VOLUME - IA

Technical Conditions of Contract (TCC) Signalling & Telecommunication (S&T) Modification Works in Stations, Gr 241, Allahabad Division

FOR

RE WORKS OF BHANDAI-UDI, BIRLANAGAR-ETAWAH AND FARRUKHABAD-SHIKOHABAD INCLUDING MAINPURI-ETAWAH

OF

NORTH CENTRAL RAILWAY

BHARAT HEAVY ELECTRICALS LIMITED

BHEL Maharatna Company	**Technical Conditions Of Contract (TCC)** **PROJECT ENGINEERING & SYSTEMS DIVISION** **HYDERABAD**	Ref No: TCC No: HY/PE&SD/Projects/TCC/2024-25/S&T Mod_Stations/Balance/Gr 241/01, Rev.00 Rev. No. 00

TECHNICAL CONDITIONS OF CONTRACT (TCC)

FOR

Balance Signalling & Telecommunication (S&T) Modification Works at TWS, Mainpuri site, Allahabad Division

FOR

RAILWAY ELECTRIFICATION PROJECT IN BHANDAI-UDI, BIRLANAGAR-ETAWAH AND SHIKOHABAD-FARRUKHABAD INCLUDING MAINPURI-ETAWAH, SECTION OF AGRA, JHANSI AND ALLAHABAD DIVISIONS OF NORTH CENTRAL RAILWAY UNDER RE PROJECT LUCKNOW, TOTAL RKM 386/440TKM

Revisions: Refer to record of revisions	Prepared By:	Checked By:	Approved By:	Date
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Volume IA
Part I
Contract specific details

Chapter I- Project Information

1.0 Project Details

Bharat Heavy Electricals Limited has been awarded the "The Electrification of Railway Lines of the section Birlanagar-Etawah, Bhandai-Udi and Farrukhabad-Shikohabad including Mainpuri-Etawah of North Central Railway 386 RKM/440 TKM" project on EPC basis by Central organization for railway electrification (CORE), Allahabad.

1	Customer	:	Central organization for railway electrification (CORE), Allahabad.
2	Project Information	:	Electrification of Railway Lines of the section Birlanagar-Etawah, Bhandai-Udi and Farrukhabad-Shikohabad including Mainpuri-Etawah of North Central Railway 386 RKM/440 TKM
3	Location	:	Birlanagar-Etawah, Bhandai-Udi and Farrukhabad-Shikohabad including Mainpuri-Etawah of North Central Railway 386 RKM/440 TKM, Madhya Pradesh and Uttar Pradesh.
4	Address Detail	:	TWS site at Mainpuri\), Allahabad Division of North Central Zone of Indian Railway.
5	Nearest Railway Station	:	Agra, Etawah, Birlanagar, Shikohabad and others
6	Road Approach	:	NA
7	Nearest Air Port	:	Lucknow, Kanpur
11	Ambient Air Temperature (Average)	:	a) Maximum : 45^0 C b) Minimum : 2^0 C
12	Average Relative Humidity	:	40 %
13	Climatic Condition	:	Tropical Climate

Bidder is advised to visit the project site and appraise himself about the local conditions and infrastructure available in the area for fulfilling their commitments under the contract. BHEL will not admit any claims whatsoever on account of Contractor's non-familiarization of local conditions.

Chapter II- Scope of Work

2.0 SCOPE OF WORK

2.1 Scope shall be as per chapter I, Detailed scope of work, Vol IA, Part II of this TCC.

Chapter III- Facilities in the scope of BHEL/Contractor

S. No.	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.1	**ESTABLISHMENT**			
3.1.1	**FOR CONSTRUCTION PURPOSE**:			
a	Open space for office (as per availability)	Yes		Location will be finalized after joint survey with customer(CORE)
b	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with customer(CORE)
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipment, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc.		Yes	
f	Firefighting equipment like buckets, extinguishers etc.		Yes	
g	Fencing of storage area, office, canteen etc. of the bidder		Yes	
3.1.2	**FOR LIVING PURPOSES OF THE BIDDER**			
a	Open space for labor colony (as per availability)	Yes		Can be provided as per availability
b	Labor Colony with internal roads, sanitation, complying with statutory requirements		Yes	
3.2.0	**ELECTRICITY**			
3.2.1	Electricity For construction purposes		Yes	
3.2.2	Electricity for the office, stores, canteen etc. of the bidder		Yes	
3.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc.		Yes	
3.3.0	**WATER SUPPLY**			
3.3.1	For construction purposes		Yes	

S. No.	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.3.2	Water supply for bidder's office, stores, canteen etc.		Yes	
3.3.3	Water supply for Living Purpose		Yes	
3.4.0	**LIGHTING**			
a	For construction work (supply of all the necessary materials) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	
b	For construction work (execution of the lighting work/ arrangements) 1. At office/storage area 2. At the preassembly area At the construction site /area		Yes	
c	Providing the necessary consumables like bulbs, switches, etc. during the course of project work		Yes	
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5.0	**COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER**			
a	Téléphone, fax, internet, intranet, e-mail etc.		Yes	
3.6.0	**COMPRESSED AIR wherever required for the work**		Yes	
3.7.0	**Demobilization of all the above facilities**		Yes	
3.8.0	**TRANSPORTATION**			
a	For site personnel of the bidder		Yes	
b	For bidder's equipment and consumables (T&P, Consumables etc.)		Yes	

Sl. No	Description PART II 3.9.0 CONSTRUCTION FACILITIES	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.9.1	**Engineering works for construction:**			
a	Providing the construction drawings for all the works covered under this scope			Drawing schedule shall be submitted by bidder and approved by BHEL during kick off meeting
b	Drawings for construction methods			Drawing schedule shall be submitted by bidder and approved by BHEL during kick off meeting
c	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes		Yes	In consultation with BHEL
d	Shipping lists etc. for reference and planning the activities		Yes	In consultation with BHEL
e	Preparation of construction (Concreting B/W, etc.) schedules and other input requirements		Yes	In consultation with BHEL
f	Review of performance and revision of site construction schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly construction schedules based on S. No. e. hard copy to Construction manager, by email to HO.		Yes	In consultation with BHEL
h	Daily construction / work plan based on S. No. g. hard copy to Construction manager, by email to HO.		Yes	In consultation with BHEL
i	Periodic visit of senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two Weeks.		Yes	

Sl. No	Description PART II 3.9.0 CONSTRUCTION FACILITIES	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
j	Arranging the materials required for Work		Yes	
k	Coordination for inspection & checking and getting clearance from customer		Yes	
l	Preparation of formats for completion of activities		Yes	

Chapter IV- T&P's to be Deployed By Contractor

LIST OF TOOLS AND PLANT:

The following tools and equipment but not limited to, are required for the efficient execution of the civil works. The contractor shall make them available for construction purposes, including all consumables likely to be used at his own cost at the time of mobilization.

