

Bid Document for Works

(Two-Envelope Bidding Process)

Name of work: Shifting of S&T Cables and Associated Works, at Patli station of N. Rly. in Delhi-Rewari, section in connection with laying of tracks for HORC project.

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Contract title: Patli S&T Tender (Cable Shifting and associated works)

Project: Haryana Orbital Rail Corridor Project

Employer: Haryana Orbital Rail Corporation Limited

Country: INDIA

Issued on: 21.11.2023

Bid No: HORC/HRIDC/Patli/S&T-01/2023

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Volume I

Part I

Bidding Procedure

Section 1

Instruction to Bidders (ITB)

Section 1: Instructions to Bidders (ITB)

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Section 1: Instructions to Bidders (ITB)

A. General

- 1. Scope of Bid**
- 1.1** In connection with the Invitation for Bids indicated in the Bid Data Sheet (BDS), Haryana Orbital Rail Corporation Limited (HORCL), hereinafter referred to as the ‘Employer’, issues these Bidding Documents for the Procurement of Works as specified in Section 5: Works Requirements. The name, identification, number of contract(s) for the National Competitive Bidding (NCB) are provided in the BDS.
- 1.2** Throughout these Bidding Documents:
- (a) the term “in writing” means communicated in written form and delivered against receipt;
 - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - (c) “day” means calendar day.
- 2. Source of Funds**
- 2.1** The required funds have been sourced by EMPLOYER, unless otherwise specified in the BDS.
- 3. Corrupt Practices**
- 3.1** The Employer requires that bidders, suppliers, and contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Employer:
- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) “corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of any party in the procurement process or the execution of a contract;
 - (ii) “fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;
 - (iii) “collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Employer, designed to influence the action of any party in a procurement process or the execution of a contract;
 - (iv) “coercive practice” means harming or threatening to harm, directly or indirectly, persons, or their property

to influence their participation in a procurement process, or affect the execution of a contract;

- (b) will reject a Bid for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract; and
- (c) will sanction a party or its successor, including declaring ineligible, either indefinitely or for a stated period of time, to participate in Employer's activities, if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for, or in executing a contract of the employer.

- 4. Eligible Bidders** 4.1 A Bidder may be a natural person, private entity, government-owned entity, or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a Joint Venture (JV). The bidder must ensure the following:
- (a) In case of Single Entity:
 - (i) Submit Power of Attorney authorizing the signatory of the bid to commit the bidder.
 - (b) In case of Joint Venture:
 - (i) The number of partners in the JV shall not be more than that indicated in the Bid Data Sheet (BDS);
 - (ii) Submit MOU, as per form given in Section 4.
 - (iii) The JV shall nominate a Representative through Power of Attorney (Form given in Section 4) who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution.
 - (iv) Submit Power of Attorney by individual partners to lead partners as per form given in Section 4.
 - (v) In case a Joint Venture is the successful bidder, the Joint Venture Agreement should be entered by the Joint Venture partners. The duly signed Joint Venture Agreement should be submitted along with the Performance Security to the employer after notification of the award of contract within 28 days.
 - (c) Foreign Firm(s) shall only be eligible to participate either as a single entity or as a partner in JV, if they have already

opened project office in India and have to submit proof of the same along with the bid, failing which the bid shall be rejected.

- (d) Any bidder from a country which shares a land border with India will be eligible to bid, only if the bidder is registered with the Competent Authority as stated in DoE Order no 6/18/2019-PP dtd 23 July 2020 (Public Procurement No.1). However, it will not apply to bidders from those countries (even if sharing land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects as stated in DoE Order no 6/18/2019-PP dtd 23 July 2020 (Public Procurement No.2) or any amendments thereof.

1) “Bidder from a country which shares a land border with India” means:

- i. An entity incorporated, established or registered in such a country; or
- ii. A subsidiary of an entity incorporated, established or registered in such a country; or
- iii. An entity substantially controlled through entities incorporated, established or registered in such a country; or
- iv. An entity whose beneficial owner is situated in such a country; or
- v. An Indian (or other) agent of such an entity; or
- vi. A natural person who is a citizen of such a country; or
- vii. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

2) The *beneficial owner* for the purpose of 1) above will be as under:

- i. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more juridical person, has a

controlling ownership interest or who exercises control through other means.

Explanation—

- a. “Controlling ownership interest” means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company.
 - b. “Control” shall include the right to appoint majority of the directors or to control the management or policy decision including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.
- ii. In case of partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together or through one or more juridical person, has ownership or entitlement to more than fifteen percent of capital or profits of the partnership;
 - iii. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more juridical person, has ownership or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 - iv. Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
 - v. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- (e) Eligible bidder can be either ‘Class-I Local’ or ‘both Class-I Local and Class-II Local’ or ‘combination of Class-I Local, Class-II Local and Non-local’, as defined below.

- i. Class-I Local- means a supplier or service provider, whose goods, services or works offered for procurement meets the minimum local content of 50%.
- ii. Class-II Local- means a supplier or service provider, whose goods, services or works offered for procurement meets the minimum local content of 20%.
- iii. Non-local- means a supplier or service provider, who does not meet the requirements as per i and ii above.

The Bidders are required to submit a declaration using ‘Form-MII’ of Section 4 Bidding Forms.

In keeping with the Public Procurement (Preference to Make in India) Order 2017, as amended from time-to-time up to 28 days prior to deadline for submission of bids, in case any bidder, who does not meet the eligibility criteria as prescribed vide clause 4.1 above, shall participate at its own risk & cost and Employer shall not be liable for any loss or damage caused to the bidder.

4.2 Deleted.

4.3 A Bidder shall not have conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process, if, including but not limited to:

- (a) they have controlling shareholders in common; or
- (b) they receive or have received any direct or indirect subsidy from any of them; or
- (c) they have the same legal representative for purposes of this bid; or
- (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or
- (e) a Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the party is involved. However, this does not

limit the inclusion of the same subcontractor in more than one bid; or

- (f) a Bidder participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; or
- (g) a Bidder was affiliated for any period(s) during last two years before the date of issue of Invitation for Bids with a firm or entity that has been hired (or is proposed to be hired) by the Employer as Engineer for the contract.

4.4 The bidder will be disqualified if:

- a. The bidder or any of its constituents has been blacklisted/banned business dealings for all Government Departments or by Ministry of Railways or by EMPLOYER at any time till finalization of bids, except in cases where such blacklisting/banning has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produced.
- b. Any previous contract of the bidder or any of its constituents had been terminated for contractor's failure or part terminated for its failure as a JV partner with forfeiture of its full Performance Security, by Haryana Orbital Rail Corporation Limited.(HORCL) at any time starting from 3 years before the deadline for submission of bids and upto one day before the date of opening of price bids;

Provided, however, there is no stay order or declaration by any Court against such termination of the Contract by Haryana Orbital Rail Corporation Limited. or such termination of the Contract has not been revoked by Haryana Orbital Rail Corporation Limited or competent authority of EMPLOYER has not passed an order of non-applicability of disqualification of the bidder or any of its constituents despite such termination.

- c. The bidder or any of its constituents has been imposed delay damages of 5% or more of contract value by EMPLOYER due to delay in the implementation of any previous contract within the period of last 2 years before the deadline for submission of bids (Period of 2 years shall be reckoned from the date on which the total accrued amount of Delay Damages has reached 5% or more of the contract price) or such accrued delay damages has not been fully recovered before the deadline for submission of bids on account of contractor's request for deferring recovery to maintain cash flow and EMPLOYER has acceded to the same

in the interest of the project or the work under the previous contract in question has not been completed before the deadline for submission of bids, unless imposition of such delay damages has been set aside by the Competent Authority.

- d. The bidder or any of its constituents:
 - i. has suffered bankruptcy/insolvency or
 - ii. has any ongoing case of insolvency before the NCLT/any Court where Interim Resolution Professional (IRP) has been appointed or is at any later stage of the insolvency process

On the deadline of submission of bids or thereafter till finalization of bids.

- e. The bidder is found ineligible by the Employer, in accordance with ITB-3.
- f. The bidder or its constituent(s) has been declared by EMPLOYER to be a poor performer and the period of poor performance is still in force on the deadline for submission of bids.

OR

The bidder or its constituent(s) has been declared by EMPLOYER to be a poor performer at any time after the deadline for submission of bids and upto one day before the date of opening of price bids.

- g. The bidder or any of its constituents has changed its name or created a new business entity as covered by the definition of “Allied Firm” under para 1102 (iii) of Chapter XI of Vigilance Manual of Indian Railways (available on website of Indian Railways), consequent to having been banned business dealings or suspended business dealings or having been declared poor performer.
- h. The bidder or any of its constituents is from a country which shares a land border with India and is not registered with the Competent Authority as stated in DoE Order no 6/18/2019-PP dtd 23 July 2020 .
- i. Bidder is an Entity of such countries, which have been identified by the Railway Ministry as not allowing Indian Companies to participate in their Government procurements for any item

related to Railway Ministry, shall not be allowed to participate, except for the list of items published by the Railway Ministry permitting their participation.

- j. Bidder fails to disclose any previous transgressions made in respect of Code of Integrity [Rule 175 (1) of General Financial Rules 2017] with any entity in any country during the last three years or of being debarred by any other procuring entity

The Bidder shall submit an affidavit stating that they are not liable to be disqualified as per this sub clause using the appropriate Performa given in Section 4. Non-submission of an affidavit by the bidder shall result in summary rejection of his bid.

- 4.5 Bidders shall immediately inform the Employer in case they cease to fulfill eligibility in terms of ITB 4.3 & 4.4. In case the bidder fails to inform the Employer or submits a false affidavit his bid shall be summarily rejected and bid security shall be forfeited. The bidder shall also be liable for Banning of Business dealings for a period up to five years. .

5. Eligible Material, Equipment and Services

- 5.1 The materials, equipment and services to be supplied under the Contract shall be from the approved sources as specified in Section 5: Works Requirements.

B. Contents of Bidding Document

6. Sections of Bidding Document

- 6.1 The Bidding Document consists of Volume-I (Parts I, II and III) and Volume-II, which includes all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.
- 6.2 The Invitation for Bids (IFB) issued by the Employer is not part of the Bidding Document.
- 6.3 The Employer is not responsible for the completeness of the Bidding Document and their Addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of **the** bid.

- 7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting**
- 7.1** A prospective Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address indicated in the BDS or raise his inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received no later than twenty one (21) days prior to the deadline for submission of bids. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2.
- 7.2** The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
- 7.3** The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4** The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the BDS either in person or through video conferencing. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5** The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer not later than one week before the meeting.
- 7.6** Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3.

Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting.

- 7.7 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
- 8. Amendment of Bidding Document**
- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing addenda.
- 8.2 Any addendum/corrigendum issued shall be part of the Bidding Document.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 22.2

C. Preparation of Bids

- 9. Cost of Bidding**
- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 10. Language of Bid**
- 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in English. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in English in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 11. Documents Comprising the Bid**
- 11.1 The bidder shall submit both technical and financial bids through e tendering portal only.
- 11.2 Initially, only the Technical Bids are opened through e tendering portal. The Technical Bids are evaluated by the Employer. No amendments or changes to the Technical Bids

are permitted. Bids with Technical Bids which do not conform to the specified requirements will be rejected as deficient Bids.

11.3 Price Bids of technically compliant Bids shall be opened through e tendering portal of EMPLOYER at a date and time advised by the Employer. The Price Bids are evaluated and the Contract is awarded to the Bidder whose Bid has been determined to be the lowest evaluated substantially responsive Bid.

11.4 The Technical Bid shall contain the following :

- (a) Scanned copy of Letter of Technical Bid in accordance with ITB 16;
- (b) Scanned copy of Bid Security, in accordance with ITB Clause 19;
- (c) Scanned copy of alternative Technical Bid, if permissible, in accordance with ITB Clause 13;
- (d) Scanned copy of written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB Clause 20.2;
- (e) Scanned copy of documentary evidence in accordance with ITB Clause 17 establishing the Bidder's qualifications to perform the contract; and
- (f) Scanned copy of any other document required in the BDS.

11.5 The Price Bid shall contain the following :

- (a) Scanned copy of Letter of Price Bid. ;
- (b) Summary sheet completed online as per ITB 14
- (c) Online alternative Price Bid corresponding to the alternative Technical Bid, if permissible, in accordance with ITB Clause 13; and
- (d) any other document required in the BDS.

12. Bid Letters and Price Schedules

12.1 The Bidder shall submit the Technical Bid and the Price Bid online through e tendering portal using appropriate letter formats furnished in Section 4: Bidding Forms. These forms must be completed without any alterations to their format, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

12.2 The Bidder shall submit, as part of the Price Bid, including the Bill of Quantities through online e –Tendering portal.

- 13. Alternative Bids**
- 13.1** Unless otherwise indicated in the BDS, alternative bids shall not be considered.
- 13.2** When alternative periods for completion are explicitly invited, a statement to that effect will be included in the BDS, as will the method of evaluating different periods for completion.
- 14. Bid Prices and Discounts**
- 14.1** The prices quoted by the Bidder online in the summary sheet of Bill of Quantities shall conform to the requirements specified below.
- 14.2** In the BOQ, quantity and unit rates and thereby the amount against each item have been indicated. From this, price of each schedule/bill has been worked out and indicated in the summary sheet in BOQ. The Bidder shall quote rates as single percentage above/below/at par in figures as per format for each schedule/bill in the summary sheet. **The rates quoted by the bidder in summary sheet will only be considered for evaluation of bids. Rates offered through any other medium or at any other location will not be considered.**
- 14.3** Deleted
- 14.4** The Bidder can modify its bid and resubmit it any number of times through e Tendering portal before the deadline for submission of bids. Any other correspondence in connection with the bid is not permissible and shall not be considered in bid evaluation.
- 14.5** Unless otherwise provided in the BDS and the Contract, the rates and prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. In such a case, the indices and weightings for the price adjustment formulae shall be as specified in the Tables of Adjustment Data included in Contract Data.
- 14.6** If so indicated in ITB 1.1, bids are being invited for individual contracts or for any combination of contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4,

provided the bids for all contracts are submitted and opened at the same time.

- 14.7** All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause (including standard specifications), as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.
- 14.8** Bidders should note that during the progress of the Works, the foreign currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Sub-Clause 14.15 of the Conditions of Contract. Any such adjustment shall be effected by comparing the percentages quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.
- 14.9** Bidder should note that non-submission of the Letter of Price Bid (LPB) and/or Summary sheet of BOQ by the bidder shall result in summary rejection of his bid.
- 15. Currencies of Bid and Payment** **15.1** The bidder shall quote the unit rates and the prices entirely in the Indian Rupees.
- 16. Documents Comprising the Technical Bid** **16.1** The Bidder shall furnish a commitment in Letter of Technical Bid(LTB)for deployment of equipment and personnel as stipulated in Section 5: Work's Requirement
- 16.2** The bidder shall furnish commitment in LTB for submitting construction method statement for all major activities of work and get this approved from the engineer prior to the commencement of work on that activity in case of award of contract.
- 16.3** The Bidder shall furnish a commitment in Letter of Technical Bid (LTB) for adhering to mobilisation and construction schedule as stipulated in Section 5: Work's Requirement.
- 16.4** Bidder should note that non-submission of the Letter of Technical Bid (LTB) by the bidder shall result in summary rejection of his bid.
- 17. Documents Establishing the** **17.1** To establish its qualifications to perform the Contract in accordance with Section 3: Evaluation and Qualification

Qualifications of the Bidder

Criteria, the Bidder shall submit as part of its technical Bid the information requested in the corresponding information sheets included in Section 4: Bidding Forms.

17.2 Domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 34.

18. Period of Validity of Bids

18.1 Bids shall remain valid for a period of 120 days after the bid submission deadline date prescribed by the employer. A bid valid for a shorter period shall be rejected by the employer as non-responsive.

18.2 In exceptional circumstances, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended upto the date mentioned in the letter of request for extension. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid.

**19. Bid Security/
Bid Security
Declaration**

- 19.1** Unless otherwise specified in the BDS, the Bidder shall furnish as part of its bid, in original form, either a Bid Security Declaration or a bid security in original form and for the said amount of Indian Rupees as specified in the BDS.
- 19.2** If a Bid Security Declaration is required pursuant to ITB 19.1, it shall use the form included in Section 4 (Bidding Forms). The Employer will declare a Bidder ineligible to be awarded a contract for a period of 3 (three) years , if a Bid Security Declaration is executed
- 19.3** If a Bid Security is specified pursuant to ITB 19.1, the bid security shall be, at the Bidder’s option, in any of the following forms:
- (a) A Cashiers or Banker’s certified cheque or Bank draft drawn on a Scheduled/Nationalized Bank in India in favour of “Haryana Orbital Rail Corporation Limited” payable at Gurugram; or
 - (b) An unconditional bank guarantee using the Form given in Section 4: Bidding Forms. The bank guarantee shall be from a bank having minimum net worth of over INR 2.35 Lakhs from the specified banks as under:
 - (i) **a Scheduled Bank in India, or**
 - (ii) **a Foreign Bank having their operations in India, or**
 - (iii) **a Foreign Bank which do not have operations in India is required to provide a counter-guarantee by State Bank of India,**

The bid security shall be valid upto the date as mentioned in BDS, or upto the date mentioned in the letter of request for extension, if any under ITB 18.2.

In case the bidder has opted for Bid security in the form of an unconditional Bank guarantee, the bidder should upload the scanned copy of Bank Guarantee with the bid. The original Bank Guarantee should be delivered in person to the official nominated as indicated in the bid data sheet within 5 working days of deadline of submission of bids. Non submission of scanned copy of Bank Guarantee with the bid on e-tendering portal and/or non-submission of original Bank Guarantee within the specified period shall lead to summary rejection of bid. The details of the BG, physically submitted should match with the details available in the

scanned copy and the data entered during bid submission time, failing which the bid will be rejected.

- 19.4** Any bid not accompanied by an enforceable and compliant bid security or Bid Security Declaration, as required in accordance with ITB 19.1, shall be summarily rejected by the Employer as non-responsive.
- 19.5** The bid security of the Bidders who have been determined to be unqualified for opening of their financial bids shall be returned within 3 working days after the opening of financial bids. The Bid Security of unsuccessful bidders shall be returned within 3 working days after issue of LOA to the successful Bidder.
- 19.6** The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.
- 19.7** The bid security may be forfeited or the Bid Security Declaration executed;
- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bids, except as provided in ITB 18.2 or
 - (b) if a Bidder misrepresents or omits the facts in order to influence the procurement process;
 - (c) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 40;
 - (ii) furnish a performance security in accordance with ITB 41;
 - (iii) accept the correction of its Bid Price pursuant to ITB 32.2; or
 - (iv) furnish a domestic preference security if so required.
 - (d) if the undertaking of the affidavit submitted by the bidder or its constituents in pursuance to ITB clause 4.4 or any of the declarations of Letter of Technical Bid or Letter of Price Bid submitted by the bidder has been found to be false at any stage during the process of bid evaluation.
- 19.8** The Bid Security of a JV shall be in the name of the JV that submits the bid. If the JV has not been legally constituted at the time of bidding, the Bid Security shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.

- 20. Format and Signing of Bid**
- 20.1** The Bidder shall submit Technical Bid and the Price Bid as described in ITB Clause 11 through e tendering portal of Govt. of Haryana (<https://etenders.hry.nic.in>).
- 20.2** The Bid shall be digitally signed by a person dully authorized to sign on behalf of the bidder.
- 20.3** DELETED
- D. Submission and Opening of Bids**
- 21. Online submission and opening of bids**
- 21.1** The Bidder shall submit the Technical and price bid through e tendering portal of Govt. of Haryana (<https://etenders.hry.nic.in>)
- 21.2** DELETED
- 21.3** DELETED
- 21.4** DELETED.
- 21.5** DELETED
- 21.6** No details about price proposal shall be disclosed directly or indirectly in the technical proposal failing which the bid shall be rejected.
- 22. Deadline for Submission of Bids**
- 22.1** Bids must be received by the Employer through e tendering portal Govt. of Haryana (<https://etenders.hry.nic.in>)_only not later than the date and time indicated in the BDS.
- 22.2** The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
- 23. Late Bids**
- 23.1** The e-Tendering portal cannot accept any bid once the deadline for the Bid submission has lapsed.
- 24. Withdrawal, Substitution, and Modification of Bids**
- 24.1** A Bidder may withdraw, or modify its bid after it has been submitted through e-Tendering portal before the deadline for submission of bids..

(a) DELETED

(b) DELETED

24.2 DELETED.

24.3 No bid may be withdrawn, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

25. Bid Opening

25.1 The Employer shall conduct the opening of Technical Bids through e-tendering portal of Govt. of Haryana (<https://etenders.hry.nic.in>).

25.2 The Price Bids will remain unopened until the time of opening of the Price Bids. The date, and time, of the opening of Price Bids will be announced through e- tendering portal.

25.3 DELETED

25.4 DELETED

25.5 DELETED

25.6 DELETED

25.7 DELETED

25.8 At the end of the evaluation of the Technical Bids, the Employer will intimate bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award. The date and time of the opening of Price Bids will be advised through email.

25.9 The Employer will notify Bidders in writing who have been rejected on the grounds of being substantially non-responsive to the requirements of the Bidding Document and who have been determined as being not qualified as a result of evaluation of Technical Bid and their Price Bids shall not be opened. The bid security of the bidders shall be returned as per due process.

25.10 The Employer shall conduct the opening of Price Bids through the tendering portal of Govt. of Haryana (<https://etenders.hry.nic.in>) of all Bidders who submitted substantially responsive Technical Bids and who have been determined qualified as a result of technical evaluation.

25.11 DELETED

25.12 DELETED

E. Evaluation and Comparison of Bids

26. Confidentiality **26.1** Information relating to the examination, evaluation & comparison, pre-qualification of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.

26.2 Any attempt by a Bidder to influence the Employer in the examination, evaluation & comparison and pre-qualification of the Bids or Contract award decisions may result in the rejection of its Bid.

26.3 Notwithstanding ITB Sub-Clause 26.2, from the time of opening the Technical Bids to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it should do so in writing.

27. Clarification of Bids **27.1** To assist in the examination, evaluation & comparison and pre-qualification of the Bids, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the Bid shall be sought, offered, or permitted, by the Employer in the evaluation of the Price Bids.

27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

- 28. Deviations, Reservations, and Omissions**
- 28.1** During the evaluation of bids, the following definitions apply:
- (a) “Deviation” is a departure from the requirements specified in the Bidding Document;
 - (b) “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
 - (c) “Omission” is the failure to submit part or all of the information or documentation required in the Bidding Document.
- 29. Determination of Responsiveness**
- 29.1** The Employer’s determination of a bid’s responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
- 29.2** A substantially responsive bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
- (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer’s rights or the Bidder’s obligations under the proposed Contract; or
 - (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.
- 29.3** The Employer shall examine the technical aspects of the bid submitted in accordance with ITB 16, Technical Bid, in particular, to confirm that all requirements of Section 5 (Works Requirements) have been met without any material deviation or reservation.
- 29.4** If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

- 30. Nonconformities, Errors, and Omissions**
- 30.1** Provided that a bid is substantially responsive, the Employer may waive any non-conformities in the bid that do not constitute a material deviation, reservation or omission.
- 30.2** Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.
- 30.3** Deleted
- 31. Pre-Qualification of the Bidder**
- 31.1** The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders are qualified to perform the Contract satisfactorily.
- 31.2** The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB Clause 17, to clarifications in accordance with ITB Clause 27 and the qualification criteria indicated in Section 3: Evaluation and Qualification Criteria. Factors not included in Section 3: Evaluation and Qualification Criteria shall not be used in the evaluation of the Bidder's qualification.
- 31.3** An affirmative determination of technical bid shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Price Proposal to the Bidder-
- 31.4** DELETED
- 31.5** DELETED
- 32. Correction of Arithmetical Errors and Omissions in Price Bid and Evaluation of Bid Price**
- 32.1** DELETED
- (a) DELETED
- (b) DELETED
- (c) DELETED
- (d) DELETED

- (e) DELETED
- (f) DELETED
- (g) DELETED
- 32.2 DELETED
- 33. Conversion to Single Currency**
 - 33.1** For evaluation and comparison purposes the currencies of the bid shall be converted into Indian Rupees as stated in BDS.
- 34. Purchase Preference**
 - 34.1** The Purchase Preference shall be available to Class-I Local bidder. Margin of Purchase Preference (MPP) shall be as specified in Bid Data Sheet.
 - 34.2** If a bidder or any of its constituents has been debarred by any procuring entity for violation of the 'Public Procurement (Preference to Make in India) Order 2017', shall not be eligible for preference for procurement for the duration of debarment. The debarment for such procuring entities shall take effect prospectively from the date on which it comes to the notice of the Employer.
- 35. Evaluation of Bids**
 - 35.1** The Employer shall evaluate Price Bids of each Bid for which the Technical Bids have been determined to be substantially responsive. The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
 - 35.2** To evaluate the price Bid of a bid, the Employer shall consider the following:
 - (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Day Work items, where priced competitively.
 - (b) DELETED
 - (c) DELETED
 - (d) DELETED
 - (e) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria).
 - 35.3** The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution

of the Contract, shall not be taken into account in bid evaluation.

35.4 If this Bidding Document allows Bidders to quote separate prices for different contracts, and the award to a single Bidder of multiple contracts, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Price Bid, is specified in Section 3 (Evaluation and Qualification Criteria).

35.5 If the bid, which results in the lowest Evaluated Bid Price is substantially on lower side and/or seriously unbalanced in the opinion of the Employer as per criteria defined below, the Employer may require the bidder to submit additional performance security as under: -

- a) If overall price quoted by the L1 bidder is below the engineer's estimated price by more than 10% and the difference between overall price quoted by the L1 and L2 is more than 5% of the estimated price, then the bid price of L1 bidder shall be treated as substantially on lower side and such bidder shall be bound to furnish additional performance security equal to the $(0.9 \times \text{engineer's estimated price} - \text{L1 price})$ or $(0.95 \times \text{L2 price} - \text{L1 price})$ whichever is lower, on this account. Example below demonstrates the method of calculation to arrive at additional performance security:

Suppose overall price quoted by the L1 bidder is 17% below the estimated price and the overall price quoted by L2 bidder is 8% below the estimated price. In this case the overall price quoted by the L1 bidder is lower by more than 10% of the estimated price and also the difference between overall price quoted by the L2 and L1 bidder is more than 5% of the estimated price, hence the L1 bidder shall be required to furnish additional performance security for an amount equal to

$\{0.9 \times \text{engineer's estimated price} - (1-17/100) \times \text{engineer's estimated price}\} = \{0.07 \times \text{engineer's estimated price}\} = 7\%$ of engineer's estimated price or $\{0.95 \times (1-8/100) \times \text{engineer's estimated price} - (1-17/100) \times \text{engineer's estimated price}\} = \{0.044 \times \text{engineer's estimated price}\} = 4.4\%$ of engineer's estimated price; whichever is lower.

As per the above L1 bidder shall be required to submit additional performance security of 4.4% of engineer's estimated price.

- b) If for any bill/ schedule of quantities % age above or below quoted by the bidder on the estimated price is beyond 15% below the overall % age difference between the quoted contract price and the engineers estimated price, then the price for that particular schedule shall be treated as seriously unbalanced and bidder shall be bound to furnish additional performance security for such unbalanced price. Example below demonstrates the method of calculation to arrive at unbalanced price and additional performance security:

Suppose for the L1 bidder overall % age difference between quoted contract price and the engineers estimated price; $(\text{Overall contract price} - \text{Overall estimated price}) \times 100 \div \text{overall estimated price} = +4\%$

Maximum % age below permitted over estimated price of any bill / schedule in this case = $+4 - 15 = -11\%$

Suppose for the L1 bidder has quoted 20% below estimated price of schedule "A" then the pricing of the schedule A shall be treated as unbalanced and the bidder shall be required to furnish additional performance security for an amount equal to $(20 - 11)\%$ of the estimated price of schedule A.

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| 36. Comparison of Bids | 36.1 | The Employer shall compare all substantially responsive bids to determine the lowest evaluated bid, in accordance with ITB 34 and 35. |
| 37. Employer's Right to Accept Any Bid, and to Reject Any or All Bids | 37.1 | The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders. |

F. Award of Contract

- | | | |
|---------------------------|-------------|--|
| 38. Award Criteria | 38.1 | The Employer shall award the Contract to the Bidder whose bid is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily and whose offer has |
|---------------------------|-------------|--|

been determined to be the lowest evaluated subject to ITB 38.2 and 38.3 below. In case of more than one bids are evaluated to be lowest, Contract shall be awarded to the bidder having higher average annual construction turnover (calculated as total certified payments received for contracts in progress or completed) in equivalent INR within the last three financial years.

38.2 The works contracts are not divisible in nature. Hence, following procedure shall be followed for award of the contract:

- i. Among all qualified bidders, the lowest bidder will be termed L1. If L1 is 'Class-I local bidder', the contract will be awarded to L1.
- ii. If L1 is not 'Class-I local bidder', the lowest bidder among the 'Class-I local bidder', will be invited to match the L1 price subject to Class-I local bidder's price falling within Margin of Purchase Preference (MPP) and the contract shall be awarded to 'Class-I local bidder' subject to matching the price of L1.
- iii. In case such lowest eligible 'Class-I local bidder' fails to match the price of L1, the 'Class-I local bidder' with next higher bid within MPP shall be invited to match the price of L1 and so on, and contract shall be awarded accordingly.
- iv. In case none of the 'Class-I local bidder' within MPP matches the L1 price, the contract will be awarded to L1 bidder.

38.3 The Employer has the right to review at any time prior to award of contract that the qualification criteria as specified in Section 3: Evaluation and Qualification Criteria are still being met by the Bidder whose offer has been determined to be the lowest evaluated Bid. A Bid shall be rejected if the qualification criteria as specified in Section 3: Evaluation and Qualification Criteria are no longer met by the Bidder whose offer has been determined to be the lowest evaluated Bid. In this event the Employer shall proceed to the next lowest evaluated Bid to make a similar reassessment of that Bidder's capabilities to perform satisfactorily."

The Employer shall award the Contract to the Bidder whose bid is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily and whose offer has been determined to be the lowest evaluated subject to ITB 38.2 below. In case of more than one bids are evaluated to be lowest, Contract shall be awarded to the bidder having higher average annual construction turnover (calculated as total certified payments received for contracts in progress or completed) in equivalent INR within the last three financial years.

- 39. Notification of Award**
- 39.1** Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its bid has been accepted by the Competent Authority at EMPLOYER’s Corporate Office or CPM’s Office. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the “Letter of Acceptance”) shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Works (hereinafter and in the Conditions of Contract and Contract Forms called “the Contract Price”) and the requirement for the Contractor to remedy any defects therein as prescribed by the Contract.
- 39.2** Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.
- 40. Signing of Contract**
- 40.1** Promptly after notification, the Employer shall send the successful Bidder the Contract Agreement.
- 40.2** Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.
- 41. Performance Security**
- 41.1** Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 35.5, using for that purpose the Performance Security Form included in Section 8: Contract Forms, or another form acceptable to the Employer.

In case the contractor fails to submit Performance Security within 28 days of issue of LOA, it may seek extension of time for a period not exceeding 28 days along with payment of damages either through bank transfer or Demand Draft in favour of EMPLOYER. The rate of payment of damages for

such extended period shall be a sum calculated @ 0.035% of the Performance Security for each day of the extension sought. Further, if the last day of the extension sought happens to be a declared holiday in the concerned office, submission of Performance Guarantee shall be accepted on the next working day. Extension of time may be granted by the authority who is competent to sign the contract agreement.

The contractor may commence the work within 42 days of issue of LOA subject to the condition that, no payment will be made to the contractor till completion of the following: -

1. Submission of Enforceable Performance Guarantee
2. Signing of Contract agreement.

In case contract is terminated on account of non-submission of Performance Security within the specified time or extended time, the Employer shall be entitled to forfeit Bid Security, damages paid if any, and other dues payable against that contract.

- 41.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.
- 41.3 The above provision shall not apply to the furnishing of a Domestic Preference Security, if so required.

42. Jurisdiction of Courts

The bidding process shall be governed by and construed in accordance with the laws of India and the Courts as indicated in Bid Data Sheet shall have exclusive jurisdiction over all the disputes/issues arising under, pursuant to and/ or in connection with the bidding process.

43. Make In India

- 43.1 The provisions of revised 'Public Procurement (Preference to Make in India) Order 2017' issued by Department of Industrial Policy and Promotion under Ministry of Commerce and Industry vide letter no. P-45021/2/2017-PP (BE-II) dated 16.09.2020, as amended from time to time up to 28 days prior to deadline for submission of bids, shall be applicable to the bidding process and award of the contract shall be done accordingly.
- 43.2 **Local Content:** The amount of value added in India, which unless otherwise prescribed by Railway Ministry, be the

total value of the item procured (excluding net domestic indirect taxes) minus value of imported content in the item (including all custom duties) as proportion of total value, in percent. Services such as transportation, insurance, installation, commissioning, training, and after sales services like AMC / CMC etc. are not local value addition for an imported product.

Section 2

Bid Data Sheet (BDS)

[Section 2: Bid Data Sheet (BDS)]

This section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section I – Instructions to Bidders.

A. Introduction

ITB 1.1	The number of the Invitation for Bids is: HORC/HRIDC/Patli/S&T-01/2023
ITB 1.1	The Employer is: Haryana Orbital Rail Corporation Limited
ITB 1.1	The name of the Bid is “Shifting of S&T Cables and Associated Works, at Patli station of N. Rly. in Delhi-Rewari section in connection with laying of tracks for HORC project.
ITB 1.3	<p>Add new sub-clause ITB 1.3</p> <p>Instructions for Online Bid Submission:</p> <p>The Bidders are required to submit soft copies of their Bid electronically on the eProcurement portal of Government of Haryana i.e. https://etenders.hry.nic.in, using valid Digital Signature Certificates. The instructions given below are meant to assist the Bidders in registering on the e-procurement Portal, prepare their bids in accordance with the requirements and submitting their Bids online on the eProcurement Portal.</p> <p>Registration:</p> <ol style="list-style-type: none"> i) Bidders are required to enroll on the above-mentioned eProcurement portal by clicking on the link “Online Bidder Enrollment” on the Portal which is free of charge. ii) As part of the enrolment process, the Bidders will be required to choose a unique username and assign a password for their accounts. iii) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the e Procurement Portal. <p>A. Obtaining a Digital Certificate:</p> <ol style="list-style-type: none"> i. The Bids submitted online should be encrypted and signed electronically with a Digital Certificate to establish the identity of the Bidder online. These Digital Certificates are issued by an Approved Certifying Authority, by the Controller of Certifying Authorities, Government of India. ii. A Digital Certificate is issued upon receipt of mandatory identity (i.e. Applicant’s PAN Card) and Address proofs and verification form duly attested by the Bank Manager / Postmaster / Gazetted Officer. Only upon

Bid No: HORC/HRIDC/Patli/S&T-01/2023

	<p>the receipt of the required documents, a digital certificate can be issued. For more details please visit the website – https://etenders.hry.nic.in</p> <p>iii. The Bidders may obtain Class-II or III digital signature certificate from any Certifying Authority or Sub-certifying Authority authorized by the Controller of Certifying Authorities or may obtain information, application format and documents required for the issue of digital certificate.</p> <p>a)</p> <p>iv. The Bidder must ensure that he/she comply by the online available important guidelines at the portal https://etenders.hry.nic.in for Digital Signature Certificate (DSC) including the e-Token carrying DSCs.</p> <p>b)</p> <p>For any queries related to e-Bidding process (registration, online e-bid submission/withdrawal, uploading of documents), Bidder may contact the below representative of NIC:</p> <p>Mr. Anuj Mahajan Technical Director, Scientist-E, NIC. Panchkula. E - mail: amahajan@nic.in, eprocnichry@yahoo.com Help Desk: 0172 – 2700275, 0120-4001002, 0120-4200462.</p> <p>v. Bidder for a particular Bid must be submitted online using the digital certificate (Encryption & Signing), which is used to encrypt and sign the data during the stage of Bid preparation. In case, during the process of a particular Bid, the user loses his digital certificate (due to virus attack, hardware problem, operating system or any other problem) he will not be able to submit the Bid online.</p> <p>Hence, the users are advised to keep a backup of the certificate and also keep the copies at safe place under proper security (for its use in case of emergencies).</p> <p>vi. In case of online Bidding, if the digital certificate issued to the authorized user of a firm is used for signing and submitting a Bid, it will be considered equivalent to a no-objection certificate/power of attorney/lawful authorization to that User. The firm has to authorize a specific individual through an authorization certificate signed by all partners to use the digital certificate as per Indian Information Technology Act 2000. Unless the certificates are revoked, it will be assumed to represent adequate authority of the user to Bidder on behalf of the firm in the department Bids as per</p>
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	<p>Information Technology Act 2000. The digital signature of this authorized user will be binding on the firm.</p> <p>c)</p> <p>vii. In case of any change in the authorization, it shall be the responsibility of management/ partners of the firm to inform the certifying authority about the change and to obtain the digital signatures of the new person/ user on behalf of the firm/ company. The procedure for application of a digital certificate however will remain the same for the new user.</p> <p>viii. The same procedure holds true for the authorized users in a private/Public limited company. In this case, the authorization certificate will have to be signed by the directors of the company.</p> <p>B. Opening of an Electronic Payment Account:</p> <p>For purchasing the Bid documents online, Bidders are required to pay the Bid documents fee online using the electronic payment gateway service through their Debit Cards & Internet Banking accounts. For online payments guidelines, please refer to the Home page under tab “Guidelines for hassle free Bid Submission” of the eProcurement Portal of Government of Haryana, https://etenders.hry.nic.in</p> <p>C. Pre-requisites for online Bidding:</p> <p>In order to operate on the electronic Bid management system, a user’s machine is required to be set up. A help file on system setup/Pre-requisite can be obtained from National Informatics Center or downloaded from the home page of the website - https://etenders.hry.nic.in the link for downloading required java applet & DC setup are also available on the Home page of the eProcurement Portal.</p> <p>D. Online Viewing of Invitation of Bids (IFB):</p> <p>The Bidders can view the IFB and the time schedule (Key Dates) through the single portal eProcurement system on the Home Page at https://etenders.hry.nic.in</p>
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	<p>E. Downloading of Bid Documents:</p> <p>The Bid documents can be downloaded free of cost from the eProcurement portal https://etenders.hry.nic.in</p> <p>F.Key Dates:</p> <p>The Bidders are strictly advised to follow dates and times as indicated in the online Invitation of Bids. The date and time shall be binding on all Bidders. All online activities are time tracked and the system enforces time locks that ensure that no activity or transaction can take place outside the start and end dates and the time of the stage as defined in the online Invitation of Bids.</p> <p>G.Online Payment of E-Service Fee:</p> <p>The online payment for E-Service Fee in INR shall be made using the secure electronic payment gateway by Bidders online directly through Debit Cards & Internet Banking accounts. The secure electronic payments gateway is an online interface between Contractors and Debit card/online payment authorization networks.</p> <p>H.Preparation & Submission of online Applications/Bids:</p> <ol style="list-style-type: none">i. Detailed Bid documents may be downloaded from e Procurement website (https://etenders.hry.nic.in) from 21.11.2023 (17:00 Hrs. IST) to 07.12.2023 (15:00 Hrs. IST.) and Bid mandatorily be submitted online following the instruction appearing on the screen.ii. Scan copy of Documents to be submitted/uploaded for Technical Bid under online PQQ/ Technical Envelope: All documents shall be prepared and scanned in file formats PDF /JPEG/MS WORD format such that file size does not exceed 10 MB) and uploaded during the on-line submission of PQQ or Technical Envelope.iii. Price Bid shall be submitted mandatorily online under Commercial Envelope and original not to be submitted manually. <p>NOTE:</p> <p>(A) <i>Bidders participating in online Bids shall check the validity of his/her Digital Signature Certificate before participating in the online Bids at the portal https://etenders.hry.nic.in.</i></p> <p>d)</p>
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	(B) For help manual, please refer to the ‘Home Page’ of the e Procurement website at https://etenders.hry.nic.in
ITB 4.1(b)	Joint Venture/Consortium is not permitted.
ITB 4.1 c	Shall not be applicable.
ITB 4.1 d	Shall not be applicable.
ITB 4.1 e	Eligible Bidder for this work is ‘Class-I Local’
ITB 4.4 h	Shall not be applicable.
ITB 4.4 i	Shall not be applicable.

43. B. Bidding Documents

ITB 7.1	<p>For <u>Clarification of Tender purposes</u> only, the Employer’s address is: Attention: Chief Project Manager (West) Street address: Haryana Rail Infrastructure Development Corporation Limited (HRIDC), RailTel Tower, Plot no.143, Sector-44 Floor: 5th floor City: Gurugram ZIP code: 122003 Country: India Telephone: +91 9310812157 E-mail: horc.etendering@gmail.com</p>
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ITB 7.4	<p>Replace the entire Sub-Clause 7.4 with the following:</p> <p>There will be NO Pre-Bid Meeting for this Bid. However, Bidder may submit their Bid related queries in the following format:</p> <table border="1" data-bbox="436 386 1383 890"> <thead> <tr> <th data-bbox="440 390 561 564">Query No.</th> <th data-bbox="561 390 841 564">Reference to Bid Document (Clause/ Para No. & Page No.)</th> <th data-bbox="841 390 1149 564">Brief Description of Clause/ Para No.</th> <th data-bbox="1149 390 1380 564">Query Raised</th> </tr> </thead> <tbody> <tr> <td data-bbox="440 564 561 611">1.</td> <td data-bbox="561 564 841 611"></td> <td data-bbox="841 564 1149 611"></td> <td data-bbox="1149 564 1380 611"></td> </tr> <tr> <td data-bbox="440 611 561 657">2.</td> <td data-bbox="561 611 841 657"></td> <td data-bbox="841 611 1149 657"></td> <td data-bbox="1149 611 1380 657"></td> </tr> <tr> <td data-bbox="440 657 561 703">3.</td> <td data-bbox="561 657 841 703"></td> <td data-bbox="841 657 1149 703"></td> <td data-bbox="1149 657 1380 703"></td> </tr> <tr> <td data-bbox="440 703 561 749">4.</td> <td data-bbox="561 703 841 749"></td> <td data-bbox="841 703 1149 749"></td> <td data-bbox="1149 703 1380 749"></td> </tr> <tr> <td data-bbox="440 749 561 795">5.</td> <td data-bbox="561 749 841 795"></td> <td data-bbox="841 749 1149 795"></td> <td data-bbox="1149 749 1380 795"></td> </tr> <tr> <td data-bbox="440 795 561 842">etc.</td> <td data-bbox="561 795 841 842"></td> <td data-bbox="841 795 1149 842"></td> <td data-bbox="1149 795 1380 842"></td> </tr> <tr> <td data-bbox="440 842 561 888"></td> <td data-bbox="561 842 841 888"></td> <td data-bbox="841 842 1149 888"></td> <td data-bbox="1149 842 1380 888"></td> </tr> </tbody> </table> <p>The prospective Bidders can submit their Bid related queries through email along with an editable soft copy (MS Word) on the email id (<i>i.e.</i>, <u>horc.etendering@gmail.com</u>).</p>	Query No.	Reference to Bid Document (Clause/ Para No. & Page No.)	Brief Description of Clause/ Para No.	Query Raised	1.				2.				3.				4.				5.				etc.							
Query No.	Reference to Bid Document (Clause/ Para No. & Page No.)	Brief Description of Clause/ Para No.	Query Raised																														
1.																																	
2.																																	
3.																																	
4.																																	
5.																																	
etc.																																	
ITB 7.5	The Bidder shall submit any Bid related queries in writing, to reach the Employer not later than 27.11.2023,1800hrs IST .																																
ITB 7.6	<p>Replace ITB 7.6 with the following:</p> <p>Response to Bid related queries, without identifying the source, will be uploaded on e-Procurement portal, https://etenders.hry.nic.in. Any modification to the Bid Document that may in the sole discretion of the Employer become necessary as a result of the Bid related queries shall be made by the Employer exclusively through the use of an</p>																																
ITB 8.2	<p>Replace ITB 8.2 with the following:</p> <p>Any addendum/Corrigendum issued shall be part of the Bid Documents and shall be uploaded on eProcurement portal, https://etenders.hry.nic.in .</p> <p>The onus is on the Bidders to visit the eProcurement portal to see the addenda published by the Employer.</p>																																

44. C. Preparation of Bids

ITB 10.1	The language of the bid is: English.
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	All correspondence exchange shall be in English language.
ITB 11.2	Alternative technical solutions are not permitted.
ITB 11.4 (f)	Checklist as per Form No. 2 given in Section 4: Bidding Forms
ITB 13.1	Alternative bids will not be permitted.
ITB 13.2	Alternative times for completion will not be permitted.
ITB 14.5	The prices quoted by the Bidder shall be firm and NOT be adjustable
ITB 15.1	The currency of the Bid and the payment currency shall be Indian Rupees (INR) only . The prices shall be quoted by the Bidder entirely in Indian Rupees (INR) only .
ITB 18.1	The bid validity period shall be 120 (One hundred and twenty only) days.
ITB 19.1	The Bidder shall furnish a Bid Security for an amount of INR 2,51,000/- (INR Two lakh Fifty-One Thousand only).
ITB 19.2	Not Applicable
ITB 19.3	Replace the ITB 19.3 with the following: The amount for Bid Security will only be paid online by eligible Bidders on eProcurement Portal in favor of Haryana Rail Infrastructure Development Corporation Limited using the electronic payment gateway service.
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: (a) In case of Private/Public Companies or Limited Liability Partnership (LLP) firms, a Power of Attorney from the Director of the Company who has been authorized by the Board of Directors through resolution to sign on behalf of the Company. Copy of Board Resolution shall also be submitted. (b) In case of Proprietary Bidder, Power of Attorney by the Proprietor. (c) In case of Partnership firms, Power of Attorney duly signed by all the Partners. (d) In case of Limited Liability Partnership (LLP) firms, a Power of Attorney issued by the LLP in favour of the individual to sign the Bid on behalf of the LLP and create liability against the LLP.

	(e) In case of Joint Venture/Consortium, Power of Attorney duly signed by authorized representative of individual Member in favour of the Lead Member and Authorized representative of JV/Consortium.
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45. D. Submission and Opening of Bids

ITB 22.1	<p>For <u>Bid submission purposes</u> eProcurement website address is: https://etenders.hry.nic.in .</p> <p>The start date for Bid submission is: Date: 01.12.2023. Time: 11:00 hrs. IST</p> <p>The deadline for Bid submission is: Date: 07.12.2023. Time: 15:00 hrs. IST</p>
ITB 25.1	<p>The online bid opening shall take place at eProcurement portal https://etenders.hry.nic.in.</p> <p><u>Bid Opening:</u> Date: 07.12.2023. Time: 15:30 hrs. IST</p>
ITB 34.1	Not Applicable
ITB 35.5	<p>Replace ITT 35.5 with the following:</p> <p>An Abnormally Low Bid is one in which the bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the bidder to perform the contract at the offered price. The Employer may in such cases seek written clarifications from the bidder, including detailed price analysis of its bid price in relation to scope, schedule, allocation of risks and responsibilities, and any other requirements of the bids document. If, after evaluating the price analyses, the Employer determines that the bidder has substantially failed to demonstrate its capability to deliver the contract at the offered price, the Employer may reject the bid/ proposal.</p> <p>No Additional Performance Security deposit in case of abnormally low bids shall be taken. However, whenever there are compelling circumstances to ask for Additional Performance Security in case of abnormally low bids, the same shall be taken only with the approval of the next higher authority to the authority competent to finalize the particular</p>

Section 2: Bid Data Sheet (BDS)

	Bid and the bidder shall be bound to furnish such additional Performance Security.
ITB 38.1	Deleted
ITB 42	Gurugram, Haryana

Section 3

Evaluation & Qualification Criteria (EQC)

Section III – Evaluation and Qualification Criteria

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1. Evaluation

In addition to the criteria listed in ITB 35.2 (a)-(e), the following criteria shall apply:

1.1. Adequacy of Technical Bid

Evaluation of the Bidder's commitment for the contract consistent with the requirements stipulated in Section 5: Works Requirements regarding work methods and scheduling as submitted by Bidder in Form T-1.

1.2. Multiple Contracts

Multiple Contracts are not envisaged.

1.3. Completion Time

Alternative Completion Time is not permitted.

1.4. Technical Alternatives

Technical alternatives are not permitted

1.5. Margin of Preference

1.5.1 Purchase Preference to Central Public Sector Enterprises (CPSEs)

Purchase Preference to CPSEs shall not apply.

1.5.2 Preference to Make in India

Preference as defined in ITB clause 43 shall be applicable.

