Bonds, ICC Publication No. 758.
13. We, the Surety Insurer, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, inter alia, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, tribunal, arbitrator or any other authority.

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

Notwithstanding anything to the contrary contained in these presents,

- a. Our liability under this Surety Bond shall not exceed **XXXX (Rupees XXXXX Only)**.
- b. This Surety Bond shall be valid up to **XXXX (being the date of expiry)**;
- c. Unless the bank is served a written claim or demand on or before **XXXX [date of expiry]** all rights under this Bond shall be forfeited and the Surety shall be relieved and discharged from all liabilities under this Bond irrespective of whether or not the original Surety bond is returned to the Surety.

Dated the day of 2024

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

Place.....

Bank's Seal and authorized signature(s)

[Name in Block letters].....

[Designation with Code No.].....

[P/Attorney] No.

Witness

1.

2.

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

(*ACS-9)

INDEMNITY BOND

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

_____ We, M/s. _____ (hereinafter called
the Contractor) do hereby undertake that we shall hold in our custody for and on behalf of the President of India
acting in the premises through the General Manager, Central Railway or for him all Railway materials which has
been handed over to us against the contract for Tender no. _____
dt. _____ for the work of _____

_____” by the Railway for the purpose of execution of the said contract until
such time the materials are duly installed and/or erected or otherwise handed over to the Railway.

We shall be entirely responsible for the safe custody and protection of the said materials against all risk till they are
duly delivered as installed and/or erected equipment to the Railway or as directed otherwise and shall indemnify
the Railway against any loss, damage or deterioration whatsoever in respect of the said materials. The said
materials shall at all time be opened to Inspection by any Officer authorized by the General Manager, Central
Railway or his nominee.

**Should any loss, damage or deterioration of materials occur or surplus materials disposed off and
a refund becomes due, the Railway shall be entitled to recover from us the full cost and
compensation determined in terms of the contract for such loss or damage, if any, along with the
amount to be refunded without prejudice to any other remedies available to him by deduction
from any sum due or any sum which at any time thereafter becomes due to us under the said or
any other contract.**

In the event of any loss or damage as aforesaid the assessment of such loss or damage and the assessment of the
compensation therefore would be made by the President of India acting through the General Manager, Central
Railway or his authorized nominee shall be final and bind upon us.

Signed at _____ on this day of _____

Signature of Witness: _____

for& on behalf of M/s. _____

Name of Witness in BLOCK LETTERS : _____

ADDRESS: _____

ANNEXURE XIX

Para 5 of the Instructions to Tenderers

TENDER NO. _____

Requisition-cum-receipt for the material

Requisition-cum-receipt for the material

Sr. No. _____

Date:

Please arrange to supply the bearer _____

Description of materials required

Qty	Nos.	in words	In figures

at (place of supply) _____ Station _____
for sub-section between Km. _____ to Km. _____ against Contract No. _____

Signature of the Contractor/Contractors

(Specimen signature)

(B) Received the above material Qty. _____ (fig) _____ as mentioned above. On _____ received in good condition and I/We undertake the responsibility for replacement / payment of/ for the same as shall be deemed fit by the Railway in terms of Special Conditions

Station:

Signature of the Contractor(s)

PROFORMA FOR EFT (RTGS/NEFT) PAYMENT DETAILS

To,
Sr.DFM,
Central Railway,
Bhusawal

Sub: Bank details for payment through EFT (RTGS/NEFT).

I hereby agree to get make my payment thorough EFT (RTGS/NEFT). The details are as under –

SN	Particulars	Details
1.	Name of Firm / Contractor	
2.	Address of Firm / Contractor	
3.	Beneficiary Name	
4.	Name of Bank	
5.	Branch & Address of Bank	
6.	Beneficiary's Bank Account No.	
7.	Type of Account	
8.	Bank's IFSC Code	
9.	Bank's MICR Code	
10.	GST No.	
11.	PAN No. (Enclose/upload copy)	
12.	TIN No. (Enclose/upload copy of Certificate)	
13.	Service Tax Registration No. (Enclose/upload copy of Certificate)	
14.	Mobile/Telephone No.	

Thanking you.