S.No.	Description	Minimum Quantity	Remarks
A. For S&T(C&I works)			
1	Hydra	1	Need based
2	JCB	1	Need based
3	Tractor	1	Need based
4	Cable unwinding Machines, rollers etc	1 No	Need based
5	MC4 connector tool kit containing (1) crimping plier MC4, (2) open end spanner set MC4, (3) stripping plier MC4, (4) socket wrench insert to tighten, (5) socket wrench insert to secure, inserts for both 4 sq-mm and 6-sqmm (of both pliers).	2 Set	Need based
6	Electrical measuring Instruments		
	a) Megger-1KV	1No	Need based
	b) HV Tester-10KV	1No	Need based
	d) Logic probe	1No	Need based
	e) Modbus communication check kits	1No	Need based
	f) Digital Multi meter	3 No	Need based
7	Tong Testers	3 No	Need based
8	Digital power meters	1 No	Need based
9	Phase sequence meter	1 No	Need based
10	OFC termination kit, Splicing kits	1 Set	Need based
11	Primary /secondary injection kit	1 No each	Need based
12	Transformer oil filtration unit	1 No	Need based
13	Earth resistance measurement kit	1 No	Need based
14	Lugs, glands as in scope of supply	1 set	Need based
15	Transmission line stringing equipment	1 No	Need based
16	DG Sets	1 No	Need based
17	Cable jointing kit and associated tools	2 Set	Need based
18	Welding equipment	1 No	Need based
19	Flood lights	5 No	Need based
20	Set of screw drivers	1 Set	Need based
21	Set of Allen keys (mm & inch)	1 Set	Need based
22	Small size hacksaw & fraksaw	1 Set	Need based
23	Cutting pliers	2 No	Need based

24	Nose pliers	2No	Need based
25	Insulation stripers	2No	Need based
26	Dry cable jointer	1 No	Need based
27	Number punches	1 No	Need based
28	Alphabet punch	1 No	Need based
29	Embossing machine with cassettes (Numbers and alphabets)	1 No	Need based
30	Portable drilling machine up to 1-1/2”	1 Set	Need based
31	Soldering gun	1 No	Need based
32	Soldering Iron	1 No	Need based
33	Continuity tester	5 No	Need based
34	Double ended spanner Set of sizes 10-11, 12-13, 14-15, 16-17, 17-18	2 Nos each	Need based
35	Screwdriver Set	1 Set	Need based
36	Crimping tool with Dye range 50-400sq-mm cable, mechanical gear power, hand operated	1 Set	Need based
37	Crimping tool up to 6 sq-mm cable	1 set	Need based
38	Drilling machine AC, hand operated, with bit size up to 20 mm	1 set	Need based
39	Measuring Tape, 5m	2 Nos	Need based
40	Measuring Tape, 50 m	2 Nos	Need based
41	Allen Key set	1 Set	Need based
42	Adjustable spanner 2-inch size	1 No	Need based
43	Hammer	2 Nos	Need based
44	Rough file kit	1 Set	Need based
45	Cutting Pliers	2 Nos	Need based
46	Nose Pliers	2 Nos	Need based
47	Vacuum cleaner, of industrial type, for control room sweeping / cleaning.	1 No	Need based
48	Blowers for cleaning the panels	2 Nos	Need based
B. For civil works			
1	Digital Concrete Mixer 2 to 4 cum with hopper/Self-loading mobile concrete mixer (Azax)with printer	2 nos.	Need based
2	Needle Vibrator (Needle type 40mm)	4 nos.	Need based
3	Needle Vibrator (Needle type 25mm)	2 nos.	Need based
4	Dewatering Pump	2 nos.	Need based
5	Earth Compactor	2 nos.	Need based
6	Theodolite with staff	2 nos.	Need based
7	Dumpy level with staff	1 no.	Need based

BHEL will not provide any tool, plants or any testing facility/apparatus for the work. It will be contractor's responsibility to arrange all required tools, plants and other testing apparatus, etc. at their own cost. The prices quoted & finalized are inclusive of the charges towards providing such T&P. No extra payment will be entertained on account of this.

Chapter V- Time Schedule

5.1 TIME SCHEDULE

5.1.1
The entire work as detailed elsewhere in the Tender Specification shall be completed within **30 (Thirty) Days** from the date of commencement of work at site.

5.1.2
During the total period of contract, the contractor has to carry out the activities in a phased manner as required by BHEL and the program of milestone events.

5.1.3
The work shall be commenced on the mutually agreed date between the bidder and BHEL site engineer. The decision of BHEL in this regard shall be final and binding on the contractor. The scope of work under this contract is deemed to be completed only when so certified by the site Engineer.

5.2 COMMENCEMENT OF CONTRACT PERIOD

The date of commencement of contract period shall be the mutually agreed date between the bidder and BHEL engineer to start the work. In case of discrepancy the decision of BHEL engineer will be final.

5.3 MOBILISATION

5.3.1
The activities for Signalling & Tele communication (S&T) modification work shall be started as per directions of Construction manager of BHEL.

5.3.2
The contractor should mobilize manpower in order to complete the work in **30 (Thirty) Days.**

5.3.3
Requisite Material, men and machinery should be arranged in order to complete the project within stipulated time.

5.3.4
The contractor has to augment his resources in such a manner that following major milestones of the project are achieved on specified schedules:

In order to meet above schedule in general, and any other intermediate targets set, to meet project, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL.

5.4 CONTRACT PERIOD

For the purpose of contract, the period shall be taken as **30 (Thirty) Days.** Completion of the work shall be as per Bar Charts revised from time to time. In order to expedite the work, the contractor has to deploy work force as per site requirement without any extra cost to BHEL.

5.5 PROTECTION OF WORK

The contractor shall have total responsibility for protecting his works till it is taken over by the Employer. No claim will be entertained by the Employer or the representative of the Employer for any damage or loss to the Contractor's works and the Contractor shall be responsible for complete restoration of the damaged works to original conditions to comply with the specification and drawings. Should any such damage to the Contractor's Works occur because of other party not being under his supervision or control, the Contractor shall make his claim directly with the party concerned.

If disagreement or conflict or dispute develops between the Contractor and the other party or parties concerned regarding the responsibility for damage to the Contractor's Works the same shall be rectified. The Contractor shall not cause any delay in the repair of such damaged Works because of any delay in the resolution of such disputes. The Contractor shall proceed to repair the Work immediately and no cause thereof will be assigned pending resolution of such disputes.

5.6 GUARANTEE PERIOD

The guarantee period of twelve months shall commence from the date of completion of all works as certified by the BHEL site engineer.