2. Qualification

2.1 Eligibility

Criteria	Compliance Requirements				Documents Submission Requirements
	Single Entity	Joint Venture			
		All Partners Combined	Each Partner	Lead Partner	
2.1.1 Conflict of Interest					
No Conflict of interest in accordance with ITB Sub-Clause 4.3.	Must meet requirement	N. A.	N. A.	N. A.	Letter of Technical Bid (Form PS 1)
2.1.2 Share of partners					
The share of partners shall not be less than the specified percentage.	N. A.	N. A.	N. A.	N. A.	N.A.
2.1.3 Disqualification of Bidder					
Not Disqualified under Clause 4.4 of ITB.	Must Meet Requirement	N. A.	N. A.	N. A.	Letter of Technical Bid (Form PS 1) & Affidavit (Form PS 3)

2.2 Financial Status

Criteria	Compliance Requirements				Documents Submission Requirements
	Single Entity	Joint Venture			
		All Partners Combined	Each Partner	Lead Partner	
2.2.1 Historical Financial Performance					
The Bidder must demonstrate that the current soundness of the Bidders financial position. As a minimum criteria, Profit Before Tax (PBT) should be positive for two financial years out of last five financial years.	Must meet requirement	N. A.	N. A.	N. A.	Form FIN – 1 with attachments
2.2.2 Average Annual Construction Turnover :					
Minimum average annual construction turnover in equivalent INR 2.00 Crores Calculated as total certified payments received for contracts in progress or completed, within the	Must meet requirement	N. A.	N. A.	N. A.	Form FIN – 2

Section 3 – Evaluation and Qualification Criteria

last three financial years (refer note below the table).					
2.2.3 Net –Worth					
Minimum average Net-Worth (Total Assets – Total Liabilities) should be positive during the last three financial years (refer note below the table).	Must meet requirement	N. A.	N. A.	N. A.	Form FIN – 1
2.2.4 Bid Capacity					
The available Bid capacity should be equal to or more than INR 2.00 crores . The available Bid capacity will be calculated as per Item No. 1 of Form FIN- 3.	Must meet requirement	N. A.	N. A.	N. A.	Form FIN – 2 & 3

Note: In the event that the audited accounts for the latest concluded Financial Year are not available, the Bidder shall furnish information pertaining to the last five financial years after ignoring the latest concluded financial year. In case the bidder submits audited financial information for the last six or more years, only the figures for the latest five years shall be considered for evaluation.

2.3 Experience

Criteria	Compliance Requirements				Documents Submission Requirements
	Single Entity	Joint Venture			
		All Partners Combined	Each Partner	Lead Partner	
2.3.1 Specific Construction Experience					
a) Similar Work and Nature. Supply, Installation & commissioning of Outdoor Railway signalling works starting 1st April 2016 till 31 st October 2023. i) Execution as a Contractor, JV member or subcontractor in One work having completed/ substantially completed having minimum value of INR 1.20 Crores. OR (ii) Execution as a Contractor, JV member or subcontractor in at least two Contracts, completed/ substantially completed each having minimum value of INR 0.80 Crore	Must meet requirement	N. A.	N. A.	N. A.	N.A.

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Section 3 – Evaluation and Qualification Criteria

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Note:-

- (1) (a) For the purpose of value of work for the past experience of a firm in a JV in sub clause 2.3.1(a) credit shall be given in proportion of the percentage share of the firm in that JV. For past experience of key activities in sub clause 2.3.1(a) credit shall be given for execution of the quantity of that specific activity executed by the firm as part of a JV, duly certified by the Employer. If the Employer’s Certificate does not indicate the specific quantity of key activity/activities executed by each partner, in such a case credit for quantity of each key activity shall be given as per following provisions in order of priority:
 - i) As per details given in JV agreement forming part of the relevant Contract Agreement.
 - ii) If JV agreement does not provide such details, then credit shall be given in proportion of the percentage share of the firm in that JV.
- (b) In case a JV quoting for the Bid has executed similar work specified in 2.3.1(a), with the same constitution of JV, the requirement specified to be met under sub clause 2.3.1(a) shall be considered to have been met treating the JV as a single entity for this purpose.
- (2) The phrase “substantial completion” used in clause 2.3.1 (a) shall mean where the Employer has certified:

Ongoing works where required value of the work has been physically completed for minimum 80% of the awarded cost. The same should be supported by Employer’s certificate.

IMPORTANT NOTE FOR SPECIAL ATTENTION OF BIDDERS:

EACH BIDDER SHOULD SUBMIT DETAILS/REFERENCES AS TO HOW THE ELIGIBILITY CRITERIA IS BEING MET BY THE BIDDER AGAINST EACH ITEM OF EQC. THIS SHOULD BE PREPARED AND SUBMITTED IN THE PERFORMA “EQC FORM NO.1” ENCLOSED IN SECTION 4

Section 4: Bidding Forms

This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

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Form: PS 1

Letter of Technical Bid

Date:
Invitation for Bid No.:

To:.....

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda/Corrigenda issued in accordance with Instructions to Bidders (ITB) 8;
- (b) We offer to execute the Works in conformity with the Bidding Documents.
- (c) Our bid shall be valid for a period of **120 days** from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
- (d) If our bid is accepted, we commit to obtain performance security in accordance with the Bidding Documents.
- (e) If our bid is accepted, we commit to deploy key equipment and key personnel consistent with the requirements stipulated in Section 5: Works Requirements.
- (f) If our bid is accepted, we commit to submit work method statements for all major activities and get these approved from the engineer prior to commencing work on such activities. We also understand that the work shall be executed as per the approved method statements without any deviations.
- (g) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3.
- (h) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.3, other than alternative offers submitted in accordance with ITB 13.
- (j) If our bid is accepted, we will not sub-contract any work to a contractor from a bidder of a country which share a land border {Details in clause ITB 4.1 (d)} with India unless such contractor is registered with the Competent Authority.
- (k)
 - i. We declare that we are not liable to be disqualified in accordance with ITB 4.4, and we are enclosing the affidavit for the same as per the Performa given in the bid document.
 - ii. We understand that if at the time of evaluation of the bid or during execution of the contract, the declaration regarding local content, submitted through the relevant form provided in Section 4 Bidding Forms, is found to be false, it will be treated as

Bid No: HORC/HRIDC/Patli/S&T-01/2023

breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which the Bidder or its successors can be debarred up to two years along with such other actions as may be permitted by law.

iii. We have also enclosed declaration in Form-MII and also a certificate, in case the estimated cost of the work is more than ₹10 Cr, from statutory auditor or cost auditor of the company or from practicing cost accountant or chartered accountant.

iv. We also undertake that the 'Local Content' added in the entire work will have to be submitted along with the final bill.

- (l) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (m) We have not made any deviations from the requirement of the bidding document and we have also not made any tampering or changes in the bidding documents on which the bid is being submitted and if any tampering or changes are detected at any stage, we understand the bid will invite summary rejection and forfeiture of bid security/the contract will be liable to be terminated along with forfeiture of performance security, even if LOA has been issued.
- (n) If our bid is accepted, we opt to take payment into the bank account, nominated by us.
- (o) We declare that the submission of this bid confirms that no agent, middleman or any intermediary has been, or will be engaged to provide any services or any other item of work related to the award and performance of this contract. We further confirm and declare that no agency commission or any payment which may be construed as an agency commission has been, or will be, paid and that the bid price does not include any such amount. We acknowledge the right of the Employer, if he finds to the contrary, to declare our bid to be noncompliant and if the contract has been awarded to declare the contract null and void
- (p) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date.....

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Form: PS 2

Letter of Price Bid

Date:

Invitation for Bid No.:

To:

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8;
- (b) We offer to execute the Work in conformity with the Bidding Documents;
- (c) The total price of our Bid is INR
- (d) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (e) We have not made any deviations from the requirement of the bidding document and we have also not made any tampering or changes in the bidding documents on which the bid is being submitted and if any tampering or changes are detected at any stage, we understand the bid will invite summary rejection and forfeiture of bid security/the contract will be liable to be terminated along with forfeiture of performance security, even if LOA has been issued.
- (f) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Name

In the capacity of

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Signed

Duly authorized to sign the Bid for and on behalf of

Date

**FORMAT FOR AFFIDAVIT TO BE SUBMITTED BY BIDDER
ALONGWITH THE BID**

*(To be executed in presence of Public Notary on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper has to be in the name of the bidder)***

I *(Name and designation)***..... appointed as the attorney/authorized signatory of the bidder (including its constituents), M/s. _____ (hereinafter called the bidder) for the purpose of the Bid for the work of _____ as per the bid No. _____ of HORCL/HRIDC, do hereby solemnly affirm and state on behalf of the bidder including its constituents as under:

- *1. That the bidder or any of its constituents has not been Blacklisted/ banned for business dealings for all Government Departments or by Ministry of Railways or by HORCL/HRIDC at any time and/or no such blacklisting is in force as on the deadline for submission of bids.

- *2. That none of the previous contracts of the bidder or any of its constituents had been terminated/rescinded for Contractor's failure or part terminated for its failure as a JV partner with forfeiture of its full Performance Security, by Haryana Rail Infrastructure Development Corporation Limited during the period of last 3 years before the deadline for submission of bids.

(Add Proviso of Clause 4.4(b) (ITB) suitably, if any Contract was so terminated).

- *3. The bidder or any of its constituents has not been imposed liquidated damages of 5% or more of contract value by HORCL/HRIDC due to delay in the implementation of any previous contract (either in the capacity of a single entity or as constituent of any other JV) within the period of last 2 years before the deadline for submission of bid [2 years shall be reckoned from the date on which imposed L.D. has exceeded 5% of the contract price]and there are no such accrued delay damages which has not been

fully recovered before the deadline for submission of bids on account of contractor's request for deferring recovery to maintain cash flow and HORCL/HRIDC has acceded to the same in the interest of the project and the work under the previous contract in question has been completed before the deadline for submission of bid, unless imposition of such delay damages has been set aside by the Competent Authority.

4. That the Bidder or any of its constituents is neither Bankrupt/Insolvent nor is in the process of winding-up nor such a case is pending before any Court on the deadline of submission of the bid.
- *5. That the name of the Bidder or any of its constituents is not on the list of "Poor Performer" of HORCL/HRIDC as on the deadline for submission of bid.
6. We declare that the bidder or any of its constituents have not either changed their name or created a new business entity as covered by the definition of "Allied Firm" under para 1102 (iii) of chapter XI of Vigilance manual of Indian Railways with latest amendments and corrections (available on website of Indian Railways), consequent to having been banned business dealings for specified period which is not over or suspended business dealings or having been declared as poor performer.
- 7.# We declare and certify that balance sheets for last three financial years including that for the latest concluded financial year are being submitted.

OR

We declare and certify that balance sheet for the latest concluded financial year has not been finalized till date and that is why we are furnishing financial data for last three financial years ignoring the latest concluded financial year.

*(# - Delete whichever is not applicable)**.*

8. That the bidder or any of its constituents is not an Entity of such countries, which have been identified by the Railway Ministry as not allowing Indian Companies to participate in their Government procurements for any item related to Railway Ministry, except for the list of items published by the Railway Ministry permitting their participation.
9. That the bidder or any of its constituents has not committed any previous transgressions in respect of Code of Integrity [Rule 175 (1) of General Financial Rules

Bid No: HORC/HRIDC/Patli/S&T-01/2023

2017] with any entity in any country during the last three years or of being debarred by any other procuring entity

10. We declare and certify that we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.
11. We declare that the information and documents submitted along with the Bid by us are correct and we are fully responsible for the correctness of the information and documents, submitted by us.
12. “We have read the clause regarding restrictions on procurement from a bidder of a country which share a land border with India and I certify that :

@ This Bidder is not from such a country

OR

This Bidder is from such a country and the bidder has been registered with the Competent Authority

13. We understand that in case we cease to fulfill the requirements of qualifying and eligibility criteria at any time after opening of bids and till finalization of bids, it will be our bounden duty to inform the Employer of our changed status immediately and in case of our failure to do so, our bid shall be rejected and bid security shall be forfeited. In case such failure comes to the notice of Employer at any time after award of the contract, it will lead to termination of the contract and forfeiture of Bid or Performance Security. We shall also be liable for Banning of Business dealings upto a period of five years.
14. We understand that if the contents of the affidavit are found to be false at any stage during bid evaluation, it will lead to rejection of our bid and forfeiture of the bid security. Further, we ***[insert name of the bidder]***** _____ and all our constituents understand that we shall be liable for banning of business dealings upto a period of five years.
15. We also understand that if the contents of the affidavit are found to be false at any time after the award of the contract it will lead to termination of the contract, forfeiture of Bid or Performance Security and Banning of Business dealings of the Bidder and all its constituents for a period of upto five years.

SEAL AND SIGNATURE OF THE BIDDER

Verification:

Verified on _____ day of _____ at _____ that the contents of the above mentioned affidavit are true and correct and nothing material has been concealed there from.

SEAL AND SIGNATURE OF THE BIDDER

**Modify the contents wherever necessary, in terms of sub-clause 4.4 ITB.*

*** The contents in Italics are only for guidance purpose and details as appropriate, are to be filled in suitably by Bidder.*

Attestation before Magistrate/Public Notary

@ Strike out whichever is not applicable. In case the bidder is from a country which share a land border with India, evidence of valid registration by the Competent Authority shall be attached.

Form: BDF/1

Bid Security

The amount for Bid Security will only be paid online by eligible Bidders on eProcurement Portal of Government of Haryana.

Form: BDF/2

Bid Security Declaration Form

DELETED

Form T-1

1. Outline Method Statement

2. Work Schedule

Bill of Quantities (BOQ)

For Bill of Quantities, Please refer Volume-II

Bidders Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

Form ELI - 1: Bidder's Information Sheet

Bidder's legal name	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	

The Bidder shall attach copies of the following original documents with the form:

1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2.

Form FIN-1: Financial Situation

NAME OF BIDDER:

	Year 1:2020-21				
	Year 1:2020-21	Year 2:2021-22	Year 3:2022-23	Year 4:	Year 5:
1. Total Assets				Not Applicable	
2. Current Assets					
3. Total Liabilities					
4. Current Liabilities					
5. Net Worth [= 1 – 3]					
6. Working Capital [= 2 - 4]					
7. Profit Before Tax (PBT)					

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 CA/Auditor)

Name of CA/Auditor: _____

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Registration No: _____

(Seal)

Notes:

- 1. The Bidder is not required to submit any document as documentary evidence along with the Bid Documents. All information furnished in this Form shall be certified by a Chartered Accountant/Company Auditor/Statutory Auditor.*
- 2. The above documents shall reflect the financial situation of the legal entity or entities comprising the Bidder and not the Bidder's parent companies, subsidiaries, or affiliates.*
- 3. In the event that the audited accounts for the latest concluded Financial Year are not available, the Bidder shall furnish information pertaining to the last three financial years after ignoring the latest concluded financial year. In case, the bidder submits audited financial information for the last four or more years, only the figures for the latest three years shall be considered for evaluation.*

Form FIN-2: Annual Construction Turnover

NAME OF BIDDER:

Year	Amount Currency	Exchange Rate	Indian National Rupees Equivalent
2020-21			
2021-22			
2022-23			
Average Annual Construction Turnover			

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 CA/Auditor)

Name of CA/Auditor: _____

Registration No: _____

(Seal)

- The Bidder is not required to submit any document as documentary evidence along with the Bid Documents. All information furnished in this Form shall be certified by a Chartered Accountant/Company Auditor/Statutory Auditor..

Bid No: HORC/HRIDC/Patli/S&T-01/2023

3. In the event that the audited accounts for the latest Financial Year are not available, the Bidder shall furnish information pertaining to last three financial years after ignoring the latest financial year. In case the bidder submits audited financial information for the last four or more years, only the figures for the latest three years shall be considered for evaluation.

Form FIN-3: Bid Capacity

1.0 Bid Capacity:

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, taking into account the completed as well as works in progress.

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

B = Existing commitments and balance amount of ongoing works with Bidder and also the works which are awarded to Bidder but yet not started upto the date of inviting the Bid.

Note:

(a) The Bidder (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 for calculating 'A', and
- (ii) Existing commitments and balance amount of ongoing works with Bidder and also the works which are awarded to Bidder but yet not started upto the date of inviting the Bid for calculating 'B'. The details shall be submitted in the prescribed proforma given under **2.0 below**. 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, the Bidder/s failed to submit the above statement along with offer, their/his offer shall be considered as incomplete and will be rejected **summarily**.

(c) The Available Bid Capacity of Bidder shall be assessed based on the details submitted by the Bidder. In case, the available bid capacity is less than that prescribed in Sub-Clause 3.3.1 (ii), Section III, EQC, then the offer shall not be considered even if the Bidder has been found eligible in other eligibility criteria/ Bidder requirement.

2.0 Bidder should provide information on their current commitments on all contract that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate is yet to be issued.

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Current Contract Commitments /Works in Progress

(All amounts in INR)

S. No.	Name and Brief particulars of contract (Clearly indicate the part of the work)	Contract No. & Date	Name of client with telephone number	Contract Value in INR Equivalent (Give only the value of)	Stipulated Period of completion	Value of balance work yet to be done in INR equivalent upto
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total value of balance work yet to be done in INR equivalent upto the date of inviting the Bid						B=

Notes:

- (i) *Where a work is undertaken by a JV/Consortium, only that portion of the contract which is undertaken by the concerned applicant/member should be indicated and the remaining done by the other members of the JV/Consortium be excluded.*
- (ii) *The Bidder is not required to submit any document as documentary evidence along with the Bid Documents. **All information furnished in this Form shall be certified by a Chartered Accountant/Company Auditor/Statutory Auditor.***
- (iii) *The above documents shall reflect the financial situation of the legal entity or entities comprising the Bidder and not the Bidder's parent companies, subsidiaries, or affiliates.*

"Certified that current commitments on all the contracts that have been awarded or for which a letter of intent or acceptance has been received or for the works in progress or the works approaching completion, value of outstanding work has been indicated in the above table correctly. It is further certified that if later on the Employer discovers that information provided in the table is incorrect then the Employer will treat our Bid invalid and it will be liable for rejection"

3.0 Calculation of Available Bid Capacity

Description	Value
A= Maximum value of construction works executed and payment received in any one of the previous three financial	

Description	Value
years, taking into account the completed as well as works in progress as per Form FIN 3 (in INR Equivalent)	
N= Number of years prescribed for completion of work for which Bid has been invited (in years)	3/12
B= Existing commitments and balance amount of ongoing works with Bidder and also the works which are awarded to Bidder but yet not started upto the date of inviting the Bid (in INR Equivalent)	
Bid Capacity (INR Equivalent) = $[A \times N \times 2] - 0.33 \times N \times B$	

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 CA/Auditor)

Name of CA/Auditor: _____

Registration No: _____

(Seal)

Form EXP-2(a): Specific Construction Experience

Fill up one form per Contract

Contract of Similar Size and Nature			
Contract No.		Contract Identification	
Award Date		Completion Date	
Role in Contract	<input type="checkbox"/> Contractor <input type="checkbox"/> JV member <input type="checkbox"/> Subcontractor		
Total Contract Amount	INR		
If partner in a JV or subcontractor, specify participation in total contract amount	Percent of Total:	Amount: INR	
Employer's Name, Current Address and Current Telephone/Fax Number, E-mail			

The bidder shall attach a copy of the Certificate(s) issued by the employer in support of the information being furnished in each Exp (2a) form, failing which the claim of the bidder shall be liable to be rejected (in case of experience as a sub-contractor, the employer shall be the owner of the Project who has engaged the main Contractor).

EQC FORM NO.1

Clause No & Clause heading	Details of value of work/quantity of activity and References (Folio No.) of Documents through which criteria against each item is being met.
1 1.1 Adequacy of Technical Bid Form T-1	
2 Qualification	
2.1.1 Conflict of Interest	
2.1.2 Share of partners	Not Applicable
2.1.3 Disqualification of Bidder	
2.2 Financial Status	
2.2.1 Historical Financial Performance	
2.2.2 Average Annual Construction Turnover	
2.2.3 Net Worth	
2.2.4 Bid Capacity	
2.3 Experience	
2.3.1 Specific Construction Experience (a) Contracts of Similar Size and Nature (i) Single Contract (ii) Two Contracts	

FORM NO. 2**CHECKLIST FOR CLAUSES PERTAINING TO
REJECTION OF BID**

We, the undersigned, declare that we have read and understood the content of ITB clauses mentioned below. We also understand that our bid shall be liable for rejection in case we fail to comply the requirements of undermentioned clauses;

ITB Clause No.	Reason for Rejection
4.4	Non-submission of Affidavit
4.5	Non-submission of immediate information to the Employer in case Bidder ceases to fulfill eligibility in terms of ITB 4.3 & 4.4
14.2	Quoting more than one percentage for any Bill Nos.
14.9	Non-submission of the Letter of Price Bid (LPB) and/or Summary sheet of BOQ
16.4	Non-submission of the Letter of Technical Bid (LTB)
19.3	Bid not accompanied by an enforceable and compliant bid security

SEAL AND SIGNATURE OF THE BIDDER

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Form-MII

**Declaration for ‘Local content’ in terms of
‘Public Procurement (Preference to Make in India) Order 2017’, as
amended up to 28 days prior to deadline for submission of bids,
issued by Department of Industrial Policy and Promotion under
Ministry of Commerce and Industry**

Ref: Bid Notice No.....

I / We declare that:

1. The offer submitted against the meets the ‘Local Content’ requirement as prescribed vide clause ITB 4.1 e and ITB 43.2.
2. The details of the local content and location(s) where local value addition is made in case of imported items, are as below:

BOQ Item no	Description in brief	BOQ Amount	Made in India Items: Amount of local content	Imported Items: Value added in India	Imported Items: Location of Value added in India
1					
2					
....					
Total		A	B	C	

Total Local Content: B + C

% of local content in total BOQ cost:%

3. Fulfilment of the aforesaid requirements shall also be ensured from the subcontractors and that the above statement contains information for the entire contract.

SEAL AND SIGNATURE OF THE BIDDER

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Section 5

Works Requirements (WRQ)

Summary

Invitation for Bids (IFB)

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- Section 4: Bidding Forms (BDF)

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- Section 6: General Conditions of Contract (GCC)
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5 – I: General Specification

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CHAPTER – 1: SYSTEM REQUIREMENTS

1.1 GENERAL

- 1.1.1** The Contractor will prepare the required cable route diagram, cable core distribution plan, cable termination plan. Physical plan of equipment inside location boxes etc. As per the requirement of the work
- 1.1.2** The Design shall be Reliable, Energy and Cost efficient with due considerations to the Local Climate Conditions, Safety, Ease of installation, Operation, Maintenance and Future replacements.
- 1.1.3** If there is a requirement to change the Design after the Construction Design has been submitted and consented by the issue of Notice of No Objection during the Construction Phase, the Contractor shall propose the Design change through either a Field Change Notice (FCN) or a Design Change Notice (DCN).
- 1.1.4** It is a requirement that the Indian Railway (IR) remains operational during the construction/ Installation of the work.
- 1.1.5** All equipment for Signalling & Telecommunication system for HORC project shall be compatible with existing Indian Railway equipment.
- 1.1.6** Safety, Health and Environment Considerations: The design of the Permanent Works shall be according to Indian laws and regulations related to Safety, Health & Environment Requirements. Safety, Health & Environment aspects shall be kept in mind during the Design, Manufacturing/Supply, Construction/ Installation and Testing & Commissioning Phases as described at appropriate places in the Bidding Document.
- 1.1.7** Quality Control: Quality control aspects shall be kept in mind during the Design, Manufacturing/ Supply, Construction/ Installation and Testing & Commissioning Phases as specified at appropriate places in the Bidding Document. It shall be the overall responsibility of the Contractor to ensure deliverables of quality products at all times conforming to the provisions mentioned in this bidding document.

1.2 CONTRACTOR'S WARRANTY OF DESIGN

- 1.2.1** The Contractor shall give warranty to the Employer that the design produced by them (in accordance with the Conditions of Contract) meets the Employer's Requirements and Specifications provided by the Employer and is fit for the purpose thereof. In accordance with Design Certificates as Appendix-8 of this bidding document. Where, there is any inadequacy, insufficiency, impracticality or unsuitability from the Employer's Requirements and Specifications or any part thereof, the Contractor's design shall take into account, address or rectify such inadequacy, insufficiency, impracticality or unsuitability at Contractor's own cost.

- 1.2.2 The Contractor shall indemnify the Employer against any damage, expense, liability, loss or claim, which the Employer might incur, sustain or be subject to arising from any breach of the Contractor's design responsibility and/or warranty set out in this clause.
- 1.2.3 The Contractor shall further specify and shall be deemed to have checked and accepted full responsibility for the Contractor's part of the design (in accordance with Conditions of Contract) notwithstanding.
- 1.2.4 That such design may be or have been prepared, developed or issued by the Employer which has been checked by the Contractor, any of Contractor's consultants, his sub-contractor and/ or his qualified personnel/ persons or cause to be prepared, developed or issued by others.
- 1.2.5 Any warranties, guaranties and/ or indemnities that may be or may have been submitted by any other person.
- 1.2.6 That the same have been accepted by the Engineer.
- 1.2.7 The Contractor shall conform to the provision of any statute relating to the Works and Regulation and Bye-laws of any Local Authority and of Any Water and Lighting Agencies or Undertakings with whose system the work is proposed to be connected and shall before making any variation from the Drawings or the Specifications that may be necessitated by so confirming give to the Engineer notice specifying the variation proposed to be made and the reason for making the variation and shall not carry out such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by Statute, Regulations or Bye-laws as aforesaid and shall pay all Fees and Taxes payable to any authority in respect thereof. Nothing shall be payable by the Employer in this regard.
- 1.2.8 The Contractor shall ensure compliance of provision of all laws of land in force and enacted from time to time and:
- 1.2.9 Ensure compliance with the regulations or byelaws of any local body and utilities.
- 1.2.10 The Contractor shall arrange necessary clearances and approvals before the work is taken up. Nothing extra will be paid by Employer on this account.
- 1.2.11 Ignorance of rules, regulations and byelaws shall not constitute a basis for any claim at any stage of work.
- 1.3 CONTRACTOR'S COORDINATION WITH OTHERS**
- 1.2.12 Coordination with External Related Parties: The Contractor shall fully coordinate the design of the works with all relevant bodies and entities, in particular Government authorities, Departments and Regulatory Bodies, Public Utility Companies, Power Supply Authorities, Adjacent Indian Railway Authorities and the Consultants and Contractors of adjacent projects whether ongoing or planned, as advised by the Engineer.

1.4 CO-ORDINATION WITH INDIAN RAILWAYS:

- 1.4.1** For some S&T Works proposed by Contractor and having implication over working of Indian Railways and its Systems, approval from Indian Railways through the Employer shall be required, in addition to the consent by the Engineer. The Contractor shall be required to submit three additional copies of such Preliminary Design & Detailed Design to the Engineer for onward submission to Indian Railways.
- 1.4.2** The Contractor shall co-ordinate in seeking the approval from Indian Railways, however, the Employer shall facilitate the Contractor in seeking the approval from Indian Railways including, but not limited to, providing clarifications / additional data, attending meetings etc. as required.
- 1.4.3** It will be the Contractor's responsibility to take approval of Indian Railways on the designs/works; however, the Employer will extend all assistance in seeking these approvals.

1.5 PACKAGING, SHIPPING AND DELIVERY

- 1.5.1** Unless otherwise consented by the Engineer, the Contractor shall provide adequate storage facilities by way of covered areas at his own cost for storing in a safe and secure manner all the plant &
- 1.5.2** The Contractor shall make its own arrangement of space for storage facility. However, if the spare land is available with the Employer, the same will be handed over to the Contractor free of cost, for the purpose of establishing temporary construction depot(s) with the condition that whenever the Employer requires this portion of land back, the same shall be handed over by the contractor at a month's notice and no extra cost/ compensation to the Contractor.

(End of Chapter-1)

CHAPTER 2 - QUALITY ASSURANCE

2.1 NOTIFICATION OF NON-CONFORMITIES

- 2.1.1 If, prior to an issue of the Taking-Over Certificate for the Works or the relevant Section, the Contractor proposes to repair any item of the Works which does not conform to the requirements of the Contract, the Contractor shall immediately submit for review by the Engineer of such proposal and supplying full particulars of the nonconformity and, if appropriate, of the proposed means of repair.
- 2.1.2 If the Engineer issues nonconformity report or similar documents to notify the Contractor of any item of the Works which does not conform to the requirements of the Contract, the Contractor shall promptly investigate the matter and within 14 days of notification by the Engineer, submit to the Engineer for review the remedial measures and necessary actions to be taken to rectify the item and to prevent re-occurrence else Engineer may take suitable punitive action/measures.
- 2.1.3 The Contractor shall maintain and update a nonconformity register to indicate the status of all nonconformities which are identified by the Engineer/ and or the Contractor. The Contractor shall submit the register for review upon request by the Engineer.

2.2 MONTHLY PROGRESS REPORT ON QUALITY MANAGEMENT SYSTEM

- 2.2.1 The Contractor shall continuously monitor the performance of the Quality Management system and shall include the same in each Monthly Progress Report as required in Monthly Progress Report.
- 2.2.2 The Contractor shall provide and maintain, at all stages of the Works, a **Quality control register (s)** to identify the status of Inspections, Sampling and Testing of the work and all Certificates. Such register shall be updated by the Contractor to show all activities in previous months and shall reach the Engineer's office before 7th working day of each month. Each register shall:
- 2.2.3 List the Certificates received for each batch of goods and material incorporated in the Works and compare this against the certification required by the Contractor and the Contractor's quality plans;
- 2.2.4 List the inspection and testing activities undertaken by the Contractor on each element or segment of the Works and compare these activities against the amount of inspection and testing required by the Contract and the Contractor's quality plans;
- 2.2.5 Show the results of each report of inspection and/ or test and any required analysis of these results and compare these results against the pass/ fail criteria and summaries any actions proposed by the Contractor to overcome any nonconformity.

2.2.6 The Engineer shall submit the same to the Employer along with his observations/ Comments before 15th working day of each month.

2.3 QUALITY RECORDS

2.3.1 The Contractor shall ensure that all the Quality Records as objective evidence of the implementation of the Quality Management System are properly indexed, filed, maintained, updated and securely stored.

(End of Chapter-2)

CHAPTER-3: TAKING OVER OF WORKS / SECTIONS

3.1 Inspection/ Testing & Commissioning

3.1.1 General

Within seven (7) days of receipt of the Contractor's written application for a Taking-Over Certificate, pursuant to Sub-Clause 10.1 of the General Conditions of Contract, the Engineer, in the company of the Contractor, will inspect the Works or Section covered by the application, as per the requirements described in this Sub-Clause. During the joint inspection, the Works or Section will be examined and relevant documentation will be reviewed. The Engineer will prepare a written list of outstanding items, if any, to be completed or corrected before issuance of the Taking-Over Certificate and a separate written list of items to be completed or corrected during the remainder of the Contract or the Defects Notification Period. The list shall include an agreed date of correction for each deficiency.

The Contractor shall also obtain written confirmation from all applicable Interfacing Contractors that all interfacing matters have been concluded.

If there are no outstanding items to be completed or corrected before the Taking Over of the Works or a Section, the Contractor shall submit to the Engineer all guarantees, warranties, final certifications or similar documents or both as are required under the Contract.

3.1.2 Inspection/ Testing & Commissioning

The inspection listed in the following table shall be conducted by the Engineer, in coordination with Interfacing Contractors as necessary.

The Contractor shall prepare and submit for review and approval by the Engineer an Inspection and Testing Plan detailing and explaining how the Contractor will plan, perform and document all tests and inspections that shall be conducted to verify and validate the Works. The Inspection and Testing Plan shall consist of a narrative description supported by graphics, diagrams and tabulations as required.

Sub System/Equipment	Inspection/Testing & Commissioning
Cable	Laying
	Cable Route marker
	Cable joints
Point Machines	Testing
Track circuits	Testing
Signals	Testing

After Inspection/Testing of the Works as mentioned above the Contractor shall submit the Inspection/ T&C Report in the agreed format in six (6) signed copies to the Engineer for review and approval.

3.1.3 Remedial Action and Re-inspection

Within twenty-eight (28) days of receipt of a written application for a Taking-Over Certificate, the Engineer shall proceed in accordance with Sub-Clause 10.1 of the General Conditions of Contract.

3.1.4 Taking Over Certificate

If the Engineer does not issue a Taking-Over Certificate but gives instructions in accordance with sub-paragraph (ii) of Sub-Clause 10.1 of the General Conditions of Contract, the Contractor shall, when he considers the work specified by the Engineer completed, give written notice to the Engineer and the Contractor and Engineer shall again follow the procedure in sub-clause 1.1 of this Sub-Division.

(End of Chapter-3)

CHAPTER-4: DEFECTS NOTIFICATION PERIOD

4.1 GENERAL

- 4.1.1 The Contractor shall be responsible for the rectification of any defect, fault or failure in the Works that is attributable to the Contractor, as may be notified by (or on behalf of) the Employer or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).
- 4.1.2 The Contractor shall carry out the rectification of any defect, fault or failure in the Works that is attributable to the Contractor in accordance with the Defects Management Plan specified in [Defects Management Plan] in [Works Management Planning] of the General Specifications and which has received the consent of the Engineer.

4.2 FINAL INSPECTION

- 4.2.1 Subject to having completed the works described below and all outstanding Works, no earlier than thirty (30) days prior to the expiry of the Defects Notification Period for the Works or Section (as the case may be), the Contractor may request the Employer and the Engineer to conduct a final inspection of the Works or Section.
- 4.2.2 The Employer, the Engineer and the Contractor will conduct a joint final inspection of the Works or Section (as the case may be). The final inspection will include Contractor clean-up and Site restoration requirements. The final inspection will be completed within twenty one days from the Engineer's receipt of the Contractor's request for final inspection.
- 4.2.3 During the joint final inspection, the Employer and the Engineer will identify a list of any deficiencies and agree with the Contractor a programme for the rectification of each of any such deficiencies.
- 4.2.4 The Contractor shall correct every deficiency before the Engineer issues a Defects Correction Certificate for the Works or Section (as the case may be). After correction of any deficiencies identified during the joint final inspection, the Contractor shall request re-inspection by the Employer and the Engineer. The Employer and the Engineer shall re-inspect the Works or Section within seven (7) days from the Engineer's receipt of the Contractor's request for re- inspection.
- 4.2.5 The Contractor shall complete the following works prior to final inspection. In completing these works, the Contractor shall if necessary co-operate and co-ordinate with any Interfacing Contractors or Interfacing Parties and shall not interfere in their works.
- 4.2.6 works to be completed prior to the final inspection of any Section
- (i) any outstanding works or defects listed on the Taking-Over Certificate for the Section;
 - (ii) all Contractor's documentation required under the Contract has been submitted;
 - (iii) all interface work requirements have been completed, including but not limited to, utilities, drainage and services;

(iv) touch-up, repair and remedy of any cosmetic deficiencies in the Works.

4.2.7 works required to be completed prior to the final inspection of the last Section

(i) the items listed in Sub-Clause 2.5 (1) above;

(ii) restoration of the Site as follows:

a. removal of all Temporary Works;

b. removal/restoring of all temporary facilities, including but not limited to temporary access roads, work areas, yards, stores, toilets, offices, workshops; except as may be specified in the Contract or ordered by the Employer to remain;

c. reinstatement of all topsoil and restoration of ground surfaces (to their original condition, if applicable; or as specified);

d. removal of any remaining surplus Plant and Materials;

e. removal of all debris, waste, garbage, etc. whether hazardous or otherwise and disposal of same in accordance with the Contract;

f. cleaning of all drains and waterways of construction debris, waste, garbage, etc.

(iii) Plant is in good repair and good working condition and all requisite operation and maintenance manuals have been provided to the Employer.

(iv) Any operation, test or other certificate (s) or the like, not previously provided, have been provided to the Employer enabling full and unrestricted use of the Works.

(v) Ownership of or rights to/in any documentation as specified in the Contract has been transferred to the Employer.

(End of Chapter-4)

Section 5: Works' Requirements

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CHAPTER 1: SCOPE OF WORKS

1.1 INTRODUCTION

HORC has planned some yard modification at Patli station (NR) in connection with laying of new Railway tracks. S&T cables and locations boxes infringing the alignment are to be shifted to facilitate civil works. The affected Signalling functions are to be transferred on new cables.

1.2 SCOPE OF S&T WORKS

- 1.2.1 Supply of S&T cables, location boxes, digital axle counters, chargers, secondary cells terminals, wires etc.
- 1.2.2 Supply of protection material e. g. DWC pipes, GI pipes, RCC cable ducts etc.
- 1.2.3 Preparation of cable route plan, cable core chart, location box and cable termination rack plan.
- 1.2.4 Digging of Trenches, laying of ducts, carrying out protection works, laying of S&T cables of different sizes and filling back, restoring to original.
- 1.2.5 Casting of foundations for location Boxes, erection fixing of terminals/ equipment and connecting cables.
- 1.2.6 Termination of cable cores at locations and CTRs/relay racks
- 1.2.7 Fixing of track circuit JB.s and connections of track jumpers, installing of HASSDAC its wiring etc.
- 1.2.8 Commissioning of all cables, Points Machines and BPAC on new S&T cables.
- 1.2.9 Supply, laying, splicing/ jointing/ termination of main telecom OFC & Quad cable in Patli.

1.3 SYSTEM REQUIREMENTS

- 1.3.1 S &T work is required to be carried out in accordance with the IRS specification for RRI/PI (S/36/87) and conforming to RDSO Specifications No. RDSO/SPN/192/2005 for EI with latest amendments. The installation practices of all signaling gears should be as per the Signal Engg Manual Part I &II issued in May 2021 (latest). The work is required to be carried out in accordance with the RE manual for stations falling under 25 KV electrified traction. The work is required to be carried as per specifications and drawings given in BOQ and in PS Signalling, wherever applicable.
- 1.3.2 The Signal & Telecom material to be supplied by the contractor as per RDSO Specifications/ Drawings will be procured from approved vendors approved by RDSO and will be inspected by RDSO. Where there are not more than three Indian

suppliers categorized as Approved Vendor for a particular item, developmental vendors can be considered for placement of bulk order without any quantity restrictions. (Ref RB letter no 2001/RS (G)/779/7Pt 2 dated 06.11.2018).

- 1.3.3** In case where there are more than three Indian suppliers categorized as Approved Vendor for a particular item, total quantity to be ordered on developmental sources shall be limited upto 20% of NPQ as per Railway Board's letter no. 2001/RS(G)/779/7 Pt. 2 dated 25.06.2018. For procurement through RDSO Vendors for Developmental order, prior approval of HRIDC's Engineer shall be obtained duly following conditions laid down in the aforementioned letters.
- 1.3.4** Signal & Telecom items not inspected by RDSO/ RITES for any reason will be inspected by the Engineer / Authorized Representatives of HRIDC. In case of any difficulty in inspection, HRIDC may decide the authority of inspection, either by any other Govt. agency or by consignee. Whenever materials are inspected by Authorized Representatives of the HRIDC/Engineer, the contractor will be required to furnish his or manufacturer's Guarantee Certificate.
- 1.3.5** The HRIDC 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 HRIDC's decision shall be final, even though they might have been inspected by RDSO/RITES. The contractor shall remove forthwith any such material rejected and replace it promptly at his own cost. Inspected and accepted material, if damaged during transit shall be replaced by the contractor free of cost prior to installation.
- 1.3.6** Items included in the list of items to be inspected by RDSO & RITES and are not inspected by RDSO/RITES for any reason whatsoever will be inspected by the Authorized Representatives of HRIDC. The following conditions will apply:
- Material conforming to RDSO Specn/drg is procured from RDSO approved source.
 - Contractor shall submit Manufacturer's Guarantee Certificate for the material
- 1.3.7** Director Telecom/Railway Board's letter No. 2003/Tele/RCIL1/Pt. IX dated 24.06.2013 regarding digging in the vicinity of Electrical, Signal and Telecom. Cables (Appendix-3) shall be followed while digging for S&T works
- 1.3.8** Policy Circular No. 02/16 of Northern Railway, No. 256-Sig/o/sg/Pt.-XV dated 22.08.2016 (Appendix-2) Guidelines for Signalling Cables Laying on Northern Railway shall be followed.

1.4 RELEVANT DOCUMENTS

1.4.1 This Particular Specification (PS) shall be read in conjunction with the Conditions of Contract, the General Specifications (S&T) called as GS(S&T) and any other document forming part of the Contract.

1.4.2 In the event of a conflict between this document and others, the following precedence shall apply:

- a. Employer's Requirements - Particular Specification (Signalling)
- b. Employer's Requirements-GS (S&T)
- c. General and Subsidiary Rules (G & SR) of NR
- d. Indian Standards referenced herein including Indian Railway signaling engineering manual (IRSEM) with latest amendment.
- e. International Standards referenced herein.
- f. Other National Standards.
- g. Other International Standards.

1.4.3 Notwithstanding the precedence specified above, the Contractor shall seek clarification from the Engineer in the event of conflict among above specifications.

(End of Chapter-1)

CHAPTER 2: DESIGN REQUIREMENTS

2.1 PRELIMINARY DESIGN FOR SIGNALLING SYSTEM

Following Preliminary design and documents for Signalling works but not limited to, shall be submitted by the contractor for approval of engineer:

- 2.1.1 All the drawings/arrangement for the items mentioned under Appendix-1.
- 2.1.2 Typical Signalling Cable Core plan for Station.
- 2.1.3 Typical Cable termination details for Track side devices such as DC Track circuit/ Digital axle counters, BPAC, Points Machines, Signals, Apparatus cases etc.
- 2.1.4 Typical Foundation drawings for full and half apparatus cases.
- 2.1.5 Typical Foundation drawings for Main and Shunt signals.
- 2.1.6 Architecture lay out for RDPM system/ Datalogger.
- 2.1.7 Bridge crossing drawing for Major, minor and all other bridges.
- 2.1.8 Typical drawing for Road crossing, Track crossing by Signalling cables.
- 2.1.9 Typical drawing for Laying of Signalling cable in Station limit and outside of station limit.
- 2.1.10 Typical Installation drawing of DC Track circuits.
- 2.1.11 Typical Installation drawing of HASSDAC.
- 2.1.12 Typical Installation drawing of Point machines.

2.2 DETAILED DESIGN FOR SIGNALLING SYSTEM

The Detailed design and documents for Signalling works at all stations shall include following but not limited to:

- a) Equipment Rack details
- b) Fuse Details
- c) Relay Contact Analysis
- d) Cable Termination Rack Diagrams
- e) Cable Core Allocation
- f) Cable Route Plan
- g) Cable termination details of locations/ Junction box.

Contractor shall submit the as built diagrams for cable route plan, cable core distribution Plan, megger charts, CTR and location termination plan etc.

2.3 TYPICAL INSTALLATION DRAWINGS

Following Indicative typical arrangement drawings which are available in **Appendix -2 (Guidelines of cable laying)** of this document (NR Policy circular 02/2016 circulated vide their Letter No. 256-

Sig/O/SG/Pt-XV Dated 22-08-2016) and Typical installation drawings indicated in **Appendix-2** shall also be referenced during the design:

S.No.	Description	Drawing No.
1.	Typical main cable distribution plan for Double line (4 Lines) PI station	SDO/CABLELAYING/001
2.	Position of trenches for cable laying	SDO/CABLELAYING/002
3.	Cable trench	SDO/CABLELAYING/003
4.	Laying of Signalling Cable & Telecomm/ Power cable in same trench	SDO/CABLELAYING/004
5.	RCC Duct 300MM	NR/SIG/CABLE/001
6.	RCC Duct 500MM	NR/SIG/CABLE/002
7.	RCC Duct 500MM	NR/SIG/CABLE/003
8.	Laying of cables in Rocky area	NR/SIG/CABLE/004
9.	Track crossings	NR/SIG/CABLE/005
10.	Road crossings	NR/SIG/CABLE/006
11.	Cable laying on culverts with low flood level	SDO/CABLELAYING/011
12.	Cable lying on culverts with high flood level	NR/SIG/CABLE/007
13.	Cable laying on metallic bridges	SDO/CABLELAYING/013
14.	Cable trough for metallic bridges	SDO/CABLELAYING/014
15.	Cable laying on arch bridges	NR/SIG/CABLE/008
16.	Brick masonry channel for arch bridge	SDO/CABLELAYING/016
17.	Arrangement of jumper cable	SDO/CABLELAYING/017
18.	Concrete cable marker	SDO/CABLELAYING/020
19.	Method of unrolling cable	SDO/CABLELAYING/021
20.	Rule made of pipe for measuring trench depth	SDO/CABLELAYING/022

2.4 PROCUREMENT

2.4.1 The contractor may procure items/ equipment either locally (from India) or from the international market.

2.4.2 RDSO maintains an approved list of suppliers/ vendors for various equipment/items/ components to be used on railway systems in India. The list of suppliers/vendors approved for various items are available at the website of RDSO (www.rdsso.gov.in).

- 2.4.3 The list of applicable RDSO specifications is given in this document. If procured locally, items shall be procured from RDSO's "Approved list of firms for manufacture and supply" and as per relevant specification. Before procurement MODEL & VENDOR NAME of equipment shall be submitted by the contractor to the engineer for approval.

(End of Chapter-2)

CHAPTER-3: RELAYS

3.1 SYSTEM REQUIREMENTS

- 3.1.1 The various types of relays used in interlocking systems shall comply with IRS specification no. S-34/68 and the requirements of IRS, BS or BRS specifications or any other specifications as approved by the Engineer.
- 3.1.2 Deleted
- 3.1.3 The relays shall be preferably of the plug-in type. The contractor shall seek the advice of the Engineer in case other than plug-in-type relays are proposed to be used.
- 3.1.4 All plug-in Relays and relay groups shall be fitted with non-interchangeable interlocking device to prevent the wrong relays/ relay group being accidentally plugged-in during replacements.
- 3.1.5 Removal or replacement of plug-in relays/ relay groups during operation shall not cause any unsafe conditions in the circuits.
- 3.1.6 All relays shall, to the extent possible, be housed in the Signalling Equipment room.
- 3.1.7 All relays shall have a minimum of 10% of working contacts as spare subject to a minimum of one front and one back contact.
- 3.1.8 The use of relays within the Signalling sub system shall, however, be minimised by design.

(End of Chapter-3)

CHAPTER-4: SIGNALLING CABLES

4.1 SIGNALLING OUTDOOR CABLES

The Cables for carrying outdoor Signalling circuits shall be PVC insulated, PVC sheathed and armoured unscreened cable conforming to IRS specification S63/2007 with latest revision and amendment. The cable conductor shall be of annealed copper having minimum cross-sectional area of 1.5 sq. mm of 24Core, 19Core, 12 Core, and 6 Core and Power cable of 25 Sq. mm multistrand.

4.2 SIGNALLING INDOOR CABLES

Indoor cable/wire used shall be single core, plain annealed high conductivity copper conductor, PVC insulated unarmoured as per IRS specification 76/89 with latest amendment, tinned flexible single core indoor wire in different colours or suitable cable shall be used. All electronic equipment shall however, be wired as per the requirement of the relevant RDSO specification of the equipment and/or as specified by the OEM. The Q style Relay wiring shall be carried out with 16/ 0.2mm size flexible multicolour wire. The cable conductor for indoor power cable shall be of annealed copper having minimum cross-sectional area of 10 Sq. mm.

4.3 QUAD CABLE

The Quad cable used for Axle Counter circuit shall be 6-Quad Telecom underground Jelly filled cable as per RDSO specification IRS TC-30-05 of this document with latest amendment.

4.4 OPTICAL FIBRE CABLE

The Optic Fibre Cable for the Signalling system shall be provided as per RDSO specification No. RDSP/SPN/TC/110/2020 (or latest) of this document with latest amendment.

4.5 HDPE duct 40/33 mm shall be provided as per RDSO specification No. RDSP/SPN/TC/45/2013

4.6 DWC pipe shall be provided as per RDSO specification No. RDSO/SPN/204/2011

(End of Chapter-4)

CHAPTER 5: INSTALLATION REQUIREMENTS

5.1 GENERAL

- 5.1.1 The construction requirements establish the overall procedures for the Contractor to follow for the Works that is related to the components manufactured off-site and supplied for installation, assembling and wiring of the Permanent Works. These requirements relate to their Manufacturing, Supply and Installation in the system and associated activities. The requirement given here are specific requirements to be read in conjunction with the general requirements given in GS (S&T).
- 5.1.2 The requirement of Construction/ Installation Plan, Method Statement, Manufacturing/ Procurement, Delivery, Storage and Installation at site are covered in detail in GS (S&T). The requirements given here are specific requirements to be read in conjunction with the general requirements given in this GS (S&T).
- 5.1.3 The Contractor shall be required to demonstrate that the Construction/ Installation system Procedure, adopted would enable installation of equipment in the minimum time available commensurate with the project aims. The contractor shall identify and undertake the construction activities that are possible to be carried out **away from the site** and include them in his Construction/ Installation Plan and Programme.

5.2 INSTALLATION

- 5.2.1 All the important Signalling equipment viz. Distributed EI with object controllers, HASSDAC, LED Signals, IPS, RDPM/ Data Loggers, Point Machines, BPAC etc. shall be installed in accordance with RDSO and OEM's installation Checklist. **A certificate** shall also be required to be issued by the OEM that the installation has been done in accordance with the Installation checklist and earthing and surge protection arrangements are adequate for satisfactory performance of the equipment. As far as possible the equipment shall be **commissioned after such a certificate** has been issued by the OEM.

5.3 INDOOR INSTALLATION

- 5.3.1 All items of the Signalling system comprising active electrical and electronic components shall, as far as possible be located in the Signalling equipment rooms.
- 5.3.2 All wall-mounted equipment shall be installed at appropriate height to avoid any hazards to the person passing by. The Contractor shall ensure the fixture is of sufficient strength to hold the wall-mounted equipment in a secure and safe manner. Sufficient space shall be provided to allow for front maintenance access of the wall mounted equipment.
- 5.3.3 All floor mounted equipment cabinets in the equipment room shall be securely bolted to ground, properly aligned and leveled. Racks/ Cabinets shall be suitably protected against

entry of rodents, lizards etc. and also from effects of vibrations generated from train movements. All cable entries shall be sealed using suitable cable sealing system. The floor mounted equipment cabinets shall be arranged in a way to allow sufficient space at the front and rear side of the cabinets for maintenance access.