Sign & Seal of Contractor

PROFORMA FOR IDENTITY CARD TO CONTRACTOR'S EMPLOYEE

SN	Particulars	Details	
1.	Identity Card No.		Colour photograph of employee (Sign & seal of Contractor on photograph)
2.	Date of Issue		
3.	Letter of Acceptance / Contract Agreement No. and date		
4.	Name and address of Firm / Contractor		
5.	Particulars of Employee:		
(a)	Name		
(b)	Address		
(c)	Age		
(d)	Sex		
(e)	Date of entry in service		
(f)	Designation/nature of work		
6.	Validity date of I/Card		
7.	Signature of Employee		

Sign & Seal of Contractor

**Countersignature of the concerned
Senior Supervisor of Railway**

Certificate of no relative being an employee of Central railway

I/We the under signed hereby solemnly declare and certify that I/ We do not have any of our relative/relatives employed in the Central railway (Signal and Telecom department) except the names mentioned herein under:

1.
2.
3.
4.

and so on

Note: Names, Designation, Name of office, Headquarter of the tenderer's relative in Central railway (Signal and Telecom Department) to be mentioned above by the tenderer/ tenderers in 1, 2, 3, 4 and so on.

Signature of Tenderer / Tenderers

Format for authorization letter from OEM(s)

(The authorization letter, printed on the original stationery of the OEM, is to be submitted by the Bidder along with the Bid as a requirement of Eligibility Criteria)

Ref. No: _____

Date: _____

To,
**Senior Divisional Signal & Telecom Engineer,
Central Railway, Bhusawal-425201
For and on behalf of the President of India**

Sub: Tender Enquiry for (Name of Work) _____

Dear Sir,

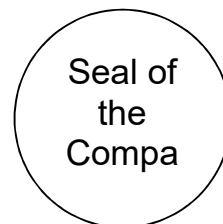
With reference to the Tender Enquiry for (Name of work) _____ this is to certify that we _____ (name of manufacturer & address) authorize _____ (name & address of participating bidder) to include equipments manufactured by us in their bid. We undertake the responsibility to render all kind of repair & maintenance support to the bidder as mentioned in the Tender Document in case a contract is awarded to M/s. _____ (name of the bidder) based on their Bid and subsequent confirmations, if any, submitted by them to you.

We request you to kindly consider the bid submitted by _____ (name of the bidder) for execution of the aforesaid work including supply and installation of equipment manufactured by us.

(Signature)

Name of the Person : _____
Authorized Signatory

Place : _____



ANNEXURE XXIV**Annexure-2**

LCDA No. (18 DIGIT IPAS GENERATED NO.)

Dated: _____

DOCUMENT OF AUTHORIZATION

Reference: (i) Works Contract/ Supply Contract No. _____ Dated _____
(ii) Inland Letter of Credit No. _____ Dated _____

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

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

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

S. No.	Invoice No.	Invoice date	Invoice Amount (INR)	LCDA No.	LCDA date	Amount paid (INR)
Total Paid						

THIS PAYMENT: - \$\$\$ _____

LC BALANCE AFTER THIS PAYMENT: _____

(Signature of authorised Railway authority)

Name

Designation

Official Seal

OEM's Site Installation Certificate
(For EI,HASSDAC/MSDAC,UFSBI/BPAC,IPS,Dataloggeronly)

**To,
Sr.DSTE,
Bhusawal,
Central Railway**

This is to certify that verification of system installation (details given below) has been completed by undersigned (OEM representative) and all necessary arrangements like earthing, surge protection, power supply, power & communication cables and equipment wiring meet the required standards of engineering for trouble free working of installed system.

1. System being commissioned:

2. Station / Section:

3. Division:

4. Date of commissioning:

.....
Name of RDSO approved Original Equipment Manufacturer:

.....
Name of OEM representative with Designation:

.....
Signature of OEM representative with Date:

Police Verification

Photo
(Of applicant
signed by
Contractor)

S. No.	Particulars	
1.	Full Name with Aliases	
2.	Parent's Names	
3.	Nationality	
4.	Present Address in full with police station & District	
5.	Period of Residence	
6.	Home/Permanent Address in full with police station & District	
7.	Address with police stations and districts where the applicant has resided continuously for more than 6 months in the past 5 Years.	
8.	Aadhar Number	
9.	The applicant has been involved in a criminal case as accused (Yes/No). If yes, then details.	
10.	The applicant has been arrested in connection with a criminal case (Yes/No.) if yeas then details	
11.	The applicant has been convicted for a criminal offence (Yes/No). if yes, then details.	

*Optional

Declaration (By Applicant): I certify the above information is correct and complete to the best of my knowledge and belief.

Countersigned by	Signature of Applicant
	Date Place
Contracting Railway Supervisor	
Date Place	

Police certificate

The details as stated above are correct & the above person does not have any criminal case registered or pending against him in any court of law as per official records available .

Counter signature of Authorized

Signatory with stamp

List of Standard drawing & its attached Annexure details

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* These all drawings attached separately in IREPS.

END OF TENDER DOCUMENT