Chapter VI- Storage and Security

Contractor shall take all necessary measures to prevent any theft, pilferage of BHEL's supplies and as well as contractor (s) supplies. In order to achieve this following shall be required to be adhered with:

1. **Storage and security of contractor supplies:** Contractor shall be responsible for storage and security of supply till contract completion or handing over of project to Railways whichever is later.
   - 1.1 Contractor shall file FIR in case of any theft for record and purpose of insurance claim.
   - 1.2 Contractor shall liaison with insurance company and provide all necessary documents in order to facilitate insurance claim.
   - 1.3 Contractor shall keep sufficient security to prevent any kind of theft/damage at works during contract execution.
   - 1.4 In case of any theft, pilferage, damage or loss of any material, contractor shall replenish the same without any additional cost to BHEL without any time delay.
   - 1.5 Contractor shall handover the supply items mentioned in Annexure-I of price bid document of NIT to BHEL store. These items shall be issued (Except spares) on free item basis by BHEL whenever required for erection /Installation work.

2. **Storage and security of BHEL supplies:**
   - 2.1 Contractor shall draw materials supplied by BHEL from BHEL's store after due permission from store's in charge.
   - 2.2 Contractor shall be responsible for transportation (and damage etc. thereafter) of supplies from BHEL stores to works or their respective stores.
   - 2.3 Contractor shall file FIR in case of any theft for record and purpose of insurance claim.
   - 2.4 Contractor shall liaison with insurance company and provide all necessary documents in order to facilitate insurance claim.
   - 2.5 In case of any theft, pilferage, damage or loss of any material, contractor shall replenish the same without any additional cost to BHEL without any time delay. In case contractor fails to replenish the material within stipulated time, BHEL shall supply the material and cost of the same shall be recovered from contractor.
     In case of successful claim of insurance, same shall be passed on to the contractor.
   - 2.6 No extra payment for security shall be paid to contractor by BHEL as contract price is inclusive of all.
   - 2.7 Following is the tentative store location of BHEL
     a) Mainpuri TWS
     The above location is subjected to approval by Railways, finalized locations shall be informed by BHEL later.
   - 2.8 The contractor shall be responsible for the storage & security of the materials till the same is erected /incorporated in the work and finally handed over to Railways, even though payments are made against supply for the materials against the Purchase order. The contractor shall rectify/ replace all such materials, if they are being stolen, damaged or lost for any reason whatsoever before erection / incorporation in the work after being paid against supplies of the same against the Purchase order.

Chapter VII- Special Payment Conditions

1. Payment for the work shall be done as per actual measurement and certification by BHEL Engineer at site.

2. Payment shall be made separately for works being carried out in the state of Madhya Pradesh and Uttar Pradesh. For this purpose, separate measurement book will be maintained and bidder shall provide two (02) separate GST registration in respective states.

Chapter VIII- Statutory Regulation

6.2 BUILDING & OTHER CONSTRUCTION WORKERS (REGULATION OF EMPLOYMENT AND CONDITIONS OF SERVICE) ACT, 1996 (BOCW Act) AND RULES OF 1998 READ WITH BUILDING & OTHER CONSTRUCTION WORKERS CESS Act, 1996 & CESS RULES, 1998 and

INTER-STATE MIGRANT WORKMEN ACT, 1979 (IN CASE BIDDER ENGAGE MANPOWER FROM OTHER STATE)

In case any portion of work involves execution through building or construction workers and/or inter-state migrant workmen, then compliance to the above titled Acts as applicable shall be ensured by the contractor and contractor shall obtain license and deposit the cess under the Act. In the circumstances it may be ensured as under:-

It shall be the sole responsibility of the contractor in the capacity of employer to forthwith (within a period of 15 days from the award of work) apply for a license to the Competent Authority under the BOCW Act and/or ISMW Act as applicable and obtain proper certificate thereof by specifying the scope of its work. It shall also be responsibility of the contractor to furnish a copy of such certificate of license / permission to BHEL within a period of one month from the date of award of contract.

It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under these acts and rules including that of payment / deposit of cess as per the applicability under above referred Acts within a period of one month from the receipt of payment.

It shall be the responsibility of the sub-contractor to furnish the receipts / challans towards deposit of the cess together with the number, name and other details of beneficiaries (building/Inter-state Migrant workmen) engaged by the sub-contractor during the preceding month.

It shall be the absolute responsibility of the sub-contractor to make payment of all statutory payments & compensations to its workers including that is provided under the Workmen's Compensation Act, 1923.

Volume IA
Part II
Technical Specification

Chapter I- Detailed Scope Of Work

1.0 Signaling system scope of work :

(Shikohabad-Farrukhabad, Gr.241A) – SECTION-TWS_Manpuri Station

All balance signaling works including design of signaling plan, route control chart or selection/control table, panel diagram, wiring/circuit diagram, cable route chart, cable core diagram, termination and equipment position diagram etc. as part of the modification to the existing signaling system along with supply, installation, testing and commissioning shall be executed in accordance with the provision of IRSEM and signal and Interlocking principles issued in the form of typical designs. In addition to above, augmentation of existing service building to accommodate additional signaling equipment/racks etc. shall be carried out if required. Glued joints if any required for single rail track circuit shall be provided. The released materials shall be transported to the railway depot within the site.

The pending works as on date are:

i. "Complete indoor work of installation wiring and commissioning for RE modification in existing PI /RRI stations/cabins including minor modifications to circuits for stations as per SIP
ii. Modification of existing PA system to suit RE requirement
iii. Modification in works, drawing & submission of as built drawing

The list is not exhaustive and any work required to carry out for completeness of the system & its commissioning shall be in the scope of the bidder.

1.1 Telecommunication scope of work :

1.1.1 Where optical fiber cable (OFC) and quad cable already exist in the section

Where optical fiber cable (OFC) and quad cable already exist in the section , scope of work includes supply , trenching and laying of 6 quad cables, jointing of quad cables for provision of emergency sockets in the section and SP/SSP/TSS /LC gates etc.(By other contractor), transferring the existing communication circuits including block on new cables, supply and installation of power supply equipment, batteries and other telecom equipment, supply and installation of SDH and PD MUX equipment and their networking with the existing OFC link for augmenting existing OFC equipment at stations in the section, supply, installation and testing and commissioning of HQ and way station control equipment for giving various control phones at stations, SP/SSP/TSS etc., augmentation of existing service buildings as required, provision of cable huts and service buildings, protection of telecom lines entering 25 KV sub-station /switching posts, and protection against surge and lightning. The scope also includes masonry works for erection and installation of telecom equipment and all types of painting as per Railway Telecom Manual and standard practices. Supply of spares to the extent of 10% (minimum 1) of each type of equipment like SDH, PDMUX, control phones, emergency sockets etc.

All the materials not limited to above as required for execution of the telecom works to suit 25 KV has to be provided by the Contractor in accordance with the Good Industry Practice. The Contractor shall transport the released materials railway depot.