- 5.3.4 The equipment layout within the equipment room shall be designed to:
- 5.3.5 Allow sufficient clearance for escape out of the equipment rooms in case of emergency.
- 5.3.6 Allow sufficient space at the front and at the back of the equipment for the maintainer to attend to the equipment freely without obstruction.
- 5.3.7 Allow required space around the equipment as mandated by the OEM/ RDSO specification.
- 5.3.8 The Contractor shall submit the following to the Engineer for review at least three months before the commencement of the installation inside the equipment room:
- 5.3.9 Drawings showing the equipment layouts and positions of the racks, cabinets and enclosures.
- 5.3.10 Racks, cabinets, layout drawings showing the arrangement of individual module.
- 5.3.11 Specifications, sample of all the mounting brackets and accessories.
- 5.3.12 Equipment mounting and installation methods.
- 5.3.13 Schematic diagrams and wiring diagrams of the System.
- 5.3.14 Electrical distribution schematics within the room including the earthing details and
- 5.3.15 Cable route diagrams for cables within the room.
- 5.3.16 Installation work inside the room shall be carried only after these submissions have been reviewed without objection by the Engineer.

5.4 SIGNALLING STRUCTURES

- 5.4.1 For housing the Signalling Indoor equipment existing Signalling equipment rooms shall be used.
- 5.4.2 The installation layout of SERs at stations and S&T Huts shall be planned in such a way that number of indoor equipment units, their size and installation as per contractor's design for better utilization of space and same got approved by the Engineer.
- 5.4.3 The S&T Contractor shall coordinate with Building Contractor for construction of **Cable pit/ Duct for entry/ exit of cable.**

5.5 OUTDOOR INSTALLATION

- 5.5.1 All the ducts/ troughs/ pipes for laying cables shall be provided by the contractor.
- 5.5.2 All the mounting brackets and accessories shall be corrosion resistant, aesthetically designed to match with all architectural finishes and of sufficient strength to mount the equipment securely.

- 5.5.3 If the equipment is installed at locations exposed to direct sunlight, the equipment, mounting brackets, cables and accessories shall be made of materials which are resistant to ultra violet rays.
- 5.5.4 All trackside equipment and the mounting method shall be designed in a way to minimize frequency of preventive maintenance and theft and vandalism.
- 5.5.5 The Contractor shall submit the following to the Engineer for review at least three months before the commencement of the outdoor installation activities:
 - 5.5.6 Specifications, sample of all the mounting brackets and accessories.
 - 5.5.7 Equipment mounting and installation methods.
 - 5.5.8 Schematic diagrams and wiring diagrams of the System.

(End of Chapter-5)

CHAPTER-6: SIGNALLING CABLE LAYING, TERMINATION AND TESTING

6.1 SIGNALLING CABLES

- 6.1.1 The Cables for carrying **outdoor Signalling circuits** shall be PVC insulated, PVC sheathed and armored unscreened cable conforming to IRS specification, with latest amendment. The cable conductor shall be of annealed copper having a minimum cross-sectional area of **1.5 sq. mm** and core of **6/12/19/24**. **Guidelines for cable laying** as Appendix-2 shall be followed.
- 6.1.2 The Cables for carrying **Signalling power supplies** outdoor shall be copper conductor, minimum conductor size **25 sq. mm**, PVC insulated unarmored, unscreened, underground power cable as per IRS specification described in Chapter-4 of this document with latest amendment and IS: 1554 (Part-2). The size of conductor shall be so selected as to suit the Electrical load. This shall include Power cable of **suitable size if required** for extending the **Electric Power supply to Object controller rooms** from the IPS Room at station building. Separate power cable for **110V AC, 24V DC upto distant signals, 110V DC for point machines and 24V DC for BPAC** shall be provided.
- 6.1.3 The **Optic Fibre Cable** for the Signalling system shall be provided as per RDSO Specification with latest amendment.
- 6.1.4 Indoor Cable/ Wire used shall be single/ multi core, plain annealed high conductivity copper conductor, PVC insulated unarmored as per IRS specification described in Chapter-4 of this document with latest amendment. The indoor power cable for carrying **Signalling power supplies** shall be copper conductor, minimum conductor size **10 sq. mm**, PVC insulated armoured, unscreened, underground power cable as per IRS specification with latest amendment and IS: 1554 (Part-2). All electronic equipment shall, however, be wired as per the requirement of the relevant RDSO specification of the equipment and /or as specified by the OEM. The Q style relays shall be wired with 16/ 0.2 mm multistrand wire. The contractor shall take prior approval of Engineer if indoor cable/ wire other than RDSO approved are proposed to be used.
- 6.1.5 All cables shall be adequately rated for their current carrying capacity. All power cables shall be able to withstand full load current for peak operation. The Contractor shall comply with the latest edition of IEE Wiring Regulations.
- 6.1.6 A **labelling** scheme shall be applied for all cables installed. Each cable shall be uniquely identified. Labels shall be tied at both ends, at entry and exit points of cable trays, ducts and trenches and at other appropriate locations where necessary. Type of labels to be used shall be got approved from the Engineer.
- 6.1.7 The **DWC-HDPE pipe/ duct** used for protection of Signalling cables **below the track/ road, on the slope of embankment for crossing bridges, on the top of PCC/RCC**

bridges or any other place shall be supplied as per RDSO specification with latest amendment.

- 6.1.8 Medium type **GI Pipe** (blue colour strip) shall be provided on the top level of all OWG bridges.
- 6.1.9 On top of PCC/RCC bridges, if concrete cable duct is not available then GI pipe with suitable support shall be provided with concrete cover by S&T contactor.
- 6.1.10 Signalling cables shall be protected through RCC duct covers cover in **Station area** from Home-to-Home Signals of the station area.
- 6.1.11 Outside the station area i.e., beyond Home Signals, the Signalling cable shall be protected with '**B**' class bricks of good quality.
- 6.1.12 Signalling and Telecom cable shall be laid in separate trenches to the extent possible. If not possible a brick separation shall be provided.

6.2 CABLE CORE ALLOCATION

- 6.2.1 A cable core distribution plan shall be prepared for each installation.
- 6.2.2 deleted.
- 6.2.3 Adequate spare conductors to a minimum of **20% of the total conductors** used shall be provided for each main cable upto home signal and **10% upto distant signal**. All branch/tail cables shall have at least **10% spare cores** or 2 cores, whichever is more. The spare conductors shall be provided in the outermost layer. All spare cores shall be made through up to the end points and terminated. For distant signals **double core** shall be provided for each function.
- 6.2.4 deleted.
- 6.2.5 A separate cable shall be used for operation of point/ crossover. **Operation and detection circuit** shall work on different cables.
- 6.2.6 **deleted.**
- 6.2.7 The quad cable used for signalling functions shall also **have 20% (of the total conductors used) spare** conductors.

6.3 CABLE ROUTE PLAN

- 6.3.1 After deciding the size and the number of conductors in the different types of cables to be used on a route, a foot survey along the track shall be done to determine the best route for the cable.
- 6.3.2 While planning the cable route, any future yard modification etc. shall also be kept in view.
- 6.3.3 As far as possible low-lying areas, platform copings, drainages, hutments, rocky terrains, points and crossings, shall be avoided.
- 6.3.4 The cable route plan shall **show the actual alignment of track, giving offsets from permanent way** and permanent structures at regular intervals. The diagram shall indicate

the various **road and track crossings, crossing with electric power cables, water and sewage lines** and other items of importance.

6.3.5 All cable routes shall be carefully coordinated with all the interfacing parties. The cable trenching work shall be taken in hand only when the cable route plan has been approved by the Engineer.

6.3.6 The cable shall be laid in the HORC/IR land only.

6.4 STORING & TRANSPORTATION OF CABLE

6.4.1 Cable drums shall not be stacked on flat side. Suitable stoppers shall be placed for stability.

6.4.2 Cable drums shall have easy access for lifting and moving.

6.4.3 When rolling the cable drum either for unloading or transportation, the drum shall always be rotated in the direction of the 'arrow' which is marked on the drum.

6.4.4 The drums shall not be rolled over objects that could cause damage to the protective battens of the cable.

6.4.5 When unloading is carried out from the vehicle the drum shall not be dropped on the ground directly to avoid damage due to impact. Fork lifter or ramp shall be used.

6.4.6 During all stages of storage, it is essential that the ends of the cable are effectively sealed by end cap or in any other approved manner to avoid water entry into the cable.

6.4.7 It is desirable that cable drums are stored in covered shed to protect against direct exposure to sun/ rains.

6.5 PAYING OUT THE CABLE

6.5.1 For paying out cables, the cable drums shall be mounted on cable wheels. It shall be ensured that no kink is formed while paying out the cable.

6.5.2 Cable drum shall never be kept on its side and cable uncoiled since this can result in twisting of cable conductors resulting in damage to them.

6.5.3 The drum on the wheel shall be brought to one end of the trench and the end of the cable freed and the cable shall be laid along the trench.

6.5.4 The cable drum shall be brought as close to the cable trench if possible. The cable drum shall clear the ground by 5 to 10 cm.

6.5.5 The wooden battens on the drums shall be carefully removed shortly prior to laying and before the drum is mounted on the jack.

6.5.6 A party of labourers shall move along the trench carrying cable at suitable intervals so that cable is not damaged due to dragging along the ground or bent unduly.

6.5.7 The in-charge of cable laying shall ensure proper synchronization of all labourers for smooth laying.

6.5.8 In cases where the wheels are not available, the drum shall be mounted on an axle at one end of the trench and cable paid out and carried by labourers.

6.5.9 In no case, shall the drum be rolled off on to the road for laying the cable and the cable dragged on the ground for laying purposes.

- 6.5.10 Whenever mechanized equipment is used, the work shall be carried out by a trained operator under the supervision of the Engineer or its authorized representative.
- 6.5.11 Where the cable drum is in damaged condition the cable may be placed on a horizontal revolving platform and the cable paid out in the same manner as given in paras above.
- 6.5.12 Paying out of cable shall be done by rotating the cable drum and not by pulling the cable with excessive force.
- 6.5.13 Wherever flaking of cable is required, it shall be done by making a succession of loops in the form of Figure '8', these loops being disposed on top of each other to avoid tangling of cable. Figure of '8' flaking shall only be carried out under the direct supervision of an experienced official.

6.6 EXCAVATION AND BACKFILLING OF THE TRENCHES

- 6.6.1 Manual trenching is recommended for laying of Signalling cables in the station yards from Home-to-Home signal and mechanized trenching is recommended beyond the Home signal.
- 6.6.2 Digging of trench between IR track and HOCR track shall be manual or mechanized as proposed by the contractor as per site survey/ feasibility and approved by the Engineer for every Station & Block section separately.
- 6.6.3 Excavation of Cable Trench shall be made in all kinds of soils including clearing roots of trees, rocks, etc. During excavation, the earth of the trenches shall not be thrown on the ballast. The earth shall be thrown by the side of the trenches away from track.
- 6.6.4 Trenches shall be straight as far as possible and steep angles shall be avoided.
- 6.6.5 The width of manually made cable trenches shall be commensurate with number of cables. The minimum width shall be kept as **0.3 metres**.
- 6.6.6 It is desirable that the excavation of the trenches is not done in long lengths and does not remain uncovered for long period. It is preferable that cables are laid and refilling done on the same day.
- 6.6.7 Before commencement of the laying, inspection of the trench and inspection of protection works shall be carried out by the Engineer so as to ensure their conformity with the specification.
- 6.6.8 After cable has been laid and until the whole of the cables to be laid in the trench have been covered with their protective covers, no sharp metal tool such as spades, crowbar or fencing pins shall be used in the trench or placed in such a position that they may fall into the trench.
- 6.6.9 For **road/platforms/railway track crossing**, trenchless horizontal directional drilling (HDD) technique shall be adopted under the supervision of competent staff for laying of GI/DWC-HDPE pipe. Both ends of GI/DWC-HDPE pipes shall be closed properly using accessories and the pits shall be properly backfilled. There shall be no damage to the road/platform/tracks or any such structures etc. enrooted during or after the HDD operations.

- 6.6.10 Backfilling of the trenches shall be done properly. The earth excavated shall be put back on the trench rammed and consolidated.

6.7 CABLE LAYING UNDERGROUND

- 6.7.1 The cables may be laid underground, either in the trench, in ducts, in cement troughs, in pipes or in any other approved manner.
- 6.7.2 Cable laying in ducts-RCC ducts/ Half split DWC pipe be used for laying the cable from Home-to-Home Signal in Station yard. The ducts shall have suitable covers and shall rest on walls of duct as per Appendix-2
- 6.7.3 The cables shall generally be laid keeping in view all the relevant provisions of Signal Engineering Manual of IR and the Joint Procedure order for undertaking digging work in the vicinity of S&T underground cables (Appendix-3 of the document) shall be followed.
- 6.7.4 Before commencing work on any part of the site, the Contractor shall ascertain that the Engineer and also, where applicable, the local and statutory authorities or other bodies/ persons concerned have reviewed the cable route. The Contractor shall further ensure that all necessary permits in such cases have been obtained and notices served.
- 6.7.5 Every precaution shall be taken to ensure that cables and equipment are not installed in a manner or under conditions likely to cause electrolytic or other corrosive action or damage to, or be detrimental to, the performance of the cables and equipment during operation.
- 6.7.6 Signalling cables shall not run with cables carrying high voltages or heavy currents and shall conform to the requirements specified in BS 7671.
- 6.7.7 Signalling tail cables shall be mechanically protected by DWC pipe to avoid being damaged from track side maintenance activities and shall be immune to any malfunction from electromagnetic interference.
- 6.7.8 All cables shall be laid along the track preferably **One metre** inside the HORC/ IR boundary. If it is necessary to lay the cable outside the HORC boundary it shall be laid on the berm with interface with Civil contractor with the approval of the Engineer. After Back filling Compaction of the formation shall be done properly.
- 6.7.9 The cable laid parallel to the track shall be buried at a depth of minimum 1.0 metre (top most cable) from ground level However, in case of rocky soil, the depth may be reduced suitably with pre cast cement concrete slab of minimum 10 cms. thickness provided for protection of cables. When it concerns the laying of tail cables which serve the track apparatus etc., the depth shall not be less than 0.50 metres.
- 6.7.10 No sharp object like stone chips, iron pieces etc. shall ever come in contact with laid cables irrespective of the method of laying the same. The bottom of the cable trench shall be levelled and got rid of any sharp materials. In the soft ground, the cable shall be laid at the bottom of the trench previously levelled. In both the above cases, the cable shall be covered with a layer of sand or sifted earth of 0.10 metre thickness and thereafter a

protective cover of trough or a layer of bricks shall be placed in block section and half split DWC pipe in station area shall be placed.

- 6.7.11 At each end of the main cable an extra loop length of **4 to 5 metre shall** be kept.
- 6.7.12 Before starting cabling work, location boxes shall first be erected so that cable after laying is directly taken inside location box and its multiple handling/ damage by re-digging and taking inside Location box/ Signal equipment Room is eliminated.

6.8 CABLE LAYING IN ELECTRIFIED AREA

- 6.8.1 The cable shall be laid at not less than three meter from the nearest edge of the mast foundations supporting the catenary or any other live conductor. When laying upto 1m from the OHE structure, the depth of the cable does not exceed 0.5 meters with suitable cable protection measures provided. If it is difficult to maintain these distances, the cable shall be laid in concrete/ heavy duty HDPE/ Ducts or any other approved means for a distance of 3 metres on either side of the Mast. When so laid, the distance between the cable and mast may be reduced to 0.5 meters. The precautions are necessary to avoid damage to the cable due to surge/ heavy current in the event of the failure of an overhead insulator.
- 6.8.2 In the vicinity of traction sub stations and feeding posts, the cable shall be laid at least one metre away from any metallic part of the O.H.E. and other equipment at substation, which is fixed on the ground, and at least five metre away from the substation earthing. In addition, the cable shall be laid in RCC pipes/ or other approved means for a length of 300 metres on either side of the feeding point. As far as possible, the cable shall be laid on the side of the track opposite to the feeding post.
- 6.8.3 In the vicinity of the SP/SSP, the cable shall be laid at least one meter away from any metallic body of the station, which is fixed in the ground, and at least 5 metres away from the station earthing. The distance of 5 metres can be reduced to one meter provided the cables are laid in GI/DWC/HDPE pipes or any other approved means.
- 6.8.4 Where an independent Earth is provided for an OHE structure, i.e. where the mast is connected to a separate Earth instead of being connected to the rail, the cables shall be laid at least one meter away from the Earth.
- 6.8.5 Where there are O.H.E. structures along the cable route, the cable trenches shall be as far as possible, be dug not less than 5.5 metres away from the center of the Track.

6.9 LAYING OF DIFFERENT TYPE OF CABLE IN SAME TRENCH

- 6.9.1 The OFC cable shall be laid/ blown in lubricated HDPE pipe as per Telecom manual.
- 6.9.2 Where several cables of different categories have to be laid in the same trench, they shall be placed as far as possible in the following order starting from the main track side, so that in the event of failures, the maintenance staff may easily recognize the damaged cables:
- 6.9.3 Power cable of S & T

- 6.9.4 Signalling cable
- 6.9.5 Telecommunication cable
- 6.9.6 A distance of approximately **10 cm must be** maintained between Telecommunication cable and Signalling cables. The Signalling cables must be separated from power cables/Telecom cables by a row of bricks placed between them as per sketch shown in Appendix-2(Guidelines for cable laying) of this document.

6.10 CABLE LAYING IN DUCTS

- 6.10.1 Cables in rocky or rock mixed soil area shall be laid in appropriate pipes/ duct.
- 6.10.2 Cables for longer distances shall be laid on bottom layer. Duct shall be filled with sand after cable is laid to avoid entry of rodents.
- 6.10.3 The ducts shall be of such design as to prevent collecting the water in the duct.
- 6.10.4 Cables in any conduits, trunkings or ducts shall not occupy cross-sectional space in excess of 50%.
- 6.10.5 When cables are laid in trunking/ RCC duct, care shall be taken to see that no ballast or stones have been dropped inside the trunking/ RCC duct. The trunking/ RCC duct shall be cleared of all ballast and stones before the cover are secured. When the ends of covers are joined together with cement plaster, a piece of paper or wood shall be placed under the joint to prevent the cement plaster from falling on the cable.
- 6.10.6 After placing the trunking/ RCC duct in the trench the ducts have to be aligned using 8 mm rod. For this purpose, a hole is left in the trunking/ RCC duct for insertion of rods. Wherever there is a diversion proper care shall be taken to cover the cables, either by smoothly forming a curve with duct or a masonry structure can be constructed to protect the cables. After laying of cables the ducts shall be covered with RCC slab and shall be continuously plastered at the end with trunking/ RCC duct.
- 6.10.7 Where it is necessary to take the cables between the tracks, it shall be carried in trunking/ RCC duct kept sufficiently below the ballast level.
- 6.10.8 In station area the S & T cables shall be laid in RCC/ Half split DWC duct as per sketch given in Appendix-2 of this document.

6.11 CABLE LAYING IN SOLID & ROCKY SOIL

- 6.11.1 In case of rocky soil, the depth may be reduced suitably.
- 6.11.2 Sharp edges on the sides must be smoothed out and bottom of the chase shall be levelled. In the rocky ground the cable shall be laid normally on layer of sifted earth of 50 mm thickness previously deposited at the bottom of the trench. Cable shall be covered with the layer of sand or sifted earth of 100 mm thickness.
- 6.11.3 In case sharp edge of rocky ground cannot be protected with sifted earth, concrete/ GI/DWC-HDPE pipe shall be used if numbers of cables are small. If number of cables is

large, RCC duct shall be used. In isolated cases, it can be given smooth surface by using either masonry bricks or cement concrete.

- 6.11.4 A row of bricks shall then be placed lengthwise on the top and jointed with cement mortar and a layer of concrete with cement plaster shall be provided on the top of the same.
- 6.11.5 A sketch showing laying of cables in rocky area is placed at Appendix-2 of this document.
- 6.11.6 Laying in special soil condition: Cable shall not be run through abnormally high acidic or alkaline soil or through sewages. If this is unavoidable special measures shall be taken to prevent corrosion. Cable may be laid in the concrete/ GI/ DWC-HDPE pipes properly jointed to prevent ingress of moisture.
- 6.11.7 Cable laying in residential area: When laying the cable in residential area, the cable shall be specially protected on both sides up to a distance of about 50-100 metres beyond the building line subjected to approval of Engineer. In such cases, the cable shall be protected by means of concreting of 50 mm as proposed for rocky soil/ in concrete/ GI/ DWC-HDPE pipes. This is better than using bricks as in a residential area bricks are usually found while digging and its special significance of cable protection may be overlooked.

6.12 RCC DUCTS

- 6.12.1 RCC ducts as per Drawing No. GC/HRIDC-SK-GEN-017 interconnected with Mild steel rods shall be provided. Main cables for Signalling and Telecom will be laid in the ducts in station section (Home signal to Home signal) (Appendix-2).
The ducts will be covered with RCC cover as per Drg, No. GC/HRIDC-SK-GEN-017 the top of the duct shall be at least 500 mm below ground level. (Appendix-2).

6.13 TRACK CROSSING

- 6.13.1 As far as possible, the cable shall be crossed from one side of the yard to the other, at minimum number of locations.
- 6.13.2 Track crossing shall be **through trenchless** method. The following precaution shall be taken:
 - 6.13.3 The cable crosses the track at right angles.
 - 6.13.4 The cable does not cross the track under points and crossings.
 - 6.13.5 The cable is laid in concrete/GI/DWC-HDPE pipes or suitable ducts or in any other approved manner while crossing the track.
 - 6.13.6 Cable laid across the track must be 1.0 meter (minimum) below the bottom of the rail.
 - 6.13.7 No digging shall be done below the sleepers.
 - 6.13.8 A sketch showing track crossing is placed at Appendix-2 of this document.

6.14 ROAD CROSSING

- 6.14.1 Road crossing shall be done through **trenchless** method. The cable shall be laid in GI pipes (IS1239 Part-1) or in any other approved manner while crossing the road at the

- depth of **1 meter from the ground** level. It shall extend **1 meter (minimum)** on each side of the road keeping in view the future increase of width of the road.
- 6.14.2 When crossing roads, it is necessary to lay the cables in such a manner as to avoid the necessity of bending the cable sharply and minimize the excavation of road surface as far as possible.
- 6.14.3 The crossing of main roads often involves difficulties, especially if traffic is heavy. Precautions to avoid accidents to workmen, pedestrians and vehicles shall be taken. On minor roads, which can be temporarily closed to traffic it is possible to open up across the entire width of the road, pipes shall be installed quickly in the cutting, which is then filled in there by reducing to a minimum the time for which the road is closed.
- 6.14.4 Some roads, which are broad, may be opened for half their width allowing the other half for use of traffic, pipes are laid, trench filled in the first half and the other half opened up after the first half is opened half is linked with those laid in the first half.
- 6.14.5 Whenever a cable is laid across an important road, particularly one with a special surface, space for future expansion may be provided. Either of the following methods may be adopted:-
- 6.14.6 The size of the pipe shall be so chosen that provision for laying of additional cables in future is kept. Pipes having diameters ranging from 100 to 200 mm are suggested, or
- 6.14.7 A spare pipe may be laid, through which a cable can be drawn when required. It will be advantageous to leave a lead wire of G.I wire in the pipe for drawing the cable in future.
- 6.14.8 A separate pipe of suitable diameter shall be used for telecommunication cable.
- 6.14.9 A sketch showing the track crossing is placed at Appendix-2 of the document.

6.15 CABLE LAYING ON BRIDGES/CULVERTS

- 6.15.1 Wherever practicable, the cable may be taken underground across the drain bed at a suitable depth for crossing small culverts with low flood level. A sketch No. showing cable laying on culverts with low flood level is placed at Appendix-2 of this document. Wherever cable may not be taken underground across the drain bed, cable shall be taken on the approach slopes of culvert through **GI pipe** of suitable sizes **with concrete cover** and blocks. A sketch No. showing cable laying on culverts with high flood level is placed at **Appendix-2** of this document. The same may be used by the S&T contractor for laying of S&T cables. The cables in these ducts shall be laid in **HDPE/ DWC** pipes.
- 6.15.2 When cables have to cross a **Girder bridge**, they shall be placed inside a GI pipe/ metallic through (filled with an anti-theft measure as sealing compound). The cable shall be supported across the bridge in a manner which would involve minimum vibrations to the cable and which will facilitate maintenance work. Adequate cable length to the extent 5 to 6 meters shall be made available at the approaches of bridge. A sketches showing cable laying on metallic bridges are placed at Appendix-2 of this document.
- 6.15.3 In case of arch bridges, cable shall be taken through **GI pipes on top of** the arch adjoining the parapet wall. The pipe shall be covered with ballast. Cement Concreting of 50 mm

shall be done throughout from entry/exit end of cable up to diversion point including slope on either side. The entry and exit ends of the cable from the pipe to the diversion point of the cable shall be concreted for 1 metre (minimum). A sketches showing cable laying on arch bridges are placed at Appendix-2 of this document.

- 6.15.4 On PCC/ RCC box Bridges . All Outdoor Signalling cables and Telecommunication Cables (OFC cable, Telecom Quad Cable & PIJF Telephone Cables etc.) on these Concrete Bridges & Culverts shall be laid inside DWC Pipes. OFC cable shall be laid inside the HDPE duct. **Entry/ Exit of the Cables to/ from Bridges & Culverts** shall be suitably protected by concrete cover. The Contractor shall carry out necessary co-ordination with Civil, Structure & Track Contractor in this matter. Cable shall be laid in **Double Wall Corrugated Pipes** in the slope to climb from ground to top level of bridges. It shall be so laid to maintain a continuous depth of 1 meter (top of DWC Pipe) from the nearest ground level. The slope of track formation shall be restored to its original condition after laying of cables.
- 6.15.5 On Girder bridges, GI pipe shall be laid on the top level of the bridges on both sides of the track.
- 6.15.6 As the laying involves movement of a large number of staff over the bridge the line shall be blocked and flagman posted on other side. On a double line only the line near which cable is being laid shall be blocked but care shall be taken to see that staff is aware of this and measures taken to prevent staff from straying on to the unblocked line.
- 6.15.7 Damage to cable is likely to occur if care is not taken in laying cable where the bed changes from solid support such as a foundation, pier of bridge to soft support such as soft soil. The cable must not press against the edge of the solid support. The soft soil near the edge must be tamped and the cable raised slightly.
- 6.15.8 In order **to prevent theft and miscreant** activities on approach of cable to bridge/ culvert where it is not possible to ensure adequate depth, **concrete protection** is proposed.
- 6.15.9 To cross the bridges full DWC pipe shall be provided on the slope at the **distance of about 500mm from the retaining wall edge**.

6.16 CABLE LAYING IN MONSOON SEASON

- 6.16.1 Cable laying in monsoon when the precipitation is heavy shall be avoided. The trenches will be inundated and visual inspection of the bedding of the trench will be rendered difficult. Threading the cable in pipes will also be more difficult.
- 6.16.2 When cable laying is necessary during the rainy season, the cable ends shall be inserted in a pipe sealed at one end and the pipe buried. Termination work shall be started only when there is likelihood of a clear weather for three to four days.

6.17 LAYING OF CABLE ABOVE GROUND

- 6.17.1 Signalling cables for outdoor circuits shall not normally be laid above ground. In exceptional cases where it becomes unavoidable, the following precautions shall be taken:

- 6.17.2 The cable shall be suspended in wooden cleats, from cable hangers or in any other approved manner so that no mechanical damage occurs to the cable even under exposed condition.
- 6.17.3 The cable supports shall be so spaced as to avoid sag.
- 6.18 INDOOR SIGNALLING CABLE** shall normally be laid on ladders, channels or in any other approved manner. The cables shall be neatly tied/ laced.
- 6.18.1 In AC electrified areas cables shall be laid underground only. For laying cables in RE area instructions laid down in IRSEM shall also be followed.
- 6.19 CABLE MARKERS:** Underground Cable Route shall be identified by **Concrete Cable route Markers** directly buried inside the trench at **50 m interval** and at diversion and track crossing points within the Station section from home to home with the approval of Engineer. Outside station section **normal concrete type cable route marker** as per sketch given in Appendix-1 of this document shall be provided **at every 50 m interval and at diversion and track crossing points** with the approval of Engineer It shall also be provided at entry/ exit of track/ road crossing etc. during crossing of bridge on the ground level, on mid of slope, at diversion etc.
- 6.20 ENTRY OF CABLE AT CABIN, RELAY ROOM, LOCATION BOXES ETC.**
- 6.20.1 All cable entry points in the Signal/ Telecom Equipment room, Battery room, SM's room, IPS room, MSDAC room at Station or S&T Huts, Location boxes, Junction boxes etc. shall be **properly sealed** using modular based cable and pipe sealing system/ other approved means. All cable entries from/ to adjacent rooms through overhead duct/ ladder shall also be sealed.
- 6.20.2 All cable entrance ducts must **be closed with suitable masonry works, sand covered and plastering** to prevent entry of rats etc. RCC slab shall be provided on the cable pit of the Signalling/ Telecom equipment rooms at the Stations and S&T Huts.
- 6.20.3 Cable shall be protected on both sides up to a distance of **10 meter beyond building line** of Signalling/ Telecom equipment rooms, Battery room, Power supply room, SM's room of Station and S&T Huts.
- 6.20.4 Damage to cable is likely to occur if care is not taken in laying cable where the bed changes from solid support such as a foundation/ masonry to soft support such as soft soil. The cable must not press against the edge of the solid support. The soft soil near the edge must be tamped and the cable raised slightly.
- 6.21 TERMINATION OF CABLES**
- 6.21.1 No jointing of Signalling cables is permitted. All cables shall be terminated.
- 6.21.2 The cable termination of Signalling cables shall be undertaken on approved type of terminations with ease of maintenance and disconnection facility on CT racks/ location boxes/ junction boxes.

- 6.21.3 All wire and cable conductors shall be clearly identified and numbered at each end using durable shrink on or tag type labels. A description of the terminating function shall be included. Each core so terminated shall be provided with identification marking on cable and on conductors/ terminals and ferrules with letters or/ numbers embossed on them as per requirement of circuitry. This will enable easy identification of conductors in case of any failures or cable disconnections or cable cut by outsider/ miscreants. A proper marking and termination practice ensures quick and easy restoration during failures.
- 6.21.4 Unused cable cores/ pairs of multi-core/ pair cables shall also be terminated and marked so.
- 6.21.5 Crimping or other standard industry practice shall be used for terminating all conductors. Solder terminations shall only be used with the approval of the Engineer.
- 6.21.6 Wherever practical, multiple pin plugs and sockets shall be used to connect multi- core cables and wiring loops to all items of equipment. These shall have some form of keying to prevent incorrect equipment modules from being installed.
- 6.21.7 The cable terminations shall be secured enough to withstand vibration level that is likely to be experienced in the HORC environment.

6.22 CABLE TERMINATION RACK (CTR) AND LOCATION BOX

- 6.22.1 Cable Termination Rack (CTR) with **20% extra** capacity for future expansion shall be provided.
- 6.22.2 **Only screw less terminals with isolation facility** shall be used for cable terminations. The terminals and fuses used shall meet the requirements of RDSO specification described in Chapter-4 of this document with latest amendments. If any alternative terminal type is proposed for use, it should be got approved by the Engineer.
- 6.22.3 The Cable Termination Rack (CTR) shall be equipped with copper earth bar to which all cable shields shall be connected and soldered. The copper earth bar shall be connected to the earth.
- 6.22.4 The Outdoor cables shall be terminated in Location Boxes.
- 6.22.5 Location boxes shall be rugged and free from ingress of rodents, insects, dust, moisture and water.
- 6.22.6 Location boxes shall be able to withstand vibration level, likely to be experienced alongside the track.
- 6.22.7 Location boxes shall be theft and vandal proof as far as possible and shall be able to withstand the climate of the region.
- 6.22.8 Cable entry points in the location boxes shall be filled with sand and plastered with cement.
- 6.22.9 Separate Location boxes shall be used for UP and DN line cables.
- 6.22.10 All location boxes shall be provided with 110 V AC LED lighting arrangement with ON/ OFF switch to assist maintenance/repair work undertaken during night.

6.22.11 The installation of Location boxes shall not be done on loose earth/ water logger area. It should be installed on proper concrete foundation. The foundation drawing shall be proposed by the Contractor and approved by the Engineer.

6.23 TESTING OF CABLE

6.23.1 Before the cable is laid in the trench, a visual inspection of cable shall be made to see that there is no damage to the cable. It shall be tested for insulation and continuity of the cores. Thereafter, the cable shall be laid into the trench. Record of insulation and loop resistant must be maintained.

6.23.2 Testing of all main and Tail cables after laying of the cable in trenches and also after termination in apparatus cases, in boxes and in relay room shall be done.

6.23.3 If any defect is noticed during the testing after laying the cable the same shall be replaced.

6.23.4 The insulation resistance tests shall be made when conductors, cables and insulated parts are clean and dry. An insulation tester shall be used for insulation testing. Any metallic sheath or metal work of any rack or apparatus case shall be bonded to earth during test.

6.23.5 Insulation Resistance so measured shall not be less than 5 mega ohms per km at buried temperature. If the insulation resistance is found to be lower than 5 mega ohms, the cause shall be investigated, and immediate steps taken to repair or replace the cable to prevent any malfunctioning of the equipment and circuits.

6.23.6 Supervision of cable laying: The work shall be supervised personally by an official authorized by the Engineer. The cable trench shall be inspected by the authorized person and jointly signed by him/ her and the Contractor's authorized person before cable laying is undertaken on the request for inspection (RFI). The record of joint inspection of the trench shall be maintained.

6.24 EARTH LEAKAGE DETECTOR (ELD)

DELETED

6.25 EARTHING AND BONDING

6.25.1 General: Earthing shall be provided for all Indoor & Outdoor Signalling installations to achieve the following objectives:

a) Efficiently dissipate heavy fault currents and electrical surges, both in magnitude and duration, to protect equipment from being damaged so as to minimize down time, service interruption and replacement cost.

b) Provide a stable reference for electrical and RF circuits at the installation to minimize noise during normal operation.

- c) Protection of personnel who work within the area from dangerous electric shock caused due to “step potential” or “touch potential”.
- d) To achieve the primary goal of assuring personnel safety and damage control, a low impedance path shall be made available to the current generated due to lightning or power system fault. The potential differences between any two points shall be as low as possible. Safety considerations also require the equipment chassis or enclosure to be earthed to minimize shock hazards to system staff.
- e) To achieve the secondary goal of providing protection for sensitive and interconnected electronic and electrical systems, earthing shall be designed to minimize the noise voltage generated by currents from two or more circuits flowing through common earth impedance and to avoid creating earth loops susceptible to magnetic fields and differences in earth potential.
- f) The contractor shall submit the design for Earthing and Bonding of Signalling and Telecommunication systems for review and approval by the Engineer. OEM's original data sheets of the proposed devices shall also be submitted along with the protection methods adopted in their design.

6.26 INDOOR SIGNALLING INSTALLATION

- 6.26.1** The earth electrode shall be made of high tensile low carbon steel circular rods, molecular bonded with copper on outer surface to meet the requirements of UL 467. The Ground Enhancement material should meet the requirement of IEEE 80's Clause 14.5 (d) and should be tested as per IEC 62561-7 standard. All the earth electrodes shall be bonded together using Galvanized Steel tapes or Copper Bonded Steel Conductors of suitable size in continuous length of max. up to 100 metre to achieve equipotential bonding. For Power supply equipment, MSDAC equipment etc. separate maintenance free earthing arrangement shall be provided.

6.27 OUTDOOR SIGNALLING INSTALLATION

- 6.27.1** All the Outdoor Signalling equipment viz. Signals, Location boxes etc. shall be provided with suitable Earthing arrangement with earth value $< 5\Omega$.
- 6.27.2** The target earth resistance value for outdoor Signalling equipment shall be in accordance with the requirement specified for the equipment by the OEM/RDSO specification.
- 6.27.3** The Signalling equipment having Solid State components and the enclosures housing them shall be provided with maintenance free earth using copper bonded steel electrode, earth enhancement compound and bonding connection through exothermic welding as per RDSO specification with latest version and amendments. Each HASSDAC DP shall be provided separate one maintenance free earth electrode or more with Earth value shall be $< 1\Omega$.

- 6.27.4** In order to arrive at the required target resistance value, the number of earth electrodes should be decided based on the calculations involving soil resistivity as per the standards above, all interconnected in parametric ring form or in parallel manner.
- 6.27.5** Where the equipment to be earthed are in close vicinity they should be connected to a common earth in star configuration.
- 6.27.6** For **outdoor Signalling items installed in Location boxes**, One earth busbar of suitable size shall be provided in each location box and earth point of all equipment and cable armour etc. shall be terminated on this busbar. This busbar shall be connected to normal earthing electrode.
- 6.27.7** **All Apparatus Cases and Signals shall be earthed with General/ Conventional earth pit.** Multi-strand single core PVC insulated copper cable as per IS:694, **10 Sq mm cable** shall be used to connect the Apparatus cases of signals with the earth pit. Cable shall be protected with the conduit.
- 6.27.8** **GI wire as earthing bond** shall not be used.
- 6.27.9** All earth pits shall be concrete and have **concrete cover, painting of earth value and date of testing.**

6.28 LIGHTING PROTECTION

DELETED

6.29 SURGE PROTECTION

DELETED

(End of Chapter-6)

CHAPTER 7: TESTING AND COMMISSIONING

7.1 INSTALLATION TESTS

7.1.1 Post Installation tests and Inspection:

- a. The Installation designs and drawings approved by the Engineer shall be referred during this test.
- b. The Installation shall be inspected by the Contractor and witnessed by the Engineer. The Contractor shall submit a Post installation Inspection and testing Plan for Engineer's approval, prior to commencement of Post Installation inspection and testing.

7.2 DURING THE INSPECTION, IT SHALL BE VERIFIED THAT

- a. The equipment has been installed as per the procedures and designs and drawings that have been reviewed by the Engineer and that equipment is correctly located and labeled.
- b. Any false feed, temporary wiring and redundant items have been removed and that equipment is correctly protected against interference, damage and deterioration.
- c. The Installation shall be inspected and witnessed by the Engineer's representative as per the Installation checklists and records shall be maintained. The defects noticed during inspection shall be appended to/ recorded on the Inspection checklists. Once the Contractor has rectified the defects, the same shall be informed to the Engineer with **photographs of rectification**. The same shall be verified by the Engineer and recorded. The Installation inspection records and Installation checklists shall form part of Installation test records.

7.3 After installation of the equipment, Visual inspection on un-energized equipment shall be carried out to check the following:

- a. Cleanliness;
- b. Workmanship;
- c. Confirmation of items conforming to ratings specified;
- d. Water and dust proofing;
- e. Leveling, mounting and positioning;
- f. Joints and connections tightness;
- g. Cables — dressing, bending radii, jointing and finish at terminals;
- h. Clearances and dimensions in conformity with drawings and SOD;
- i. Earthing and bonding;
- j. Layout and Equipment profile check.
- k. Protection devices;

- l. Painting
- m. Labeling
- n. Locks
- o. No breakages

7.4 The Visual inspection shall be followed by (but not limited to) further Installation tests as under:

- a. Voltage measurements;
- b. Continuity test as per wiring diagram;
- c. Cable Insulation testing;
- d. Power cubicle function test;
- e. Wire continuity tests;
- f. Earth value measurements;
- g. Wire count tests;

7.5 STATUTORY CLEARANCES

The Contractor shall obtain all the mandatory clearances required for commissioning of Signalling work. In such case, the Employer shall extend all the requisite help and assistance to enable inspection, tests, verification of test records and trial run by CRS.

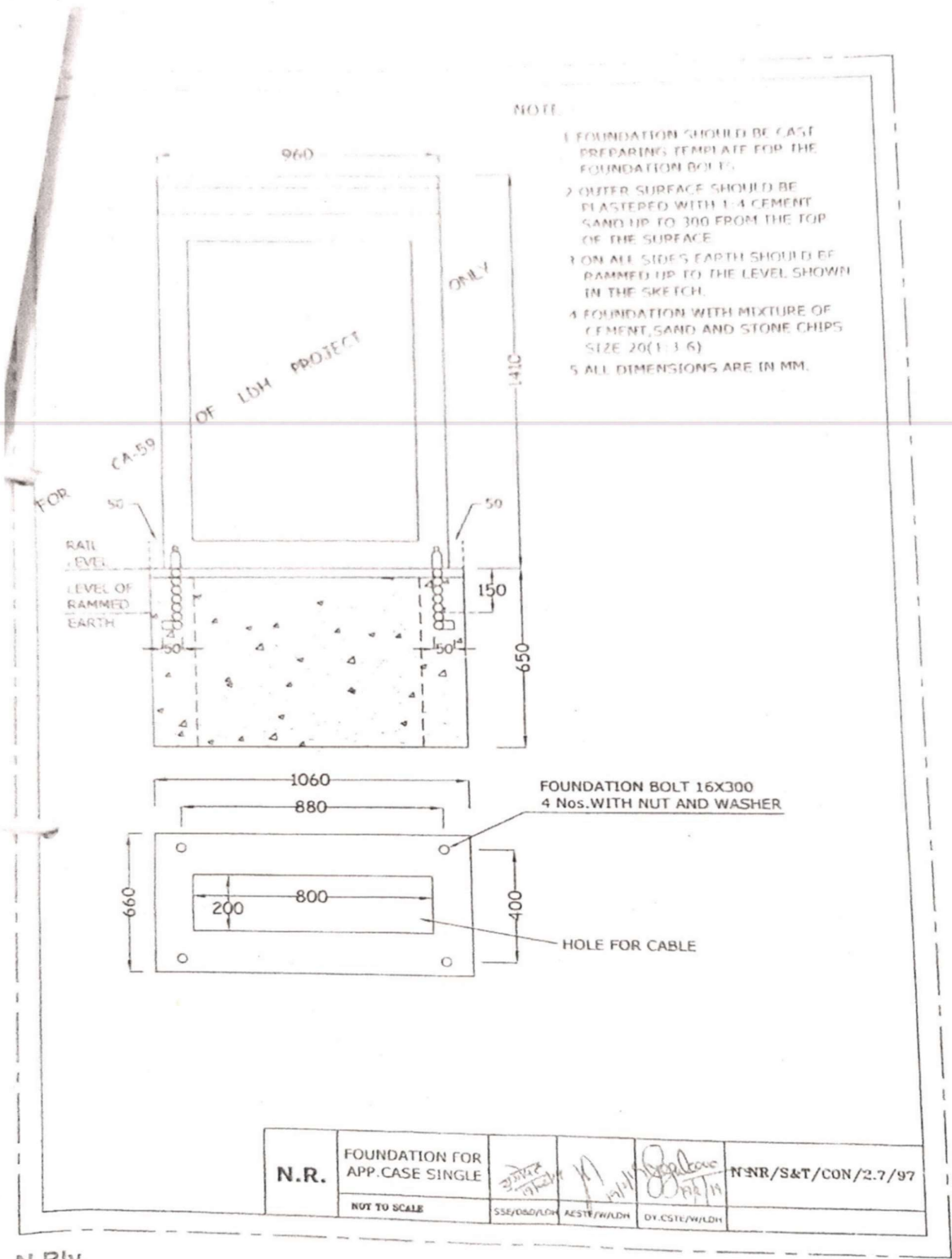
(End of Chapter-7)

Appendix 1

Appendix-1

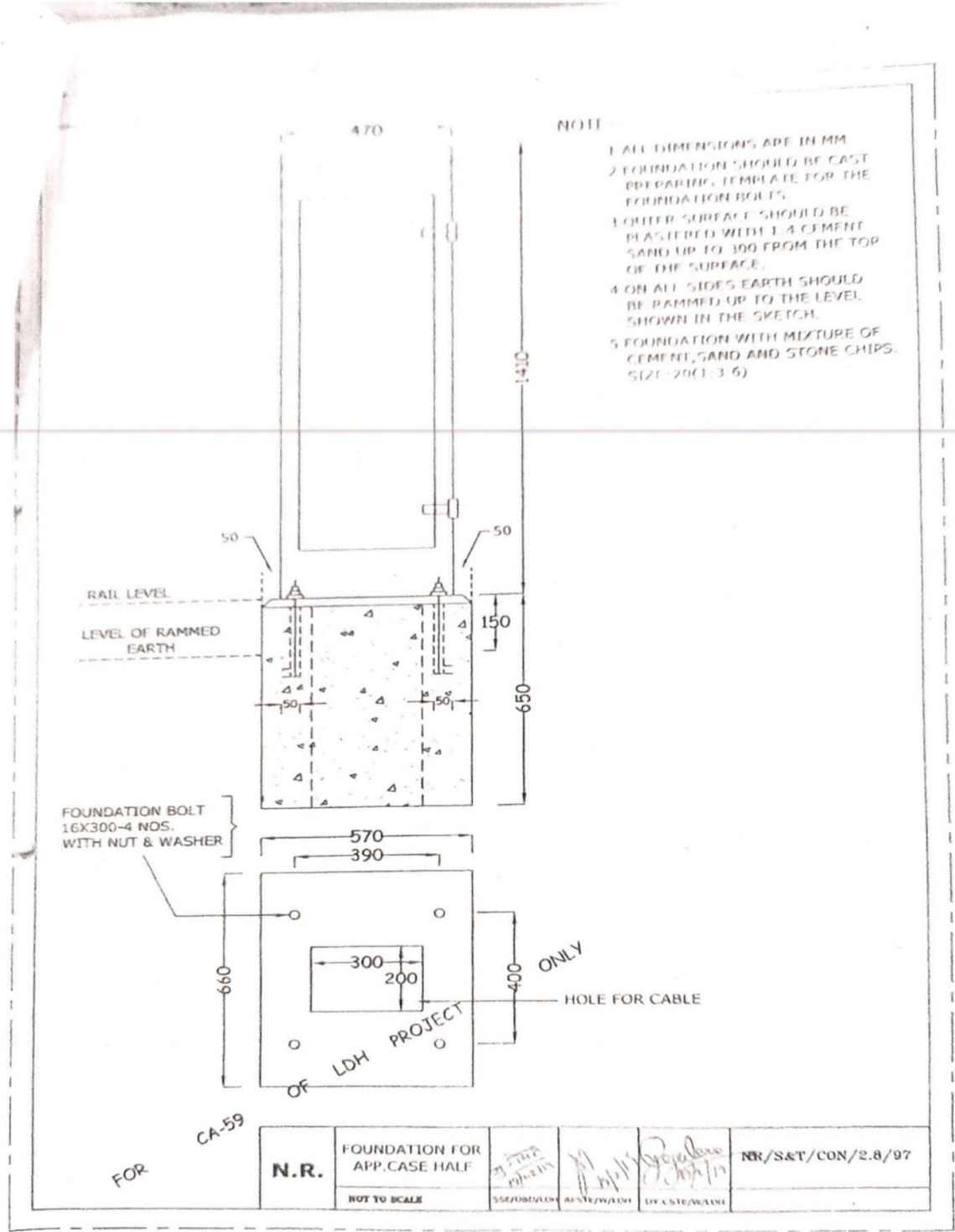
S.N.	Description	Drawing No.
1	FOUNDATION FOR APP. CASE SINGLE	NR/S&T/CON/2.7/97
2	FOUNDATION FOR APP. CASE HALF	NR/S&T/CON/2.8/97
3	CABLE MARKER	NR/S&T/CON/1-5/97-A
4	EARTH ELECTRODE (G.I PIPE)	NR/S&T/CON/6-3/97
5	ENCLOSURE EARTH ELECTRODE & HANDLE	NR/S&T/CON/6-4/97
6	CABLE TRANCH	NR/S&T/CON/1-1/97-A
7	CABLE TERMINATION ARRANGEMENT IN TRACK LEAD JUNCTION BOX	NR/S&T/CON/3-2/97

Appendix-1



N.R.Iy.