1.1.2 Where OFC and quad cable does not exist in the section.

Where OFC and quad cable does not exist in the section, scope of work includes supply, trenching and laying of OFC and 6 quad cables, jointing of quad cables, splicing of OFC cable, provision of emergency sockets in the section and SP/SSP/TSS /LC gates etc.(By other contractor), transferring the existing communication circuits including block on new cables, supply and installation of power supply equipment, batteries and other telecom equipment, supply and installation of SDH and PD MUX equipment and their networking with the existing OFC link or forming new link if OFC is not existing in the section, commissioning of quad cable system , supply, installation and testing and commissioning of HQ and way station control equipment for giving various control phones at stations, SP/SSP/TSS etc., provision of cable huts and service buildings, protection of telecom lines entering 25 KV sub-station /switching posts, protection against surge and lightning . The scope also includes masonry works for erection and installation of Telecom equipment and all types of painting as per Railway Telecom Manual and Good Industry Practice.

Supply of spares to the extent of 10% (ten percent) (minimum 1) of each type of equipment like SDH, PDMUX , control phones, emergency sockets, etc. All the materials not limited to above as required for execution of the Telecom works to suit 25 KV has to be provided by the Contractor. On completion of above, the Contractor shall carry out works, testing and commissioning of entire system in totality. The Contractor shall transport the released materials to railway depot.

materials to railway depot.

1.2 Bidder is required to survey the entire section and complete all balance and pending Singnalling & Telecommunication works as per approved design & drawings. After completion of the work bidder is required to prepare AS-BUILT drawings pertaining to Signalling & Telecommunication works for the entire Gr. 241 section not only for the works executed under this contract but for the work carried out by previous contractors.

1.3 Before taking up the balance S&T works, the bidder shall carry out detailed inspection for system integration check of the entire S&T works in the section, as it is expected that because of non-operation of the system for almost two years many instruments, cabling, etc. may not function properly. The bidder will submit a report of all such items and with due approval of BHEL/RE will repair and replace any malfunctioning instrument/ cabling and also carry out any modification or re-work if needed.

Chapter II- Pre Bid Clarifications By Railways

2.0 Pre-Bid stage clarifications by Railways:

2.1 Indian Railways will show the space required for the OHE stores. Same store shall be used for all the material storage requirement including S&T. If S&T contractor wish to store the S&T items in these stores, it is contractor responsibility / own risk to retain in same store or separate store can be utilised by them separately without attaching to OHE store.

2.2 SIP's are available in the NCR website at the following link. Same shall be used for arriving the BOQ.

http://www.ncr.indianrailways.gov.in/view_section.jsp?lang=0&id=0,1,283,375,704,706

Other S&T modification requirements / documentation like Cable courage plans of the existing system will be provided at the time of execution.

2.3 In the Jhansi division (Gr.239) there is no siding at Nonera station. (It was originally indicated in bid at Schedule-B (Annex-1) document.

2.4 The augmentation of existing IPS need to be considered. However, the space in the existing IPS system to accommodate additional converters is not available. Hence S&T contractor to assess and provision to be looked for accommodating the converters within the existing IPS system / room.

2.5 Existing signal feed cables for 110V AC shall be retained and new signalling cables for relays are required to be terminated in the existing location boxes except at starter signal location where new location boxes are to be used.

2.6 Existing signal feed cables (B-NX110 & B-N24V), New signal repeater relays, new signalling and power cables with HPR relays are to be terminated in the existing location boxes, except at starter signal locations where new location boxes are to be used.

2.7 New charger / batteries / chokes are to be considered. New power cable shall be used for track circuit feed chargers. The necessary power cable, other devices shall be assessed based on the site visit only.

2.8 Point motor immunization – New Point machine are to be installed of adequate immunity level for all the stations as required by S&T contractor.

2.9 Existing signalling system & point machine arrangement at the stations having SM Slides or Lever frames have to be modified to suit RE and no replacement or upgradation is required.

2.10 There is no scope of signalling work for modification in RE suit stations.

2.11 Stations with Tower wagon siding, point machines (with motor – 100V DC with 400V AC) immunity are to be provided.

2.12 Replacement of point motor in the existing system is in S&T contractor scope of supply.

2.13 Use of QBAT relay for tracks more that 350m is allowed in present scope of work.

2.14 Typical point operation circuit of existing arrangements for sections Gr-239 is available on online.

2.15 Conventional DC track circuit will be retained and only modifications are required to suit RE by S&T contractor.

2.16 Earthing & Protection: Normal earth for conventional equipment and maintenance free earth for electronic equipment & surge protection for entire signalling installation to be considered for existing surge protection for entire signalling installations are already available. Present scope includes surge protection for new installation

2.17 Railways will provide the ABT meter.

2.18 Charges for accommodation and transportation shall not be borne by contractor for inspection agencies.

2.19 Provision of OFC repeater at Bhind is also to be included in the scope of this work.

2.20 Cable huts shall be provided with area and location at specified in the annexures.

2.21 Telecom PIJF cable is to be supplied and laid and wiring to be done for provision of Railway Auto Telephone. PIJF cable size 10 Pair with 5 Distribution points at each location shall be provided for subordinate rest house / camp office locations.

2.22 Following stations are already electrified. There is no scope of S&T modifications works at these places / locations. However, only interfacing and augmentation required in totality as required for completeness of section (if required).

2.22.1 In Gr-239 : Birla Nagar & Etawah,

2.23 The cable quantities, BOQ's are indicative only. S&T contractor needs to do survey and arrive the actual BOQ and cables requirements.

2.24 Cable courage plans, Track bonding plan, SIP, proposed / modified SIP (where new siding or new modifications are proposed) will be provided at the time of execution.

2.25 Existing signalling system & point machine arrangement at the stations having SM slides or level frames have to be modified to suit RE and no replacement or upgradation is required for the same.

2.26 TSS are located in Gr-241A at Safai; These are distributed equally two at each sections. Same shall be used for by S&T contractor in their S&T modification job.

2.27 IRS type standard mechanical lifting barrier and electric lifting barrier of Global make was available in existing system. S&T contractor shall provide the suitable provisions for RE.

~~2.28~~ In Gr-241A – 6 Quad cable scope at TSS / SP / SSP locations are required.

2.29 Following is the scope of work for OFC huts:

2.29.1 Shifting of existing telecom equipment in ASM room in OFC hut where new OFC huts are required.

2.29.2 Provision of cable termination panel and termination of cable, installation of FDMS, STM/MUX, wayside equipment wiring & communication is in the scope of augmentation of all OFC huts.

2.29.3 As part of passenger amenities scope, all the PA system equipment's are to be modified to suit RE immunisation.

2.29.4 S&T contractor shall terminate the OFC cable as per length of cable drum. Further as required at intermediate SP/SSP/TSS locations.