Appendix-1



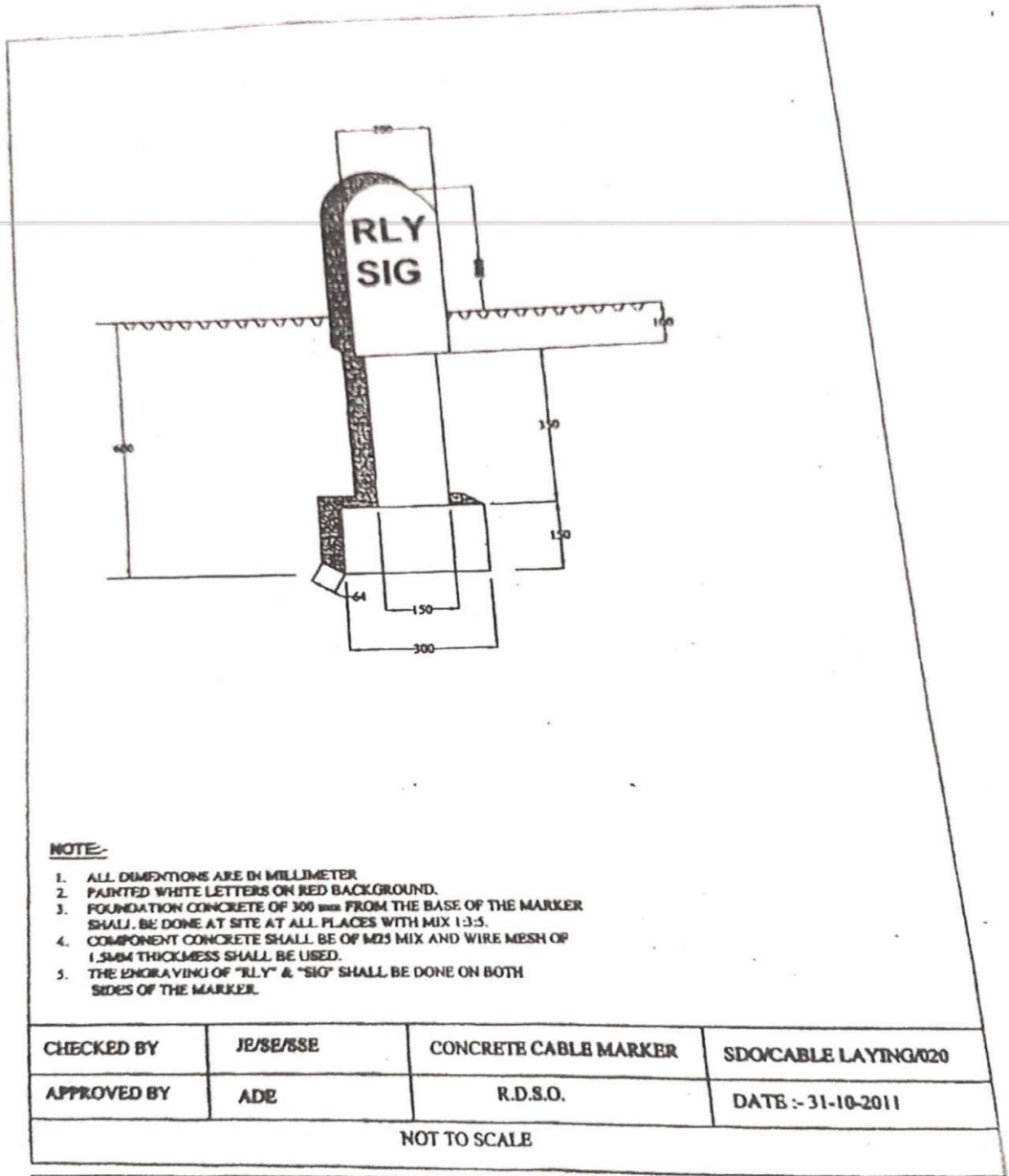
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			NOT TO SCALE	55/08/01/04	APR/20/01	DR: [Signature]	

rlly.

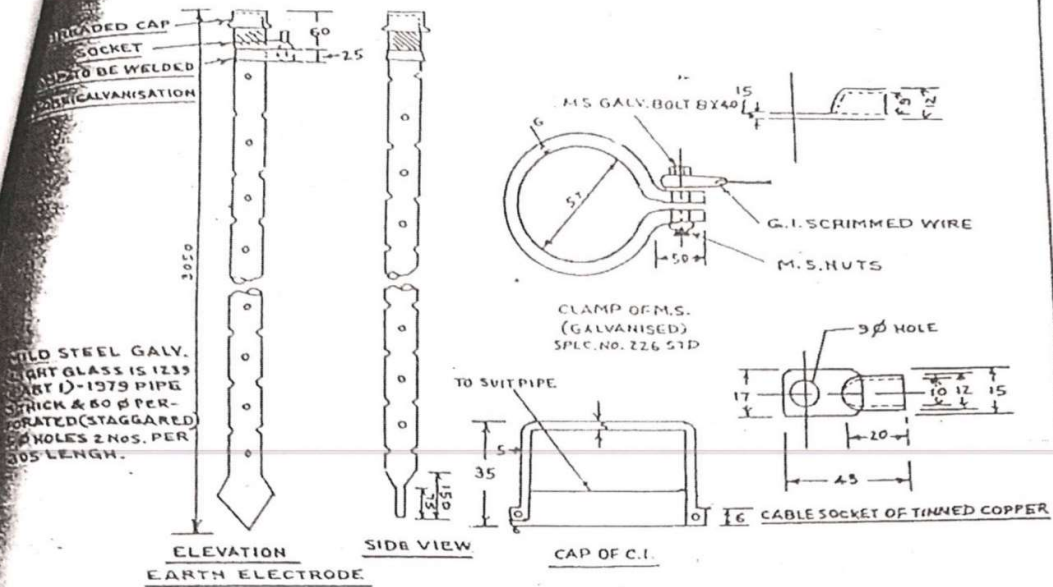
Appendix-1

Outlines on Signalling Cable Laying

Annexure-23



Appendix-1



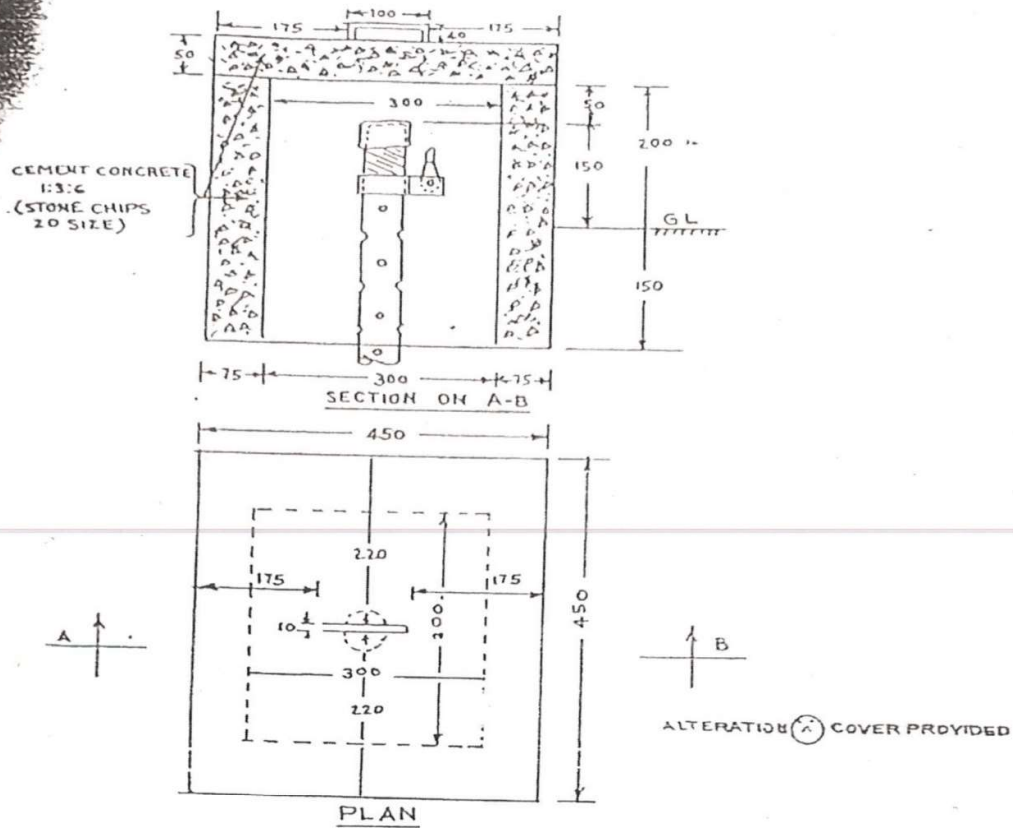
NOTE :-

- 1 ALL DIMENSIONS IN MM.
- 2 NOT TO SCALE
- 3 LOWER END OF PIPE TO BE SHAPED AS SHOWN BY SQUIZZING & IF NECESSARY BY CUTTING OF DEFORMED MATERIAL.
- 4 EARTH ELECTRODE PIPE TO BE GALVANISED AFTER DRILLING AND FABRICATION.
- 5 EACH ELECTRODE SHOULD BE SUPPLIED WITH A GALVANISED HEX-HEAD IRON BOLT TO SPEC. NO. I.S. 1821-1961 (8 φ, 40 LENGTH WITH 25 THREADED PORTION) AND TWO ROUND FLAT WASHERS AND A NUT TO SUIT FOR FIXING THE SOCKET TO PIPE CLAMP.

Engg. Cons.
New Delhi.

		 S.I/D&D/LDH		
N.R.	EARTH ELECTRODE (G.I. PIPE)	 	Yes	Nº NR/S&T/CON/6-3/97
S&T	ELECTRICALS	DRN.	S.E./C	ASTE/SPL

Appendix-1



NOTE:-

1. OUTER SURFACE ABOVE GROUND LEVEL SHOULD BE PLASTERED WITH 1: 4 CEMENT SAND.
2. ALL DIMENSIONS IN MM.

R

Scale: 100mm = 10mm

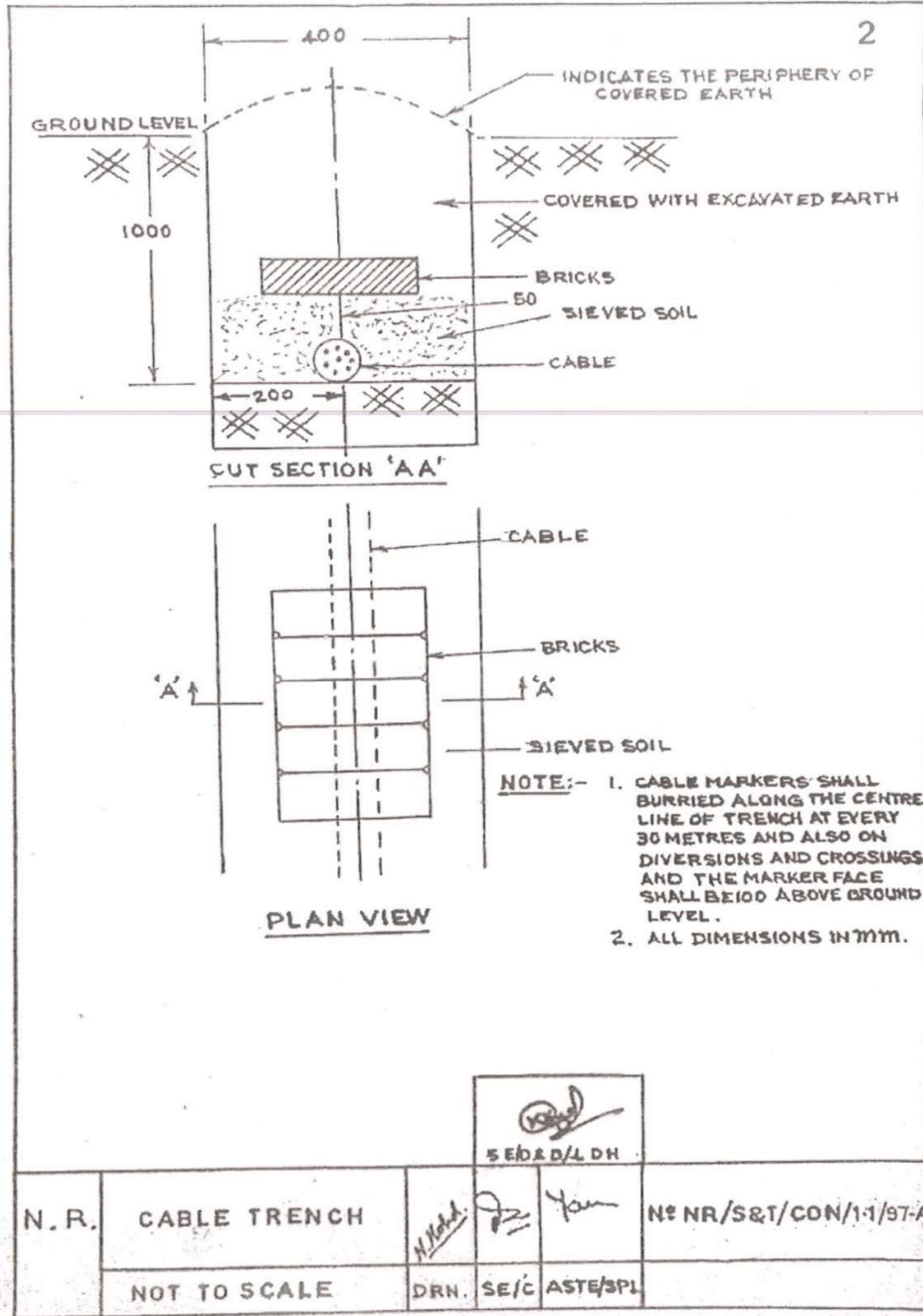
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	NOT TO SCALE	DRN.	SE/C	

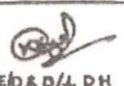


Appendix-1

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6



		 SED & D/L DH	
N. R.	CABLE TRENCH	 DRN. SE/C	 ASTE/SPL
	NOT TO SCALE	Nº NR/S&T/CON/1-1/ST-A	

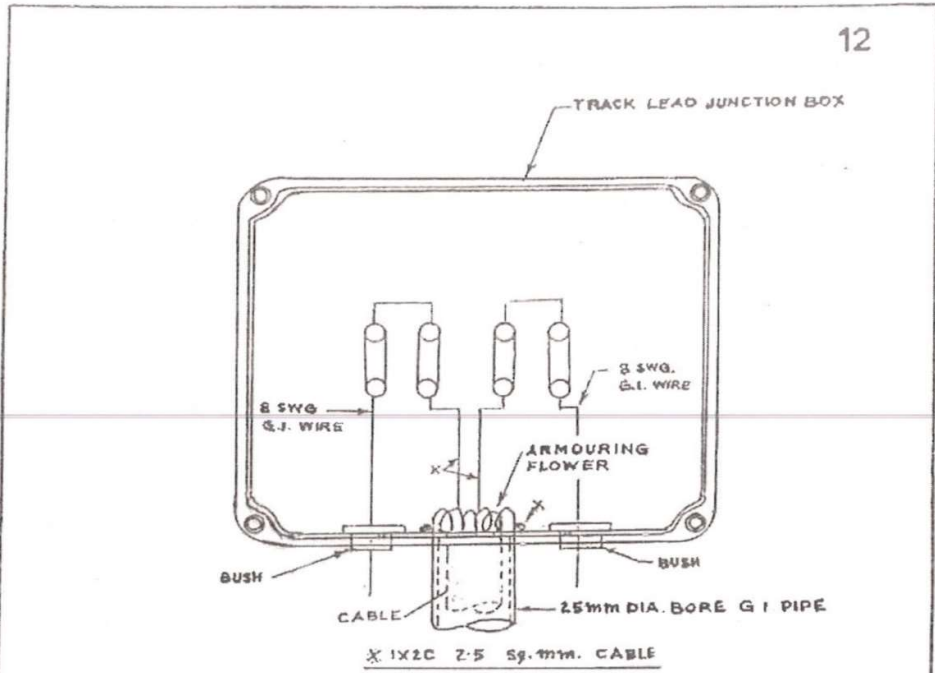
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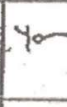
5

GARWARE



NOTE :-

- 1 ALL DIMENSIONS IN MM.
- 2 ARMOURING FLOWER PROVIDED FOR PREVENTING THE PULLING OUT OF THE CABLE FROM TRACK LEAD JUNCTION BOX.
- 3 NYLON BUSH TO BE PROVIDED TO PREVENT EARTHING OF G. I. JUMPER WIRE.
- X 4 HEXAGON BACK NUT M.S. FOR 25 DIA. ANHODISED BORE.

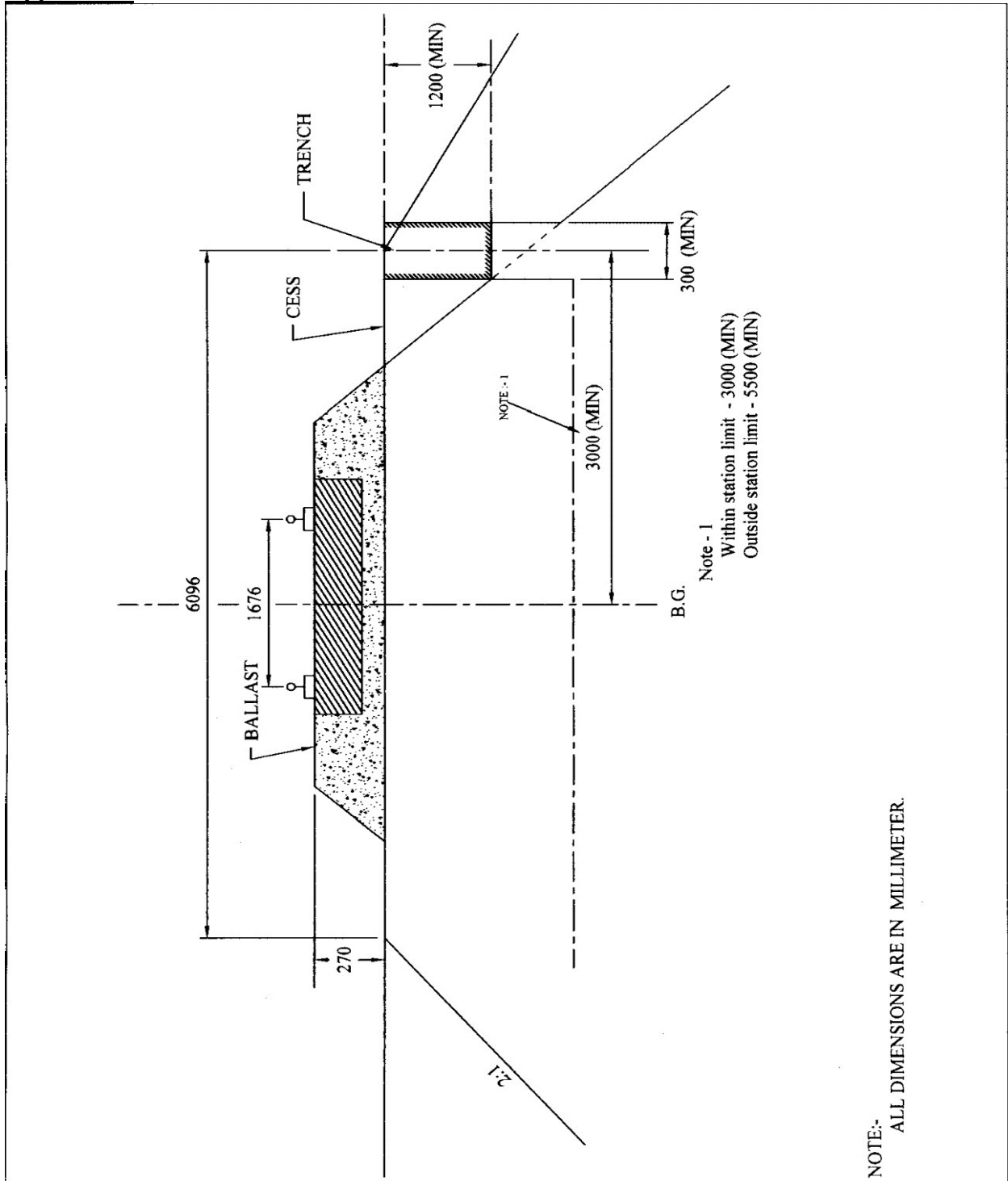
		 S.E/D&D/LDH	
N. R.	CABLE TERMINATION ARRANGEMENT IN TRACK LEAD JUNCTION BOX	 N.H.A. RETO	 Y
NOT TO SCALE		DRN SE/C	ASTE/SPL
		N:NR/S&T/CON/32/37	

Appendix 2

Appendix-2

Sl. No.	Description	Drawing No.
1	POSITION OF TRENCHES FOR CABLE LAYING	SDO/CABLE LAYING/002
2	CABLE TRENCH	SDO/CABLE LAYING/003
3	CONCEPTIONAL PLAN RCC DUCT OF SIGNALLING PLAN	GC RDSO-SK-GEN017
4	LAYING OF CABLES IN ROCKY AREA	NR/SIG/CABLE/004
5	TRACK CROSSING	NR/SIG/CABLE/005
6	ROAD CROSSING	NR/SIG/CABLE/006
7	G.I PIPE ON CULVERT	NR/S&t/CON/1.4/97
8	CABLE LAYING ON CULVERTS WITH LOW FLOOD LEVEL	SDO/CABLE LAYING/011
9	Guidelines for Signalling Cables Laying on Northern Railway.	Head Quarter Office, Baroda House, New Delhi. No. 256-Sig/O/SG/Pt-XV Dated- 22.08.2016
10	TYPICAL MAIN CABLE DISTRIBUTION PLAN FOR DOUBLE LINE (4 LINE) P.I. STATION	SDO/CABLE LAYING/001

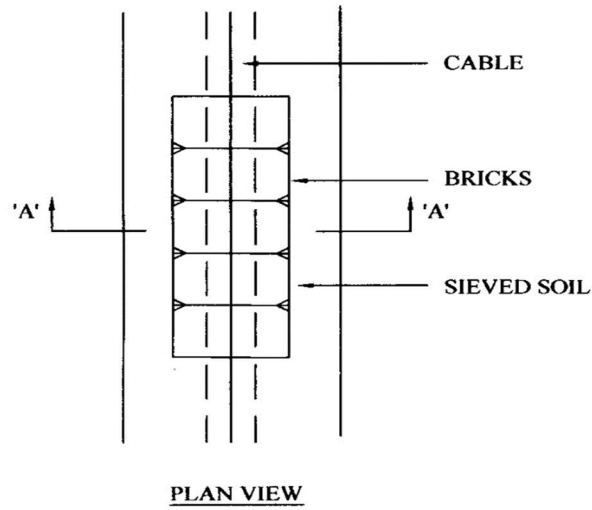
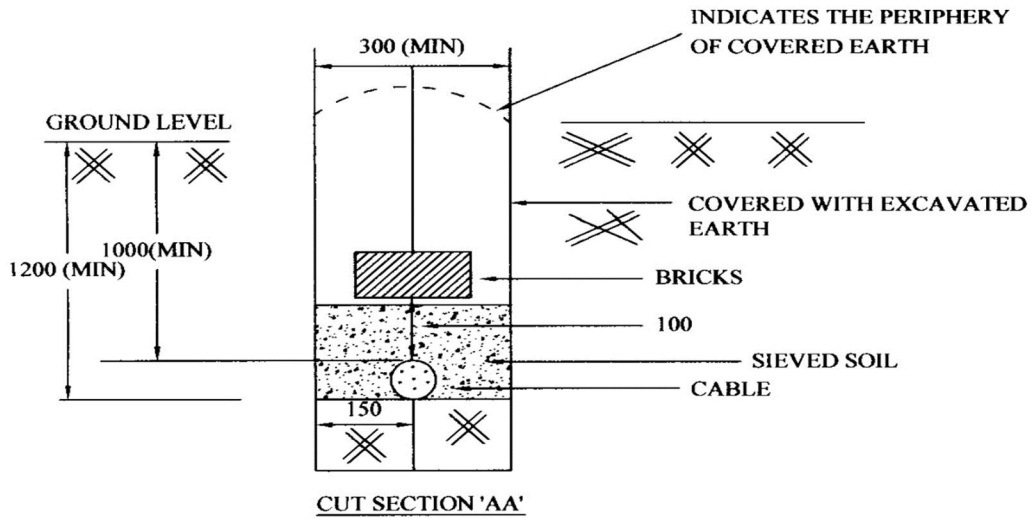
Appendix-2



CHECKED BY	JE/SE/SSE	POSITION OF TRENCHES FOR CABLE LAYING	SDO/CABLE LAYING /002
APPROVED BY	ADE	R D S O	DATE : 31-10-2011

NOT TO SCALE

Appendix-2

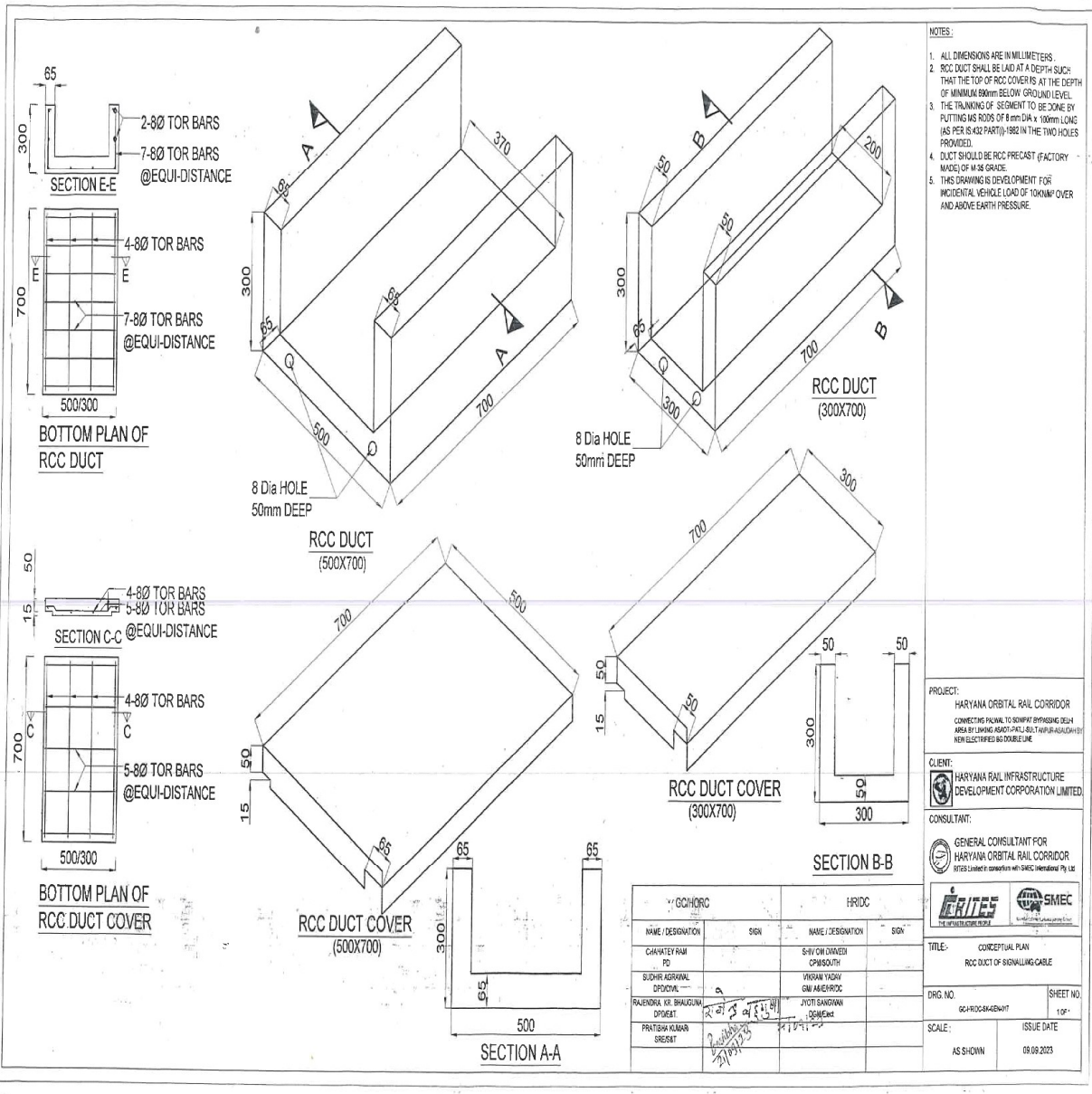


NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETER.

CHECKED BY	JE/SE/SSE	CABLE TRENCH	SDO/CABLE LAYING/003
APPROVED BY	ADE	R. D. S. O.	DATE : 31-10-2011
NOT TO SCALE			

Appendix-2

Appendix-2



- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS.
 2. RCC DUCT SHALL BE LAID AT A DEPTH SUCH THAT THE TOP OF RCC COVERS AT THE DEPTH OF MINIMUM 90mm BELOW GROUND LEVEL.
 3. THE JOINTING OF SEGMENT TO BE DONE BY PUTTING AS ROOF OF 8mm DIA x 100mm LONG (AS PER IS 432 PART II) IN THE TWO HOLES PROVIDED.
 4. DUCT SHOULD BE RCC PRECAST (FACTORY MADE) OF M35 GRADE.
 5. THIS DRAWING IS DEVELOPMENT FOR INCIDENTAL VEHICLE LOAD OF TONNAGE OVER AND ABOVE EARTH PRESSURE.

PROJECT:
 HARYANA ORBITAL RAIL CORRIDOR
 CONNECTING PUNJAB TO SONPAT BY PASSING DELHI AREA BY USING HIGH SPEED RAIL (HARYANA-DELHI) NEW ELECTRICISED DOUBLE LINE

CLIENT:
 HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED

CONSULTANT:
 GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR
 (AS PER Letter to consultant with SMEC International Pvt Ltd)



TITLE: CONCEPTUAL PLAN
 RCC DUCT OF SIGNALING CABLE

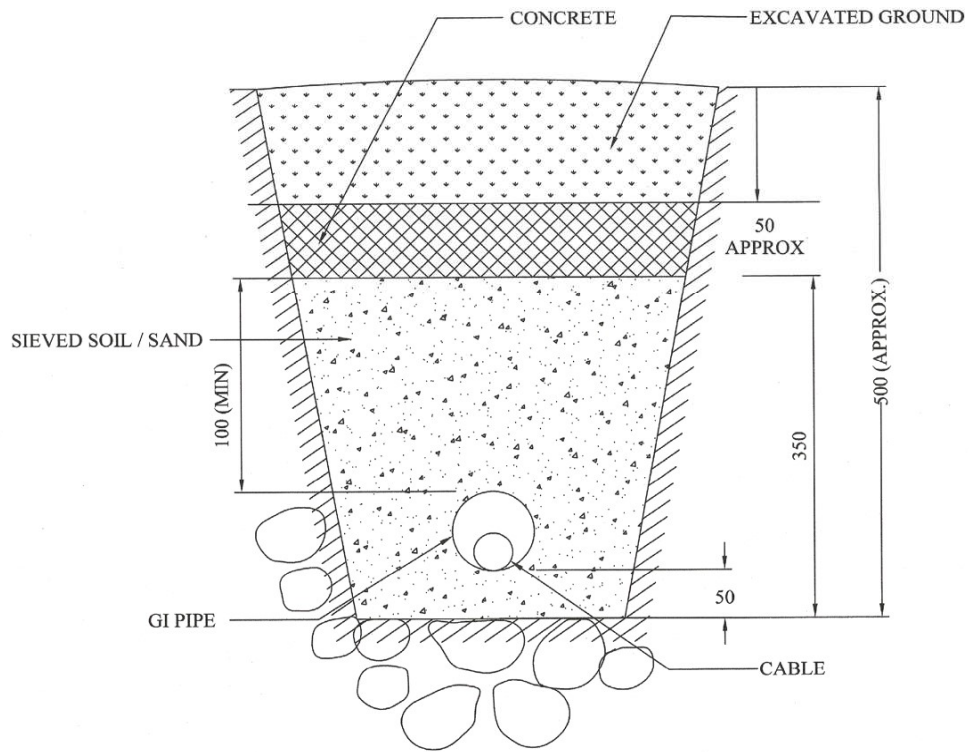
DRG NO.: 64-RCC-04-0007
SHEET NO.: 1 OF 1

SCALE: AS SHOWN
ISSUE DATE: 09.09.2023

GCHORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAVATEY RAM PD	[Signature]	SHYAM CHANDEL CP/ISSOUTH	[Signature]
SUDHAR AGRAWAL SPECIALIST	[Signature]	PREMJI YADAV GSI/ALE/PROG	[Signature]
RAJENDRA KUL BHALLUJAN DIRECTOR	[Signature]	JYOTI SANDHANI DC/M&C	[Signature]
PRATEEK KUMAR SRESHT	[Signature]		

Appendix-2

ANNEXURE-11



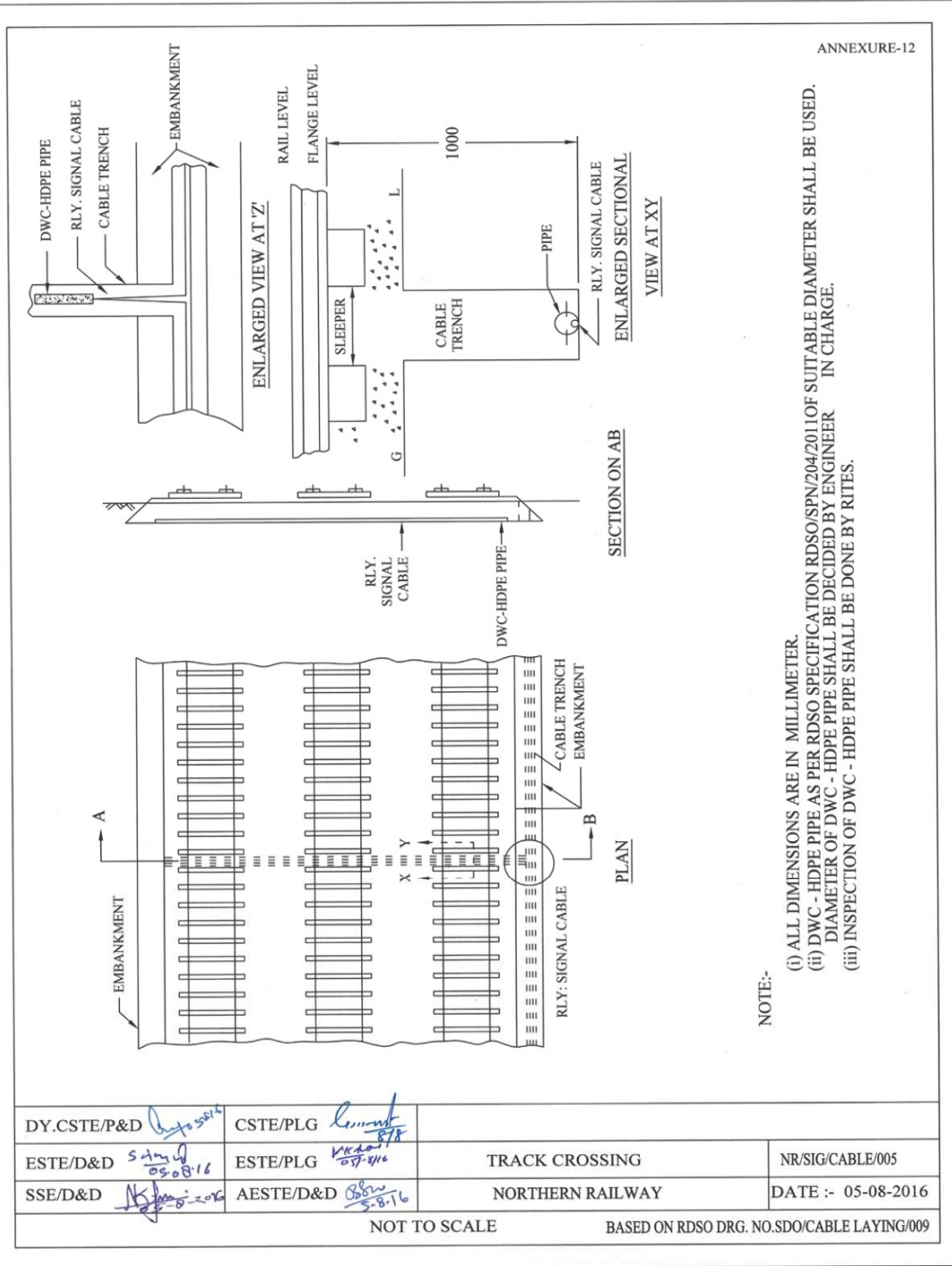
NOTE:-

- (i) ALL DIMENSIONS ARE IN MILLIMETER.
- (ii) G.I PIPE OF MEDIUM GRADE OF ISI MARK AS PER IS:1239(PART-I) OF SUITABLE DIAMETER SHALL BE USED. DIAMETER OF G.I.PIPE SHALL BE DECIDED BY ENGINEER IN CHARGE.
- (iii) INSPECTION OF G.I PIPE SHALL BE DONE BY RITES.

DY.CSTE/P&D <i>[Signature]</i> 2016	CSTE/PLG <i>[Signature]</i> 8/8		
ESTE/D&D <i>[Signature]</i> 20.08.16	ESTE/PLG <i>[Signature]</i> 25/8/16	LAYING OF CABLES IN ROCKY AREA	NR/SIG/CABLE/004
SSE/D&D <i>[Signature]</i> 2016	AESTE/D&D <i>[Signature]</i> 5.8.16	NORTHERN RAILWAY	DATE :- 05-08-2016
NOT TO SCALE		BASED ON RDSO DRG. NO.SDO/CABLE LAYING/008	

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ANNEXURE-12



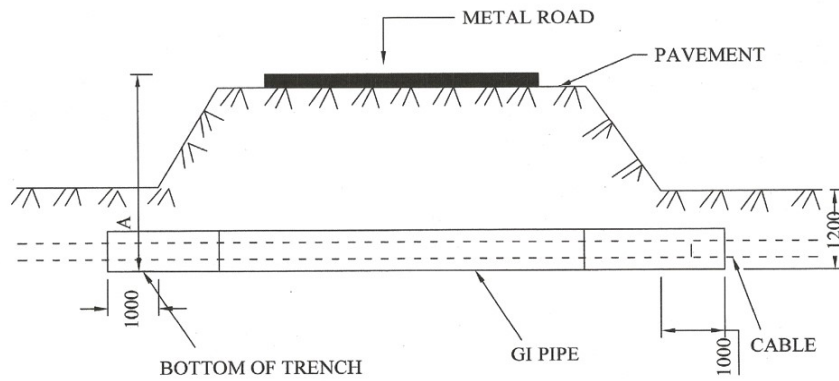
NOTE:-

- (i) ALL DIMENSIONS ARE IN MILLIMETER.
- (ii) DW-C - HDPE PIPE AS PER RDSO SPECIFICATION RDSO/SPN/204/2011 OF SUITABLE DIAMETER SHALL BE USED. DIAMETER OF DW-C - HDPE PIPE SHALL BE DECIDED BY ENGINEER IN CHARGE.
- (iii) INSPECTION OF DW-C - HDPE PIPE SHALL BE DONE BY RITES.

DY.CSTE/P&D <i>[Signature]</i>	CSTE/PLG <i>[Signature]</i>		
ESTE/D&D <i>[Signature]</i>	ESTE/PLG <i>[Signature]</i>	TRACK CROSSING	NR/SIG/CABLE/005
SSE/D&D <i>[Signature]</i>	AESTE/D&D <i>[Signature]</i>	NORTHERN RAILWAY	DATE :- 05-08-2016
NOT TO SCALE		BASED ON RDSO DRG. NO.SDO/CABLE LAYING/009	

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ANNEXURE-13



NOTE:-

- (i) ALL DIMENSIONS ARE IN MILLIMETER.
- (ii) G.I PIPE OF MEDIUM GRADE OF ISI MARK AS PER IS:1239(PART-I) OF SUITABLE DIAMETER SHALL BE USED. DIAMETER OF G.I.PIPE SHALL BE DECIDED BY ENGINEER IN CHARGE.
- (iii) INSPECTION OF G.I.PIPE SHALL BE DONE BY RITES.

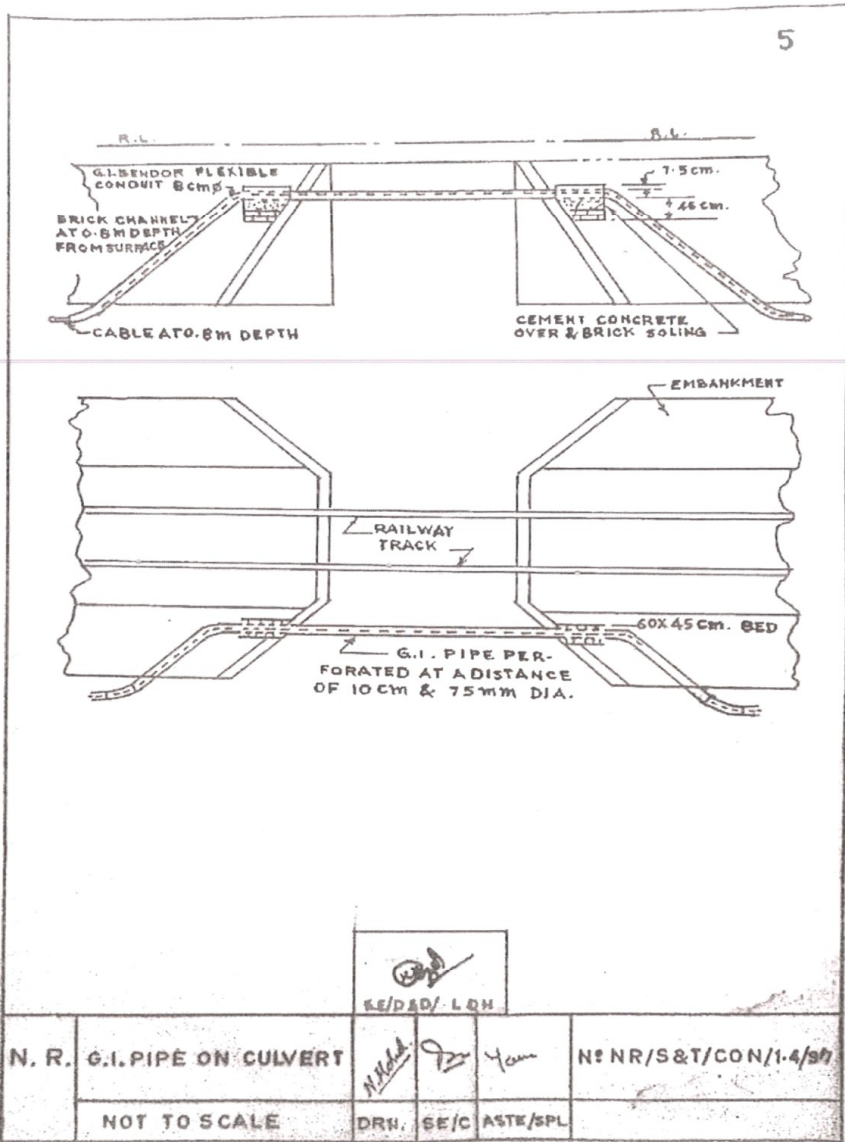
DY.CSTE/P&D <i>[Signature]</i>	CSTE/PLG <i>[Signature]</i>		
ESTE/D&D <i>[Signature]</i>	ESTE/PLG <i>[Signature]</i>	ROAD CROSSINGS	NR/SIG/CABLE/006
SSE/D&D <i>[Signature]</i>	AESTE/D&D <i>[Signature]</i>	NORTHERN RAILWAY	DATE :- 05-08-2016
NOT TO SCALE		BASED ON RDSO DRG. NO.SDO/CABLE LAYING/010	

Appendix-2

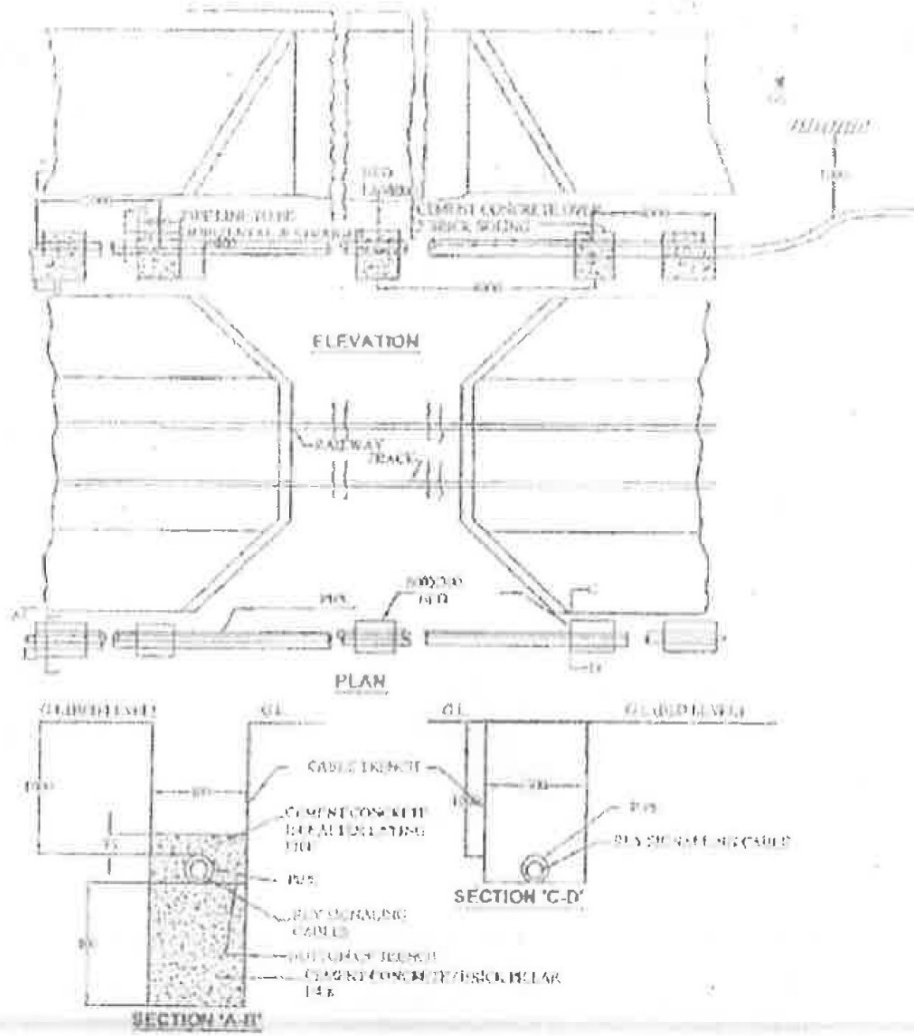
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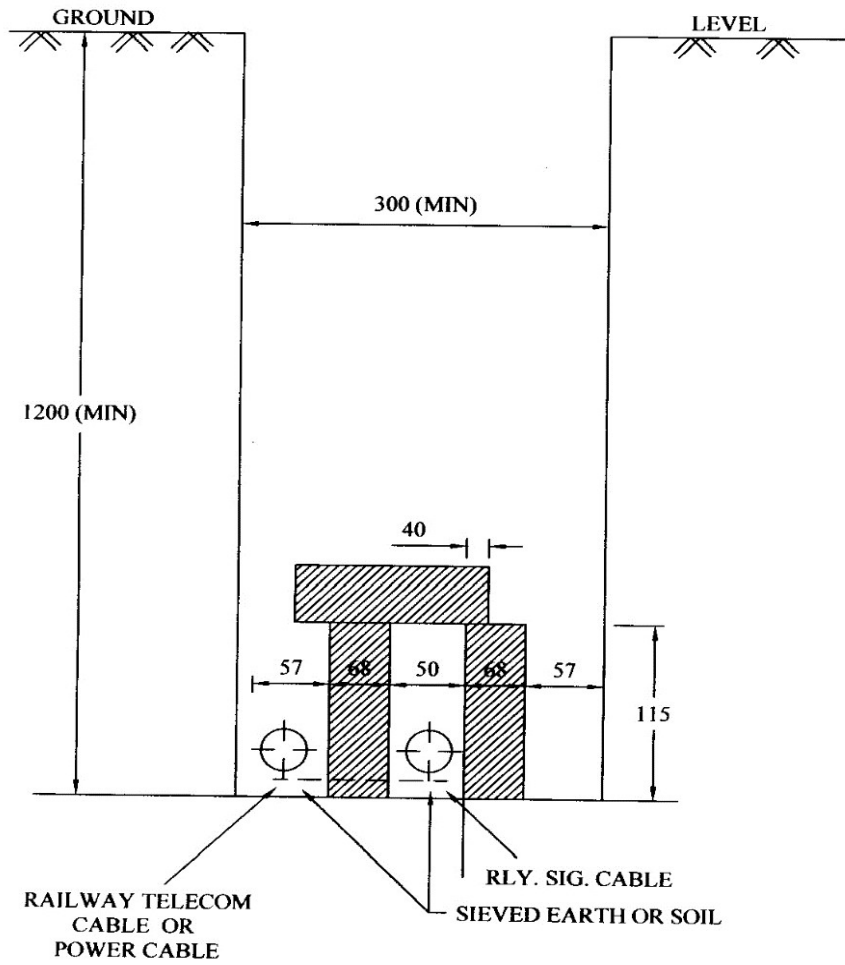


NOTE:-

ALL DIMENSIONS ARE IN MILLIMETER.

CHECKED BY	JE/SE/SSE	CABLE LAYING ON CULVERTS WITH LOW FLOOD LEVEL	SDO/CABLE LAYING/01
APPROVED BY	ADE	R.D.S.O	DATE :- 31-10-2011
NOT TO SCALE			

Appendix-2



NOTE:

2. TELECOM CABLE/POWER CABLE TO BE LAID AWAY FROM THE TRACK
1. DIMENSIONS ARE IN MILLIMETRES

CHECKED BY	JE/SE/SSE	LAYING OF SIGNALLING CABLE & TELECOM/POWER CABLE IN SAME TRENCH	SDO/CABLE LAYING/004
APPROVED BY		R. D. S. O.	DATE :- 31-10-2011
NOT TO SCALE			

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Policy Circular No. 02/16

NORTHERN RAILWAY

Head Quarter Office, Baroda House, New Delhi.

No. 256-Sig/O/SG/Pt-XV Dated- 22.08.2016

CSTE/Project, CSTE/Project-West, CSTE/Project-HQ, CSTE/Construction, Baroda House, New Delhi.

Sr. DSTEs,

Northern Railway, DRM office,

DLI, FZR, LKO, MB & UMB.

Sub- Guidelines for Signalling Cables Laying on Northern Railway.

Ref- i) RDSO's Letter No. STS/E/Cable Laying Practices dated 31.10.11 & 07/11.03.14

This office letter No. 256-SIG/O/SG/Pt-XII dated 01.12.2011.

ML's DO letter No. 2011/SIG/SF/1/Cable Laying dated 15.11.2011 circulated vide this office letter No. 256-SIG/O/SG/Pt-XII dated 29.11.2011.

Railway Board's JPO/Telecom Circular No. 17/2013 issued vide Railway Board letter No. 2003/Tele/RCIL/1/Pt-IX dated 24.06.2013.

RDSO has issued guidelines on Signalling Cable laying under reference (i) & ML's D.O. letter No. 2011/SIG/SF/1/Cable Laying dated 15.11.2011 circulated vide this office letter No. 256-SIG/O/SG/Pt-XII dated 29.11.2011 under reference (iii). Further, Railway Board has issued JPO/Telecom Circular No. 17/2013 (under reference iv) for undertaking digging work in the vicinity of underground Signalling, Electrical and Telecommunication Cables. These guidelines have been discussed and deliberated upon in the HQ office as per the requirement & existing practice of Cable laying on Northern Railway and accordingly, guidelines for Cable laying to be adopted on Northern Railway have been prepared.

The important items for Signal cable laying to be adopted on Northern Railway are as under :-

PI/RR/IEI installations with more than 100 routes :-

Duplicated Power cable arrangement shall be adopted for PI/RR/IEI installation having more than 100 routes for External circuits i.e. 24V DC/ 60V DC External for Track proving & Point detection, 110V AC for Track Feed Battery charger, External 24V DC for Axle Counter, BPAC etc. (Ref- Para No. 3.5.3 of RDSO guideline).

Laying of Signalling cable from Home to Home Signal for PI/RR/IEI installations having more than 100 routes shall be done in RCC duct of 500mm width with removable top cover as per NR Drawing No. NR/Sig/Cable/002 & 003 (Annexure -9 & 10). Beyond Home Signal and upto Distant Signal, Normal trenching as per extant practice shall be continued. (Ref- Para No. 7.3.7 & 7.3.8 of RDSO guideline).

PI/RR/IEI installations with less than 100 routes :- For less than 100 route PI/RR/IEI installations, RCC ducting from Home to Home signal shall be adopted for works sanctioned prior to 2016-17 to the extent possible. Subsequently, from 2017-18 onwards all abstract estimate at PWP level should take care of full implementation of this guideline for all stations irrespective of number of routes. Beyond Home Signal and upto Distant Signal, Normal trenching as per extant practice shall be continued. (Ref- Para No. 7.3.7 & 7.3.8 of RDSO guideline).

Only in Automatic Signalling territory, between Advance Starter of one station and Home Signal of other station, RCC duct with 300mm width as per NR Drawing No. NR/Sig/Cable/001 (Annexure -8) shall be adopted. (Ref- Para 7.3.8 of RDSO guideline). From 2017-18 onwards, all abstract estimate at PWP level should take care of full implementation of this guideline.

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In Para No. 7.3.11 of RDSO guideline, RCC duct is to be laid at the depth of 600mm to 1000mm. This para has been modified as *“The RCC duct shall be laid at the depth such that the top of RCC cover is at the depth of Minimum 690 mm below ground level.”*

Laying cable in Solid & Rocky soil

In Para 7.4.1 of RDSO guidelines, following has been added as :

“However, before finalising tender schedule for Cable laying in solid/rocky soil area , detailed site survey should be conducted by min. Assistant level Officer, its report to be placed on record & approval taken from JAG level officer executing the work & accordingly quantity and depth of Cable laying in solid/rocky soil area to be finalised.”

Para 7.4.3 has been modified as below:-

“In case, sharp edge of rocky ground cannot be prevented with sifted earth, GI pipe of medium grade of ISI mark as per IS: 1239 (Part-I) of suitable diameter shall be used. Diameter of GI pipe shall be decided by Engineer In-charge. Inspection of GI pipe shall be done by RITES. In isolated cases, Rocky ground can be given smooth surface by using either masonry bricks or cement concrete.”

Track Crossing - DWC-HDPE pipe of suitable diameter as per RDSO specification RDSO/SPN/204/2011 shall be used as per NR drawing No. NR/Sig/cable/005 (**Annexure-12**). Diameter of DWC-HDPE pipe shall be decided by Engineer In-charge. (Ref: Para 8.2 (iii) of RDSO guideline). Inspection of DWC-HDPE pipe shall be done by RITES.

Road Crossing:- GI pipe of medium grade of ISI mark as per IS: 1239 (Part-I) of suitable diameter shall be used. Diameter of GI pipe shall be decided by Engineer In-charge. Inspection of GI pipe shall be done by RITES

Cable laying on Bridges/Culverts –

For Cable laying on bridges/culverts with high flood level, reference Para 10.2 of RDSO guideline, following shall be adopted:-

On approach of Bridges/Culverts, DWC- HDPE pipe of suitable diameter as per RDSO specification RDSO/SPN/204/2011 shall be used. Diameter of DWC-HDPE pipe shall be decided by Engineer In- charge.

On Bridge/Culvert portion, perforated GI pipe of medium grade of ISI mark as per IS:1239 (Part-I) of suitable diameter shall be used. Diameter of GI pipe shall be decided by Engineer In-charge.

At junction point of GI and DWC pipe, a GI bend of 112.5 degree, 1 mtr. Length as per IS 1239 (Part-2): 2011 and overlapping 250mm with DWC pipe shall be used.

Inspection of DWC-HDPE and GI pipe shall be done by RITES.

Cable laying on Arch bridges :- For Cable laying on Arch bridges, reference Para 10.4 of RDSO guideline following shall be adopted :-

On approach of arch bridge, DWC- HDPE pipe of suitable diameter as per RDSO specification RDSO/SPN/204/2011 shall be used. Diameter of DWC- HDPE pipe shall be decided by Engineer In- charge.

On Bridge portion, perforated GI pipe of medium grade of ISI mark as per IS:1239 (Part-I) of suitable diameter shall be used. Diameter of GI pipe shall be decided by Engineer In- charge.

At junction point of GI and DWC pipe, a GI bend of 112.5 degree, 1 mtr. Length as per IS 1239 (Part-2): 2011 and overlapping 250mm with DWC pipe shall be used.

Inspection of DWC-HDPE and GI pipe shall be done by RITES.

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Cable laying on bridges/culvert with low flood level and metallic bridges shall be as per existing RDSO guidelines.

Planning for Cable route:- A new para 4.7 regarding Planning for cable route has been incorporated. The details are as below:-

Para 4.7 : The cable trench should be as straight as possible. Cable Route Plan

should be immediately prepared after laying of the cable showing exact location of cables at an interval of every 30 - 40 meters also showing various protective measures provided like RCC duct, DWC pipe, GI pipe, GI trough etc. **After the submission of Cable route plan showing protective works, the payment to the contractor for complete trenching and Cable laying of the station to be released. This should be mentioned as special condition of the contract.**

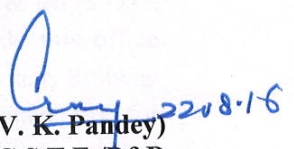
12. **Laying of different type of cable in same trench** :- It is highlighted that for Laying of different type of cables in the same trench, para 7.2 of RDSO guideline to be followed strictly, particularly Signalling cables must be separated from power cables by a row of bricks between them as mentioned in Para 7.2.2. For this sketch No. SDO/CABLE LAYING/004 showing laying of signalling cable & Telecom/Power cable in same trench as enclosed (**Annexure-7**) should be ensured.

The detailed guidelines for Signal Cable laying (in 47 pages) to be adopted on Northern Railway are enclosed herewith. It is advised that these guidelines are circulated to all field executives to ensure its strict implementation in all future works.

This is issued with the approval of CSTE.

DA/ Guidelines in 47 pages

(Based on "Guideline on Signalling Cable laying" Version 1.1 issued by RDSO vide letter No. STS/E/Cable laying Practices, dated 07/11.03.2014)


(V. K. Pandey)
Dy.C.S.T.E./P&D
for G.M./S&T

Copy to/-

1. **CSTE/CORE**, 1, Nawab Yusuf Road, Civil Lines, Allahabad for kind information & necessary action please.
2. **CMD/RVNL**, Plot No. 25, Ist Fir, B-Block, August Karanti Bhawan, Bhikaja Cama Place, New Delhi for kind information & necessary action please.
3. **CMD/DFCCIL**, 5th Floor, MRTS Building, Pragati Maidan, Metro Station, New Delhi for kind information & necessary action please.
4. **Chief Workshop Manager**, N. Railway, Ghaziabad for kind information please.
5. **Principal/STTC**, Ghaziabad for information please.



GUIDELINES ON SIGNALLING CABLE LAYING

TO BE FOLLOWED ON NORTHERN RAILWAY

Number of Pages - 47

(Based on "Guideline on Signalling Cable laying" Version 1.1 issued by RDSO vide letter No. 7STS/E/Cable laying Practices, dated 07/11.03.2014)

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Background

The Signal Engineering Manual (SEM) covers broadly various instructions on laying of signalling cables. Railway Board have also issued guidelines on the subject from time to time. This issue of cable laying practices has also been discussed in many forums like CSTE's Conference, MSG's etc.

On account of multiple faults in the cable and inadequate protection arrangement against short/open circuit faults, failures of point and other signalling gears have taken place on various Zonal Railways. In some of the cases, Railways signalling cables are invariably damaged by

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JCB & other track machine operated by Engineering Department, which resulted in serious dislocation to train services inviting criticism from different quarters.

Following documents are also considered while preparing this document:-

RDSO guideline on Signalling cable laying issued vide RDSO's Letter No.STS/E/Cable Laying Practices dtd 31.10.11 & 07/11.03.14.

Railway Board's Joint Procedure Order/Telecom Circular No. 17/2013 issued vide Railway Board letter No. 2003/Tele/RCIL/1/Pt-IX dated 24.06.2013.

Cable Laying Practices adopted on WCR.

Railway Signalling Installation and Quality Handbook.

These guidelines on signalling cable laying containing consolidated instructions on the subject are being issued for uniform adoption on Northern Railways.

General

Railway signalling circuits shall normally be carried on cables. For new works, signalling circuits shall only be carried on cables. In 25 KV AC electrified areas overhead lines shall not be used.

Planning for cables

Cables used for carrying signalling, circuits shall conform to relevant approved specification.

The conductors used shall be of annealed copper and of approved size. For this purpose, specification No. IRS:S 63 may be referred.

Power cable used for carrying power supply for signalling circuits shall conform to relevant approved specification. The size of conductor shall be so selected as to suit the electrical load.

For this purpose, specification No. IRS:S 63 may be referred.

The Core-wise usage of signalling cable is as given below:-

Core & Cross section	RDSO Specification	Usage
6 Core × 1.5 mm ²	IRS S 63	Tail Cable
12 Core × 1.5 Sq. mm ²	IRS S 63	Tail Cable/LC Gate/ Main Cable
19 Core × 1.5 Sq. mm ²	IRS S 63	Main Cable
24 Core × 1.5 Sq. mm ²	IRS S 63	Main Cable
30 Core × 1.5 Sq. mm ²	IRS S 63	Main Cable
2 Core × 2.5 Sq. mm ²	IRS S 63	Track circuit lead connections
12 Core × 2.5 Sq. mm ²	IRS S 63	Main/Tail Cable
2 Core × 16 Sq. mm ²	IRS S 63 & IS 1554	Power cable
2 Core × 25 Sq. mm ²	IRS S 63 & IS 1554	Power cable
2 Core × 35 Sq. mm ²	IRS S 63 & IS 1554	Power cable
2 Core × 50 Sq. mm ²	IRS S 63 & IS 1554	Power cable
4/6 Quad Cable (0.9 mm)	IRS TC:30	Axle Counter

A cable core distribution plan is required to be prepared for each installation. Cables for power distribution shall be indicated for each signaling gear. A sketch No. SDO/CABLE LAYING/001 showing typical main cable distribution plan including power cable for field gears for a typical double line (4 lines) PI station is enclosed (**Annexure-4**).

The distribution of various power supplies for operating signalling gear in yard shall be covered in cable distribution plan. However, following guidelines may be followed:-

In general, following power supplies are required to be distributed on each side of the station:-
110V AC for track feed battery charger etc.

24/60 DC for external for TPR, point detection etc.

24 DC external for electronic equipment like Axle Counter, BPAC etc.

The above power supplies as per the requirement of the station may be extended on each side of station and terminated at all main location boxes/huts.

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Duplicated Power cable arrangement shall be adopted for PI/RR/El installation having more than 100 routes for External circuits i.e. 24V DC/ 60V DC External for Track proving & Point detection, 110V AC for Track Feed Battery charger, External 24V DC for Axle Counter, BPAC etc. to avoid major signalling breakdown affecting punctuality of train services during any damage/cable becoming faulty. A changeover switch may be provided at either end of the station for extending the alternate power supply in case of failure.

In RE area, for automatic signalling, IBH, mid-section, level crossing gates and at station where location boxes/huts are more than 2 km power supply may be taken from auxiliary transformer.

In Non-RE area, for automatic signalling, IBH and mid-section level crossing gates, power supply may be extended from stations on either side. The arrangement shall be such that the power supply from one of station can be extended while at same time power supply from other station shall remain isolated.

While planning for cabling on a route, the number of conductors required, for the circuits shall be first determined. Recommended core sizes shall be used.

Adequate spare conductors to a minimum of 20% of the total conductors used shall be provided for in each main cable up to the farthest point zone, beyond this there shall be a minimum of 10% spare conductors of the total conductors used. The spare conductors shall be provided on the outermost layer. 2 numbers of 12 Core dedicated spare cable from home signal to home signal may be laid and terminated in all locations for instant transfer of these dedicated conductors in case of cable failure and cable testing.

Where a number of cables have been laid along a route, the circuits shall be so distributed that cables can be disconnected for maintenance purpose with the least possible dislocation to traffic. Line wise and, if necessary; function wise cable shall be provided. Auxiliary signals shall be taken in different cables.

Separate cables of suitable size shall be laid for point operation.

Numbering of cable to be done in ascending order from right hand side of the cable core distribution plan.

Number of location boxes shall be kept at minimum. Where too many locations boxes (say more than 10) are coming in a close proximity generally between starter & home signal, it is proposed to use location huts instead of location boxes for security, proper protection and ease of maintenance. Prefabricated huts (approximate size 10 feet x 10 feet) may be used, the drawing/design of which shall be issued by RDSO separately.

Planning for cable route

After deciding the size and the number of conductors in the different types of cables to be used on a route, a foot survey along the track shall be done to determine the best route for the cable. The route shall be shown clearly on a cable route plan showing the actual alignment of track, giving offsets from permanent way or permanent structures. The diagram shall indicate the various road and track crossings, crossing with power cables, water and sewage mains and other points of importance. It is preferable to chart the route on a route plan on which the existing routes of power cables, etc. are shown. Changes, if any, shall be incorporated in the chart/plan.

While planning cable route plan, any future yard modification/doubling etc. shall also be kept in view.

Cable route plan shall also be approved by Engineering and Electrical Department. Cable route plan shall also be approved by Branch Officer of Signal & Telecom (Open Line) wherever it is prepared by organization other than open line.

As far as possible low lying areas, platform copings, drainages, hutments, rocky terrains, points and crossings, shall be avoided.

Wherever JCB/Mechanized trenching or any kind of digging cases near existing cables is resorted, instructions contained in Railway Board Joint Procedure Order/Telecom Circular No.

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17/2013 issued vide Railway Board letter No. 2003/Tele/RCIL/1/Pt-IX dated 24.06.2013 (Annexure-1) shall be followed.

The cable trench should be as straight as possible. Cable Route Plan should be immediately prepared after laying of the cable showing exact location of cables at an interval of every 30 - 40 meters also showing various protective measures provided like RCC duct, DWC pipe, GI pipe, GI trough etc. After the submission of Cable route plan showing protective works, the payment to the contractor for complete trenching and Cable laying of the station to be released. This should be mentioned as special condition of the contract.

Laying of cable above ground

Signalling cables for outdoor circuits shall not normally be laid above ground. In exceptional cases where it becomes unavoidable, the following precautions shall be taken:-

The cable shall be suspended in wooden cleats, from cable hangers or in any other approved manner so that no mechanical damage occurs to the cable even under exposed condition.

The cable supports shall be so spaced as to avoid sag.

In station yards, cable shall be laid in ducts suitably protected.

Indoor signalling cable shall normally be laid on ladders, channels or in any other approved manner. The cables shall be neatly tied/laced.

In AC electrified areas cables shall be laid underground only. For laying cables in RE area instructions laid down in Chapter XXII of SEM shall also be followed. Extract of this chapter are available in para 22 of these guidelines.

Excavation and backfilling of the trenches

Manual trenching is recommended for laying of signalling cables in the station yards from Home to Home signal and mechanized trenching is recommended from Home to distant signal and beyond into block/automatic section.

Under road/platforms/railway tracks/difficult terrain etc., trench less horizontal directional drilling (HDD) method may be adopted under the supervision of competent staff for laying of GI/DWC-HDPE pipe. Both ends of GI/DWC-HDPE pipes shall be closed properly using accessories and the pits shall be properly backfilled. There shall be no damage to the road/platform/tracks or any such structures etc. encountered during or after the HDD operations.

Excavation of cable trench shall be made in all kinds of soils including clearing roots of trees, rocks etc. Trenches shall be straight as far as possible and steep angles shall be avoided.

The bottom of the trench shall be levelled and got rid of any sharp materials. No sharp object like stone chips, iron pieces etc. shall ever come in contact with laid cables irrespective of the method of laying the same.

After cable has been laid and until the whole of the cables to be laid in the trench have been covered with their protective covers, no sharp metal tool such as spades, crowbar or fencing pins shall be used in the trench or placed in such a position that they may fall into the trench. When cables are laid in trunking, care shall be taken to see that no ballast or stones have been dropped inside the trunking. The trunking shall be cleared of all ballast and stones before the cover is secured. When the ends of covers are joined together with cement plaster, a piece of paper or wood shall be placed under the joint to prevent the cement plaster from falling on the cable.

It is desirable that the excavation of the trenches is not done in long lengths and does not remain uncovered for long period. It is preferable that cables are laid and refilling done on the same day.

Before commencement of the laying, inspection of the trench and inspection of protection works shall be carried out so as to ensure their conformity with the specification. A sketch No. SDO/CABLE LAYING/022 rule made of pipe for measuring depth is enclosed (**Annexure-25**).

Backfilling of the trenches shall be done properly. The earth excavated shall be put back on the trench, rammed and consolidated.

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

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Cable laying in underground

General

Cables may be laid underground, either in the trench, in ducts, in cement troughs, in pipes or in any other approved manner.

Cables shall be laid generally as per instructions given in these guidelines. However, special precautions to be taken in the station yards etc. where a number of other utilities may be existing, may be detailed in a joint circular issued by the Civil Engineering, Signalling and Electrical Department (where applicable) of the Railway. Railways may provide any additional protection as necessary at a particular location due to prevailing law and order problem.

Cable is generally laid parallel to the track beyond Home signal with minimum deviations and on one side of the yard.

As far as possible, cable shall be crossed only at two locations, i.e. one crossing on each side of the yard.

The cable laid parallel to the track shall be buried at a depth of minimum 1.0 metre (top most cable) from ground level. A sketch No. SDO/CABLE LAYING/003 showing cable trench is enclosed (**Annexure-6**). While those laid across the track must be minimum 1.0 metre below the rail flanges. However, in case of rocky soil, the depth may be reduced suitably. When it concerns the laying of tail cables which serve the track apparatus etc. the depth shall not be less than 0.50 metres. In theft prone areas the cables may be laid at a depth of 1.2 metres with anchoring at every 10 metres.

The width of manually made cable trenches shall commensurate with number of cables. The minimum width shall be kept as 0.3 metres. The bottom of the cable trench shall be levelled and got rid of any sharp materials. In the soft ground, the cable shall be laid at the bottom of the trench previously levelled. In the rocky ground, the cable shall be laid on a layer of sand or sifted earth of

0.05 metre thickness previously deposited at the bottom of the trench. In both the above cases, the cable shall be covered with a layer of sand or sifted earth of 0.10 metre thickness and thereafter a protective cover of trough or a layer of bricks shall be placed.

Normally, not more than 12 cables are to be laid in one trench as it shall be difficult to attend failure at a later date. At a moderate size station with electrical signaling installation, generally the numbers of cables are more up to home, it is recommended that cables are laid in RCC duct up to home signal on both side of the station and may be extended up to distant, if required. This will also help later for laying of additional cable later without carrying out trenching.

While laying the cables in accordance with the above instructions, the following instructions shall be adhered to for the safety of the track:-

Outside the station limits, the cables shall generally be laid at not less than 5.5 metre from the centre of the nearest track.

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

At each end of the main cable an extra loop length of 6 to 8 metre shall be kept.

Extra loop length of the cable should also be buried at same depth as that of cable in the same trench and not projected outside to ensure that cable is free from theft/outside interference.

Before starting cabling work location boxes shall first be erected so that cable after laying is directly taken inside location box and its multiple handling/damage by re-digging and taking inside location box/Relay Room is eliminated.

A sketch No. SDO/CABLE LAYING/002 showing position of trenches for cable laying is enclosed (**Annexure-5**).

Laying of different type of cable in same trench

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

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Telecommunication cable

Signalling cable

Power cable

A distance of approximately 10 cm must be maintained between telecommunication cable and signalling cables. The signalling cables must be separated from power cables by a row of bricks between them.

A sketch No. SDO/CABLE LAYING/004 showing laying of signalling cable & Telecom/Power cable in same trench is enclosed (**Annexure-7**).

Cable laying in ducts

RCC duct masonry or any other approved type of ducts may be used for laying the cable. The ducts shall have suitable covers and shall rest on walls of duct.

The ducts shall be of such design as to prevent water collecting in the duct.

After placing the trunking in the trench the ducts have to be aligned using 8 mm rod. For this purpose, a hole is left in the trunking for insertion of rods. Wherever there is a diversion proper care shall be taken to cover the cables, either by smoothly forming a curve with duct or a masonry structure can be constructed to protect the cables. After laying of cables the ducts shall be covered with RCC slab and shall be continuously plastered at the end with trunking. When cables are laid in rocky area, it is desirable to protect them with split RCC ducts of suitable design.

Where it is necessary to take the cable between the tracks, it shall be carried in trunking kept sufficiently below the ballast level.

Cables for longer distances shall be laid on bottom layer. Duct shall be filled up with sand after cable is laid to avoid entry of rodents.

From Home to Home Signal, where number of signalling cables required are more, RCC duct of 500mm width with removable top cover shall be used for laying of Signalling cable for PI/RR/EI installation having more than 100 routes. Beyond Home Signal and upto Distant signal, Normal trenching as per extant practice to be continued.

Only in Automatic Signalling territory, between Advance Starter of one station and Home Signal of other station, RCC duct with 300mm width shall be used.

Partition of RCC duct for accommodating different types of signalling/telecom cables/ power cables may be provided, wherever required. This can be achieved by earmarking about 80% of inner space for multi core signalling/ telecom cables and the remaining 20% of space for carrying power cable more than 110V in a separate chamber.

The RCC duct shall be laid at the depth such that the top of RCC cover is at the depth of Minimum 690 mm below ground level.

A sketch No. NR/Sig/Cable/001, 002 & 003 showing RCC duct is enclosed (**Annexure-8**, **Annexure-9** & **Annexure-10**).

For jointing ends of RCC ducts precaution should be taken for proper alignment of RCC ducts, so that gap between two ducts is kept minimum.

Laying cable in solid & rocky soil

In case of rocky soil the depth may be reduced suitably. However, before finalising tender schedule for Cable laying in solid/rocky soil area, detailed site survey should be conducted by min. Assistant level Officer, its report to be placed on record & approval taken from JAG level officer executing the work & accordingly quantity and depth of Cable laying in solid/rocky soil area to be finalised.

Sharp edges on the sides must be smoothed out and bottom of the chases shall be leveled. In the rocky ground the cable shall be laid normally on layer of sifted earth of 0.05 metres thickness previously deposited at the bottom of the trench. Cable shall be covered with the layer of sand or sifted earth of 0.1 metre thickness.

In case, sharp edge of rocky ground cannot be prevented with sifted earth, GI pipe of medium grade of ISI mark as per IS: 1239 (Part-I) of suitable diameter shall be used. Diameter of GI pipe shall be decided by Engineer In-charge. Inspection of GI pipe shall be done by

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RITES. In isolated cases, Rocky ground can be given smooth surface by using either masonry bricks or cement concrete.

A row of bricks shall then be placed lengthwise on the top and jointed with cement mortar and a layer of concrete with cement plaster shall be provided on the top of the same. A sketch No. NR/Sig/Cable/004 showing laying of cables in rocky area is enclosed (Annexure-11).

Laying in special soil condition

Cable shall not be run through abnormally high acidic or alkaline soil or through sewages. If this is unavoidable special measures shall be taken against corrosion. Cable may be laid in the Concrete/GI/CI/PVC/DWC-HDPE pipe properly jointed to prevent ingress of moisture.

Cable laying in residential area

When laying the cable in residential area, the cable shall be specially protected on both sides up to a distance of about 300 metres beyond the building line. In such cases, the cable shall be protected by means of concreting of 50 mm as proposed for rocky soil. This is better than using bricks as in a residential area bricks are usually found while digging and its special significance of cable protection may be overlooked.

Cable laying in large yard and suburban area

Main signalling cable in large yards including suburban section shall be laid in RCC ducts/DWC-HDPE pipes.

Tail cables shall be laid through DWC-HDPE pipes of suitable sizes and buried in trenches at a depth of not less than 1000 mm from ground level.

Track crossing

As far as possible, cable shall be crossed only at two locations, i.e. one crossing on each side of the yard.

When a cable has to cross the track, it shall be ensured that-

The cable crosses the track at right angles;

The cable does not cross the track under points and crossings and

The cable shall be laid in DWC-HDPE pipes of suitable diameter as per RDSO specification RDSO/SPN/204/2011 shall be used. Diameter of DWC-HDPE pipe shall be decided by Engineer In-charge. Inspection of DWC – HDPE pipe shall be done by RITES.

Cable laid across the track must be 1.0 metre (minimum) below the rail flanges.

No digging shall be done below the sleepers. Digging work while crossing a track shall be done between sleepers in the presence of a Railways representative.

A sketch No. NR/Sig/Cable/005 showing track crossing is enclosed (Annexure-12).

Road Crossing

The cable shall be laid in GI pipe of medium grade of ISI mark as per IS: 1239 (Part-I) of suitable diameter at the depth of 1 metre from the ground level while crossing the road. It shall extend 1 metre (minimum) on each side of the road keeping in view the future increase of width of the road. Diameter of GI pipe shall be decided by Engineer In-charge. Inspection of GI pipe shall be done by RITES.

When crossing roads, it is necessary to lay the cables in such a manner as to avoid the necessity of bending the cable sharply and minimise the excavation of road surface as far as possible.

The crossing of main roads often involves difficulties, especially if traffic is heavy. Precautions to avoid accidents to workmen, pedestrians and vehicles shall be taken. On minor roads, which can be temporarily closed to traffic it is possible to open up across the entire width of the road, pipes shall be installed quickly in the cutting, which is then filled in there by reducing to a minimum the time for which the road is closed.

Some roads, which are broad, may be opened for half their width allowing the other half for use of traffic, pipes are laid, trench filled in the first half and the other half opened up after the first half is opened half is linked with those laid in the first half.

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Whenever a cable is laid across an important road, particularly one with a special surface, it is good investment to provide for future expansion. Either the following methods may be adopted:-

The size of the pipe shall be so chosen that provision for laying few cable is future is kept in view. Pipes having diameters ranging from 100to 200 mm are suggested, or

A spare pipe may be laid, through which a cable can be drawn when required. It will be advantageous to leave a lead wire of G.I. wire in the pipe for drawing the cable in future.

A separate pipe of suitable dia shall be used for telecommunication cable.

A sketch No. NR/Sig/Cable/006 showing road crossing is enclosed (Annexure-13).

Cable laying on bridges/culverts

Wherever practical, the cable may be taken underground across the drain bedat a suitable depth for crossing small culverts with low flood level. A sketchNo. SDO/CABLE LAYING/011 showing cable laying on culverts with low flood level is enclosed (Annexure-14).

Where cable may not be taken underground across the drain bed, cable shall be taken on the culvert following shall be adopted:-

On approach of Bridges/Culverts, DWC- HDPE pipe of suitable diameter as per RDSO specification RDSO/SPN/204/2011.

On Bridge/Culvert portion, perforated GI pipe of medium grade of ISI mark as per IS:1239 (Part-I) of suitable diameter shall be used. Diameter of GI pipe shall be decided by Engineer In-charge.

At junction point of GI and DWC pipe, a GI bend of 112.5 degree, 1 mtr. Length as per IS 1239 (Part-2): 2011 and overlapping 250mm with DWC pipe shall be used.

Inspection of DWC-HDPE and GI pipe shall be done by RITES. A sketch No. NR/Sig/Cable/007 showing cable laying on culverts with high flood level is enclosed (Annexure-15).

When cables have to cross a metallic bridge, they shall be placed inside a metallic trough. which may be filled, as an anti-theft measure, with sealing compound. The cable shall be supported across the bridge in a manner which would involve minimum vibrations to the cable and which will facilitate maintenance work. Adequate cable length to the extent of 2 to 3 meters shall be made available at the approaches of bridge. A sketch No. SDO/CABLE LAYING/013 & 014 showing cable laying on metallic bridges is enclosed (**Annexure-16 & Annexure-17**).

For Cable laying on Arch bridges, following shall be adopted -

On approach of Arch bridge, DWC- HDPE pipe of suitable diameter as per RDSO specification RDSO/SPN/204/2011.

On Bridge/Culvert portion, perforated GI pipe of medium grade of ISI mark as per IS:1239 (Part-I) of suitable diameter shall be used. Diameter of GI pipe shall be decided by Engineer In-charge.

At junction point of GI and DWC pipe, a GI bend of 112.5 degree, 1 mtr. Length as per IS 1239 (Part-2): 2011 and overlapping 250mm with DWC pipe shall be used.

Inspection of DWC-HDPE and GI pipe shall be done by RITES. A sketch No. NR/Sig/Cable/008 & SDO/Cable Laying/016 showing cable laying on Arch bridges is enclosed (**Annexure-18 and Annexure- 19**).

Concreting of 50 mm shall be done throughout from entry/exit end of cable upto diversion point including slope on either side. The entry and exit ends of the cable from the pipe to the diversion point of the cable shall be concreted for 1 metre (minimum).

As the laying involves movement of a large number of staff over the bridge the line shall be blocked and flagman posted on other side. On a double line only the line near which the cable is being laid shall be blocked but care shall be taken to see that staff are aware of this and measures taken to prevent staff from straying on to the unblocked line.

Damage to cable is likely to occur if care is not taken in laying cable where the bed changes from solid support such as a foundation, pier of bridge to soft support such as soft soil. The

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cable must not press against the edge of the solid support. The soft soil near the edge must be tamped and the cable raised slightly.

In order to prevent theft and miscreant activities on approach of cable to bridge/culvert where it is not possible to ensure adequate depth, concrete protection is proposed.

Laying near to sleeper

In places where cables are to be laid within 1 metre from sleeper end, digging beyond 0.50 metre shall be done in the presence of an official from Engineering Department, and the laying of the cable and refilling of trench shall be done with least delay. Laying may be undertaken under block protection as needed.

Jumper cables for track circuits

There are numerous instances of jumper cable cut due to Engineering staff working. Such instances can be minimized if jumper cable is tied with the nearest sleeper. This shall be done on wooden sleepers using iron clamps/hooks. On PSC sleepers jumper cable shall be tied using clamps. A sketch No. SDO/CABLE LAYING/017 showing arrangement of jumper cable is enclosed (**Annexure-20**).

Where sleeper ends, cable shall be buried underground in the line of sleeper and taken to TLJB. Wherever required, cable may be laid in DWC-HDPE pipe.

Jumper cable shall be laid at least 0.5 metre below ground level excluding ballast depth.

Jumper cable shall be laid neatly in squared manner and shall not be kept in loose coils above the ground near TLJB.

Top surface of TLJB shall not be 1 feet above rail level.

Cable markers

Cable markers wherever provided shall be placed at 30-40 metre interval and at diversion points.

There are three types of cable markers in use in different Zonal Railways:-

Cast iron Tablet type cable markers.

Concrete cable markers.

Electronic Markers

Concrete cable markers can be adopted where RCC ducts are used or area is prone to theft.

Concrete markers are projected above surface level for at least 300 mm.

A sketch No. SDO/CABLE LAYING/018, 019 & 020 showing cable marker is enclosed (**Annexure-21, Annexure-22 & Annexure-23**).

Storing & transportation of cable

Cable drums shall not be stacked on flat side. Suitable stoppers shall be placed for stability.

Cable drums shall have easy access for lifting and moving.

When rolling the cable drum either for unloading or transportation, the drum shall always be rotated in the direction of the 'arrow' which is marked on the drum.

The drums shall not be rolled over objects that could cause damage to the protective battens of the cable.

When unloading is carried out from the vehicle the drum shall not be dropped on the ground directly to avoid damage due to impact. Fork lifter or ramp shall be used.

During all stages of storage, it is essential that the ends of the cable are effectively sealed by end cap or in any other approved manner to avoid water entry into the cable.

It is desirable that cable drums are stored in covered shed to protect against direct exposure to sun.

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Paying out the cable

For paying out cables, the cable drums shall be mounted on cable wheels. It shall be ensured that no kink is formed while paying out the cable. A sketch No. SDO/CABLE LAYING/021 showing method of unrolling cable is enclosed (**Annexure-24**).

The drum on the wheel shall be brought to one end of the trench and the end of the cable freed and the cable shall be laid along the trench.

The cable duct shall be brought as close to the cable trench if possible. The cable drum shall clear the ground by 5 to 10 cm.

The wooden battens on the drums shall be carefully removed shortly prior to laying and before the drum is mounted on the jack.

A party of labourers shall move along the trench carrying cable at suitable intervals so that cable is not damaged due to dragging along the ground or bent unduly.

The in-charge of cable laying shall ensure proper synchronization of all labourers for smooth laying.

In cases where the wheels are not available, the drum shall be mounted on an axle at one end of the trench and cable paid out and carried by labourers.

In no case, shall the drum be rolled off on to the road for laying the cable and the cable dragged on the ground for laying purposes.

Whenever mechanized equipment is used, the work shall be carried out by a trained operator under the supervision of SSE/SE/JE (Signal) in-charge of the work.

Where the cable drum is in damaged condition the cable may be placed on a horizontal revolving platform and the cable paid out in the same manner as given in paras above.

Paying out of cable shall be done by rotating the cable drum and not by pulling the cable with excessive force.

Wherever flaking of cable is required, it shall be done by making a succession of loops in the form of Figure '8', these loops being disposed on top of each other to avoid tangling of cable.

Figure of '8' flaking shall only be carried out under the direct supervision of an experienced official.

Laying in monsoon season

It is not advisable to lay cables in monsoon when the precipitation is heavy. The trenches will be inundated and visual inspection of the bedding of the trench will be rendered difficult.

Threading the cable in pipes will also be more difficult.

When however cable laying is necessary during the monsoon season, the cable ends shall be inserted in a pipe sealed at one end and the pipe buried. Termination work shall be started only when there is likelihood of a clear weather for three or four days.

Entry of cable at cabin, relay room, location boxes etc.

All cable entry points in cabin, relay room, battery room, SM's room, location boxes, location huts, junction boxes, etc. must be closed with suitable masonry works, sand covered and plastering to prevent entry of rats etc. RCC slab shall be provided on the cable pit of cabin and relay room/station.

Cable shall be protected on both sides up to a distance of 10 metre beyond building line of cabin, relay room, battery room, SM's room. In case of location boxes, location huts, junction boxes etc. cable may be protected for 1 metre on each side.

Damage to cable is likely to occur if care is not taken in laying cable where the bed changes from solid support such as a foundation/masonry to soft support such as soft soil. The cable must not press against the edge of the solid support. The soft soil near the edge must be tamped and the cable raised slightly.

Cable termination

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The cable termination of signalling cables shall be undertaken by providing suitable location boxes/junction boxes on approved type termination.

All the core of the cable (used or spare) shall be terminated on approved type termination in cabin/SM's office or apparatus cases. Each core so terminated will be provided with identification ferrules with letters or/numbers embossed on them as per requirement of circuitry. Termination of signalling cable on CT rack in relay room and in location boxes shall be done duly using identification marking on cable and on conductors/terminals. This will enable easy identification of conductors in case of any failures or cable disconnections or cable cut done by outsider/ miscreants. A proper marking and termination practice ensures quick and easy restoration during failures.

For quad cable, jointing may be done as per instructions of Telecom Directorate of RDSO. For jointing of signal cable in straight portion arrangement shall be issued by RDSO separately.

Testing of cable

Before the cable is laid in the trench, a visual inspection of cable shall be made to see that there is no damage to the cable. It shall be tested for insulation and continuity of the cores. Thereafter, the cable shall be laid into the trench. Record of insulation and loop resistant must be maintained.

Testing of all main and tail cables after laying of the cable in trenches and also after termination in apparatus cases, in boxes and relay room shall be done.

Any defect noticed during the testing after laying the cable the same will be replaced.

All conductors in signalling cables must be tested for their insulation in dry weather every year as per instructions in para 20 below. A comparison of the test results between successive tests carried on a cable under similar conditions will give an indication of the trend towards deterioration of the insulating material over a period of time. If a sudden fall in insulation is observed, the cause shall be investigated and immediate steps taken up to repair or replace the cable.

In addition to the regular testing of cables in dry weather, random tests in wet weather may also be carried out, where considered necessary, to localise any sudden deterioration in insulation of cables.

After completion of any P.Way work in the vicinity of existing cable, testing of all cable may be undertaken to verify proper working of cable.

Instructions for insulation resistance testing of signalling cable

General

These instructions apply only to cables used for Railway Signalling and do not cover open line wires and internal wiring.

Insulation Resistance tests shall be made in such a manner that safe operation of trains is not affected. It shall be ensured that no unsafe conditions are set up by the application of test equipment.

All conductors in signalling cables must be tested for their insulation at the time of commissioning and thereafter in dry weather every year preferably during the same part of the year.

The insulation resistance tests shall be made when conductors, cables and insulated parts are clean and dry.

In addition to regular testing of the cables in dry weather, random tests in wet weather may also be carried out where considered necessary.

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The conductors of the cables possess appreciable electrostatic capacity and may accumulate electrostatic charge. The cable conductors shall be shorted or earthed to completely discharge any accumulated charge (i) before connecting the insulation tester while commencing the test (ii) before the insulation tester is disconnected when the test is completed. This is in the interest of safety of personnel and protection of equipment

A 500V insulation tester shall be used for insulation testing. The fact that the cable has capacitance means that it has to be discharged before a measurement of the insulation resistance can be made. The insulation resistance shall therefore be recorded after the test voltage has been applied for one minute or so when the indicator of the insulation tester shows a steady reading.

Any metallic sheath or metal work of any rack or apparatus case shall be bonded to earth during test.

Procedure

Disconnect all cores of a cable at both ends. The disconnection may be made through links of approved type terminals, if provided.

Connect one terminal of the insulation tester to the conductor under test and other terminal to all the other conductors being bunched together and connected to earth.

Similarly test remaining conductors of the cable one by one.

Insulation Resistance so measured shall not be less than 5 mega ohms per kilometer at buried temperature. If the insulation resistance is found to be lower than 5 mega ohms, the cause shall be investigated and immediate steps taken to repair or replace the cable to prevent any malfunctioning of the equipment and circuits.

The results of the insulation resistance tests shall be recorded in approved proforma. A comparison of test results between successive tests carried out on a cable under similar conditions will give an indication of the trend towards deterioration of the insulation resistance of the cable. If sudden fall in the insulation resistance is observed the cause shall be investigated and immediate steps taken to repair or replace the cable.

Supervision of cable laying

The work shall be supervised at site personally by an official of the Signal & Telecommunication Department not below the rank of a JE/SE/SSE (Signal).

Orders will be given by the Inspector in charge only. He will be assisted by others at vulnerable places to inform him of the position and possible danger.

All concerned staff shall have full knowledge of their duties and the material handled by them.

No work shall be started unless all types of materials, tools consumable materials and staff are available. Location boxes and junction boxes shall be in position. If the cable ends are left in the ground unattended, damage is likely to take place.

Following record shall be maintained by JE/SE/SSE in-charge of the work/section:-

Cable route plan

Cable distribution chart

Cable termination diagram

Cable Testing Record : Summary Sheet, including supply details etc. as per Annexure 2.

Cable Insulation Resistance Test Sheet as per Annexure 3.

Special requirements in 25 kV AC electrified area

Only unscreened cable shall be used.

Screened signalling cable may be used on signalling installations where screened cable is already in use and site condition demand its further use.

PVC insulated PVC sheathed and armoured unscreened cable to an approved specification (IRS-63) shall be used for carrying signalling circuits. Only approved type (IS-1554) power cable shall be used for signalling purposes.

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The screened cable, if used, shall be PVC insulated, armored and to an approved specification IRS S-35.

The cable shall be so laid that it is not less than one meter from the nearest edge of the mast supporting the catenary or any other live conductor, provided the depth of the cable does not exceed 0.5 meters. When the cable is laid at a depth greater than 0.5 meters, a minimum distance of 3 meters between the cable and the nearest edge of the O.H.E structure shall be maintained. If it is difficult to maintain these distances, the cable shall be laid in concrete/heavy duty HDPE/Ducts or any other approved means for a distance of 3 meters on either side of the Mast. When so laid, the distance between the cable and the mast may be reduced to 0.5 meters. These precautions are necessary to avoid damage to the cable in the event of the failure of an overhead insulator.

In the vicinity of traction sub stations and feeding posts, the cable shall be at least one metre away from any metallic part of the O.H.E and other equipment at the substation, which is fixed on the ground, and at least one metre away from the substation earthing. In addition, the cable shall be laid in concrete or heavy-duty HDPE pipes/or other approved means for a length of 300 meters on either side of the feeding point. As far as possible, the cable shall be laid on the side of the track opposite to the feeding post.

In the vicinity of the switching stations, the cable shall be laid at least one metre away from any metallic body of the station, which is fixed in the ground, and at least 5 meters away from the station earthing. The distance of 5 meters can be reduced to one metre provided the cables are laid in concrete pipes/ heavy-duty HDPE pipes/ducts or any other approved means.

Where an independent Earth is provided for an OHE structure, i.e. where the mast is connected to a separate Earth instead of being connected to the rail, the cables shall be laid at least one metre away from the Earth.

Where there are O.H.E structures along the cable route, the cable trenches shall as far as possible, be dug not less than 5.5 meters away from the centre of the Track.

In a cable run, the number of circuits carrying 300V at any given instant shall not exceed three.

***Note:** 300 V feed system shall not be used in future installations.

Drawings for cable laying

The sketches for cable laying in different areas, soils, bridges etc. are listed below and are enclosed. However, Railways may issue detailed drawings as per local requirement of Railways and number and size of cables required.

S.N.	Description	Drawing No.	Annexure
1.	TYPICAL MAIN CABLE DISTRIBUTION PLAN FOR DOUBLE LINE (4 LINES) PI STATION	SDO/CABLE LAYING/001	Annexure-4
2.	POSITION OF TRENCHES FOR CABLE LAYING	SDO/CABLE LAYING/002	Annexure-5
3.	CABLE TRENCH	SDO/CABLE LAYING/003	Annexure-6
4.	LAYING OF SIGNALLING CABLE & TELECOM/ POWER CABLE IN SAME TRENCH	SDO/CABLE LAYING/004	Annexure-7
5.	RCC DUCT 300 MM	NR/SIG/CABLE/001	Annexure-8
6.	RCC DUCT 500 MM	NR/SIG/CABLE/002	Annexure-9
7.	RCC DUCT 500 MM	NR/SIG/CABLE/003	Annexure-10
8.	LAYING OF CABLES IN ROCKY AREA	NR/SIG/CABLE/004	Annexure-11
9.	TRACK CROSSINGS	NR/SIG/CABLE/005	Annexure-12
10.	ROAD CROSSINGS	NR/SIG/CABLE/006	Annexure-13
11.	CABLE LAYING ON CULVERTS WITH LOW FLOOD LEVEL	SDO/CABLE LAYING/011	Annexure-14
12.	CABLE LAYING ON CULVERTS WITH HIGH FLOOD LEVEL	NR/SIG/CABLE/007	Annexure-15
13.	CABLE LAYING ON METALLIC BRIDGES	SDO/CABLE LAYING/013	Annexure-16
14.	CABLE TROUGH FOR METALLIC BRIDGES	SDO/CABLE LAYING/014	Annexure-17
15.	CABLE LAYING ON ARCH BRIDGES	NR/SIG/CABLE/008	Annexure-18

Appendix-2

16.	BRICK MASONRY CHANNEL FOR ARCH BRIDGE	SDO/CABLE LAYING/016	Annexure-19
17.	ARRANGEMENT OF JUMPER CABLE	SDO/CABLE LAYING/017	Annexure-20
18.	CI CABLE MARKER & CONCRETING	SDO/CABLE LAYING/018	Annexure-21
19.	CI CABLE MARKER	SDO/CABLE LAYING/019	Annexure-22
20.	CONCRETE CABLE MARKER	SDO/CABLE LAYING/020	Annexure-23
21.	METHOD OF UNROLLING CABLE	SDO/CABLE LAYING/021	Annexure-24
22.	RULE MADE OF PIPE FOR MEASURING TRENCH DEPTH	SDO/CABLE LAYING/022	Annexure-25

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

No.2003/Tele/RCIL/1 Pt.IX

New Delhi dated 24.06.2013

General Managers,
All Indian Railways.

Telecom Circular No. 17/2013


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

JPO No. 1/Sig/2004 dated 16.12.2004 issued by Board on the subject matter was reviewed in consultation with Signal, Electrical, Civil Engineering and Works Directorates of Board.

2. The same has now been finalized and a copy of the Revised Joint Procedure Order duly signed by ED/TD, EDCE/P, ED/SD, ED/W and EDEE/M is attached for compliance.

3. Please acknowledge receipt.

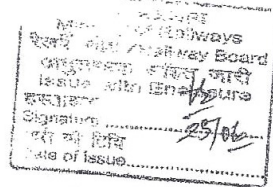
DA: 1 in 5 pages.


(Rakesh Ranjan)
Director(Telecom.)

Copy to:-

- i) ED/TD, EDCE/P, ED/SD, ED/W and EDEE/M.
- ii) CSTE, All Indian Railways
- iii) CSTE/Construction, All Indian Railways
- iv) ED/Tele, RDSO, Lucknow
- v) MD/RCIL, 143, Institutional Area, Sector 44,
Gurgaon - 122003.Haryana.

o/c



Appendix-2

*Tests sheets for Insulation and Loop resistance results in matrix format to be maintained separately for each cable in the cable testing register.

Annexure-3

CABLE INSULATION RESISTANCE TEST SHEET

Date of Meggering:

Signature

(All figures in mega ohms unless otherwise specified) No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24 25 26 27 28 29 30E

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Appendix-2

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Appendix-2

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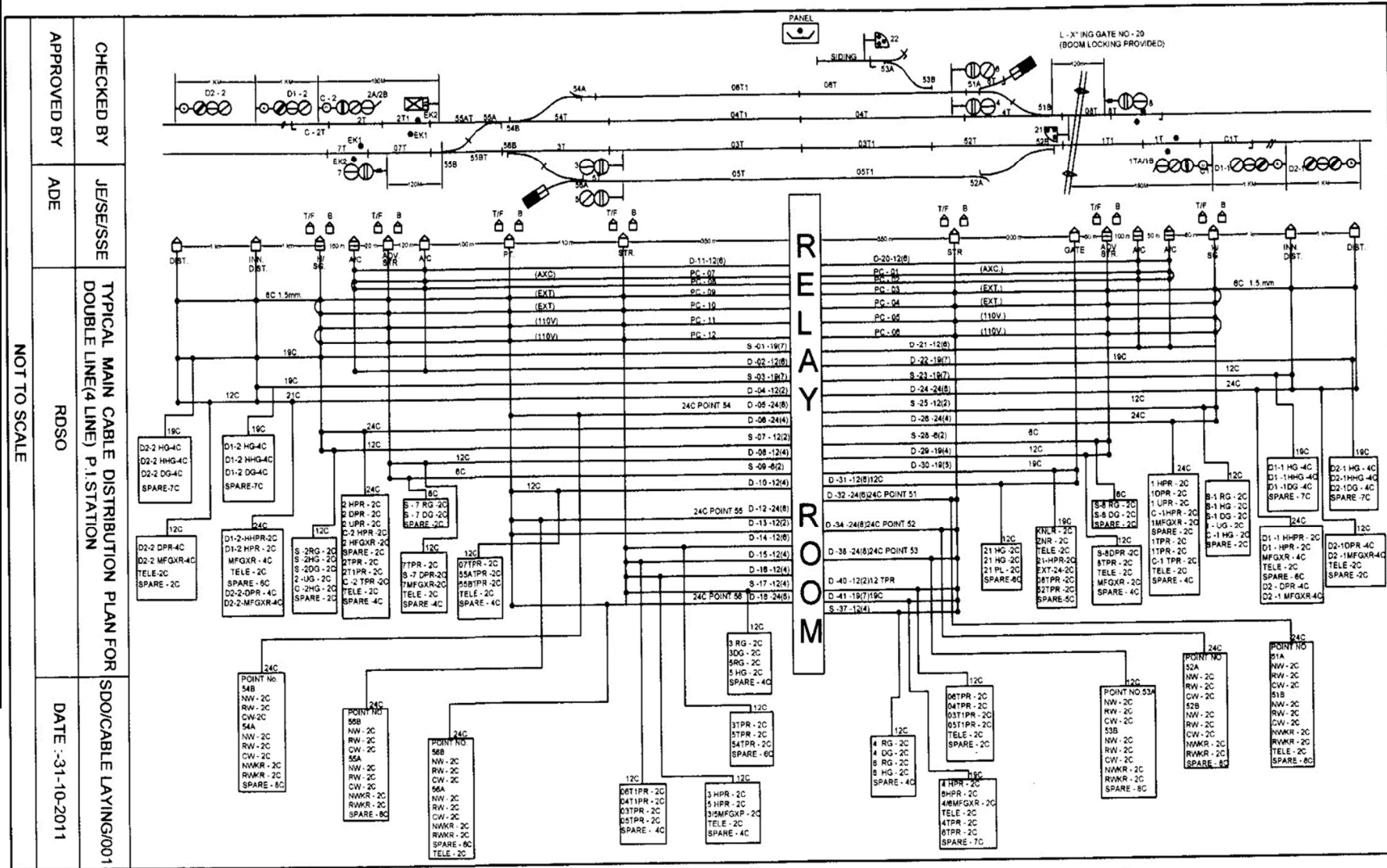
30

(All figures in mega ohms unless otherwise specified)

Date of Meggering:

Signature

Appendix-2



CHECKED BY

J/E/SE/SS

TYPICAL MAIN CABLE DISTRIBUTION PLAN FOR DOUBLE LINE(A LINE) P1 STATION

DATE -31-10-2011

NOT TO SCALE

APPROVED BY

ADE

RDSO

SDO/CABLE LAYING/001

Appendix 3

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

No.2003/Tele/RCIL/1 Pt.IX

New Delhi dated 24.06.2013

General Managers,
All Indian Railways.