2.29.5 S&T contractor shall use same OFC cable trench for SCADA as well as SP / SSP / TSS requirements.

Chapter III- Miscellaneous Information about S&T Contractor Scope of Work

Miscellaneous Information for S&T Contractor Scope of work :

3.1 **Signaling**:- Trenching, laying of underground signaling cables/power cables, casting of foundations in JB's, supply of certain equipment's/materials, erection of apparatus cases and fixing of equipment wiring, testing & commissioning in connection with RE modification at MACLS/PI/RRI/EI stations & LC Gates to suit 25kV AC Traction.

3.2 **Telecom**: Trenching, laying, backfilling, jointing, terminating and testing of 6 quad cable and PIJF cable (as required) etc., supply, installation, testing and commissioning of way station equipment, HQ control equipment's, with power supply and emergency sockets etc., in SP,SSP, TSS & Station. Modification to existing PA system, supply, installation, testing and commissioning of STM and other associated equipment's.

3.3 Collection of latest SIP (Signal Interlocking Plan) and RCC (Route Control Chart or Table of Controls) from railway authorities,

3.4 Updating & submissions of SIP and RCC (or Table of controls) documents to suit for RE modifications works in the stations shall be with in the 40 days of award of contract / LOA date.

3.5 Following documents preparation are required for S&T modification works. Same were used only after prior approvals of Railway authorities:

3.5.1 Lightening, surge protection & earth plan,

3.5.2 Location of junction box lay out & wiring details,

3.5.3 Fuse Details,

3.5.4 Cable Termination Rack Diagram,

3.5.5 Equipment Rack Details,

3.5.6 Station / Gate working Rule / Rule Diagrams,

3.5.7 Circuit Diagrams,

3.5.8 Bonding plan (Station / Auto huts / gate huts / Control),

3.5.9 Track Circuit diagram (Station / auto huts / gate huts / control)

3.5.10 Equipment layout and details including cable troughs required (Station / auto huts / gate huts / control)

3.5.11 Equipment sizing (Station / auto huts / gate huts / control)

3.5.12 Power supply Diagram (Station / auto huts / gate huts / control)

3.5.13 Cable Route plan (Separate for station & block sections),

3.5.14 Cable Core chart

3.5.15 Panel / VDU diagram (station / gate huts)

3.5.16 Route Control table (Station / auto huts / gate huts),

3.5.17 Existing Signal interlocking plan (Station /auto huts / gate huts),

3.5.18 Route Control table (Station / Auto huts / gate huts),

3.6 Submission of S&T modifications proposed document to proof consultant as well as safety consultant for their approval before submitting to railway authorities (CORE PMC). Both Proof consultancy and safety consultant are appointed by BHEL as part of contract requirement.

3.7 Proof consultant is having following responsibilities

3.7.1 Evolve a systems approach with the BHEL (Design Director) so as to minimize the time required for final designs and construction drawings and

3.7.2 Proof check of the detailed calculations, drawings and designs, which have been approved by the BHEL (Design Director) fit for submission for Railways for approval.

3.8 **Safety** consultant to carryout safety audit at the design stage of the railway project in accordance with applicable laws and good industry practices.

3.9 Completion of all the outdoor activities in parallel with material procurement like:

3.9.1 Preparation & laying of foundations for new JB's in field,

3.9.2 Laying of Track crossing pipes,

3.9.3 Foundation of Electrical lifting barriers,

3.9.4 Completing the earthing pits etc.,

3.9.5 Digging of the cable trench wherever possible to meet the targeted schedules,

3.9.6 Foundation of Signals (If required).,

3.9.7 Signal screening activities completion,

3.9.8 Insulator for mechanical gates etc.,

3.10 Procurement of all the material (RDSO Approved items) except signal cables. Signal cables BOQ shall be shared to BHEL along with probable vendors and technical specification; so that it can be arranged by BHEL.

3.11 Storing of material at convenient locations by S&T contractors,

3.12 Completion of S&T modification works (supply, erection, commissioning and handing over to Railway authorities) as required for each station, LC gates and ***handing over to Railway authority.***

3.13 Attachments / Annexures:

The detailed scope of work, scope of supply, spares list, number of stations/ LC Gates / TSS / SP / SSP / other facilities for each GROUP are enclosed in the enclosed annexures.

Chapter IV- Objective of S&T Contractor's Services

1 **Objective of S&T sub-contractor services:**

S&T Sub-contractor shall have the following objectives:

4.1 To implement the S&T sub contractor shall do the modifications job in conformity with Railways' rules and regulations; and codes Local laws, bye laws, regulations, rules etc.

4.2 Total compliance of technical specifications and various other requirements contained in the RDSO, CORE etc., and standards.

4.3 High standards of quality assurance system complying ISO 9001 in the S&T sub-contractor as well as the works and activities of the Contractor(s).

4.4 That copies of all reference documents, specifications, drawings, management procedures, method statements, work procedures, inspection and testing procedures in a systematic manner to be maintained and adequate copies are provided to site supervision personnel.

4.5 Modern safety practices in execution of works at project sites for ensuring complete safety to works, workers, running trains, general public, and structures and properties adjacent to work sites.

4.6 Proper interface and coordination among the Railway, CORE PMC agency, BHEL PMC agency, Proof consultant, Safety consultant and other consultants/ agencies and local bodies/ state government.

4.7 Full documentation of the completed works by the contractors including applications for various approvals shall be passed through proof consultants, safety consultants via BHEL PMC.

4.8 Completion of project milestones / project within the schedule agreed with Railways.

4.9 Assistance to the BHEL up to the end of `Defect Liability Period' under the Contract. This may include coordination with Electrical Inspector of Govt. (E.I.G) and Commissioner of Railways Safety (CRS) in accordance with rules for opening of new railway lines.

4.10 That all its Personnel are experienced in modern methods of construction management, monitoring and supervision.

4.11 Compliance of all rules of railways related to the execution of the project. Special care will be taken in imposing necessary speed restriction, caution, arranging necessary traffic blocks & OHE blocks, where necessary etc., in order to ensure safety at all times.

4.12 Implementation of environmental mitigation measures

4.13 Minimizing claims disputes and assist in resolving them.

4.14 Wherever applicable, necessary CRS sanctions are obtained before starting of the work by contractor(s).

4.15 Optimal utilization of resources/contractual provisions with a view to bring economy in execution.

4.16 Implementation of various Labour Rules, Regulations and welfare measures as per the rules in force and laid down provisions in the Agreement.

4.17 All mandatory testing as per the nodal provision and instructions for P. way, signalling & electrical work and Environmental monitoring Plan are being conducted and records of such test be preserved for future.

4.18 A bidder shall not have a conflict of interest that affects the bidding process. Any bidder found to have a conflict of interest shall be disqualified.

4.19 Bidders are encouraged to submit their respective Bids after visiting the Project site and ascertaining for themselves the site conditions, traffic, location, surroundings, climate, availability of power, water and other utilities for construction, access to site, handling and storage of materials, weather data, applicable laws and regulations, and any other matter considered relevant by them.