Telecom Circular No. 17/ 2013

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2. The same has now been finalized and a copy of the Revised Joint Procedure Order duly signed by ED/TD, EDCE/P, ED/SD, ED/W and EDEE/M is attached for compliance.

3. Please acknowledge receipt.

DA: 1 in 5 pages.

(Signature)

(Rakesh Ranjan)
Director(Telecom).

Copy to:-

- i) ED/TD, EDCE/P, ED/SD, ED/W and EDEE/M
- ii) CSTE's, All Indian Railways
- iii) CSTE's/Construction, All Indian Railways
- iv) ED/Tele, RDSO, Lucknow
- v) MD/RCIL, 143, Institutional Area, Sector 44,
Gurgaon - 122003.Haryana.

o/c

Ministry of Railways
Railway Board
Issue with Signature
Signature
Date of Issue

25/06

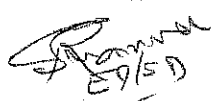
Annexure to Telecommunication Circular No. 17/2013

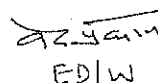
**JOINT PROCEDURE ORDER FOR UNDERTAKING DIGGING WORK
IN THE VICINITY OF UNDERGROUND SIGNALING, ELECTRICAL &
TELECOMMUNICATION CABLES.**

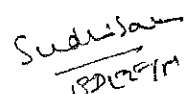
- A. A number of Engineering works in connection with gauge conversion/doubling/third line are in progress on various Railways, which require extensive digging work near the running track, in close vicinity of the working S&T cables carrying vital safety circuits as well as electrical cables feeding the power supply to cabins, ASM room, RRI Cabin, Intermediate Block Huts (IBH) etc. Similarly, S&T organisation under open line or construction units under CAO/C, are executing various Signaling and Telecom works requiring digging of earth for laying of cables or casting of foundations for the erection of signal posts etc. RailTel is also executing the work of laying of quad cable and OFC on various Railways as a part of sanctioned works for exclusive use of Railways for carrying voice and data i.e. administrative and control communication, PRS, FOIS etc. or shared by RailTel Corporation of India Ltd. On certain sections digging is also required for laying of electrical cable and casting of foundation for the erection of OHE masts by Electrical Deptt. Generally, these works are executed by contractors employed by these organisations.
- B. However, while carrying out these works in the vicinity of working signaling, telecommunication and electrical cables, at times, cable cuts take place due to JCB machines working along the track or during the digging work being done by contractors carrying out the Civil Engineering works. Similarly, such cable cuts are also resulting due to works undertaken by S&T or Electrical departments. Such cable faults results in the failure of vital signaling and telecommunication circuits & electrical installations.
- C. Henceforth, the following joint procedure shall be followed by Engineering, Electrical and S&T (and RailTel organisation, wherever such works are being done by them) officers of the respective divisions and by the construction organisation, while carrying out any digging work near to existing signaling & telecommunication and electrical cables, so that the instances of cable cut due to execution of works, can be controlled and minimized.
1. S&T department (and RailTel, where they have laid the cables) and Electrical department shall provide a detailed cable route plan showing exact location of cable at an interval of 200 m or wherever there is change in alignment so that the same is located easily by the Engineering official/contractor. In addition, S&T department and Electrical department shall also provide cable markers along the alignment of the cable. These cable route plans shall be made available to the Sr.DEN/DEN or Dy.CE/C, as the case may be, by Sr. DSTE/DSTE or Sr.DEE/DEE of the divisions or Dy. CSTE/C or Dy. CEE/C within 15 days in


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ED/CE/D

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ED/W


ED/CE/11

duplicate. Sr. DEN/DEN or Dy.CE/C will send copies to their field unit i.e. AEN/SE/P. Way & Works.

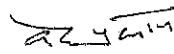
2. Before taking up any digging activity on a particular work by any agency, Sr. DSTE/DSTE or Sr.DEE/DEE of the section shall be approached in writing by the concerned Engg. or S&T or Electrical officer for permitting to undertake the work. Sr.DSTE/DSTE or Sr.DEE/DEE, after ensuring that the concerned executing agencies including the contractor have fully understood the S&T and Electrical cable route plan, shall permit the work in writing within 7 days of the request by concerned department.
3. After getting the permission from S&T or Electrical department as the case may be, the relevant portion of the cable route plan shall be attached to the letter through which permission is issued to the contractor by concerned Engg. official for commencement of work and ensuring that the contractors have fully understood the cable route plan and precautions to be taken to prevent damage to the underground cables. The contractor shall be asked to study the cable plan and follow it meticulously to ensure that the safety of the cable is not endangered. Such a provision, including any penalty for default, should form part of agreement also. It is advisable that a suitable post of SE/Sig or SE/Tele or SE/Electrical(TRD or G) shall be created chargeable to the estimates of doubling/gauge conversion, who can help Engg. agencies in the execution of the work. However basic responsibility will be of the department executing the work and the contractor. Creation of posts is not mandatory.
4. The SE/P.Way or SE/Works shall pass on the information to the concerned SE/Sig. or SE/Tele or SE/Electrical(TRD or G) about the works being taken up by the contractors in their sections at least 3 days in advance of the day of the work. In addition Engineering control shall also be informed by SE/P.Way or SE/Works, who in turn shall pass on the information to the test room/network operation center of RailTel/TPC/Electrical control.
5. On receiving the above information, SE/Sig or SE/Tele or SE/Electrical(TRD or G) shall visit the site on or before the date of taking up the work and issue permission to the contractor to commence the work after checking that adequate precautions have been taken to avoid the damage to the cables. The permission shall be granted within 3 days of submission of such requests.
6. The name of the contractor, his contact telephone number, the nature of the work shall be notified in the Engineering control as soon as the concerned Engineering officials issue the letter authorizing commencement of work to the contractor. Test room shall be given copies. Test room shall collect any further details from the Engineering control and shall pass it on to S&T/RailTel & Electrical officials regularly. In case the supervisors of concerned departments do not turn up on the day as advised in terms of para 4 and 5 above, the works of contractor should not be stopped on this account.

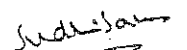

ED/TS


ED/CP

2 of 5


ED/SD


ED/W


ED/EEIM

7. In case of works being taken up by the State Government, National Highway Authority etc., the details of the permission given i.e. the nature of work, kilometer etc. be given to the Engineering control including the contact person's number so that the work can be done in a planned manner. The permission letter shall indicate the contact numbers of Test room/Network Operating Centre of RailTel/TPC/Elect. Control.
8. Where the nature of the work taken up by the Engineering department is such that the OFC or other S&T cables or Electrical cables is to be shifted and relocated, notice of minimum one week shall be given so that the Division/RailTel/Construction can plan the works properly for shifting. Such shifting works shall in addition, for security and integrity of the cables, be supervised by S&T supervisors/RailTel supervisors/Electrical supervisors.
9. The concerned SE/P.Way/SE/Works/SE/Sig/SE/Tele/ SE/Electrical(TRD or G) or RailTel supervisors supervising the work of the contractor shall ensure that the existing emergency sockets are not damaged in view of their importance in providing communication during accident/emergency.
10. In case of minor nature of works where shifting of cable is not required, in order to prevent damage to the cable, the Engineering contractor shall take out the S&T or optical fibre cable or Electrical cable carefully from the trench and place it properly alongside at a safe location before starting the earthwork under the supervision of SE/Sig. or SE/Tele or SE/Electrical(TRD or G). The cable shall be reburied soon after completion of excavation with proper care including placement of the brick over the cable under the supervision of S&T or Electrical supervisors. However, the work will be charged to the concerned engineering works. The responsibility for ensuring availability of SE (Signal), SE (Electrical) as per para 4 and 5 above lies with the respective department. The contractor will go ahead with the shifting of cables as per the program decided and he will not be held responsible for any cable cut.
11. In all the sections where major project are to be taken up/going on RailTel/S&T department shall deploy their official to take preventive/corrective action at site of work. As regards Electrical Department, the official may be deputed on need basis.
12. No new OFC or quad cable shall be laid close to the existing track. It shall be laid close to the Railway boundary on one side of the Railway track to the extent possible to avoid any interference with the future works (doubling etc.). It shall be ensured in the new works of cable laying that the cable route is properly identified with electronic or concrete markers. Wherever multiple cables are laid in a trench, RFID markers may be provided for easy identification of the cable. Henceforth, wherever cable laying is planned, before undertaking the cable laying work, the cable route plan of the same shall be prepared by the Dy.CSTE/C or Dy.CEE/C

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3 of 5

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and shall be got approved from the concerned Sr. DSTE/DSTE or Sr. DEE/DEE and also from the concerned Dy. CE/C for new lines and from the concerned Sr.DEN for all other projects including doubling GC etc., to avoid possible damage in future. Such approval shall be granted within 15 days of the submission of the request.


13. The works of excavating the trench and laying of the cable should proceed in quick succession, leaving a minimum time between the two activities.
14. In case damage is caused to OFC/Quad cable during execution of the work, the contractor is liable to pay a penalty for damaging the cable. Penalty shall not be levied in case of the following:-
- (i) Detailed cable route plan as per clause C-1 not provided by concerned department or cable is not protected as per laid down procedures.
 - (ii) The alignment of the cable does not tally with the information provided to the contractor.
 - (iii) The cable depth is found to be less than 800 mm from normal ground level.
 - (iv) No representative of S&T department/RailTel was available at site guarding the cables on the fixed pre determined date and time.
15. Penalty to be imposed for damages to cable shall be as under:-

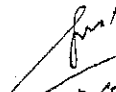
Cable damaged	Penalty per location
Only Quad cable or Signaling cable	₹ 1.0 Lakh
Only OFC	₹ 1.25 Lakh
Both OFC & Quad	₹ 1.5 Lakh
Electrical Cable	₹ 1.0 Lakh

Necessary debit in this regard shall be raised on the department undertaking the work who shall in turn levy the penalty on the defaulting contractor. S&T department shall raise the debits in case of damage to OFC or Quad or Signaling cable and Electrical department shall raise the debits in case of damage to Electrical cable.


16. Railways will not lodge FIR with RPF in cases of works being executed by authorized contractors of Railways who have been duly permitted to execute the works in accordance with this JPO. Joint note by the supervisors of the concerned department shall be prepared and the responsibility of the cable cut should be decided without involving RPF. The joint note deciding the fact whether the contractor should be penalized shall be completed in a day's time from the occurrence of cable cut.

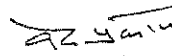
In all other cases, when the cable is cut by an agency that was not permitted to execute any work, FIR should be lodged with RPF.


ED/TT


ED/CEP


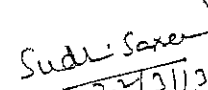

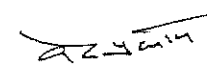
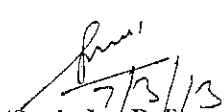
4 of 5


ED/SJ


ED/W


ED/CTA

17. While giving permission for taking up the works, concerned departments may note that earthwork by engineering contractors will normally be done by machines except in a few isolated locations where the quantity of earth work is very less.
 18. Railways shall make necessary correction in their future contract so that this JPO can also be enforced contractually.
 19. In case of damage to OFC, RailTel should be paid 5/6th of the penalty recovered. RailTel shall raise demands on the S&T department in this regard.
 20. All types of signaling & OHE bonds i.e. rail bond, cross bond and structure bond shall be restored by the contractor with a view to keep the rail voltage low to ensure safety of personnel.
-
21. Above joint circular shall be applicable for construction as well as open line organisation of Engineering, S&T & Electrical.
 22. S&T cable and electrical cable route plan should be prepared by the concerned S&T and Electrical officers respectively and got approved as stipulated in para C-12 before undertaking the work. The completion cable route plan should be finalized block section by block section as soon as the work is completed.
 23. All cable laying works shall be executed as per laid down technical specifications, such as protection measures/protective cover, compaction of refilled material etc.

 (Rajeev Sharma) Exec. Dir. Signal Devel.	 (S K Saxena) Exec. Dir. Elect. Enery (M)	 (Shobhan Chaudhuri) Exec. Dir. Telecom (Dev)	 (V P Dudeja) Exec. Dir. Works	 (Surinder Pal) Exec. Dir. Civil Engg.(P)
---	---	---	--	---

Appendix 4

APPENDIX-4

DESIGN CERTIFICATE

This Design Certificate refers to Submission No.
.....
which comprises:

[*Design Package No. / the Detailed Design and Drawing
Submission No. / Technical Submission No.]
in respect of:

[description of the Works to which the submission refers)

The contents of this submission are scheduled in Section A below.

The documents scheduled in Section B below, for which a Notice
of No Objection has been issued, are of relevance to this submission.

APPENDIX-4

DESIGNER'S STATEMENT

We hereby certify that:

- a) The design of the Works, as illustrated and described in the documents scheduled in Section A below, complies with the specifications requirements and [see note 1 below];
 - b) The outline designs, design briefs and performance specifications of those elements of the Works as illustrated and described in the documents scheduled in Section A below comply with the specifications requirements and *[see note 1 below]*,
 - c) The design of the Works, as illustrated and described in the documents scheduled in Section A below, complies with the Employer's Requirements specifications requirements and. *[see note 1 below]* except in the following respects:
 - (i) (to be completed by Contractor/Designer)
 - (ii) (etc.)
 - d) An in-house check has been undertaken and completed to confirm the completeness, adequacy and validity of the design of the Works as illustrated and described in the documents scheduled in Section A below;
 - e) All necessary and required approvals relating to the design of the Works, as illustrated and described in the documents scheduled in Section A below, have been obtained and copies of such approvals are annexed in Section C below;
- AND (in the case of a submission covering a part of the Works only) :*
- f) All effects of the design comprising the submission on the design of adjacent or other parts of the Works have been fully taken into account in the design of those parts.

Signed by

APPENDIX-4

'Authorized

Representative' (for

Designer)

Name

Position/ Designation

Date

APPENDIX-4

CONTRACTOR'S CERTIFICATION

This is to certify that all design has been performed utilizing the skill and care to be expected of a professionally qualified, competent designer, experienced in work of similar nature and scope. This further certifies that all works relating to the preparation, review, checking and certification of design has been verified by us.

Signed by 'Authorized

Representative' (for Contractor)

Name

Positi

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ation

Date

Note 1

The Contractor shall insert one of the following, as applicable:

- (i) the Contractor's Technical Proposals
- (ii) the Contractor's Technical Proposals and Design Packages Nos. for which a Notice of No Objection has been issued.
- (iii) Design Packages Nos.....for which a Notice of No Objection has been issued if such Design Packages develop and amplify the Contractor's Technical Proposals.
- (iv) The Detailed Design:

Note 2

The Contractor designer/authorized representative shall take utmost care while signing the Design certificate. For repeated false compliance of specifications/Work's requirement, Engineer may ask for suitable replacement for the position.

APPENDIX-4

Section A

Submission no...comprises the following

Drawings : (*Title, drawing number and revision*)

Documents: (*Title, reference number and revision*)Others:

Section B

Documents for which a Notice of No Objection has been issued and which are of relevance to this Submission No.

Document:

Submitted with

[*Design Package No. /

Detailed Design Submission No.... /

The Contractor is required to provide this

Good for Construction Drawing Submission No. / *information in respect of each document in*

Section B

Technical Submission No..... /

Date of Issue of Notice of No Objection

(* Delete as appropriate)

Section C

[Contractor to attach copies of necessary and required approvals]

(End)

Bid Document for Works

(Two-Envelope Bidding Process)

Name of work: Shifting of S&T Cables and Associated Works, at Patli station of N. Rly. in Delhi-Rewari, section in connection with laying of tracks for HORC project.

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Contract title: Patli S&T Tender (Cable Shifting and associated works)

Project: Haryana Orbital Rail Corridor Project

Employer: Haryana Orbital Rail Corporation Limited

Country: INDIA

Issued on: 21.11.2023

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Summary

Invitation for Bids (IFB)

Volume-I

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- Section 1: Instructions to Bidders (ITB)
- Section 2: Bid Data Sheet (BDS)
- Section 3: Evaluation and Qualification Criteria (EQC)
- Section 4: Bidding Forms (BDF)

PART 2 – WORKS' REQUIREMENTS

- Section 5: Works' Requirements (WRQ)

<h4>PART 3 – CONDITIONS OF CONTRACT AND CONTRACT FORMS</h4>
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- | |
|--|
| <ul style="list-style-type: none">Section 6: General Conditions of Contract (GCC)Section 7: Special Conditions of Contract (SCC)<ul style="list-style-type: none">Part A: Contract Data (CD)Part B: Specific Provisions (SP) |
|--|

- Section 8 – Contract Forms (COF) – Annexures to SCC

Volume-II

- Bill of Quantities (BOQ)

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Section 6

General Conditions of Contract (GCC)

Section 6 –General Conditions of Contract

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General Conditions

1. General Provisions

1.1 Definitions In the Conditions of Contract (“these Conditions”), which include Special Conditions of Contract, Parts A and B, and these General Conditions, the following words and expressions shall have the meanings stated. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.

- 1.1.1 The Contract**
- 1.1.1.1 “**Contract**” means the Contract Agreement, the Letter of Acceptance, the Letter of Bid, these Conditions, the Specification, the Drawings, the Schedules, and the further documents (if any) which are listed in the Contract Agreement or in the Letter of Acceptance.
 - 1.1.1.2 “**Contract Agreement**” means the contract agreement (*if any*) referred to in Sub-Clause 1.6 [Contract Agreement].
 - 1.1.1.3 “**Letter of Acceptance**” means the letter of formal acceptance, signed by the Employer, of the Letter of Bid, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such letter of acceptance, the expression “Letter of Acceptance” means the Contract Agreement and the date of issuing or receiving the Letter of Acceptance means the date of signing the Contract Agreement.
 - 1.1.1.4 “**Letter of Bid**” means the document entitled letter of bid, which was completed by the Contractor and includes the signed offer to the Employer for the Works.
 - 1.1.1.5 “**Specification**” means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the Works.
 - 1.1.1.6 “**Drawings**” means the drawings of the Works, as included in the **Contract**, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract.
 - 1.1.1.7 “**Schedules**” means the document(s) entitled schedules, completed by the Contractor and submitted with the Letter of Bid, as included in the Contract. Such document may include the Bill of Quantities, data, lists, and schedules of rates and/or prices.
 - 1.1.1.8 “**Bid/Tender**” means the Letter of Technical Bid **and** Letter of Price Bid and all other documents which the Contractor submitted with the Letter of Technical Bid and Letter of Price Bid , as

included in the Contract.

1.1.1.9 **“Bill of Quantities”** and **“Daywork Schedule”** and **“Schedule of Payment Currencies”** mean the documents so named (if any) which are comprised in the Schedules.

1.1.1.10 **“Contract Data”** means the pages completed by the Employer entitled contract data which constitute Part A of the Special Conditions of Contract.

1.1.1.11 **“Employer’s Requirements”** means the document entitled ‘Employer’s Requirements’ as part of Works Requirements and as included in the Contract, and any additions and modifications to such document in accordance with the Contract. Such document specifies the purpose, scope, and/or design and/or other technical criteria, for the works.

**1.1.2 Parties
Persons**

and 1.1.2.1 **“Party”** means the Employer or the Contractor, as the context requires.

1.1.2.2 **“Employer”** means the person named as employer in the Contract Data and the legal successors in title to this person.

1.1.2.3 **“Contractor”** means the person(s) named as contractor in the Letter of Bid accepted by the Employer and the legal successors in title to this person(s).

1.1.2.4 **“Engineer”** means the person nominated by the Employer to act as the Engineer for the purposes of the Contract and named in the Contract Data, or other person appointed from time to time by the Employer and notified to the Contractor under Sub-Clause 3.4 [Replacement of the Engineer].

1.1.2.5 **“Contractor’s Representative”** means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under Sub-Clause 4.3 [Contractor’s Representative], who acts on behalf of the Contractor.

1.1.2.6 **“Employer’s Representative”** means the person named by the Employer in the Contract or appointed from time to time by the Employer who acts on behalf of the Employer.

1.1.2.7 **“Employer’s Personnel”** means the Engineer, the assistants referred to in Sub-Clause 3.2 [Delegation by the Engineer] and all other staff, labour and other employees of the Engineer and of the Employer; and any other personnel notified to the Contractor, by the Employer or the Engineer, as Employer’s Personnel.

1.1.2.8 **“Contractor’s Personnel”** means the Contractor’s Representative and all personnel whom the Contractor utilises on Site, who may include the staff, labour and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the

Contractor in the execution of the Works.

- 1.1.2.9 “Subcontractor” means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works; and the legal successors in title to each of these persons.
- 1.1.3 Dates, Tests, Periods and Completion**
- 1.1.3.1 “**Base Date**” means the date 28 days prior to the deadline for submission of bids.
- 1.1.3.2 “**Commencement Date**” means the date notified under Sub-Clause 8.1 [Commencement of Works].
- 1.1.3.3 “**Time for Completion**” means the time for completing the Works or a Section (as the case may be) under Sub-Clause 8.2 [Time for Completion], as stated in the Contract Data (with any extension under Sub-Clause 8.4 [Extension of Time for Completion]), calculated from the Commencement Date.
- 1.1.3.4 “**Tests on Completion**” means the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Employer.
- 1.1.3.5 “**Taking-Over Certificate**” means a certificate issued under Clause 10 [Employer’s Taking Over].
- 1.1.3.6 “**Tests after Completion**” means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) are taken over by the Employer.
- 1.1.3.7 “**Defects Notification Period**” means the period for notifying defects in the Works or a Section (as the case may be) under Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects], as stated in the Contract Data (with any extension under Sub-Clause 11.3 [Extension of Defects Notification Period]), calculated from the date on which the Works or Section is completed as certified under Sub-Clause 10.1 [Taking Over of the Works and Sections].
- 1.1.3.8 “**Performance Certificate**” means the certificate issued under Sub-Clause 11.9 [Performance Certificate].
- 1.1.3.9 “**Day**” means any (working or non-working) calendar day from 00:00 hrs. to 24:00 hrs.
- 1.1.3.10 “**Months**” means any calendar month of the Gregorian calendar year.
- 1.1.3.11 “**Year**” means 365 days

1.1.3.12 “**Time Periods**” Any reference to time period commencing “from” the specified day or date “till” or “until” a specified day shall include both such days.

1.1.3.13 Any reference to “**Time**” shall be according to Indian Standard Time (IST).

1.1.4 Money and Payments

1.1.4.1 “**Accepted Contract Amount**” means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects. In the Letter of Acceptance, the Accepted Contract Amount shall have two components i.e. (i) the base amount excluding GST (ii) GST component (calculated at the rate for works contract service as per GST Laws).

1.1.4.2 “**Contract Price**” means the price defined in Sub-Clause 14.1 [The Contract Price], and includes adjustments in accordance with the Contract.

1.1.4.3 “**Cost**” means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.

1.1.4.4 “**Final Payment Certificate**” means the payment certificate issued under Sub-Clause 14.13 [Issue of Final Payment Certificate].

1.1.4.5 “**Final Statement**” means the statement defined in Sub-Clause 14.11 [Application for Final Payment Certificate].

1.1.4.6 “**Foreign Currency**” means a currency in which part (or all) of the Contract Price is payable, but not the Local Currency.

1.1.4.7 “**Interim Payment Certificate**” means a payment certificate issued under Clause 14 [Contract Price and Payment], other than the Final Payment Certificate.

1.1.4.8 “**Local Currency**” means the currency in Indian Rupees.

1.1.4.9 “**Payment Certificate**” means a payment certificate issued under Clause 14 [Contract Price and Payment].

1.1.4.10 “**Provisional Sum**” means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums].

1.1.4.11 “**Retention Money**” means the accumulated retention moneys which the Employer retains under Sub-Clause 14.3 [Application for Interim Payment Certificates] and pays under Sub-Clause 14.9 [Payment of Retention Money].

1.1.4.12 “**Statement**” means a statement submitted by the Contractor as part

of an application, under Clause 14 [Contract Price and Payment], for a payment certificate.

1.1.5 Works and Goods

- 1.1.5.1 **“Contractor’s Equipment”** means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor’s Equipment excludes Temporary Works, Employer’s Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.
- 1.1.5.2 **“Goods”** means Contractor’s Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.
- 1.1.5.3 **“Materials”** means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.
- 1.1.5.4 **“Permanent Works”** means the permanent works to be executed by the Contractor under the Contract.
- 1.1.5.5 **“Plant”** means the apparatus, machinery and vehicles intended to form or forming part of the Permanent Works.
- 1.1.5.6 **“Section”** means a part of the Works specified in the Contract Data as a Section (if any).
- 1.1.5.7 **“Temporary Works”** means all temporary works of every kind (other than Contractor’s Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.
- 1.1.5.8 **“Works”** mean the Permanent Works and the Temporary Works, or either of them as appropriate.

1.1.6 Other Definition:

- 1.1.6.1 **“Contractor’s Documents”** means the calculations, computer programs and other software, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.
- 1.1.6.2 **“Country”** means India, the country in which the Site (or most of it) is located, where the Permanent Works are to be executed.
- 1.1.6.3 **“Employer’s Equipment”** means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Works, as stated in the Specification; but does not include Plant which has not been taken over by the Employer.
- 1.1.6.4 **“Force Majeure”** is defined in Clause 19 [Force Majeure].
- 1.1.6.5 **“Laws”** means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any

legally constituted public authority.

- 1.1.6.6 **“Performance Security”** means the security (or securities, if any) under Sub-Clause 4.2 [Performance Security].
- 1.1.6.7 **“Site”** means the places where the Permanent Works are to be executed and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site.
- 1.1.6.8 **“Unforeseeable”** means not reasonably foreseeable and against which adequate preventive precautions could not reasonably be taken by an experienced contractor by the date for submission of the Bid.
- 1.1.6.9 **“Variation”** means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].
- 1.1.6.10 **“Railway”** means a railway, or any portion of a railway for public carriage of passengers and goods as defined in the Railways ACT 1989. Any reference to railway means the Indian Railways and the respective Zonal Railway

1.2 Interpretation

In the Contract, except where the context requires otherwise:

- (a) words indicating one gender include all genders;
- (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- (c) provisions including the word “agree,” “agreed” or “agreement” require the agreement to be recorded in writing;
- (d) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and
- (e) the word “tender” is synonymous with “bid”, and “tenderer” with “bidder” and the words “tender documents” with “bidding documents”

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

In these Conditions, provisions including the expression "Cost plus profit" require this profit to be one twentieth (5%) of this Cost unless otherwise indicated in the Contract Data.

1.3 Communications

Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Contract Data; and

- (b) delivered, sent or transmitted to the address for the recipient’s communications as stated in the Contract Data. However:
 - (i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
 - (ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer, a copy shall be sent to the Engineer or the other Party, as the case may be.

1.4 Law and Language

The Contract shall be governed by the law of the country or other jurisdiction stated in the Contract Data.

The ruling language of the Contract shall be that stated in the Contract Data.

The language for communications shall be that stated in the Contract Data. If no language is stated there, the language for communications shall be the ruling language of the Contract.

1.5 Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

- (a) the Contract Agreement (if any),
- (b) the Letter of Acceptance,
- (c) the Letter of bid,
- (d) the Schedules (including Priced Bill of Quantities),
- (e) Special Conditions of Contract:
 - (i) Part A – Contract Data
 - (ii) Part B - Specific Provisions
- (f) the General Conditions of Contract
- (g) Works/Employer’s Requirements,
- (h) the Drawings,
- (i) any other documents forming part of the Contract including minutes of prebid meeting.

If an ambiguity or discrepancy is found in the documents, the Engineer

shall issue any necessary clarification or instruction.

- 1.6 Contract Agreement** The Parties shall enter into a Contract Agreement within 28 days after the Contractor receives the Letter of Acceptance, unless they agree otherwise. The Contract Agreement shall be based upon the form annexed to the Special Conditions of Contract. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Employer.
- 1.7 Assignment** Neither Party shall assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, either Party:
- (a) may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party, and
 - (b) may, as security in favour of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.
- 1.8 Care and Supply of Documents** The Specification and Drawings shall be in the custody and care of the Employer. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.
- Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Engineer six copies of each of the Contractor's Documents.
- The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times.
- If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.
- 1.9 Delayed Drawings or Instructions** The Contractor shall give notice to the Engineer whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary drawing or instruction, details of why and by when it should be issued, and details of the nature and amount of the delay or disruption likely to be suffered if it is late.
- If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Engineer to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost , which shall be included in the Contract Price.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

However, if and to the extent that the Engineer’s failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor’s Documents, the Contractor shall not be entitled to such extension of time, Cost or profit

1.10 Employer’s Use of Contractor’s Documents As between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor’s Documents and other design documents made by (or on behalf of) the Contractor.

The Contractor shall be deemed (by signing the Contract) to give to the Employer a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor’s Documents, including making and using modifications of them. This licence shall:

- (a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
- (b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor’s Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
- (c) in the case of Contractor’s Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.

The Contractor’s Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor’s consent, be used, copied or communicated to a third party by (or on behalf of) the Employer for purposes other than those permitted under this Sub-Clause.

1.11 Contractor’s Use of Employer’s Documents As between the Parties, the Employer shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Employer’s consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

1.12 Confidential Details The Contractor shall disclose all such confidential and other information as the Engineer may reasonably require in order to verify the Contractor’s compliance with the Contract.

The Contractor shall treat the details of the Contract as private and confidential,

except to the extent necessary to carry out the Contractor’s obligations under the Contract or to comply with applicable Laws. The Contractor shall not publish or disclose any particulars of the Works without the previous agreement of the Employer. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.

1.13 Compliance with Laws The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Special Conditions of Contract:

- (a) the Employer shall have obtained (or shall obtain) the planning, zoning or similar permission for the Permanent Works, and any other permissions described in the Specification as having been (or being) obtained by the Employer; and the Employer shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and
- (b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the Laws in relation to the execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so.

1.14 Joint and Several Liability If the Contractor constitutes (under applicable Laws) a joint venture of two or more persons/firms:

- (a) these persons shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract;
- (b) these persons shall notify the Employer of their leader who shall have authority to bind the Contractor and each of these persons; and
- (c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer.
- (d) In the event of default by any partner of joint venture, on or after achieving 25% of the financial progress (excluding advance if any) the lead partner or remaining partner(s), in case the defaulting partner is the lead partner, shall notify the Employer within twenty eight (28) days of the occurrence and within Fifty six (56) days of the said notification, the lead partner or remaining partner(s), who are not the defaulting partner, shall assign the works of the defaulting partner, to equally competent party with prior consent of the Employer. For this purpose the term “equally competent party” shall mean as under:

“The new JV partner replacing the defaulting partner

should meet the EQC requirement of package/combination of packages which was met by the defaulting partner on the basis of which the original tender was awarded.”

The replacement of any defaulting partner, with the new partner shall be subject to the condition that the new partner has to submit additional performance security equal to 10% of balance cost of work of the JV partner being replaced. The performance security submitted by the defaulting partner shall also continue with EMPLOYER till satisfactory completion of the work.

- (e) Notwithstanding the consent of the Employer for change in composition or legal status of the joint venture the partners shall continue to be jointly and severally liable to the Employer.
- (f) The joint venture shall enter into a joint venture agreement incorporating the provisions of sub-paras (a) to (e) based upon the form annexed to the Conditions of Contract. The JV agreement shall indicate precisely the specific role of all members of the JV in respect of planning, design, construction equipment, key personnel, work execution, and financing of the project. The authority to sign the agreement shall be evidenced by approved legal instruments.

Notwithstanding the contents of the sub-clauses above, if the performance of any JV partner is not found satisfactory by the Employer, in respect of the responsibilities assigned to him as per JV agreement which is a part of this agreement, the Employer may issue notice of such default to the said JV partner or the JV (depending upon reasons of default) and declare the said JV partner or the JV as Poor Performer. The issue of such notice shall automatically debar the JV partner or JV as the case may be from participating in any EMPLOYER tender from the date of issue of notice of default.

1.15 Inspections by the Employer The Contractor shall permit the Employer and/or persons appointed by the Employer to inspect the Site and/or the Contractor’s records relating to the performance of the Contract.

2. The Employer

2.1 Right of Access to the Site The Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the Contract Data. The right and possession may not be exclusive to the Contractor. If, under the Contract, the Employer is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Employer shall do so in the time and manner stated in the Specification. However, the Employer may withhold any such right or possession until the Performance Security has been received.

If no such time is stated in the Contract Data, the Employer shall give the Contractor right of access to, and possession of, the Site within such times as may be required to enable the Contractor to proceed in accordance with the programme submitted under Sub-Clause 8.3 [Programme].

If the Contractor suffers delay as a result of a failure by the Employer to give any such right or possession within such time, the Contractor shall give notice to the Engineer and shall be entitled to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) new rates in terms of clause 12.3.1 (c) .

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time or new rates.

2.2 Permits, Licenses or Approvals The Employer shall (where he is in a position to do so) provide reasonable assistance to the Contractor at the request of the Contractor:

- (a) by obtaining copies of the Laws of the Country which are relevant to the Contract but are not readily available, and
- (b) for the Contractor's applications for any permits, licences or approvals required by the Laws of the Country:
 - (i) which the Contractor is required to obtain under Sub-Clause 1.13 [Compliance with Laws],
 - (ii) for the delivery of Goods, including clearance through customs, and
 - (iii) for the export of Contractor's Equipment when it is removed from the Site.

2.3 Employer's Personnel The Employer shall be responsible for ensuring that the Employer's Personnel and the Employer's other contractors on the Site:

- (a) co-operate with the Contractor’s efforts under Sub-Clause 4.6 [Co-operation], and
- (b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.18 [Protection of the Environment].

2.4 Employer’s Financial Arrangements

The Employer has sourced the funds to finance the project.

2.5 Employer’s Claims

If the Employer considers himself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Employer or the Engineer shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Employer’s Equipment and Free-Issue Material], or for other services requested by the Contractor.

The notice shall be given as soon as practicable after the Employer became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period.

The particulars shall specify the Clause or other basis of the claim, and shall include substantiation of the amount and/or extension to which the Employer considers himself to be entitled in connection with the Contract. The Engineer shall then proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the amount (if any) which the Employer is entitled to be paid by the Contractor, and/or (ii) the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 11.3 [Extension of Defects Notification Period].

This amount may be included as a deduction in the Contract Price and Payment Certificates. The Employer shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

3. The Engineer

3.1 Engineer’s Duties and Authority

The Employer shall appoint the Engineer who shall carry out the duties assigned to him in the Contract. The Engineer’s staff shall include suitably qualified engineers and other professionals who are competent to carry out these duties.

The Engineer shall have no authority to amend the Contract.

The Engineer may exercise the authority attributable to the Engineer as

specified in or necessarily to be implied from the Contract.

However, the Engineer shall obtain the specific approval of the Employer before taking action under the-following Sub-Clauses of these Conditions:

- (a) Sub-Clause 4.12-Unforeseeable Physical Conditions: Agreeing or determining an extension of time and/or additional cost.
- (b) Sub-Clause 8.4-Extension of Time for Completion: Agreeing or determining extension of time.
- (c) Sub-Clause 11.9-Performance Certificate: Issue of Performance Certificate.
- (d) Sub-Clause 13.1-Instructing a Variation: Except,
 - i) in an emergency situation as determined by the Engineer and as amplified in sub-paras (h) and (i) below, or
 - ii) for other situations, if the variation in quantity of any item does not exceed 25% of the stipulated quantity in the agreement, the variation in quantity in such item does not result in increase in excess of 0.1% of contract price and variation in quantity in such item does not result in cumulative variation in contract price in excess of 2%.
- (e) Sub-Clause 13.3-Variation Procedure: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 or 13.2.
- (f) Sub-Clause 13.4-Payment in applicable Currencies: Specifying the amount payable in each of the applicable currencies for a Variation.
- (g) Clause 20.1: Contractor Claims for extension of time and/or additional payment.
- (h) Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 13 and shall notify the Contractor accordingly, with a copy to the Employer.
- (i) In case the emergency mentioned in above Sub-paras occurs on account of failure of Contractor, by way of not adhering to the approved scheme of work or not taking adequate safety precautions or by any other reason attributable to the contractor, then no additional amounts shall be paid to the Contractor for attending to such emergencies and the Contractor shall

be liable for Employer’s claims.

- (j) Sub-clause 4.4 regarding deployment of Sub-Contractors.

3.2 Delegation by the Engineer The Engineer may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident engineer, and/or independent inspectors appointed to inspect and/or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties.

However, unless otherwise agreed by both Parties, the Engineer shall not delegate the authority to determine any matter in accordance with Sub-Clause 3.5 [Determinations].

Assistants shall be suitably qualified persons, who are competent to carry out these duties and exercise this authority, and who are fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language].

Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorised to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However:

- (a) any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Engineer to reject the work, Plant or Materials;
- (b) if the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer, who shall promptly confirm, reverse or vary the determination or instruction.

3. Instructions of the Engineer

The Engineer may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated under this Clause. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.

The Contractor shall comply with the instructions given by the Engineer or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Engineer or a delegated assistant,

- (a) gives an oral instruction and
- (b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and
- (c) does not reply by issuing a written rejection and/or instruction within two

working days after receiving the confirmation,

- (d) then the confirmation shall constitute the written instruction of the Engineer or delegated assistant (as the case may be).

3.4 Replacement of the Engineer

Notwithstanding Sub-Clause 3.1, if the Employer intends to replace the Engineer, the Employer shall, not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the replacement Engineer.

3.5 Determinations

Whenever these Conditions provide that the Engineer shall proceed in accordance with this Sub-Clause 3.5 to agree or determine any matter, the Engineer shall consult with each Party in an endeavour to reach agreement. If agreement is not achieved, the Engineer shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances.

The Engineer shall give notice to both Parties of each agreement or determination, with supporting particulars. Each Party shall give effect to each agreement or determination unless and until revised under Clause 20 [Claims, Disputes and Arbitration].

4. The Contractor

4.1 Contractor's General Obligations

The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Engineer's instructions, and shall remedy any defects in the Works.

The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

All equipment, and material, to be incorporated in or required for the Works shall be procured from approved sources as stipulated in the Contract.

The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the design or specification of the Permanent Works.

The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the

Engineer.

On completion of the works, the contractor shall arrange to furnish to the Employer two (2) bound sets of all “As Built” drawings for every component of the Works at his own cost, all such copies being on Polyester film of quality to be approved by the Engineer or his Representative. The Taking – over Certificate of the Works, as per the provisions of Clause 10.1 herein, shall not be issued by the Engineer in the event of the Contractor’s failure to furnish the aforesaid “As Built” drawings for the entire works.

If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Special Conditions of Contract:

- (a) the Contractor shall submit to the Engineer the Contractor’s Documents for this part in accordance with the procedures specified in the Contract;
- (b) these Contractor’s Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 1.4 [Law and Language], and shall include additional information required by the Engineer to add to the Drawings for co-ordination of each Party’s designs;
- (c) the Contractor shall be responsible for this part and it shall, when the Works are completed, be fit for such purposes for which the part is intended as are specified in the Contract; and
- (d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Engineer the “as-built” documents and operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.

4.2 Performance Security

The Contractor shall obtain (at his cost) a Performance Security and an additional Performance Security, if any in terms of ITB 35.5, for proper performance of the contract, for the amount, currencies and validity period for Performance Security stated in the Contract Data. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply.

The Contractor shall deliver the Performance Security and additional Performance Security, if any, to the Employer within 14 days after receiving the Letter of Acceptance, and shall send a copy to the Engineer. The Performance Security/additional Performance Security shall be issued by an entity and from within a country (or other jurisdiction) approved by the Employer, and shall be in the form as given in Section 8 (Contract Forms) or in another form specifically approved by the Employer.

The Performance Security/additional Performance Security shall be, at the Contractor's option, in any of the following forms:

- (i) An unconditional Bank guarantee in the prescribed format given in Section 8 (Contract Forms)

The bank guarantee shall be from a bank having minimum net-worth of over INR 500 million from the specified banks as under:

- (i) a Schedule Bank in India, or
- (ii) a Foreign Bank having their operations in India, or
- (iii) a Foreign Bank which does not have operations in India is required to provide a counter-guarantee by State Bank of India,

In case the contractor is a JV;" the Performance Security/additional Performance Security, if any in terms of ITB 35.5, shall be submitted by each JV Partner separately on behalf of the JV in favour of EMPLOYER in proportion of their respective percentage share specified in the JV Agreement. The additional Performance Security shall be submitted by the partner(s) responsible for execution of schedule(s) (as per JV agreement) against which additional Performance Security is required to be submitted in terms of ITB 35.5. However, Submission of Performance Guarantee Security by individual partners on behalf of the JV shall in no way dilute their Joint & Several responsibility. The Employer shall be entitled to recover the amount of Bank Guarantees individually and all the Partners jointly at its discretion."

The Contractor shall ensure that the Performance Security/additional Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied defects, if any. If the contractor does not complete the work for any reasons whatsoever, the terms of the Performance Security/ additional Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 28 days prior to the expiry date, the Contractor shall be bound to extend the validity of the Performance Security/additional Performance Security until the Works have been completed and any defects have been remedied.

The Guarantees shall be unconditional and irrevocable. The Employer shall return the Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate or passing of the Final Payment Certificate whichever is later. However, on completion of specified section(s) and successful passage of defect liability period for such section(s) along with execution of any leftover works at the time of completion of such section(s), the contractor shall be entitled for release of 90% of the proportionate Performance Security calculated as specified in Contract Data subject to the condition that Engineer certifies that no recoveries are pending in the contract. In case Engineer points out amount to be recovered then the contractor shall be entitled

for release of 90% of the proportionate Performance Security calculated as specified in Contract Data minus the amount to be recovered.

The Employer shall return additional Performance Security submitted in terms of ITB 35.5 as per the following;

- (a) If the contractor submits an application stating that all the works against the particular schedule(s)/bill(s) for which additional Performance Security was submitted in terms of ITB 35.5 have been completed in all respect, then the Employer, on being satisfied with the claim of the contractor, shall return the full additional Performance Security against the particular schedule(s). Decision of the Employer regarding completion of works against a particular schedule/bill shall be final and binding on the contractor.
- (b) If the contractor submits an application stating that majority of the works (physical progress being not less than 90%) against the particular schedule(s)/bill(s) for which additional Performance Security was submitted in terms of ITB 35.5 have been completed and execution of balance works is held up for reasons not attributable to the Contractor, then the Employer, on being satisfied with the claim of the contractor, shall return 75% of the amount of additional Performance Security against the particular schedule(s). The balance amount of additional Performance Security shall however be returned only after completion of the works against the particular schedule(s)/bill(s) for which additional Performance Security was submitted in terms of ITB 35.5, in all respects to the satisfaction of the Employer. Decision of the Employer regarding completion of works against a particular schedule/bill shall be final and binding on the contractor.

Without limitation to the provisions of the rest of this Sub-Clause, whenever the Engineer determines an addition or a reduction to the Contract Price as a result of a change in cost and/or legislation or as a result of a Variation amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Engineer's request promptly submit Performance Guarantee @ specified in the contract data of the increased amount over the original contract price in a specific currency. On the other hand if the value of contract price decreases by more than 25% of the original contract price payable in a specific currency, Performance Guarantee @ specified in the contract data of the decrease in contract price from the original contract price in a specific currency shall be returned to the contractor, on his request.

Wherever the contract is terminated under Clause 15.2, the Performance Guarantee shall be encashed by the Employer:

- i) taken in terms of sub clause 35.5 of ITB and not due for release on the date of issue of termination letter in terms of this clause, in case of termination of the contract as a whole; Or

ii) at the discretion of the Employer it may be encashed in part/parts proportionate to the Contract price of the bill/schedule to which the terminated part of work belongs i.e $P=(A \times B) \div C$ where

P=Proportionate Bank Guarantee Amount.

A=Contract price of the particular bill/schedule to which the terminated part of work belongs.

B=Performance Guarantee amount in terms of GCC sub clause 4.2.

C=Total Contract price.

Plus additional performance Guarantee amount, if any, taken in terms of sub clause 35.5 of ITB and not due for release on the date of issue of termination letter in terms of this clause against this particular bill/schedule to which the terminated part of the work belongs, in case of termination in part/parts.

The balance work should be got done separately, and independently by EMPLOYER without risk and cost of the original contractor. The original contractor shall be debarred from participating in the tender for executing the balance work. If the failed contractor is a JV or a partnership firm, then every member/partner of such a firm would be debarred from participating in the tender for the balance work either in his/her individual capacity or as a partner of any other JV/partnership firm.

In case the contractor fails to perform the contract or any JV partner fails to perform its obligations under the JV agreement, which is a part of this agreement, the Employer may issue notice of such default to the said JV partner or the JV (depending upon reasons of default) and declare the said JV partner or the JV as Poor Performer. The issue of such notice shall automatically debar the JV partner or JV, as the case may be, from participating in any EMPLOYER tender from the date of issue of notice of default. The relevant performance security including additional performance security, if any, in terms of sub clauses 35.5 of ITB submitted by the Contractor or submitted on behalf of JV partner to the extent not due for release at the time of contemplation of such action shall be encashed and forfeited either fully or in proportion of the percentage share of that partner in the JV agreement, as the case may be.

4.3 Contractor's Representative

The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary, including financial powers, to act on the Contractor's behalf under the Contract.

Unless the Contractor's Representative is named in the Contract, the Contractor shall, prior to the Commencement Date, submit to the Engineer for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked, or if the appointed person fails to act as Contractor's Representative, the

Contractor shall similarly submit the name and particulars of another suitable person for such appointment.

The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint a replacement.

The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Engineer's prior consent, and the Engineer shall be notified accordingly.

The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].

The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Engineer has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

The Contractor shall depute his Representative to attend all the review meetings notified by the Engineer

4.4 Sub-contractors

The Contractor shall not subcontract the whole of the Works. The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor.

Unless otherwise stated in the Special Conditions of Contract:

- (a) the Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract or as specifically provided in the Contract data or value of any sub-contract for Works, or the aggregate value of such sub-contracts with any Subcontractor, does not exceed 5% (five per cent) of the Contract Price provided that such works are not for the key activities in terms of clause 2.6 of section 3 (Evaluation and Qualification Criteria) which are to be executed by specialist subcontractor(s);
- (b) the prior consent of the Engineer shall be obtained to other proposed Subcontractors and/or suppliers. While submitting his proposal in this regard, the Contractor shall ensure that;
 - (i) total value of Works requiring such consent for subcontracting

shall not be more than 70% (seventy per cent) of the Contract Price;

- (ii) the proposed subcontractor must have executed works of 40% of value of the proposed subcontract through a single contract during last seven years; and
 - (iii) No banning/blacklisting/declaration as poor performer by EMPLOYER is in force on the proposed subcontractor (on the date of grant of consent by the Engineer);
 - (iv) No contract of the proposed subcontractor has been terminated by EMPLOYER during the last two years (to be reckoned from the date of grant of consent by the Engineer);
 - (v) the Contractor shall submit the proposal for subcontracting with the name, particulars and the relevant experience of the proposed subcontractor;
- (c) the Contractor shall give the Engineer not less than 28 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site;
 - (d) each subcontract shall include provisions which would entitle the Employer to require the subcontract to be assigned to the Employer under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 15.2 [Termination by Employer]; and
 - (e) On getting consent from the Engineer, the Contractor shall provide to the Engineer copy of the agreement entered with such subcontractor.

The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [Confidential Details] apply equally to each Subcontractor.

Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from the Country to be appointed as Subcontractors.

The Contractor shall endeavour to resolve all matters and payments amicably and speedily with the sub-contractors.

The Contractor shall indemnify and hold the Employer harmless against and from any claim of subcontractors or suppliers of the materials.

The Contractor shall release payment to the Sub-contractors/Suppliers promptly and shall endeavour to resolve all issues amicably and speedily with the Sub-contractors/Suppliers, so that the execution of work is not affected in any manner whatsoever.

In case a Sub-contractor/Supplier represents to the Engineer in writing with supporting documents, stating that he has not received payment due as per the agreement/work or purchase order for the works executed by such Sub-contractor or supplies made by such Supplier, which have been covered in

previous Payment Certificates and the Engineer finds such representation having merit, the Engineer, before issuing next Payment Certificate, may forward a copy of the representation to the Contractor requesting the Contractor to supply reasonable evidence that the amount stated to be outstanding by the Sub-contractor/Supplier for the works executed or supplies made, which have been covered in previous Payment Certificates has been paid and if not, why the same is not payable. The Engineer may recommend to make payment to the Sub-contractor/Supplier unless the Contractor submits reasonable evidence to the Engineer:

- (i) that the amount claimed has been paid, or
- (ii) satisfying the Engineer in writing that the Contractor is entitled to withhold or that the amount is not payable.

On the recommendation of the Engineer, the Employer may (at his sole discretion) directly pay to the Sub-contractor/Supplier the amount due for and on behalf of the Contractor, part or all of such amounts previously certified (less applicable deductions) as are found due to the Sub-contractor/Supplier by the Engineer. The Employer shall adjust the amount paid directly to the Sub-contractor/Supplier from any amount due by it to the Contractor. The Contractor shall repay the amount, in case no amount is found due by the Employer to the Contractor.

That the payment by Employer, on behalf of the Contractor to its Sub-contractor/Supplier, shall not alter any terms of agreement between the Employer and the Contractor and nor the same shall result in any privity of contract between the Employer and the Sub-contractor/Supplier.

4.5 Assignment of Benefit of Subcontract

If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Employer, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Employer for the work carried out by the Subcontractor after the assignment takes effect.

4.6 Co-operation

The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:

- (a) the Employer's Personnel,
- (b) any other contractors employed by the Employer, and
- (c) the personnel of any legally constituted public authorities,

who may be employed in the execution on or near the Site of any work not included in the Contract.

Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment,

Temporary Works or access arrangements which are the responsibility of the Contractor.

If, under the Contract, the Employer is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Engineer in the time and manner stated in the Specification.

4.7 Setting Out

The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contract or notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the works, notifying the Engineer within 28 days of the date of commencement

In the event of such discrepancy arising during the course of the work, for which Employer's documents are handed over after the date of commencement, the contractor shall seek clarifications within 14 days of receipt of such documents

The Employer shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.

Contractor shall promptly notify the Employer and the Engineer of any error, omission, fault, or any other defect in the design, drawing or specifications for the works, which he discovers when reviewing the Contract Documents, and in the process of execution of the Works. The contractor shall be responsible to ensure correlation in various drawings and bill of quantities, before commencement and execution of work. In case of any discrepancy the contractor shall bring it to notice of the Engineer for clarification within 28 days of the issue of Letter of Acceptance. In the event of such discrepancy arising during the course of the work, for which drawings are given after the date of issue of Letter of Acceptance, the contractor shall seek clarifications within 14 days of receipt of such drawings.

4.8 Safety Procedures

The Contractor shall follow the provisions laid down in Annexure 1 to Section 7 (Special Conditions of Contract), Chapter 1. (Safety and Security) of Section 5 (Works/Employers Requirements) and shall:

- (a) comply with all applicable safety regulations,
- (b) take care for the safety of all persons entitled to be on the Site,
- (c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
- (d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Employer's Taking Over], and
- (e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works,

for the use and protection of the public and of owners and occupiers of adjacent land.

4.8.1 Notwithstanding with any other provision, the Contractor shall have to pay penalty for damage to Railway cable in terms of clause C 15 of the JPO as given in para 1.2 of Chapter 1. (Safety and Security) of Section 5 (Works/Employers Requirements) and shall also indemnify the Employer against any losses, damages to property or life in terms of para 1.11 and 1.12 of the chapter 1. (Safety and Security) of Section 5 (Works/Employers Requirements).

4.9 Quality Assurance

The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Engineer shall be entitled to audit any aspect of the system.

Details of all procedures and compliance documents shall be submitted to the Engineer for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer, evidence of the prior approval by the Contractor himself shall be apparent on the document itself.

Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

4.10 Site Data

The Employer shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Employer's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Bid or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Bid as to all relevant matters, including (without limitation):

- (a) the form and nature of the Site, including sub-surface conditions,
- (b) the hydrological and climatic conditions,
- (c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
- (d) the Laws, procedures and labour practices of the Country, and
- (e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

- (f) Data made available by the Employer in accordance with the preceding paragraph shall be deemed to include data listed elsewhere in the contract as open for inspection at the address stipulated in the Contract.

4.11 Sufficiency of the The Contractor shall be deemed to:

**Accepted
Contract
Amount**

- (a) have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and
- (b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data].

Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.

**4.12 Unforeseeable
Physical
Conditions**

In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.

If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Engineer as soon as practicable.

This notice shall describe the physical conditions, so that they can be inspected by the Engineer, and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Engineer may give. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.

If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving such notice and inspecting and/or investigating these physical conditions, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Engineer may also review whether other physical conditions

in similar parts of the Works (if any) were more favourable than could reasonably have been foreseen when the Contractor submitted the Bid. If and to the extent that these more favourable conditions were encountered, the Engineer may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price.

The Engineer may take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Bid, which may be made available by the Contractor, but shall not be bound by any such evidence.

4.13 Rights of Way and Facilities

The Contractor shall bear all costs and charges for special and/or temporary rights-of-way which he may require, including those for access to the Site. The Contractor shall also obtain, at his risk and cost, any additional facilities outside the Site which he may require for the purposes of the Works.

In case any operation connected with traffic necessitates diversion, obstruction or closure of any road, railway or any other right of way, the approval of the Engineer and the concerned authorities shall be obtained well in advance by the Contractor.

Provided that if it is found necessary for the Contractor to move one or more loads of heavy constructional plants and equipment, materials or Pre-constructed units or parts of units of work over roads, highways, bridges on which such oversized and overweight items that are not normally to be moved, the contractor shall obtain prior permission from the concerned authorities.

Payments for complying with the requirements, if any, for protection or strengthening of the roads, highways or bridges shall be made by the contractor and such expenses shall be deemed to be included in his quoted contract price.

4.14 Avoidance of Interference

The Contractor shall not interfere unnecessarily or improperly with:

- (a) the convenience of the public, or
- (b) the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Employer or of others or
- (c) Passenger amenities at stations and station platforms.

The Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

4.15 Access Route

The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper

use of appropriate vehicles and routes.

Except as otherwise stated in these Conditions:

- (a) the Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;
- (b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;
- (c) the Employer shall not be responsible for any claims which may arise from the use or otherwise of any access route;
- (d) the Employer does not guarantee the suitability or availability of particular access routes; and
- (e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.

4.16 Transport of Goods

Unless otherwise stated in the Special Conditions of Contract:

- (a) the Contractor shall give the Engineer not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;
- (b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and
- (c) the Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods, and shall negotiate and pay all claims arising from their transport.

4.17 Contractor's Equipment

The Contractor shall be responsible for all Contractors' Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

In the event of Contractor imports any equipment the following shall apply” :

(a) **Custom Clearance:** The Employer will assist the contractor, when required by furnishing letters of recommendation for obtaining expeditious clearance through customs of constructional plants, material and other things required for the works and then for re-export, if any. The following publications, may be referred to by the contractor for guidance about custom regulations etc :

- (i) Import & export policy, together with amendments, if any, published by Govt. of India, Ministry of Commerce..
- (j) Hand Book of Procedures, together with amendments, if any, Volume 1 and 2 published by Ministry of Commerce.
- (iii) Customs Tariff, together with amendments, if any published by Central Customs.

The Contractor shall be responsible to follow the latest rules and regulations without any liability of the Employer.

(b) **Re-export of contractors equipment:** The contractor shall obtain all the relevant information regarding procedure for the import and subsequent re-export of his equipment and materials from the Chief Controller of Imports and Exports, New Delhi, and shall inform himself and keep himself informed on the details of custom charges and draw-back regulations as applicable to the items of Constructional plant. The contractor shall provide the necessary guarantee/bonds where these are required by the customs notwithstanding that import licenses may be granted in the name of Employer.

(c) Notwithstanding the provisions mentioned above, Contractor's Equipment, including essential spare parts therefore, imported by the Contractor for the sole purpose of executing the Contract shall be temporarily exempt from the payment of import duties and taxes upon initial importation, provided the Contractor shall post with the customs authorities at the port of entry an approved export bond or bank guarantee, valid until the Time for Completion plus six months, in an amount equal to the full import duties and taxes which would be payable on the assessed imported value of such Contractor's Equipment and spare parts, and **callable** in the event the Contractor's Equipment is not exported from the Country on completion of the Contract. A copy of the **bond** or bank guarantee endorsed by the custom authorities shall be provided by the Contractor to the Employer upon the importation of individual items of

Contractor's Equipment and spare parts. Upon export of individual items of Contractor's Equipment or spare parts, or upon the completion of the Contract, Contractor shall prepare for approval by the customs authority the authorities, an assessment of the residual value of the Contractor's Equipment and spare parts to be exported based on the depreciation scale(s) and other criteria used by the customs authorities for such purposes under the provisions of the applicable Laws. Import duties and taxes shall be due and payable to the customs authorities by the Contractor on (a) the difference between the initial imported value and the residual value of the contractor's equipment and spare parts to be exported and (b) on the initial imported value that contractor's equipments and spare parts remaining in the Country after completion of the Contract. Upon payment of such dues within 28 days of being invoiced, the bond or bank guarantee shall be reduced or released accordingly; otherwise the security shall be called in the full amount remaining in the Country.

- (d) **Conditions of hire of the contractor's equipment:** A certified copy of the agreement in respect of any item of Equipment held by contractor under any agreement for hire or hire purchase thereof, shall be supplied to the Engineer/Employer."

4.18 Protection of the Environment

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

4.19 Electricity, Water and Gas

The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require.

The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and of which details and prices are given in the Specification. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.

The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Engineer in accordance with Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Employer.

4.20 Employer’s Equipment and Free-Issue Material

The Employer shall make the Employer’s Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification:

- (a) the Employer shall be responsible for the Employer’s Equipment, except that
- (b) the Contractor shall be responsible for each item of Employer’s Equipment whilst any of the Contractor’s Personnel is operating it, driving it, directing it or in possession or control of it.

The appropriate quantities and the amounts due (at such stated prices) for the use of Employer’s Equipment shall be agreed or determined by the Engineer in accordance with Sub-Clause 2.5 [Employer’s Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Employer.

The Employer shall supply, free of charge, the “free-issue materials” (if any) in accordance with the details stated in the Contract data. The Employer shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them, and shall promptly give notice to the Engineer of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Employer shall immediately rectify the notified shortage, defect or default.

In case materials are handed over, in accordance with the procedure prescribed by the Engineer, after proper measurement and accounted for, the contractor shall be solely liable for any shortage, damage, defect or default in such material, and shall indemnify the Employer until the final account of materials is made by the Contractor on completion of the work.

4.21 Progress Reports

Unless otherwise stated in the Special Conditions of Contract, monthly progress reports shall be prepared by the Contractor and submitted to the Engineer in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

Each report shall include:

- . charts and detailed descriptions of progress, including each stage of design (if any), Contractor’s Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- . photographs showing the status of manufacture and of progress on the Site;
- . for the manufacture of each main item of Plant and Materials, the name of

the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:

- (i) commencement of manufacture,
- (ii) Contractor’s inspections,
- (iii) tests, and
- (iv) shipment and arrival at the Site;

the details described in Sub-Clause 6.10 [Records of Contractor’s Personnel and Equipment];

copies of quality assurance documents, test results and certificates of Materials;

list of notices given under Sub-Clause 2.5 [Employer’s Claims] and notices given under Sub-Clause 20.1 [Contractor’s Claims];

safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and

comparisons of actual and planned progress of all activities, with details of any events or circumstances which may jeopardise the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

Unless otherwise stated in the Special Conditions of Contract:

4.22 Security of the Site

- (a) the Contractor shall be responsible for keeping unauthorised persons off the Site, and
- (b) authorised persons shall be limited to the Contractor’s Personnel and the Employer’s Personnel; and to any other personnel notified to the Contractor, by the Employer or the Engineer, as authorised personnel of the Employer’s other contractors on the Site.

4.23 Contractor’s Operations on Site

The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Engineer as working areas. The Contractor shall take all necessary precautions to keep Contractor’s Equipment and Contractor’s Personnel within the Site and these additional areas, and to keep them off adjacent land.

During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor’s Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.

Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor’s Equipment, surplus material, wreckage, rubbish

and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfill obligations under the Contract.

4.24 Fossils

All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Employer. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.

The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

5. Nominated Subcontractors

5.1 Definition of nominated Subcontractor

In the Contract, "nominated Subcontractor" means a Subcontractor:

- (a) who is stated in the Contract as being a nominated Subcontractor, or
- (b) whom the Engineer, under Clause 13 [Variations and Adjustments], instructs the Contractor to employ as a Subcontractor.

5.2 Objection to Nomination

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Engineer as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Employer agrees to indemnify the Contractor against and from the consequences of the matter:

- (a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;
- (b) the subcontract does not specify that the nominated Subcontractor shall indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or
- (c) the subcontract does not specify that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:
 - (i) undertake to the Contractor such obligations and liabilities as will

enable the Contractor to discharge his obligations and liabilities under the Contract, and

- (ii) indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities.

5.3 Payments to nominated Subcontractors The Contractor shall pay to the nominated Subcontractor the amounts which the Engineer certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with sub-paragraph (b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

5.4 Evidence of Payments Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Engineer may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received (Within 7 days of receipt of previous payment by the contractor) all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

(a) submits this reasonable evidence to the Engineer, or

(b)

1. (i) satisfies the Engineer in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and
2. (ii) submits to the Engineer reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement,

then the Employer may (at his sole discretion) pay, direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Employer, the amount which the nominated Subcontractor was directly paid by the Employer.

6. Staff and Labour

6.1 Engagement of Staff and Labour Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, housing, feeding and transport.

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources within the Country.

6.2 Rates of Wages and Conditions of Labour

The Contractor shall pay rates of wages, and observe conditions of labour, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

If the Employer is obliged to provide amenities or arrange payment of wages to contract labour employed by the contractor either directly or through sub-contractor under the contract on account of failures on the part the contractor to provide the amenities and / or arrange payment of wages to the contract labour as required of him under the provision of the said act / rules made there under, the Engineer/Employer shall be at liberty without prejudice to the rights of Engineer/Employer under Section 20(2) and 21(4) of the contract labour (Regulation and Abolition) Act 1970 to recover the whole or part of the expenditure so incurred on the wages so paid by the Engineer/Employer/Railway from the security deposit and/or from any sum or sums due to the contractor whether under this contract or any other contract.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, allowances, and any benefits as are subject to taxes under the Laws of the Country for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there-under, regulation or notifications including amendment. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the Engineer/Employer shall have the right to deduct any money due to the contractor including his amount of performance security. The Employer/Engineer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

The Contractor shall duly comply with the provisions of the Apprentices Act 1961 (III of 1961), the rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subject to all liabilities provide by the said Act and

said Rules.

The Contractor and his Sub Contractors shall comply with all applicable Labour Laws, and should not employ Child Labour for construction and maintenance activities. The Contractor shall provide appropriate facilities for children in Construction Camp sites.

The Contractors shall not differentiate wages between men and women for work of equal value.

6.3 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst persons in the service of the Employer or the Engineer.

6.4 Labour Laws

The Contractor shall comply with all the relevant labour Laws applicable to the Contractor’s Personnel, including Laws relating to their employment, health, safety, welfare, immigration, and emigration, and shall allow them all their legal rights. The contractor and his sub-contractors shall be responsible to ensure at his own cost, compliance to all laws, bye-laws, rules and regulations for the time being in force pertaining to the employment of local or imported labour and shall take all necessary precautions to ensure and preserve the health and safety of all staff employed directly or through sub-contractors or petty contractors on the works, which shall include all the acts listed in Appendix – 1 but not limited to the same.

The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

During continuance of the Contract, the Contractor and his Sub-Contractors shall abide at all times by all existing labour enactments and rules made thereunder, regulations, notifications and bye laws of the State or Central government or local authority and any other labour laws (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given in Appendix 1 to these Conditions of Contract.

6.5 Working Hours

No work shall be carried out on the Site on locally recognised days of rest, or outside the normal working hours stated in the Contract Data, unless:

- (a) otherwise stated in the Contract,
- (b) the Engineer gives consent, or
- (c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer.

6.6 Facilities for

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the

Staff and Labour Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

6.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and a standing arrangement for ambulance service are available at a phone call at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same. The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence.

HIV-AIDS Prevention. The Contractor shall conduct an HIV-AIDS awareness programme via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same.

Records of Safety and Health

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

Submission of Returns: :

The contractor shall be responsible for timely submission of all returns and statements to the concerned authorities in full compliance of all rules, bye-laws and regulations for the time being in force.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Consultants' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Works under Sub-Clause 8.3 an alleviation program for Site staff and labour and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.

**6.8 Contractor's
Superintendence**

Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary superintendence to plan, arrange, direct, manage, inspect and test the work.

Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

The Contractor shall employ the key personnel named in the Schedule of Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications,

abilities and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

The Contractor shall not employ any retired government Gazetted officer, who has either not completed one year after the date of retirement, or has not obtained permission to employment with the Contractor.

6.9 Contractor's Personnel

The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Engineer may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:

- (a) persists in any misconduct or lack of care,
- (b) carries out duties incompetently or negligently,
- (c) fails to conform with any provisions of the Contract, or
- (d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment.

If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven (7) days and has no further connection with the work in the Contract. The replacement person shall be appointed within fourteen (14) days of the notification by the Engineer.

A reasonable proportion of the Contractor's Superintending Staff shall have a working knowledge of the English language or the Contractor shall have available on site at all times a sufficient number of competent interpreters to ensure the proper transmission of instructions and information. If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

6.10 Records of Contractor's Personnel and Equipment

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

6.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

6.12 Foreign Personnel

The Contractor may bring in to the country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Employer will, without any financial liability, if requested by the Contractor, use his best endeavours in a timely and expeditious manner to assist the Contractor in obtaining any local,

state, national, or government permission required for bringing in the Contractor's personnel.

The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial. Contractor shall also be responsible for any legal liabilities during their stay.

6.13 Supply of Foodstuffs The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

6.14 Supply of Water The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

6.15 Measures against Insect and Pest Nuisance The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

The Contractor shall provide his staff and labour with suitable prophylactics for the prevention of malaria, and take steps to prevent the formation of stagnant pools of water. He shall comply with all the regulations of the local health authorities in these respects and shall in particular arrange to spray thoroughly with approved insecticides all buildings erected on the site such treatment shall be carried out at least once a year or as instructed by the Engineer. The Contractor shall warn his staff and labour of the dangers of diseases like Malaria, Filaria and other contagious diseases etc. and also Scorpions, Snakes, Wild animals etc. and preventive actions required to be taken by the labour and staff.

6.16 Alcoholic Liquor or Drugs The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal thereto by Contractor's Personnel.

6.17 Arms and Ammunition The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

6.18 Festivals and Religious Customs The Contractor shall respect the Country's recognized festivals, days of rest and religious or other customs.

- 6.19 Funeral Arrangements** The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of his local employees who may die while engaged upon the Works.
- 6.20 Prohibition of Forced or Compulsory Labour** The contractor shall not employ "forced or compulsory labour" in any form. "Forced or compulsory labour" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.
- 6.21 Prohibition of Harmful Child Labour** The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.
- 6.22 Employment Records of Workers** The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and shall be available for inspection by the Engineer during normal working hours. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment].
- (i) In addition to the above, the Contractor shall register his firm/company etc. on website 'www.shramikkalyan.indianrailways.gov.in' and upload requisite details of labour and their payment in this portal. These details shall be available in public domain. The Registration/ updation on Portal shall be done as under:
- (a) Contractor shall apply for onetime registration of his company/firm etc. in the Shramikkalyan portal with requisite details subsequent to issue of Letter of Acceptance. Employer/Engineer shall approve the contractor's registration in the portal within 7 days of receipt of such request.
 - (b) Contractor once approved by any Employer/Engineer, can create password with login ID (PAN No.) for subsequent use of portal for all LoAs issued in his favour.
 - (c) The contractor once registered on the portal, shall provide details of his Letter of Acceptances (LoA) / Contract Agreements on shramikkalyan portal within 15 days of issue of any LoA for approval of concerned Employer/Engineer. Employer/Engineer shall update (if required) and approve the details of LoA filled by contractor within 7 days of receipt of such request.
 - (d) After approval of LoA by Employer/Engineer, contractor shall fill the salient details of contract labours engaged in the contract and ensure

updating of each wage payment to them on shramikkalyan portal on monthly basis.

(e) It shall be mandatory upon the contractor to ensure correct and prompt uploading of all salient details of engaged contractual labour & payments made thereof after each wage period.

(ii) While processing payment of any ‘Interim Payment Certificate’ or ‘Final Payment Certificate’ or release of ‘Advances’ or ‘Performance Guarantee / Security deposit’, contractor shall submit a certificate to the Engineer or Engineer’s representatives that “I have uploaded the correct details of contract labours engaged in connection with this contract and payments made to them during the wage period in Railway’s Shramikkalyan portal at ‘www.shramikkalyan.indianrailways.gov.in’ till ____Month, ____Year.”

7. Plant, Materials and Workmanship

7.1 Manner of Execution The Contractor shall carry out the manufacture of Plant, the production and manufacture of Materials, and all other execution of the Works:

- (a) in the manner (if any) specified in the Contract,
- (b) in a proper workmanlike and careful manner, in accordance with recognised good practice, and
- (c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.

7.2 Samples The Contractor shall submit the following samples of Materials, and relevant information, to the Engineer for consent prior to using the Materials in or for the Works:

- (a) manufacturer’s standard samples of Materials and samples specified in the Contract, all at the Contractor’s cost, and
- (b) additional samples instructed by the Engineer as a Variation.

Each sample shall be labelled as to origin and intended use in the Works.

7.3 Inspection The Employer’s Personnel shall at all reasonable times:

- (a) have full access to all parts of the Site and to all places from which natural Materials are being obtained, and
- (b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.

The Contractor shall give the Employer’s Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or

responsibility.

The Contractor shall give notice to the Engineer whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Engineer shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Engineer does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, uncover the work and thereafter reinstate and make good, all at the Contractor's cost.

7.4 Testing

This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).

The Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

The Engineer may, under Clause 13 [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

The Engineer shall give the Contractor not less than 24 hours' notice of the Engineer's intention to attend the tests. If the Engineer does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Engineer, and the tests shall then be deemed to have been made in the Engineer's presence.

If the Contractor suffers delay and/or incurs Cost from complying with these instructions or as a result of a delay for which the Employer is responsible, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

The Contractor shall promptly forward to the Engineer duly certified reports of the tests. When the specified tests have been passed, the Engineer shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Engineer has not attended the tests, he shall be deemed to have accepted the readings as accurate.

7.5 Rejection If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Engineer may reject the Plant, Materials 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 Contract.

If the Engineer requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Employer to incur additional costs, the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay these costs to the Employer.

7.6 Remedial Work Notwithstanding any previous test or certification, the Engineer may instruct the Contractor to:

- (a) remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,
- (b) remove and re-execute any other work which is not in accordance with the Contract, and
- (c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise.

The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c).

If the Contractor fails to comply with the instruction, the Employer shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay to the Employer all costs arising from this failure.

7.7 Ownership of Plant and Materials Each item of Plant and Materials shall, to the extent consistent with the Laws of the Country, become the property of the Employer at whichever is the earlier of the following times, free from liens and other encumbrances:

- (a) when it is delivered to the Site;
- (b) when the Contractor is entitled to payment of the value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

7.8 Royalties Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for:

- (a) natural Materials obtained from outside the Site, and
- (b) the disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract.

8. Commencement, Delays and Suspension

8.1 Commencement of Works The Engineer shall give the Contractor not less than 7 days' notice of the Commencement Date. Unless otherwise stated in the Special Conditions of Contract, the Commencement Date shall be within the number of days after the Contractor receives the Letter of Acceptance as specified in Contract Data.

The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date, and shall then proceed with the Works with due expedition and without delay.

8.2 Time for Completion The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:

- (a) achieving the passing of the Tests on Completion, and
- (b) completing all work which is stated in the Contract as being required for whole of the Works or Section(s) to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].
- (c) The date of completion for works described in this sub-clause, shall be the earliest of the following :
 - (i) The date CRS recommends opening of the Section(s) for public carriage of passengers to Central Government, for speeds of not less than 75% of the designed operating speeds or,
 - (ii) The date CRS authorises the Railway Administration for opening of Section(s), subject to sanction of the Central Government for speeds of not less than 75% of the designed operating speeds, or,
 - (iii) The date CRS authorizes/sanctions opening of Section(s) without inspection.

8.3 Programme The Contractor shall submit a detailed time programme to the Engineer within 28 days after receiving the notice under Sub-Clause 8.1 [*Commencement of Works*]. The program shall include the physical and Financial Progress vis-à-vis program and forecast cash flow adopting Project Management Software Primavera/Sure Track/MS Project or as mutually agreed. The program must identify the milestones, interface requirements and program reporting elements. The Contractor shall supply, free of cost one set of authorized software to the Engineer and the soft copy of structured program for the project. This shall be updated every month. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:

- (a) the order in which the Contractor intends to carry out the Works, including

the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing,

- (b) each of these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- (c) the sequence and timing of inspections and tests specified in the Contract, and
- (d) a supporting report which includes:
 - (i) a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and
 - (ii) details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.

The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under Sub-Clause 13.3 [Variation Procedure].

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer within 15 days in accordance with this Sub-Clause.

8.4 Extension of Time for Completion

The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking-Over of the Works and Sections] is or will be delayed by any of the following causes:

- (a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,
- (b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,
- (c) exceptionally adverse climatic conditions,
- (d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or

- (e) any delay, impediment or prevention caused by or attributable to the Employer, the Employer’s Personnel, or the Employer’s other contractors.

If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Engineer in accordance with Sub-Clause 20.1 [Contractor’s Claims]. When determining each extension of time under Sub-Clause 20.1, the Engineer shall review previous determinations and may increase, but shall not decrease, the total extension of time.

8.5 Delays Caused by Authorities If the following conditions apply, namely:

- (a) the Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in the Country,
- (b) these authorities delay or disrupt the Contractor’s work, and
- (c) the delay or disruption was Unforeseeable,

then this delay or disruption will be considered as a cause of delay under subparagraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

8.6 Rate of Progress If, at any time:

- (a) actual progress is too slow to complete within the Time for Completion, and/or
- (b) progress has fallen (or will fall) behind the current programme under Sub-Clause 8.3 [Programme],

other than as a result of a cause listed in Sub-Clause 8.4 [Extension of Time for Completion], then the Engineer may instruct the Contractor to submit, under Sub-Clause 8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

Unless the Engineer notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor’s Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Employer to incur additional costs, the Contractor shall subject to Sub-Clause 2.5 [Employer’s Claims] pay these costs to the Employer, in addition to delay damages (if any) under Sub-Clause 8.7 below.

8.7 Extension of Time for Completion with Delay Damages

If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion for entire work or for specified section wise completion period], and he is not entitled to an extension of time under sub clause 8.4 then the employer may grant extension of time with delay damage in such case, the Contractor shall subject to Sub-Clause 2.5 [Employer’s Claims] pay delay damages to the Employer for this default. These delay damages shall be the sum stated in the Contract Data, which shall be paid for every day which shall elapse between the

relevant Time for Completion and the date stated in the Taking-Over Certificate.

- a. In case delay is fully attributable to the contractor, then the employer may grant extension of time with delay damage as stated in the Contract Data. The decision of Employer in this regard will be final and binding.
- b. In case delay is partly attributable to the contractor, then the employer may grant extension of time without or with delay damages as stated in the Contract Data, keeping in view the delays attributable to the contractor, delays for other reasons and in overall interest of completion of the work. The decision of Employer in this regard will be final and binding.

These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 15.2 [Termination by Employer] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

The total amount due under this Sub- Clause shall not exceed the maximum amount of delay damages (if any) stated in the Contract Data.

The imposition of delay damages under this sub clause shall debar the contractor from raising any claims for extended stay.

8.7.1 Provisional Delay Damages for failure to achieve agreed target for the Financial Year : Targets in terms of physical milestones (completion and commissioning of block sections or Major Bridges etc) be achieved during the current Financial Year from the date of commencement, duly considering the site availability, drawings etc, shall be agreed between the parties. On completion of the Financial Year, targets for next Financial Year shall be agreed similarly and so on for every Financial Year. In case of non-achievement of agreed targets in the previous Financial Year, for the reasons attributed to the contractor, provisional delay damages @ 1/5000 of Contacts Price per month shall be imposed starting from April month till the month the targets are achieved. If multiple milestones are agreed for any Financial Year and say 3 out of 5 milestones were achieved during the Financial Year, then provisional delay damages @ (2/5 of 1/5000)of Contact Price shall be deducted till the month any of the remaining milestone is achieved. On achievement of one out of the two milestones the rate of delay damages shall stand reduced to @(1/5 of 1/5000)of Contacts Price. If no milestones are agreed for any Financial Year, the stipulation of provisional delay damages shall not apply

If the contractor complete the entire works within the original completion period or extended completion period under clause 8.4 of GCC (without imposition of delay damages), the entire amount deducted for provisional delay damages shall be refunded to the contractor . In case the contractor is unable to complete the entire works within the original completion period or extended completion period under clause 8.4 of GCC resulting in delay in completion of the project under clause 8.7 of GCC (with imposition of delay damages), then

the provisional delay damages deducted shall be adjusted against the delay damages to be finally imposed on the contractor.

8.8 Suspension of Work

The Engineer may at any time instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

The Engineer may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10 and 8.11 shall not apply.

8.9 Consequences of Suspension

If the Contractor suffers delay and/or incurs Cost from complying with the Engineer's instructions under Sub-Clause 8.8 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause 8.8 [Suspension of Work].

8.10 Payment for Plant and Materials in Event of Suspension

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/or Materials, if:

- (a) the work on Plant or delivery of Plant and/or Materials has been suspended for more than 28 days,
- (b) the Contractor has marked the Plant and/or Materials as the Employer's property in accordance with the Engineer's instructions, and
- (c) Such materials or plant is received at site.

8.11 Prolonged Suspension

If the suspension under Sub-Clause 8.8 [Suspension of Work] has continued for more than 84 days, the Contractor may request the Engineer's permission to proceed. If the Engineer does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Engineer, treat the suspension as an omission under Clause 13 [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 16.2 [Termination by Contractor].

8.12 Resumption of Work

After the permission or instruction to proceed is given, the Contractor and the Engineer shall jointly examine the Works and the Plant and Materials affected

by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension.

8.13 Bonus for early completion: If the Contractor achieves completion of the whole of the Works or any section(s) prior to the intended Completion Date prescribed in Contract data (Extension of time pursuant to Clause 8.4 or any other clause of these conditions will not be considered), the Employer shall pay to the Contractor a sum stated in the Contract data as bonus for early completion, for every calendar month which shall elapse between the date of completion of all items of works as stipulated in the contract, including variations ordered by the Engineer and the time prescribed in Clause 8.2.

For the purpose of calculating bonus payments, the time given in the Bid for completion of the whole works or any section(s) is fixed and unless otherwise agreed, no adjustment of the time by reasons of granting an extension of time pursuant to clause 8.4 or any other clause of these conditions will be allowed. Any period falling short of completed month shall be ignored for the purpose of computing the period relevant for the payment of bonus.

9. Tests on Completion

9.1 Contractor's Obligations The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause 4.1 [Contractor's General Obligations].

The Contractor shall give to the Engineer not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Engineer shall instruct.

In considering the results of the Tests on Completion, the Engineer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Engineer.

9.2 Delayed Tests If the Tests on Completion are being unduly delayed by the Employer, Sub-Clause 7.4 [Testing] (fifth paragraph) and/or Sub-Clause 10.3 [Interference with Tests on Completion] shall be applicable.

If the Tests on Completion are being unduly delayed by the Contractor, the Engineer may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall

give notice to the Engineer.

If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Employer’s Personnel may proceed with the Tests at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

9.3 Retesting

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.5 [Rejection] shall apply, and the Engineer or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.

9.4 Failure to Pass Tests on Completion

If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 9.3 [Retesting], the Engineer shall be entitled to:

- (a) order further repetition of Tests on Completion under Sub-Clause 9.3;
- (b) if the failure deprives the Employer of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Employer shall have the same remedies as are provided in sub-paragraph (c) of Sub-Clause 11.4 [Failure to Remedy Defects]; or
- (c) issue a Taking-Over Certificate, if the Employer so requests.

In the event of sub-paragraph (c), the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Employer as a result of this failure. Unless the relevant reduction for this failure is stated (or its method of calculation is defined) in the Contract, the Employer may require the reduction to be (i) agreed by both Parties (in full satisfaction of this failure only) and paid before this Taking-Over Certificate is issued, or (ii) determined and paid under Sub-Clause 2.5 [Employer’s Claims] and Sub-Clause 3.5 [Determinations].

9.5 Contractor’s obligations

Notwithstanding the provisions of sub-clauses 4.1, 9.1 to 9.4 the provisions in subsequent sub-clauses shall apply for works of Permanent Way, signaling and telecommunication and railway electrification excluding General Electrical Services.

- (a) The Contractor shall be responsible for the execution of temporary and/or permanent works which may require the prior sanction/approval of Commissioner of Railway Safety (CRS) in accordance with extant rules for “ The Railways opening for Public Carriage of Passengers” was amended from time to time. And applicable as and when the works are undertaken. The Contractor shall initiate the process for approval at least **63** (sixty three) days prior to undertaking such works which require the approval of Commissioner of Railway Safety (CRS) and furnish draft documentation to the Engineer.
- (b) The Contractor shall ensure that existing services and operations for public carriage of passengers or goods, are not affected except those, which are

essentially required to be regulated for execution of works. Such items of works shall be planned and coordinated through the Engineer.

- (c) Prior to the commencement of commercial operations of passenger traffic :
- (i) The Contractor may have to operate locomotives, track machines and any other rolling stock for track tamping, trial runs, etc. for which track, signaling or OHE works must comply with the specifications.
 - (ii) The Employer may permit freight train operations to Railway after certification by the authorized person of Zonal Railway
 - (iii) The Contractor shall be responsible for maintaining the facilities ensuring safety of operations under (i) & (ii) above as per specifications.

10. Employer's Taking Over

10.1 Taking Over of the Works and Sections

Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Employer/Railway when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.

The Contractor may apply by notice to the Engineer for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.

In case the works are to be taken over in accordance with sub-clause 9.5, the completed works shall be taken over by the Zonal Railway with the procedure specified by the Engineer.

The Engineer shall, within 28 days after receiving the Contractor's application:

- (a) issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or
- (b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause.

If the Engineer fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 28 days, and if the Works or

Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.

10.2 Taking Over of Parts of the Works

The Engineer may, at the sole discretion of the Employer, issue a Taking-Over Certificate for any part of the Permanent Works.

The Employer shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Engineer has issued a Taking-Over Certificate for this part. However, if the Employer does use any part of the Works before the Taking-Over Certificate is issued:

- (a) the part which is used shall be deemed to have been taken over as from the date on which it is used,
- (b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Employer, and
- (c) if requested by the Contractor, the Engineer shall issue a Taking-Over Certificate for this part.

After the Engineer has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.

If the Contractor incurs Cost as a result of the Employer taking over and/or using a part of the Works, other than such use as is specified in the Contract or agreed by the Contractor, the Contractor shall (i) give notice to the Engineer and (ii) be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to payment of any such Cost, which shall be included in the Contract Price. After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this Cost and profit.

If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages thereafter for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 8.7 [Delay Damages], and shall not affect the maximum amount of these damages.

10.3 Interference with Tests on If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Employer/Engineer/other

Completion

Contractors of the Employer,

are responsible, the Employer shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.

The Engineer shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Engineer shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.

If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

10.4 Surfaces Requiring Reinstatement

Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.

11. Defects Liability

11.1 Completion of Outstanding Work and Remedying Defects

In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable thereafter, the Contractor shall:

- (a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer, and
- (b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Employer on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).

If a defect appears or damage occurs, the Contractor shall be notified accordingly, by (or on behalf of) the Employer.

11.2 Cost of Remedying Defects

All work referred to in sub-paragraph (b) of Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:

- (a) any design for which the Contractor is responsible,
- (b) Plant, Materials or workmanship not being in accordance with the Contract, or
- (c) failure by the Contractor to comply with any other obligation.

If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Employer, and Sub-Clause 13.3 [Variation Procedure] shall apply.

11.3 Extension of Defects Notification Period

The Employer shall be entitled subject to Sub-Clause 2.5 [Employer's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or damage. However, a Defects Notification Period shall not be extended by more than two years.

If delivery and/or erection of Plant and/or Materials was suspended under Sub-Clause 8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/or Materials would otherwise have expired.

11.4 Failure to Remedy Defects

If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by (or on behalf of) the Employer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.

If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Employer may (at his option):

- (a) Carry out the work himself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay to the Employer the costs reasonably incurred by the Employer in remedying the defect or damage;
- (b) require the Engineer to agree or determine a reasonable reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or
- (c) if the defect or damage deprives the Employer of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract or otherwise, the Employer shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

11.5 Removal of

If the defect or damage cannot be remedied expeditiously on the Site and the

- Defective Work** Employer gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.
- 11.6 Further Tests** If the work of remedying of any defect or damage may affect the performance of the Works, the Engineer may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 28 days after the defect or damage is remedied.
- These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause 11.2 [Cost of Remedying Defects], for the cost of the remedial work.
- 11.7 Right of Access** Until the Performance Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Employer’s reasonable security restrictions.
- 11.8 Contractor to Search** The Contractor shall, if required by the Engineer, search for the cause of any defect, under the direction of the Engineer. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Cost of the search shall be agreed or determined by the Engineer in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price.
- 11.9 Performance Certificate** Performance of the Contractor’s obligations shall not be considered to have been completed until the Employer has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.
- The Employer shall issue the Performance Certificate within 28 days after the latest of the expiry dates of the Defects Notification Periods, or as soon thereafter as the Contractor has supplied all the Contractor’s Documents and completed and tested all the Works, including remedying any defects.
- Only the Performance Certificate shall be deemed to constitute acceptance of the Works.
- 11.10 Unfulfilled Obligations** After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.
- 11.11 Clearance of Site** Upon receiving the Performance Certificate, the Contractor shall remove any remaining Contractor’s Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.

If all these items have not been removed within 28 days after the Employer receives a copy of the Performance Certificate, the Employer may sell or otherwise dispose of any remaining items. The Employer shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.

Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Employer's costs, the Contractor shall pay the outstanding balance to the Employer.

12. Measurement and Evaluation

12.1 Works to be Measured

The Works shall be measured, and valued for payment, in accordance with this Clause.

Whenever the Engineer requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

- (a) promptly either attend or send another qualified representative to assist the Engineer in making the measurement, and
- (b) supply any particulars requested by the Engineer.

If the Contractor fails to attend or send a representative, the measurement made by (or on behalf of) the Engineer shall be accepted as accurate.

Except as otherwise stated in the Contract, wherever any Permanent Works are to be measured from records, these shall be prepared by the Engineer. The Contractor shall, as and when requested, attend to examine and agree the records with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.

If the Contractor examines and disagrees the records, and/or does not sign them as agreed, then the Contractor shall give notice to the Engineer of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Engineer shall review the records and either confirm or vary them. If the Contractor does not so give notice to the Engineer within 14 days after being requested to examine the records, they shall be accepted as accurate.

12.2 Method of Measurement

Except as otherwise stated in the Contract and notwithstanding local practice:

- (a) measurement shall be made of the net actual quantity of each item of the Permanent Works, and
- (b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

12.3 Evaluation

Except as otherwise stated in the contract, the Engineer shall proceed in accordance with sub clause 3.5 (Determinations) to agree or determine the contract price by evaluating each item of work, applying the measurement agreed or determined in accordance with the above sub clause 12.1 and 12.2 and the appropriate rate or price for the item.

For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the contract or, if there is no such item, specified for similar work.

12.3.1

However, a new rate or price shall be appropriate for an item of work if :

- (a) all the following conditions are met for existing item of the contract:
 - (i) the measured quantity of the item is increased by more than 50% from the quantity of this item in the Bill of Quantities or the Schedule,
 - (ii) this item is not specified in the contract as a “fixed rate item”.

OR

- (b)
 - (i) the work is instructed under clause 13[Variations and Adjustments],
 - (ii) no rate or price is specified in the contract for this item, and
 - (iii) no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the contract.

OR

- (c) On passage of original completion period stipulated in the contract, if site in some stretches has not been handed over for execution of the work due to any of the reasons mentioned below:
 - (i) non acquisition of land,
 - (ii) non availability of forest/wild life clearances,
 - (iii) non removal of encroachments, delay in shifting of utilities (to be shifted by other agencies) and
 - (iv) non handing over of the sites by other agencies/authorities

and the contractor otherwise has been executing the works satisfactorily on other sites, as certified by the Engineer, the contractor shall be entitled for new rates for the items and quantities of work which could not be executed in the stretches still to be handed over. In case the progress is not satisfactory, the contractor shall not be entitled for new rates and the Employer shall have the option either to continue the work in these stretches through the same agency or get it executed through other means.

12.3.2

In case of entitlement for new rates, if the contractor is not willing to take up the work in these stretches, he will have the option to say so in writing or if no agreement is reached on new rates, the remaining works of such stretches shall be excluded from the scope of the contract through a variation statement. In such a case the contractor shall not be entitled for any claim or compensation on this account. The employer shall get the remaining works on these stretches executed through other means.

- (i) Each new rate or price for item(s) as described in sub paragraph 12.3.1 (a) & (c) above shall be derived from an assessment of the reasonable cost of executing the work with an additional element of 15% towards overheads and profit of the Contractor.
- (ii) Each new rate or price for item(s) as described in sub paragraph 12.3.1 (b) above shall be derived from an assessment of the reasonable cost of executing the work with an additional element of 15% towards overheads and profit of the Contractor, subject to the condition that such item(s) as described in sub paragraph 12.3.1 (b) above is/are not available in the “Standard Bill of Quantities of EMPLOYER”.
- (iii) In case item(s) as described in sub paragraph 12.3.1 (b) above is/are available in the latest “Standard Bill of Quantities of EMPLOYER, new rate or price for such items shall be the rate as available in the latest “Standard Bill of Quantities of EMPLOYER and price variation shall be applicable from the date upto which rates have been updated in the SBOQ.
- (iv) The assessment of reasonable cost of executing the work (except over heads and profit which shall be 15%) shall be arrived at based on the prevailing rates and by taking guidance from the following documents. The priority of the documents shall be in accordance with the following sequence:

12.3.3

- a) Analysis of Unified SOR of Indian Railway;
 - b) Analysis issued by MORTH;
 - c) Analysis of Delhi Schedule of Rates issued by CPWD;
 - d) Market analysis.
- (v) If the final rate decided by the competent authority as per EMPLOYER SOP is not acceptable to the contractor, the contractor will be bound to execute the work at the rates as decided by the competent authority of EMPLOYER but he may refer the dispute in rate for settlement as per provisions of clause 20 of General Conditions of Contract. Until such time as an appropriate rate or price is agreed or determined, the Engineer shall make the Interim payment at the rate of 90% of the rate proposed by him and accepted by the Project Director (concerned CPM/GM in charge of the project).

Until such time an appropriate rate or price is agreed or determined, the Engineer shall make the Interim payment at the rate of 90% of the rate proposed by him and accepted by the Project Director (concerned CPM/GM in charge of the project).

12.4 Omissions

Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if:

- (a) the Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount;
- (b) the omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
- (c) this cost is not deemed to be included in the evaluation of any substituted work;

then the Contractor shall give notice to the Engineer accordingly, with supporting particulars. Upon receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

13. Variations and Adjustments

13.1 Right to Vary

Variations may be initiated by the Employer at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by making a request to the Contractor to submit a proposal.

The Contractor shall execute and be bound by each Variation till the price does not exceed 50% of the agreemental value as specified in letter of acceptance / original agreement. For variation beyond the above the contractor shall be bound to execute, unless the Contractor promptly gives notice to the Engineer stating (with supporting particulars) that the Contractor cannot readily obtain the

Goods required for the Variation. Upon receiving this notice, the Engineer shall cancel, confirm or vary the instruction.

Each Variation may include:

- (a) changes to the quantities of any item of work included in the Contract,
- (b) changes to the quality and other characteristics of any item of work,
- (c) changes to the levels, positions and/or dimensions of any part of the Works,
- (d) omission of any work unless it is to be carried out by others,
- (e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or
- (f) changes to the sequence or timing of the execution of the Works.
- (g) Re-work arising out of revision in drawings / designs / methodology of execution, after actual execution of work; excluding any re-work arising from any default of the Contractor, such as non-conformity to the quality of work /prescribed standards etc. in the performance of obligations.

The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Engineer instructs or approves a Variation.

13.2 Value Engineering

The Contractor may, at any time, submit to the Engineer a written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Employer of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Employer of the completed Works, or (iv) otherwise be of benefit to the Employer.

The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause 13.3 [Variation Procedure].

If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:

- (a) the Contractor shall design this part,
- (b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
- (c) if this change results in a reduction in the contract value of this part, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:
 - (i) such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for

Changes in Cost],and

- (ii) the reduction (if any) in the value to the Employer of the varied works, taking account of any reductions in quality, anticipated life or operational efficiencies.

However, if amount (i) is less than amount (ii), there shall not be a fee.

13.3 Variation Procedure

If the Engineer requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:

- (a) a description of the proposed work to be performed and a programme for its execution,
- (b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
- (c) the evaluation of the Variation shall be as specified in Clause 12.3 Evaluation.

The Engineer shall, as soon as practicable after receiving such proposal (under Sub-Clause 13.2 [Value Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst awaiting a response.

Each instruction to execute a Variation, with any require Fements for the recording of Costs, shall be issued by the Engineer to the Contractor, who shall acknowledge receipt.

Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Engineer instructs or approves otherwise in accordance with this Clause.

13.4 Payment in Applicable Currencies

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

13.5 Provisional Sums

Each Provisional Sum shall only be used, in whole or in part, in accordance with the Engineer's instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Engineer shall have instructed. For each Provisional Sum, the Engineer may instruct:

- (a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or

- (b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which these shall be included in the Contract Price:
 - (i) the actual amounts paid (or due to be paid) by the Contractor, and
 - (ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in the Contract Data shall be applied.

The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

13.6 Day work

For work of a minor or incidental nature, the Engineer may instruct that a Variation shall be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this Sub-Clause shall not apply.

Before ordering Goods for the work, the Contractor shall submit quotations to the Engineer. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.

Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver each day to the Engineer accurate statements in duplicate which shall include the following details of the resources used in executing the previous day's work:

- (a) the names, occupations and time of Contractor's Personnel,
- (b) the identification, type and time of Contractor's Equipment and Temporary Works, and
- (c) the quantities and types of Plant and Materials used.

One copy of each statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

13.7 Adjustments for Changes in Legislation

The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.

If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

In case there is a decrease in cost as a result of changes of Law by Legislation after the Base Date, the Engineer shall proceed in accordance with Sub Clause 3.5 (determination) to agree or determine these matters without waiting for Contractor's / Employer's Notice.

Notwithstanding the foregoing, the Contractor shall not be entitled to such an extension of time if the same shall already have been taken into account in determining an extension and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause 13.8.

13.8 Adjustment for changes in cost.

(A) Price Adjustment

The amounts payable to the Contractor and valued at base rates and prices pursuant to Sub-Clause 14.3 (a) hereof shall be adjusted in respect of the rise or fall in the indexed costs for labour, Contractor's Equipment and plant, materials and other inputs to the Works, by the addition or subtraction of the amounts determined by the formulae prescribed in this clause.

(B) Other Changes in Cost

To the extent that full compensation for any rise or fall in the costs to the Contractor is not covered by the provisions of this or other Clauses in the Contract, the unit rates and prices included in the Contract shall be deemed to include amounts to cover the contingency of such other rise or fall in

costs.

(C): Adjustment Formulae

Contract price shall be adjusted for increase or decrease in rates and price of labour, materials fuels and lubricants in accordance with the following principles and procedures as per formulae given below. The amount certified in each payment certificate is adjusted by applying respective price adjustment factor to the payment amounts due in each currency:

- a. Price adjustment shall apply only for work carried out within the stipulated time or extensions granted by the Employer and shall not apply to work carried out beyond the stipulated time: price adjustment for extensions for reasons attributable to the Contractor, shall be paid in accordance with sub-clause 13.8 (H)
- b. Price adjustment shall be calculated for the local and foreign components of the payment for the work done as per formulae given below; and
- c. Following expressions and meanings are assigned to the work done during each month:

R = Total value of work done during the month. It would include the value of materials on which secured advance has been granted, if any during the month less the value of materials in respect of which the secured advance has been recovered, if any, during the month. This excludes the cost of work on items for which rates were fixed under variations clause (12 and 13) for which the escalation will be regulated as mutually agreed at the time of fixation of rate.

R_I = Portion of 'R' as payable in Indian Rupees

R_f = Portion of 'R' as payable in Foreign currency (at fixed exchange rates)

R = R_I+R_f

(i) Adjustment for Labour Component

Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with the following formula:

$$V_L = P_1 / 100 \times R_1 \times (L_1 - L_0) / L_0$$

V_L = Increase or decrease in the cost of work during the month under consideration due to changes in labour cost.

L₀ = Consumer price index Number for industrial workers All India – published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the closing date of submission

of Bids.

L_1 = Consumer price index Number for industrial workers All india- Published in RBI (Reserve Bank of india) Bulletin in the month on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_1 = Percentage of Labour component of the work.