4.20 S&T contractor shall fully aware the procedures and conditions as required by the railway authority for carrying out the activities at different stages. It includes documentation preparation, documents submission for approvals, documents required for seeking the approval of the commissioner of the railway safety, documents required for closing the punch list and final handing over for opening to traffic and as else in the process of handing over to railway authorities.

4.21 In case the S&T contractor is offering alternative specifications, materials and standards, the same should be already in use on a passenger carrying service anywhere in the world at speed more than 100 KMPH and are also in operation for more than 2 years. It shall be adopted on Indian Railway using the concept of cross approval / cross acceptance, which form part of the type approval guidelines already being followed by RDSO. The process shall also require validation from an independent safety accessor (ISA). Further, the safety integrated requirement / level of the system being offered should be SIL-4.

4.22 Railways will provide power blocks or traffic blocks or both during day or night as the case may be to enable the contractor to execute the construction works of overhead equipment, or such other works as may be determined by the Railways. S&T contractor shall take necessary steps for completion of the

4.23 The BHEL shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to RFP, RFQ, the Bidding Documents or the Bidding Process, including any error or mistake therein or in any information or data given in the enquiry

4.24 BHEL right to reserve termination of contract if the following aspects are made by vendor:

- 4.24.1 At any time a material misrepresentation is made or uncovered,
- 4.24.2 Bidder doesn't provide the information sought by BHEL/Railways as requested by Railways during approval / inspection process,
- 4.24.3 Mis-representation / improper response to the BHEL (or) Railway authorities,
- 4.24.4 Bidder is unable to withdraw the duties / meets the targeted scheduled activities.

Chapter VI- Quality

5.0 Introduction

This part of the specification covers the sampling, testing and quality assurance requirement for all S&T works covered in this specification.

This part of the technical specification shall be read with other parts of the technical specifications, general condition of contract and special condition of contract, which covers common QA requirements. Wherever RDSO standards have been referred, they shall be the latest revisions.

The QA and QC activities in all respects as specified in the technical specifications/ drawings / data sheets /quality plans / contract documents shall be carried out at no extra cost to the owner. The contractor shall prepare detailed construction and erection methodology scheme which shall be compatible to the requirements of the desired progress of work execution, quality measures, prior approvals if any and the same shall be got approved by the BHEL and Railway. If required, work methodology may be revised/reviewed at every stage of execution of work at site, to suit the site conditions by the contractor at no extra cost to the owner.

5.1 QA and QC Manpower

The contractor shall appoint adequate work force at site. Contractor shall give details organization chart and appointed manpower details for BHEL approval /acceptance. The contractor shall appoint a dedicated, experienced and competent QA&QC in charge at site. The contractor shall nominate one overall QA coordinator for the contract detailing the name, designation, contact details and address at the time of post bid discussions. All correspondence related to Quality Assurance shall be addressed by the contractors QA coordinator to BHEL. BHEL shall address all correspondence related to Quality issues to the contractors QA coordinator.

5.2 Quality Assurance And Supervision

The contractor shall follow the annexure-1 for the S&T works only and submit documents & take approval from BHEL and Railway as per annexure-1.

5.3 Sampling And Testing of Construction Materials

The method of sampling for testing of construction materials and work / job samples shall be as per the relevant IS / RDSO standards in line with the requirements of the technical specification / quality plans. The contractor shall carry out testing in accordance with the RDSO standards in line with the requirements of the technical specifications and quality plans.

Where no specific testing procedure is mentioned, the tests shall be carried out as per the best prevalent engineering practices and to the directions of the Engineer. All testing shall be done in the presence of the engineer or his authorized representative.

5.4 Purchase And Service

All Material shall be procured from RDSO/CORE approved vendor list.

5.5 Field Quality Plan

The contractor shall prepare the FQP in line with RDSO standard and take prior approval from BHEL and Railway.

5.6 General QA Requirements

The contractor shall ensure that the works, BOIs and services under the scope of contract at site or at any other place of work are in accordance with the BHEL technical specification, RDSO standards, approved drawings / data sheets / quality plans and BOQ. All the works, BOIs and services shall be carried out as per the best prevalent engineering practices and to the directions of the Engineer.

The contractor shall Maintain records of all testing, including cross referencing to items of work to which each test refers and the location from which any samples were obtained for testing.

5.7 Special Quality and inspection requirements

5.7.1 Ensure that the procurement of materials and equipment are from the authorised sources and are duly inspected by the nominated agencies.

5.7.2 Inspect and accept all materials received at site proposed to be incorporated in works.

5.7.3 Inspect the quality of the works with regard to workmanship, compliance with the specifications and all necessary testing required for acceptance of any item of work.

5.7.4 Maintain records of all testing, including cross referencing to items of work to which each test refers and the location from which any samples were obtained for testing.

5.7.5 Assist the contractor at any time during audit and inspection for the S&T‘s quality of the works by Railway.

5.7.6 Prepare methodology for executing the works, to be submitted 15(fifteen) days prior to the commencement of construction for Railway review.

5.7.7 Preparation of Field quality assurance plan and field inspections as and when required by Railway / BHEL.

5.7.8 Preparation and submission of documents for Railways/BHEL approval/review.

ANNEXURE 01

QUALITY ASSURANCE AND SUPERVISION

11.1 Quality of Materials and workmanship

11.1.1 The Contractor shall ensure that the Construction, Materials and workmanship are in accordance with the requirements specified in this Agreement, Specifications and Standards and Good Industry Practice.

11.1.2 The Contractor warrants that all Materials shall be new, unused, not reconditioned and in conformity with Specification and Standards, Applicable Laws and Good Industry Practice, and that the Contractor shall not use any materials which are generally recognised as being deleterious under Good Industry Practice.

11.2 Quality control system

11.2.1 The Contractor shall establish a quality control mechanism to ensure compliance with the provisions of this Agreement (the "**Quality Assurance Plan**" or "**QAP**") in accordance with ISO-9001.

11.2.2 The Contractor shall, within 30 (thirty) days of the Appointed Date, submit to the Authority's Engineer its Quality Assurance Plan which shall include the following:

(a) organisation, duties and responsibilities, procedures, inspections and documentation;

(b) quality control mechanism including sampling and testing of Materials, test frequencies, standards, acceptance criteria, testing facilities, reporting, recording and interpretation of test results, approvals, check list for site activities, and proforma for testing and calibration in accordance with the Specifications and Standards and Good Industry Practice; and

(c) internal quality audit system.

11.2.3 The Authority's Engineer shall convey its comments to the Contractor within a period of 21 (twenty-one) days of receipt of the QAP stating the modifications, if any, required, and the Contractor shall incorporate those in the QAP to the extent required for conforming with the provisions of this Clause 11.2.

11.2.4 The Contractor shall procure all documents, apparatus and instruments, fuel, consumables, water, electricity, labour, Materials, samples, and qualified personnel as are necessary for examining and testing the Works, Materials and workmanship in accordance with the Quality Assurance Plan.

11.2.5 The cost of testing of Construction, Materials and workmanship under this Article 11 shall be borne by the Contractor.

11.3 Methodology

The Contractor shall, at least 15 (fifteen) days prior to the commencement of construction, submit to the Authority's Engineer for review the methodology proposed to be adopted for executing the Works, giving details of equipment to be deployed, traffic management and measures for ensuring safety. The Authority's Engineer shall complete the review and convey its comments, if any, to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor. For the avoidance of doubt, the Parties agree that the methodology for executing critical works such as laying foundations, erection of masts and stringing of conductors shall ordinarily rely on mechanised means. For the avoidance of doubt, the Contractor shall use auger machine for excavation of foundations, wiring trains for stringing of conductors and mechanised equipment for erection of steel structures, or any equivalent thereof.

11.4 Inspection and review by the Authority

The Authority or any representative authorised by the Authority in this behalf may inspect and review the progress and quality of the construction of Works and issue appropriate directions to the Authority's Engineer and the Contractor for taking remedial action in the event the Works are not in accordance with the provisions of this Agreement.

11.5 External technical audit

At any time during construction, the Authority may appoint an external technical auditor to conduct an audit of the quality of the Works. The findings of the audit, to the extent accepted by the Authority, shall be notified to the Contractor and the Authority's Engineer for taking remedial action in accordance with this Agreement. The Contractor shall provide all assistance as may be required by the auditor in the conduct of its audit hereunder.

11.6 Inspection of records

The Authority shall have the right to inspect the records of the Contractor relating to the Works.

11.7 Inspection of Works

11.7.1 The Authority's Engineer and its authorised representative shall at all times:

(a) have full access to all parts of the Site and to all places from which natural Materials are being obtained for use in the Works; and

(b) during production, manufacture and construction at the Site and at the place of production, be entitled to examine, inspect, measure and test the Materials and workmanship, and to check the progress of manufacture of Materials.

11.7.2 The Contractor shall give the Authority's Engineer and its authorised agents access, facilities and safety equipment for carrying out their obligations under this Agreement.

11.7.3 The Authority's Engineer shall submit a monthly inspection report (the "**Inspection Report**") to the Authority and the Contractor bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. For the avoidance of doubt, such inspection or submission of Inspection Report by the Authority's Engineer shall not relieve or absolve the Contractor of its obligations and liabilities under this Agreement in any manner whatsoever.

11.8 Monthly progress reports

During the Construction Period, the Contractor shall, no later than 10 (ten) days after the close of each month, furnish to the Authority and the Authority's Engineer a monthly report on the progress of Works and shall promptly give such other relevant information as may be required by the Authority's Engineer.

11.9 Samples

The Contractor shall submit the following samples of Materials and relevant information to the Authority's Engineer for review:

(a) manufacturer's test reports and standard samples of manufactured Materials; and

(b) samples of such other Materials as the Authority's Engineer may require.

11.10 Tests

11.10.1 For determining that the Works conform to the Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out or cause to be carried out tests, at such time and frequency and in such manner as specified in this Agreement, and in accordance with Good Industry Practice for quality assurance. The Contractor shall, with due diligence, carry out all the tests in accordance with the Agreement and furnish the results thereof to the Authority's Engineer. Of the total tests for each category or type to be undertaken by the Contractor under the provisions of this Agreement and Good Industry Practice, the Authority's Engineer shall (a) carry out or cause to be carried out, test checks equal to about 10% (ten per cent) of the number of the tests required to be undertaken by the Contractor; and (b) witness or participate in at least 10% (ten per cent) of the number of such tests conducted or caused to be conducted by the Contractor.

11.10.2 In the event that results of any tests conducted under this Clause 11.10 establish any Defects or deficiencies in the Works, the Contractor shall carry out remedial measures at its own cost and furnish a report to the Authority's Engineer in this behalf. The Authority's Engineer shall require the Contractor to carry out or cause to be carried out tests to determine that such remedial measures have brought the Works into compliance with the Specifications and Standards, and the procedure shall be repeated until such Works conform to the Specifications and Standards.

11.11 Examination of work before covering up

In respect of the work which the Authority's Engineer is entitled to examine, inspect, measure or test before it is covered up or put out of view or any part of the work is

placed thereon, the Contractor shall give notice to the Authority's Engineer whenever any such work is ready and before it is covered up. The Authority's Engineer shall then either carry out the examination, inspection or testing without unreasonable delay, or promptly give notice to the Contractor that the Authority's Engineer does not require to do so. Provided, however, that if any work is of a continuous nature where it is not possible or prudent to keep it uncovered or incomplete, the Contractor shall notify the schedule of carrying out such work to give sufficient opportunity, not being less than 3 (three) business days' notice, to the Authority's Engineer to conduct its inspection, measurement or test while the work is continuing. Provided further that in the event the Contractor receives no response from the Authority's Engineer within a period of 3 (three) business days from the date on which the Contractor's notice hereunder is delivered to the Authority's Engineer, the Contractor shall be entitled to assume that the Authority's Engineer would not undertake the said inspection.

11.12 Rejection

11.12.1 If, as a result of an examination, inspection, measurement or testing, any Plant, Material, design or workmanship is found to be defective or otherwise not in accordance with the provisions of this Agreement, the Authority's Engineer may reject such Plant, Material, design or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the Defect and ensure that the rejected item complies with the requirements of this Agreement.

11.12.2 If the Authority's Engineer requires a Plant, Material, design or workmanship to be retested, the tests shall be repeated on the same terms and conditions, as applicable in each case. If the rejection and retesting cause the Authority to incur any additional costs, such costs shall be recoverable by the Authority from the Contractor and may be deducted by the Authority from any monies due to be paid to the Contractor.

11.12.3 The Contractor shall not be entitled to any extension of time on account of rectifying any Defect or retesting as specified in this Clause 11.12.

11.12.4 No examination, inspection, measurement or testing of any Plant, Material, design or workmanship by the Authority's Engineer or its failure to convey its observations or to examine, inspect, measure or test shall relieve the Contractor of its obligations and liabilities under this Agreement in any manner nor shall the Authority be liable for the same in any manner.

11.13 Remedial work

11.13.1 Notwithstanding any previous test or certification, the Authority's Engineer may instruct the Contractor to:

(a) remove from the Site and replace any Plant or Materials which are not in accordance with the provisions of this Agreement;

(b) remove and re-execute any work which is not in accordance with the provisions of this Agreement and the Specification and Standards; and

(c) execute any work which is urgently required for the safety of the Railway Project, whether because of an accident, unforeseeable event

11.13.2 If the Contractor fails to comply with the instructions issued by the Authority's Engineer under Clause 11.13.1, within the time specified in the Authority's Engineer's notice or as mutually agreed, the Authority's Engineer may advise the Authority to have the work executed by another agency. The cost so incurred by the Authority for undertaking such work shall, without prejudice to the rights of the Authority to recover Damages in accordance with the provisions of this Agreement, be recoverable from the Contractor and may be deducted by the Authority from any monies due to be paid to the Contractor.

11.15 Quality control records

The Contractor shall hand over to the Authority's Engineer a copy of all its quality control records and documents before the Completion Certificate is issued

11.16 Video recording

During the Construction Period, the Contractor shall provide to the Authority for every calendar quarter, a video recording, which will be compiled into a 3 (three) hour digital video disc or any substitute thereof, covering the status and progress of Works in that quarter. The video recording shall be provided to the Authority no later than 15 (fifteen) days after the close of each quarter after the Appointed Date.

11.17 Suspension of unsafe Construction Works

11.17.1 Upon recommendation of the Authority's Engineer to this effect, or on its own volition in cases of emergency or urgency, the Authority may by notice require the Contractor to suspend forthwith the whole or any part of the Works if, in the reasonable opinion of the Authority's Engineer or the Authority, as the case may be, such work threatens the safety of the Users and or other persons on or about the Railway Project.

11.17.2 The Contractor shall, pursuant to the notice under Clause 11.17.1, suspend the Works or any part thereof for such time and in such manner as may be specified by the Authority and thereupon carry out remedial measures to secure the safety of suspended works, the Users, other persons and vehicles on or about the Railway

Project. The Contractor may by notice require the Authority's Engineer to inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked. Upon receiving the recommendations of the Authority's Engineer, the Authority shall either revoke such suspension or instruct the Contractor to carry out such other and further remedial measures as may be necessary and reasonable and the procedure set forth in this Clause 11.17 shall be repeated until the suspension hereunder is revoked.

Chapter VII- Documentation Requirement

6 Documentation requirements:

6.1 The documents required for the S&T modifications to be completely developed by S&T contractor.

6.2 The necessary SIP's are enclosed for preliminary information. However, after award of contract, it is S&T contractor responsibility to obtain the latest SIP as well as RCC from railway authority and prepare the downstream engineering documents, submitted for proof consultant, safety consultant, and followed by CORE PMC.

6.3 As preparation & approval of all the S&T documents are in the scope of S&T contractor, prior to work, the documentation shall be provided in advance, so that the necessary approvals internally from different agencies (Proof consultant, safety consultant etc.,) will be completed by BHEL.

6.4 The detailed list of documents as a minimum are as mentioned in the "Miscellaneous information on scope of work".

6.5 Loose items supply by BHEL: Vendor to specify the exact quantities for the following items which are loosely supplied by BHEL to vendor.

Cable BOQ			
Sr. No.	**Description of materials**	**Unit**	**Quantity**
1	Signalling cable 18C x1.5 Sqmm	Kms	(Vendor to provide)
2	Cable signalling 12C x 1.5 Sqmm	Kms	(Vendor to provide)
3	Cable signalling 2Cx1.5 Sqmm	Kms	(Vendor to provide)
4	Cable signalling 2C x2.5 Sqmm	Kms	(Vendor to provide)
5	Power cable 2C x 2.5sqmm	Kms	(Vendor to provide)
6	Power cable 2C x 25 Sqmm	Kms	(Vendor to provide)
7	Power cable 2C x50 Sqmm	Kms	(Vendor to provide)
8	Power cable 2C x70 Sqmm AL EXPE Two nos.	Kms	(Vendor to provide)
9	6- Quad jelly filled U/G cable 0.9mm dia copper	Kms	(Vendor to provide)

7.8 CHECK LIST

Vendor shall submit the following documents mandatorily as part of COMPLTE technical offer.

Enquiry No. / Date :
Name of the Bidder :
Project Name :
Item Description :

S. No	Document	Bidder confirmation (Yes/No)	Remarks
1	Technical offer complies with the specifications and its associated annexures, pre-bid clarifications in Toto and there are no technical deviations. Signed and stamped copy of this specification along with annexures enclosed along with technical offer.		
2	In case of deviation, vendor to confirm that these are technically not feasible deviations and same are submitted in BHEL format. In case technically feasible deviations are proposed by the bidder and subsequently withdrawn, no commercial implications can be claimed by the bidder		
3	All items are manufactured conforming to latest version of material grade standard and manufacturing standard mentioned in this specifications		
4	Bidder to quote as per BHEL price format only. No other format is acceptable. Bidder to attach un-priced price bid format by indicating "QUOTED" against each item and submit with technical offer duly signed & stamped.		
5	For addition/reduction of quantity, unit rate quoted in the present offer shall be considered during ordering and shall be valid up to execution of the contract to the extent of + 10% and -30% of order Value.		
6	Bidder to agree that Bill of materials / list of equipment furnished in the offer is only for information; Vendor shall supply all the material to meet the performance, sizing & technical requirement as per specification & its Annexures, scope matrix etc.		
7	Check list, Deviation format, All Prices in PRICE SCHEDULE, BOQ with unit rates, Signed copy of total technical specification, Pre-qualification criteria required supporting documents, Detailed techno-commercial offer are enclosed as a minimum part of offer submission.		

(Bidder's Signature and stamp with date)

7.9 **DEVIATION FORMAT**

Enquiry No.:

Item:

Name of Bidder:

Offer Ref. No.:

Sl. No.	Clause no. & Spec. no.	Description as per Specification	Deviation taken	Nature of Deviation	Remarks

NOTES:

1. Technical offer of the bidder will be evaluated only on the basis of Deviation Schedule. Deviation Schedule constitutes this sheet (with these Notes) duly signed and stamped.
2. Deviations, if any, shall be clearly brought out only in this format. Deviations mentioned / taken elsewhere or in any other format will be ignored.
3. Additional sheets in the same format can be attached by the vendor, if necessary.
4. Nature of Deviations shall only be of Design / Manufacturing constraints and non-availability of items / components / makes in market.
5. No price implications shall be entertained for deviations withdrawn during the technical scrutiny. If any deviations are accepted by BHEL during technical scrutiny then also there will be no price implication. Hence, in no case there will be consideration of Price implications.
6. Reasons for the deviations shall be specified in the Remarks column.
7. If there are no deviations from the specifications, bidder still has to submit the signed copy of this format by writing "NO Deviations" on this format.
8. If the "Deviation Schedule" is not submitted along with the offer, the bidder's offer is likely to be rejected without any further interaction with the bidder. Only the accepted deviations in conjunction with the original tender shall constitute the contract document for the award of job to the bidder

SIGNATURE OF THE BIDDER_____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

Chapter VIII: Indicative Map