(ii) Adjustment for Cement Component

Price adjustment for increase or decrease in the cost of cement procured by the contractor shall be paid in accordance with the following formula:

$$V_c = P_c / 100 \times R_1 \times (C_1 - C_0) / C_0$$

V_c = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for cement.

C_0 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of cement, lime and plaster’ – published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the closing date of submission of Bids.

C_1 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of cement, lime and plaster’ – published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_c = Percentage of Cement component of the work.

(iii) Adjustment for Steel Component

Price adjustment for increase or decrease in the cost of Steel procured by the contractor under different schedules of BOQ shall be paid in accordance with the following formula:

Formulae-I (for all schedules of BOQ except bill/schedule-2 B & 2 C):

$$V_s = P_s / 100 \times R_I \times (S_1 - S_0) / S_0$$

V_s = Increase or decrease in the cost of work on the date under consideration due to changes in the rates for Steel.

S_0 = The average of rate of Rebars 10mm, Angles 75x75x6mm, Mild Steel Plates 10mm and Channel 150x75mm provided by Joint Plant Committee for City specified in Contract Data for the fortnight on the day 28 days prior to the closing date of submission of Bids.

S_1 = The average rate of Rebars 10mm, Angles 75x75x6mm, Mild Steel Plates 10mm and Channel 150x75mm provided by Joint Plant Committee for City specified in Contract Data for the fortnight on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_s = Percentage of Steel component of the work.

Formulae-II (for schedule-2 B of BOQ):

$$V_s = P_s / 100 \times R_I \times (S_1 - S_0) / S_0$$

V_s = Increase or decrease in the cost of work on the date under consideration due to changes in the rates for Steel.

S_0 = The average rate for MS Plates 10mm and 25mm, provided by the Joint Plant Committee of the City mentioned in the contract Data in the fortnight on the day 28 days prior to the closing date of submission of Bids.

S_1 = The average rate for MS Plates 10mm and 25mm, provided by the Joint Plant Committee of the City mentioned in the contract Data in the fortnight on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_s = Percentage of Steel component of the work.

Formulae-III (for bill/schedule-2 C of BOQ):

$$V_s = P_s / 100 \times R_I \times (S_1 - S_0) / S_0$$

V_s = Increase or decrease in the cost of work on the date under consideration due to changes in the rates for Steel.

S_0 = The average rate for TMT 10mm and 25mm, provided by the Joint Plant Committee of the City mentioned in the contract Data in the fortnight on the day 28 days prior to the closing date of submission of Bids.

S_1 = The average rate for TMT 10mm and 25mm, provided by the Joint Plant Committee of the City mentioned in the contract Data in the fortnight on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_s = Percentage of Steel component of the work.

(iv) Adjustment for Plant and Machinery and Spares Component

Price adjustment for increase or decrease in the cost of Plant and Machinery spares procured by the contractor shall be paid in accordance with the following formula:

$$V_p = P_p / 100 \times R_I \times (P_1 - P_0) / P_0$$

V_p = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for Plant and Machinery spares.

P_0 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of machinery for mining, quarrying and construction’– published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the closing date of submission of Bids.

P_1 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of machinery for mining, quarrying and construction’ – published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_p = Percentage of Plant and Machinery spares component of the

work.

(V) Adjustment for Fuel and Lubricants

Price adjustment for increase or decrease in the cost of POL(fuel and lubricants) shall be paid in accordance with the following formula:

$$V_f = P_f / 100 \times R_I \times (F_1 - F_0) / F_0$$

V_f = Increase or decrease in the cost of work on the date under consideration due to changes in the rates for Fuel and lubricants.

F_0 = The average of official prices of Diesel available on the official website of ‘Petroleum Planning and Analysis cell’ under Ministry of Petroleum and Natural Gas for Delhi, Kolkata, Mumbai & Chennai, applicable on the day 28 days prior to the closing date of submission of Bids.

F_1 = The average of official price of Diesel available on the official website of ‘Petroleum Planning and Analysis cell’ under Ministry of Petroleum and Natural Gas for Delhi, Kolkata, Mumbai & Chennai, applicable on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_f = Percentage of Fuel and Lubricants component of the work.

(vi) Adjustment for Other Non Ferrous Component

Price adjustment for increase or decrease in the cost of Other Non Ferrous metal procured by the contractor shall be paid in accordance with the following formula:

$$V_{NF} = P_{NF} / 100 \times R_I \times (NF_1 - NF_0) / NF_0$$

V_{NF} = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for Other Non Ferrous metal.

NF_0 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of non-ferrous metals incl. precious metals’ – published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the closing date of submission of Bids.

NF_1 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of non-ferrous metals incl. precious metals’ – published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related.

P_{NF} = Percentage of Other Non Ferrous metal component of the work.

(vii) Adjustment for Other local Materials

Price adjustment for increase or decrease in the cost of local materials other than Cement and Steel, Plant Machinery & Spares, POL and Other Non Ferrous Metals procured by the contractor shall be paid in accordance with the following formula:

$$V_m = P_m / 100 \times R_i \times (M_1 - M_0) / M_0$$

V_m = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for local material other than cement, steel, plant spares and POL.

M_0 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for All-Commodities-published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the closing date of submission of Bids.

M_1 = The index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for All -Commodities published in RBI (Reserve Bank of India) Bulletin in the month on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related

P_m = Percentage of local material component (other than cement, steel, plant, spares and POL) of the work.

(viii) Price Variation Clause for Contact and Catenary Wires

The Price payable shall be subject to adjustment, up or down, in accordance with the following formula:

$$P_1 = P_0 + (L_2 - L_1)$$

Po = Quoted ex-works price of contact/catenary wire.

L₁ = Average LME cash settlement quotation for Copper Grade A, 60 days prior to the date of opening of the tender.

L₂ = L₂ will be minimum of (i) & (ii) given below:-

- (i) LME rates prevailing on 90 days prior to the date of offering for inspection of each lot.
- (ii) Invoiced rate in invoice of actual imports.

Notes:

1. For prevailing LME rates, certified copy of LME rate downloaded from official LME website will be accepted as documentary evidence.
2. LME rate in L₁ & L₂ will be converted to Indian Rupees at SBI's Selling Bills rate of exchange on the date 30 days prior to the date of opening of tender and date of delivery respectively.
3. In case index/price data are not available for particular date due to any reason then the index/price data shall be calculated by drawing a graph of 1st working day before and 1st working day after that particular date. As per graphic line price data arrived at on that particular date may be taken. .

(ix) Adjustment for Fabricated and Galvanized Steel Structures:

(Item Nos. as specified in special conditions). The price adjustment of these items shall be paid as follows:

Price Variation Clause for Fabricated and Galvanized Steel Structures for Railway Electrification Works

The Price payable shall be subject to adjustment, up or down, in accordance with the following formula:

$$P = P_o [11 + 57 \underline{SBLR} + 09 \underline{Zn} + 23 \underline{W}]$$

100 $SBLR_o Z_{n_o} W_o$

P = Price payable as adjusted in accordance with the above formula.

P_o = Price quoted

$SBLR_o$ = Price of Steel Blooms - Retail (refer notes)

This price is as applicable on the 1st working day of the month, one month prior to the deadline for submission of bids.

Z_{n_o} = Price of electrolytic high grade zinc (refer notes).

This price is as applicable on the 1st working day of the month, one month prior to the deadline for submission of bids.

W_o = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Government of India (Base : 2001=100) (Refer notes). This index number is as applicable on the first working day of the month, three months prior to the deadline for submission of bids.

(For example, if date of tendering falls in May 2014, the applicable prices of Steel Blooms - Retail ($SBLR_o$) and electrolytic high grade zinc (Z_{n_o}) should be for the month of April 2014 and all India average consumer price index number (W_o) should be for the month of February 2014.

The above prices and indices are as published by IEEMA vide circular reference number IEEMA (PVC)/TLT/2014 one month prior to the deadline for submission of bids.)

SBLR = Price of Steel Blooms-Retail (refer notes).

This price is as applicable on the 1st working day of the month, two months prior to the date of delivery.

Zn=Prices of electrolytic high grade zinc (refer notes).

This price is as applicable on the first working day of the month, two months prior to the date of delivery.

W = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt of India. (Base 2001=100) (refer notes).

This Index number is as applicable on the first working day of the month,

four month prior to the date of delivery.

(For example, if date of delivery falls in December 2014, the applicable prices of steel bloom – Retail (SBLR) and Zinc (Zn) should be for the month of October 2014 and all India average consumer price index number (W) should be for the month of August 2014.

The date of delivery is the date on which transmission line towers are notified as being ready for inspection/dispatch (in the absence of such notification, the date of manufacturer's dispatch note is to be considered as the date of delivery) or the contracted delivery date (including any agreed extension thereto), whichever is earlier.)

Notes:

- (a) All prices of raw materials are exclusive of GST and any other taxes, duties, levies etc
- (b) All prices are as on first working day of the month.
- (c) The details of prices are as under:
 - 1) The prices of Steel Blooms are the average Retail price of Blooms of size 150mm x 150mm of all cities in Rs/MT as published by Joint Plant Committee (JPC), Kolkata.
 - 2) The price of electrolytic high grade zinc (in Rs/MT) is ex-works price as quoted by the primary producer.
 - 3) Cost weight age of re-rolling / conversion charges is included in labor weightage (W)

(x) Price Variation Clause for Traction Power Transformer complete with all accessories and components

The Price payable shall be subject to adjustment, up or down, in accordance with the following formula:

$$P = \underline{P}_o [10 + 29\underline{C} + 27\underline{ES} + 7\underline{IS} + 5\underline{IM} + 7\underline{TO} + 15\underline{W}]$$

100 C_oES_o IS_o IM_o TO_o W_o

P = Price payable as adjusted in accordance with the above formula

P_o =Price quoted/Confirmed

C_o =Average LME settlement price of copper wire bars (refer notes)

This price is as applicable for the month, ONE month prior to the date of bid opening.

ES_o = Price of CRGO Electrical Steel Lamination (refer notes)

This price is as applicable on the 1st working day of the month, ONEmonth prior to the dead line for submission of bids.

IS_o = Average price of steel plates 10 mm thick (refer notes).

This price is as applicable on the 1st working day of the month,ONE month prior to the dead line for submission of bids.

IM_o =Price of Insulating Materials (refer notes).

This price is as applicable on the 1st working day of the month, one month prior to the dead line for submission of bids.

TO_o = Price of Transformer Oil (Refer notes)

This price is as applicable on the 1st working day of the month, ONE month prior to the dead line for submission of bids.

W_o = All India average Consumer price index Number for industrial workers, as published by the labour bureau, ministry of labour, Govt. of India(base 2001 =100)

This index number is as applicable on the 1st working day of the month THREE months prior to the dead line for submission of bids.

(For example, if date of bid opening falls in June 2015, applicable prices of Copper Wire Bars (C_o), Transformer Oil (TO_o), Steel Plates 10 mm thick (IS_o), CRGO Electrical Steel Laminations (ES_o) and Insulating material (IM_o) should be as on 1st May 2015 and all India average consumer price index no. (W_o) should be for the month of March 2015.

The above prices and indices are as published by IEEMA vide circular reference number IEEMA (PVC)/PWR_TRF/-/-ONE month

prior to dead line for submission of bids.

C = Average LME settlement price of copper wire bars (refer notes).

This price is as applicable for the month, TWO months prior to the date of delivery.

ES= Price of CRGO Electrical Steel Lamination (refer notes).

This price is as applicable on the 1st working day for the month, TWO months prior to the date of delivery

IS = Average price of steel plates 10 mm thick (refer notes).

This price is as applicable on the 1st working day of the month, ONE month prior to the date of delivery.

IM= Price of Insulating Materials (refer notes).

This price is as applicable on the 1st working day of the month, TWO months prior to the date of delivery.

TO= Price of transformer oil (Refer notes)

This price is as applicable on the 1st working day of the month, ONE month prior to the date of delivery

W = All India average Consumer price index Number for industrial workers, as published by the labour bureau, ministry of labour, Govt. of India(base 2001 =100)

This index number is as applicable on the 1st working day of the month THREE months prior to the date of delivery.

(For example, if date of delivery in terms of clause given below falls in December 2015, applicable prices of Copper Wire Bars (C), Insulating Material (IM), CRGO Electrical Steel Lamination (ES) should be as on 1st October 2015 and Transformer Oil (TO), Plates 10 mm thick (IS) should be 1st November 2015 and All India average Consumer price index Number (W) should be for the month of September 2015.

The date of delivery is the date on which the transformer is notified as being ready for inspection/dispatch (in the absence of such

notification, the date of manufacturer's dispatch note is to be considered as the date of delivery) or the contracted delivery date (including any agreed extension thereto), whichever is earlier.

Notes:

- (a) All prices of raw materials are exclusive of GST and any other taxes, duties, levies etc. Transformers manufacturers import major raw materials like copper, CRGO steel sheets and Plates etc. The landed cost of these imported raw materials includes applicable custom duty but exclusive of GST and any other taxes, duties, levies.
- (b) All prices are as on first working day of the month.
- (c) The details of prices are as under:
 - 1) The LME price of Copper Wire Bars (in Rs/MT) is the LME average settlement price of Copper Wire Bars converted into Indian Rupees with applicable average exchange rate of SBI of the month. This price is the landed cost, inclusive of applicable customs duty only but exclusive of countervailing duty.
 - 2) The price of CRGO is the price of CRGO Electrical Steel Lamination in Rs./MT suitable for transformers of ratings above 10MVA or Voltage above 33KV up to 400 KV.
 - 3) The price of steel is the average retail price of steel plates 10 mm thick as published by Joint Plant Committee (JPC) in Rs./MT as on 1st working day of the month.
 - 4) The price of Insulating materials (in Rs./Kg) of pre-compressed pressboards of size 10 mm thick, 3200 mm x 4100 mm is the average C&F price in free currency per MT converted into Indian Rupees with applicable exchange rates prevailing as on 1st working day of the month as quoted by primary suppliers. This price is the landed cost, inclusive of applicable customs duty only but exclusive of countervailing duty.
 - 5) The price of Transformer Oil (in Rs./K.Ltr.) is the average price on ex-refinery basis as quoted by primary producers for supply in drums.

(xi) PRICE VARIATION CLAUSE FOR SIGNALING & TELECOM CABLE

The price payable for signaling cables is variable as per Price Variation Formula given below:

For Signaling Copper Cables:

$$P = P_o + CuF (Cu - Cu_o) + CCFcu(CC - CC_o) + FeF (Fe - Fe_o)$$

For Telecom Copper Cables For Jelly Filled, 0.9 mm dia, 6 quad cable

$$P = P_o + CuF (Cu - Cu_o) + AlFcu(Al - Al_o) + CCFcu (CC - Cc_o) + FeF (Fe - Fe_o)$$

For Aluminum Power Cables:

$$P = P_o + AlF (Al - Al_o) + CCFAl(CC - CC_o) + FeF (Fe - Fe_o)$$

Where,

P= Price payable per KM as adjusted in accordance with Price variation clause.

P_o= Price per KM of cable as per Purchase order.

CuF= Variation factor for Copper

Cu_o= Price of copper Rod in Rs. Per MT

CCFCu= Variation factor for PVC Compound for Copper Signaling & Telecom cable

CCo= Price of PVC Compound in Rs. Per MT

AlF= Variation factor for Aluminum

Alo= Price of EC grade LME Aluminum rods (Properzi rods) in Rs. Per MT.

CCFAI = Variation factor for PVC Compound for Aluminum power cable

FeF= Variation factor for Steel

Feo= Price of Steel for Armour (Flat strip 4 mm. x 0.8mm/ Round 1.4mm dia) in Rs. Per MT

(Prices per MT for Cuo, CCo, Feo, Alo as applicable on the 1st working day of the month, one month prior to the deadline for submission of bids. The above prices and indices are as published by IEEMA vide circular reference no. IEEMA (PVC) /CABLE --/-- one month prior to the deadline for submission of bids.)

Cu= Price of Copper Rod in Rs. Per MT.

CC= Price of PVC Compound in Rs. Per MT.

Fe= Price of Steel for Armouring (Flat strip 4mm x 0.8 mm/ Round 1.4mm dia) in Rs. Per MT.

Al = Price of EC grade LME Aluminum rods (Properzi rods) in Rs. Per MT.

(Prices per MT for Cu, CC, Fe, Al as prevailing on 1st working day of the calendar month covering the date One month prior to the date of inspection call letter will be applicable for the calculation of updated price. The above prices and indices are as published by IEEMA vide circular reference no. IEEMA (PVC) /CABLE --/--/-- one month prior to the date of inspection.)

The value of variation factors for copper, steel and PVC Compound are different for different sizes of signaling cables. Accordingly, the PVC formula for some of the types of signaling cable is as given under:-

Underground Railway Signaling Cable unscreened and armoured copper conductor

- (i) Size 30 C x 1.5 sq.mm.
 $P = P_o + 0.391(Cu - C_{uo}) + 0.557(CC - CC_o) + 0.425(Fe - Fe_o)$

For armouring, price of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (ii) Size 24C x 1.5 sq.mm
 $P = P_o + 0.313(Cu - C_{uo}) + 0.481(CC - CC_o) + 0.398(Fe - Fe_o)$

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (iii) Size 19C x 1.5 sq.mm
 $P = P_o + 0.248(Cu - C_{uo}) + 0.395(CC - CC_o) + 0.343(Fe - Fe_o)$

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (iv) Size 12C x 1.5 sq.mm
 $P = P_o + 0.157(Cu - C_{uo}) + 0.277(CC - CC_o) + 0.289(Fe - Fe_o)$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (v) Size 9C x 1.5 sq.mm
 $P = P_o + 0.117(Cu - C_{uo}) + 0.241(CC - CCu) + 0.383(Fe - Feo)$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (vi) Size 6Cx 1.5 sq.mm
 $P = P_o + 0.078(Cu - C_{uo}) + 0.199(CC - CCu) + 0.329(Fe - Feo)$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (vii) Size 4Cx1.5 sq.mm
 $P = P_o + 0.052(Cu - C_{uo}) + 0.152(CC - CCo) + 0.277(Fe - Feo)$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (viii) Size 2C x 4 sq.mm(multistrand)
 $P = P_o + 0.073(Cu - C_{uo}) + 0.156(CC - CCo) + 0.3(Fe - Feo)$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (ix) Size 12C x 2.5 sq.mm
 $P = P_o + 0.282(Cu - C_{uo}) + 0.371(CC - CCo) + 0.342(Fe - Feo)$

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (x) Size 2C x 2.5 sq.mm
 $P = P_o + 0.047(Cu - C_{uo}) + 0.139(CC - CCo) + 0.277(Fe - Feo)$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (xi) Size 2C x 25 sq.mm PVC insulated, armoured, Aluminum power

cable

$$P = P_o + 0.146 (Al - Al_o) + 0.303 (CC - CC_o) + 0.306 (Fe - Fe_o)$$

For armouring, value of steel flat strip of size 4mm x 0.8mm is to be taken into consideration.

- (xii) For Jelly filled, 0.9mm dia, 6 quad cable
 $P = P_o + 0.135 (Al - Al_o) + 0.139 (Cu - Cu_o) + 0.515 (CC - Cc_o) + 0.693 (Fe - Fe_o)$.

For PVC Compound Grade CW-22, is to be taken into consideration.

For armouring, value of steel flat strip of size 4mm x 0.8mm is to be taken into consideration.

For the remaining varieties of signaling cables, the formula shall be the same as in use on Indian railways.

- (xii) Adjustment for Foreign Currency Component

(for each of the foreign currencies in which the contract price is payable)

- a. The foreign currency component of each payment which is convertible into foreign currency at fixed exchange rate shall be adjusted in accordance with the following formula:

$$VF_c = 0.85 \times R_f \times (Fe_1 - Fe_0) / Fe_0$$

VF_c = Increase or decrease in the cost of work payable due to changes in the cost of foreign input.

Fe_0 = the index applicable for the foreign input (plant, material,

engineer's salary etc. as the case may be) on the day 28 days prior to the date of submission of Bids, as published in the country of origin.

Fe_1 = corresponding index on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related (average index in case indices are published at lesser intervals).

- a. The bidder shall, in his tender, indicate the foreign input, (plant, material, engineer's salary etc.) and appropriate index, the source of which shall be a Government or Public Organization. The bidder shall also attach specimens of the publications of the last 12 months for information of the Employer. If this index is not acceptable to the Employer, then he will specify as alternative index and the source of publishing of that index.
 - b. If the bidder has requested payment in more than one foreign currency, R_f shall be suitably broken up and the formula applied separately to each currency component by taking into account and corresponding indices(index and currency belonging to the same country).
 - c. The currency of foreign exchange payment and the index shall belong to the same country.
- (D)** If the contractor changes the country of origin of the source of supply of any input to the works, he shall immediately notify the Engineer who shall modify the price adjustment provisions subsequent to such change to reflect the relevant cost index from the actual country of origin of the input.
- (E)** If the currency in which the Contract price is expressed is different from the currencies of the sources of the relevant indices, the Engineer shall determine the correction to be applied in calculating the Price Adjustment Factor formula viii(a) in order to avoid distortions in the amount of price adjustment. Such correction shall be applied to the increment of price fluctuation in the base costs of the respective inputs and shall correspond to the ratio of the exchange rates between the respective currencies of the date of base indices and the date of

current indices as defined in sub-clause viii(a).

(F) Sources of Indices

The sources of Indices for the foreign currency portion of the Contract (R_F) not stated in Sub-Clause 13.8 (C) shall be those as listed in the Contract Data, as approved by the Employer.

(G) Base, Current and provisional Indices:

Base, Current and Provisional Indices, the base cost indices or prices shall be those prevailing on the day 28 days prior to the closing date for submission of bids. current indices or prices shall be those prevailing on the day 28 days prior to last day of the period to which a particular interim payment certificate is related. if at any time the current indices are not available, provisional indices as determined by the engineer will be used, subject to subsequent correction of the amounts paid to the contractor when the current indices become available. the index numbers of various groups and sub groups as published by reserve bank of india in the rbi bulletin will be considered for this purpose.

(H) Limit of Price Adjustment

Provided that, in determining all such price adjustment in accordance with the aforesaid Sub-Clauses:

- a. No account will be taken of any amount by which any cost incurred by the Contractor has been increased by default or negligence of the Contractor.

If the Contractor fails to complete the work within time for completion prescribed under Clause 8.2, the adjustment of prices thereafter until the completion of the works shall be made using either the indices or prices, whichever is more favourable to the Employer, provided that if an extension of time is granted pursuant to Sub-Clause 8.4, the above position shall apply to the adjustments made after expiry of such extension of time.

(I) Percentages governing adjustments for change in cost

The percentages governing the price adjustment for the local currency portion (R_i) of the contract for various works is given in Annexure 2.

(J) Indices to be used in case of Interim Payment Certificate for a period more than a month

As per provisions of contract (Clause 14.3 of GCC) interim payments certificates are to be submitted by the contractor on monthly basis for the works/supply of items pertaining to a particular month. In such cases the monthly indices will be

applied for the month on the day 28 days prior to the last day of the period to which a particular interim payment certificate is related. However, in case a bill is submitted for a period pertaining to more than a calendar month the average indices for those months on the day 28 days prior to last day of the period to which bill pertains and previous month(s) shall be used for calculation purpose.

14. Contract Price and Payment

14.1 The Contract Price

Unless otherwise stated in the Special Conditions of Contract:

- (a) the Contract Price shall be agreed or determined under Sub-Clause 12.3 [Evaluation] and be subject to adjustments in accordance with the Contract;
- (b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 13.7 [Adjustments for Changes in Legislation];
- (c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and final quantities:
 - (i) of the Works which the Contractor is required to execute, or
 - (ii) for the purposes of Clause 12 [Measurement and Evaluation]; and
- (d) the Contractor shall submit to the Engineer, within 28 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules, if applicable. The Engineer may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.
- (e) It may be noted that in the event of the Contractor not making the due payments stated in sub-clause (b) above, and the concerned party puts up a claim with the Employer / Engineer, then the Employer / Engineer may make such payments and deduct the same from the sums due to the Contractor.

14.2 Advance Payment

14.2.1 Mobilization Advance

The Employer shall make payment, as an Interest bearing advance for mobilization, when the Contractor submits a guarantee in accordance with this

Sub-Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the Contract Data.

Unless and until the Employer receives this guarantee, or if the total advance payment is not stated in the Contract Data, this Sub-Clause shall not apply.

The Engineer shall issue an interim payment certificate for the first installment of mobilisation advance after receiving an application for advance payment (under sub clause 14.3 [Application for Interim Payment Certificates]) and after the Employer receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment plus 10%. The next installment shall be released only when the contractor submits statement of having utilized the previous installment of mobilization advance and the Employer is satisfied that the utilization has been done in purposeful manner.

Interest bearing advance against plant and machinery, is payable for procurement of plant, equipment and machinery to be utilized specifically for the subject works, with following stage payments:

14.2.2 Advance against Plant and Machinery

<p>Stage-1: At the stage of Purchase Order</p>	<p>50% of the total permissible advance payment or actual payment made whichever is less, provided that the contractor has submitted copy of Purchase Order and the invoices duly certified from the firm and against a guarantee in amounts and currencies equal to the stage advance payment plus 10%.</p>
<p>Stage-2: At the stage of dispatch of the plant and machinery from manufacturing unit/ assembly point</p>	<p>Cumulative 90% of the permissible advance payment or actual payment made whichever is less, against a guarantee in amounts and currencies equal to the stage advance payment plus 10%. In case of domestic manufacture, provided the contractor has submitted GST invoice and Delivery Challan (Interstate movement Challan to the worksite) and in case of foreign manufacture provided the contractor has submitted Bill of Lading (BOL), Final Inspection Certificate and Transit Insurance.</p>
<p>Stage-3: At the stage of arrival of plant & machinery at the work site</p>	<p>Remaining of the permissible advance payment, against a guarantee in amounts and currencies equal to the stage advance payment plus 10%. Provided Plant & Machinery have reached the site, physical verification by Engineer and submission of commissioning certificate of the</p>

Plant & Machinery.

The total advance payment under this sub-clause, including the applicable currencies and proportions, shall be as stated in the Contract Data.

All such plant, equipment and machinery shall be used only for executing the works under this Contract. No such plant, equipment and machinery shall be removed from the site, unless advance equivalent to the advance against such machinery has been fully repaid and prior permission of the Engineer has been obtained.

The Engineer shall decide whether a particular plant, equipment or machinery is actually required to execute the work. No advance is payable against items identified as unnecessary. The plant and machinery admissible for advance payment and its valuation shall be done by the Engineer on following considerations;

- i. New items: 80% of purchase price.
- ii. Used or Second-hand items: Not to be considered.
- iii. New Items valued at less than ₹ 10,00,000 each: Not to be considered.

14.2.3 Guarantees

Advances as mentioned in sub-clauses 14.2.1 & 14.2.2 above, shall be payable against acceptable Bank Guarantees from banks as specified in clause 4.2. The guarantees shall be in the form as given in Section 8 (Contract Forms) or in another form approved by the Employer. The Contractor shall ensure that the guarantees are valid and enforceable until the advance amount paid as has been repaid, but its amount may be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

14.2.4 Recovery of Advances

Unless stated otherwise in the Contract Data, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Engineer in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates], as follows:

- (a) deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment) exceeds 5 percent of the Accepted Contract Amount less Provisional Sums or passage of six months from

the date of release of first advance payment, whichever is earlier; and

14.2.5 Advances to be Used only for this work.

- (b) deductions shall be made for accrued interest on the advance up to the month and advance at the rate stated in the Contract Data of the amount of each Interim Payment Certificate (excluding the advance payment and deductions and repayments of retention) in the currencies and proportions of the advance payment until such time as the advance payment and accrued interest has been repaid; provided that the advance payment and accrued interest shall be completely repaid prior to the time when 80 percent of the Accepted Contract Amount has been certified for payment. If the amount of interim payment certificate is not sufficient for recovery of accrued interest or in the opinion of the Employer satisfactory progress is not being achieved by the contractor, then the contractor will have to deposit the accrued interest and return the mobilisation advance in part or in full as demanded by the Employer, failing which Employer shall have the right to encash the Bank Guarantee(s)

The contractor shall always have the option to start repayment earlier and/or to complete the repayment earlier than the due date.

If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Employer], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Employer.

The advances shall be used by the Contractor strictly for the purpose of the Contract, and for the purpose for which they are paid. Under no circumstances, shall the advances be diverted for other purposes. Any such diversion shall be construed as a breach of the Contract and the Contractor shall be asked to return the advance at once and pay interest at 15% per annum till the advance is recovered back from him. The Contractor shall return the advance and pay the interest in one go without demur.

Employer retains the right for any other remedy prescribed for breach of Contract in this regard.

The Contractor, if required by the Engineer shall provide the details of utilisation of Mobilisation advance.

14.3 Application for Interim Payment Certificates

The Contractor shall submit a Statement in six copies to the Engineer in accordance with the payment procedure specified by the Engineer, after the end of each month, in a form approved by the Engineer, showing in detail the

amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the report on the progress during this month in accordance with Sub-Clause 4.21 [Progress Reports] and Record Measurement Sheets.

The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

- (a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);
- (b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];
- (c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in the Contract Data to the total of the above amounts, until the amount so retained by the Employer reaches the limit of Retention Money (if any) stated in the Contract Data;
- (d) Any amounts to be added and deducted for the advance payments and repayments in accordance with sub clause 14.2 [Advance Payment];
- (e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and Materials intended for the Works];
- (f) any other additions or deductions which may have become due under the Contract or otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and
- (g) the deduction of amounts certified in all previous Payment Certificates.
- (h) for invoicing as per GST Laws, the estimated contract value of the Works executed in terms of (a) above and any amounts added or deducted as per (b), (e) to (g) above is to be broken up in two components i.e. (i) the base amount excluding GST (ii) GST component (calculated at the rate for works contract service as per GST Laws).
- (i) Statement of interim payments certificates should be submitted by the Contractor to the Engineer by the 7th day of each month for the work executed upto the end of the previous month.
- (j) An amount to be deducted for the payments to be made to different Departments towards payments liable to be made by the Contractor.

14.4 Schedule of Payments

If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

- (a) the instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates];
- (b) Sub-Clause 14.5 [Plant and Materials intended for the Works] shall not apply; and
- (c) if these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less than that on which this schedule of payments was based, then the Engineer may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less than that on which the instalments were previously based.

If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

14.5 Plant and Materials intended for the Works

If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3:

- (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and
- (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates].

If the lists referred to in sub-paragraphs (b)(i) or (c)(i) below are not included in the Contract Data, this Sub-Clause shall not apply.

The Engineer shall determine and certify each addition if the following conditions are satisfied:

- (a) the Contractor has:
 - (i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and
 - (ii) submitted a statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;

and either:

- (b) the relevant Plant and Materials:

- (i) are those listed in the Schedules for payment when shipped,
 - (ii) have been shipped to the Country, en route to the Site, in accordance with the Contract; and
 - (iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Engineer together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Employer in amounts and currencies equal to the amount due under this Sub-Clause: this guarantee may be in a similar form to the form referred to in Sub-Clause 14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration;
- or
- (c) the relevant Plant and Materials:
 - (i) are those listed in the Schedules for payment when delivered to the Site,
 - (ii) the original ‘Invoice’ and the original ‘Inspection Certificate’ by the approved Inspection agency marked ‘for payment’ is furnished with the Application for IPC [sub-Clause 14.3].
 - (iii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration, and appear to be in accordance with the Contract.

The additional amount to be certified shall be the equivalent of eighty percent of the Engineer’s determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials. The amount shall be certified on receipt of an Indemnity Bond for the stated amount in the Form approved by the Employer.

The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials.

14.6 Issue of Interim Payment Certificates No amount will be certified or paid until the employer has received and approved the performance security. Thereafter, the Engineer shall within two days after receiving a statement and supporting documents (including

Contractor's certificate in terms of Sub-Clause 6.22 (ii)), issue to the Employer a provisional interim payment certificate which shall state the amount which the Engineer determines to be due after preliminary check as per EMPLOYER's procedure order. After this the Engineer shall, within 28 days after receiving a statement and supporting documents, issue to the employer an Interim Payment Certificate which shall state the amount which the Engineer fairly determines to be due, with supporting particulars.

However, prior to issuing the Taking-Over Certificate for the Works, the Engineer shall not be bound to issue the Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated in the Contract Data. In this event, the Engineer shall give notice to the Contractor accordingly.

An Interim Payment Certificate shall not be withheld for any other reason, although:

- (a) if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or
- (b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer, the value of this work or obligation may be withheld until the work or obligation has been performed.

The Engineer may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Engineer's acceptance, approval, consent or satisfaction.

14.7 Payment

The Employer shall pay to the Contractor:

- (a) the first instalment of the advance payment within 42 days after issuing the Letter of Acceptance or within 21 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub-Clause 14.2 [Advance Payment], whichever is later;
- (b) (i) After preliminary scrutiny and certifications by the Engineer, payment of 70% of the certified net payment due (after recoveries and deductions), shall be made by the Employer within 10 days of receiving a statement and supporting documents by the Engineer subject to the condition that last interim payment certificate has been settled after detailed check. In the event of the contractor submitting bills based on false measurements, Project Director should issue a written warning to him to the effect that the facility of 70% payment without detailed check will be withdrawn in future. If the contractor repeats the misconduct this facility should be withdrawn.

(ii) The amount certified in each Interim Payment Certificate within 56 days after the Engineer receives the Statement and supporting documents. Any discrepancy shall be rectified in the next payment to the Contractor; and

- (c) the amount certified in the Final Payment Certificate within 56 days after the Employer receives this Payment Certificate or, the undisputed amount shown in the Final Statement, within 56 days after the date of notification of the suspension in accordance with Sub-Clause 16.2.

Payment of the amount due, unless specified in the Contract Data, shall be made in INR into the bank account, nominated by the Contractor except for the Contract where the Contractor has opted for payment through Letter of Credit (LC) arrangement. In such a case, the procedure for payment shall be as prescribed in clause 14.7.1 below.

However, in case of JV, direct payment to individual JV partners shall be made on joint certification (about the net amounts payable to individual partners) by the authorized representative of the JV and concerned respective authorized representative of individual JV partners, after making requisite recoveries/deductions from the gross payment. In case of any dispute regarding the net amounts payable to individual partners, the Engineer shall decide the same on the basis of the execution of items of works under Schedules/Bills indicated in the JV agreement as the responsibility of execution of each JV partner. Payment to individual JV partners shall be treated as payment made to the JV. The said payment shall not alter any obligation of the JV and its individual Partners under the Agreement and their obligations under the agreement shall remain joint and several.

A foreign company (either single entity or JV partner), shall have to submit proof of having opened their project office in India before any payment (including advance payment) is released to such a company. The required proof here shall be a copy of the report containing information as per format prescribed by Reserve Bank of India submitted to the Director General of Police (DGP) of the state concerned in which project office has been established.

Procedure for payment through LC:

14.7.1

- (i) The LC shall be a sight LC.
- (ii) 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.

- (iii) The Employer's Bank and its nodal branch for issue of LCs based on requests received from Employer Accounts Units shall be as indicated in the Contract Data. The Branch office of the Employer's Bank, where the Employer Accounts Office has its Account, as indicated in the Contract Data, 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 present incidental cost @ 0.15% per annum of LC value or any increase/decrease by the banks for issue of LC and operation thereof shall be borne by the contractor and shall be recovered from his Interim Payment Certificates.
- (iv) The LC shall be opened initially for duration of 180 to 365 days in consultation with contractor. The LC shall be extended time to time as per the progress of the contract, on the request of the contractor. The value of LC to be opened initially as well as extended thereafter shall be finalized by the engineer in consultation with the contractor on the basis of expected progress of work.
- (v) The LC terms and conditions shall inter-alia indemnify and save harmless the Employer from and against all losses, claims and demands of every nature and description brought or recovered against the Employer 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 Employer on this account shall be considered as reasonable compensation and paid by contractor.
- (vi) The LC terms and conditions shall inter-alia provide that Employer will issue a Document of Authorisation (in the format decided in consultation with the Employer's Bank) after passing the Interim Payment Certificate for completed work, to enable contractor to claim the authorized amount from their bank.
- (vii) The acceptable, agreed upon document for payments to be released under the LC shall be the Document of Authorisation.
- (viii) The Document of Authorisation shall be issued by Employer Accounts Office against each Interim Payment Certificate passed by Employers.
- (ix) On issuance of document of Authorisation, a copy of Document of Authorization shall be sent to the contractor. A copy of Document of Authorisation shall also be sent by Employer Accounts Office to Employer's bank.

- (x) On receipt of Document of Authorization, the contractor shall present his claim to his bank (advising Bank) for necessary payments as per LC terms and conditions. The claim shall comprise of copy of Document of Authorization, Bill of Exchange and Payment Certificate.
- (xi) The payment against LC shall be subject to verification from Employer's Bank .
- (xii) The contractor's bank (advising bank) shall submit the documents to the Employer's Bank .
- (xiii) The Employer's bank (Issuing Bank) shall, after verifying the claim so received w.r.t. the Document of Authorisation received from Employer Accounts Office release the payment to contractor's bank (advising bank) for crediting the same to contractor's account.
- (xiv) Any number of Interim Payment Certificates can be dealt within one LC, provided the sum total of payments to contractor is within the amount for which LC has been opened.
- (xv) The LC shall be closed after the release of Final Payment certificate including PVC amount, if any, to the contractor.
- (xvi) In case of JV, LC shall be opened in the name of JV and option of direct payment to individual JV partners through LC shall not be permissible.

14.8 Delayed Payment If the Contractor does not receive payment in accordance with Sub-Clause 14.7 [Payment], the Contractor shall be entitled to receive interest on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 14.7 [Payment], irrespective (in the case of its sub-paragraph (b)) of the date on which any Interim Payment Certificate is issued.

Unless otherwise stated in the Special Conditions of Contract, the interest amount be calculated at the rate specified in the Contract Data. If no rate is specified in the Contract Data the clause shall not apply.

The Contractor shall be entitled to this payment without formal notice or certification, and without prejudice to any other right or remedy.

14.9 Payment of

The Retention Money shall be certified and paid with the final payment certificate or bank guarantee against retention money shall be released, after

Retention Money making required adjustments for recovery for shortage/excess materials, if any **(except those quantities which become surplus due to change in planning/scheme by Railway/EMPLOYER) in case the recovery for surplus/excess materials is still balance after adjusting the amount payable in the final payment certificate.**

The contractor shall be entitled to substitute a bank guarantee in the form approved by the Employer with the retention money amount recovered upto the date of request. Such substitution shall be permissible maximum upto 3 times. The Bank Guarantee shall be valid upto end of Defect Liability Period. In case of extension of date of completion of contract, the Contractor shall extend the validity of the Bank Guarantee(s) until the revised end of Defect Liability Period.

Wherever the contract is terminated under Clause 15.2, the Retention Money shall be forfeited and the balance work should be got done separately.

14.10 Statement at Completion

Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Engineer six copies of a Statement at completion with supporting documents, in accordance with Sub-Clause 14.3 [Application for Interim Payment Certificates], showing:

- (a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,
- (b) any further sums which the Contractor considers to be due, and
- (c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.

The Engineer shall then certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates].

Within 56 days after receiving the Performance Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement as per procedure prescribed by the Engineer, with supporting documents showing in detail in a form approved by the Engineer:

14.11 Application for Final Payment

Within 56 days after receiving the Performance Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement as per procedure prescribed by the Engineer, with supporting documents

Certificate

(including Contractor’s certificate in terms of Sub-Clause 6.22 (ii)) showing in detail in a form approved by the Engineer:

- (a) the value of all work done in accordance with the Contract, and
- (b) any further sums which the Contractor considers to be due to him under the Contract or otherwise, and
- (c) the final statement of local content after completion of works in Form-MII provided in Section 4 Bidding Forms.

If the Engineer disagrees with or cannot verify any part of the draft final statement, as per procedure prescribed by the Engineer the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the final statement as agreed. This agreed statement is referred to in these Conditions as the “Final Statement”.

However if, following discussions between the Engineer and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Engineer shall deliver to the Employer (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause 20.3 [Obtaining Dispute Board’s Decision] or Sub-Clause 20.2 [Amicable Settlement], the Contractor shall then prepare and submit to the Employer (with a copy to the Engineer) a Final Statement.

14.12 Discharge

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.

14.13 Issue of Final Payment Certificate

Within 28 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Engineer shall issue, to the Employer, the Final Payment Certificate which shall state:

- (a) the amount which he fairly determines is finally due, and
- (b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled, the balance (if any) due from the Employer to the Contractor or from the Contractor to the Employer, as the case may be.

If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-

Clause 14.12 [Discharge], the Engineer shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 28 days, the Engineer shall issue the Final Payment Certificate for such amount as he fairly determines to be due.

14.14 Cessation of Employer's Liability

The Employer shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:

- (a) in the Final Statement and also
- (b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause 14.10 [Statement at Completion].

However, this Sub-Clause shall not limit the Employer's liability under his indemnification obligations, or the Employer's liability in any case of fraud, deliberate default or reckless misconduct by the Employer.

14.15 Currencies of Payment

The Contract Price shall be paid in Indian Rupees (INR).

15. Termination by Employer

15.1 Notice to Correct If the Contractor fails to carry out any obligation under the Contract as mentioned below, but not limited to, the Engineer/ Employer may serve the contractor with a 14 days notice in writing calling upon the contractor to make good the failure and to remedy it. If the contractor;

- (a) fails to comply with Sub-Clause 4.2 [Performance Security],
- (b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,
- (c) without reasonable excuse fails to:
 - (i) proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or
 - (ii) comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 28 days after receiving it, or
 - (iii) adhere to the agreed programme of work / activity on the critical path, by a margin of 10% of the stipulated period, or
 - (iv) take steps to deploy competent and adequate number of personnel, and equipment to achieve progress as per agreed programme or
 - (v) adhere to the instructions of Engineers/Employer persistently or

- (vi) comply any provision of the contract or
 - (vii) provide the Engineer/Employer or their representative proper facilities for inspecting the works or any part thereof as required, under Clause 7.3 (Inspection) and 7.4 (Testing).
- (d) subcontracts the whole or major part of the Works or assigns the Contract without prior written consent of the Employer,

If the contractor does not, within 14 days of receipt of notice under this sub-clause, proceed to make good his default in so far as the same is capable of being made good and carry on the work of complying with such direction as contained in the notice under sub clause 15.1, to the entire satisfaction of the Engineer/Employer, the Employer shall be entitled to take action under sub-clause 15.1.1 or 15.1.2 or 15.2 below.

15.1.1

In case of contractor's repeated failure to adhere to the agreed program, and whereas the contractor has been served with a Notice to Correct under Clause 15.1 of GCC, if the contractor approaches EMPLOYER with a revised program with specific monthly physical and financial targets along with the proposal to deploy matching inputs in the form of manpower and other resources to the satisfaction of the Employer, then the Employer may consider whether to proceed with termination of the contract under Clause 15.2 of GCC or to continue with the contract. However, the request to continue with the contract shall only be considered if the contractor supports his earnestness to adhere to the revised program by submitting additional Performance Security in the form of Bank Guarantee(s) of specified number and value as decided by the Employer (total value of which will not exceed 10% of the contract price). The encashment of these additional Bank Guarantee(s) shall be linked with the non achievement of agreed physical/financial targets agreed upon by the Contractor and the Employer.

15.1.2

In case the contractor's failure is limited to only some of the works, and in response to Notice to Correct under Clause 15.1 of GCC, the contractor approaches the Employer that such works may be offloaded from him and got executed through another agency and additional cost incurred, if any, should be recovered from his dues, the Employer, on being convinced that the anticipated additional cost for such works will not be substantial and can be recovered from the dues of the contractor and that such offloading will help in improving the overall progress of the project, may agree to such offloading without any repercussion on the performance security and/or additional bank guarantees, if any, submitted by the contractor. However, the Employer will not be under any compulsion to agree to such a request. The Contractor shall be informed of the LOA issued to other agency(ies) for such works.

In case the contractor does not approach the employer for offloading but

the Employer is convinced that:

- (i) offloading of some works will help in improving the progress of the project;
- (ii) termination/part termination of the contract at this stage will not be in the interest of the project;
- (iii) the anticipated additional cost for such works will not be substantial and can be recovered from the dues of the contractor;

The Employer may issue 7 days notice to the Contractor stating the resources required to be deployed against each work. If the contractor fails to deploy the required resources as indicated in the notice, the employer shall offload such works and proceed with getting the works executed through other agency(ies). The Contractor shall be informed of the LOA issued to other agency(ies) for such works.

Offloading under the sub clause 15.1.2 shall be without any repercussion on the performance security and/or additional bank guarantees, if any, submitted by the contractor. The Contractor would have no future claim on this account and the extra expenditure so incurred, if any, by the Employer in getting the offloaded work done, shall be recovered from subsequent payment certificates or any other dues of the contractor.

15.2 Termination by Employer

The Employer shall be entitled to terminate the Contract as a whole or any part or parts (as may be specified in the Notice of Termination under any of the above Sub-Clause issue) if the Contractor:

- (a) fails to comply with the directions contained in the notice under Sub-Clause 15.1 [Notice to Correct],
- (b) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against it by Court or Statutory Authority him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or
- (c) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:
 - (i) for doing or forbearing to do any action in relation to the Contract, or
 - (ii) for showing or forbearing to show favour or disfavour to any person in relation to the Contract,

or if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (c). However, lawful inducements and

rewards to Contractor's Personnel shall not entitle termination

In any of these events or circumstances, the Employer may, by Notice Terminate the contract with immediate effect.

The Employer's election to terminate the Contract shall not prejudice any other rights of the Employer, under the Contract or otherwise.

The Contractor shall remove all his plants and machinery from the site then leave the Site and deliver any required Goods, all Contractors' Documents, and other design documents made by or for him, to the Engineer within 7 days from the issue of Notice of Termination, failing which Delay Damages as prescribed for delay in completion of works shall be imposed as per provision of clause 8.7. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice of Termination (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

After termination, the Employer may complete the Works and/or arrange for any other entities to do so. The Employer and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor for completing the work.

15.3 Valuation at Date of Termination As soon as practicable after a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract. For this purpose, the contractor shall be notified the date for witnessing of measurements and handing over of the materials for which contractor has already been paid. In case the contractor fails to attend or send a representative even after such notice, the Engineer shall ex parte proceed with measurements of the works executed and taking over of plants and materials etc. for which payment has already been made to the contractor, which shall be treated as final.

15.4 Payment after Termination After a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Employer may:

- (a) proceed in accordance with Sub-Clause 2.5 [Employer's Claims],
- (b) encash the Performance Guarantee and forfeit the Performance Security:
 - i) In full including additional Performance Guarantee amount if any taken in terms of sub clause 35.5 of ITBand not due for release on the date of issue of termination letter, in case of termination of the contract as a whole; Or
 - ii) in part/parts proportionate to the contract price of the bill/schedule to which the terminated part of work belongs i.e.

$P = (A \times B) \div C$ where,

P = Proportionate Bank Guarantee Amount

A = Contract Price of the particular bill/schedule to which the terminated part of work belongs

B = Performance Guarantee amount in terms of GCC sub clause 4.2

C = Total Contract Price

Plus additional Performance Guarantee amount if any taken in terms of sub clause 35.5 of ITB and not due for release on the date of issue of termination letter against that particular bill/Schedule to which the terminated part of the work belongs in case of termination in part/parts.

(c) release any payment due to the contractor for works executed prior to termination and evaluation under clause 15.3 (valuation at date of termination, however, if by this time the Contractor has failed to make a payment due to the Employer, the same will be deducted from the payment due and any balance remaining shall then be paid to the Contractor.).

15.5 Employer's Entitlement to Termination for Convenience

The Employer shall be entitled to terminate the Contract, at any time for the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after the later of the dates on which the Contractor receives this notice or the Employer returns the Performance Security. The Employer shall not terminate the Contract under this Sub-Clause in order to execute the Works himself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause 16.2 [Termination by Contractor].

After this termination, the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment] and shall be paid in accordance with Sub-Clause 19.1 [Payment and Release in case of Optional Termination].

15.6 Corrupt or Fraudulent Practices

If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 15 shall apply as if such expulsion had been made under Sub-Clause 15.2.

For the purposes of this Sub-Clause:

- (a) *“corrupt practice” means the offering, giving, receiving of soliciting of any thing of value to influence the action of a public official in the procurement process or in the Contract execution.*
- (b) *“fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of the Contract to the detriment of the Employer, and includes collusive practice among Bidders*

(prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.

- (i) (c) *“collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Employer, designed to establish bid prices at artificial, noncompetitive levels.*
- (d) *“coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.*

16. Suspension and Termination by Contractor

16.1 Contractor’s Entitlement to Suspend Work

If the Engineer fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or the Employer fails to comply with Sub-Clause 2.4 [Employer’s Financial Arrangements] or Sub-Clause 14.7 [Payment], the Contractor may, after giving not less than 21 days’ notice to the Employer, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.

The Contractor’s action shall not prejudice his entitlements to interest under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause 16.2 [Termination by Contractor].

If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor’s Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

16.2 Termination by Contractor

The Contractor shall be entitled to terminate the Contract if:

- (a) the Contractor does not receive the reasonable evidence within 42 days after giving notice under Sub-Clause 16.1 [Contractor’s Entitlement to Suspend Work] in respect of a failure to comply with Sub-Clause 2.4 [Employer’s Financial Arrangements],
- (b) the Engineer fails, within 56 days after receiving a Statement and

supporting documents, to issue the relevant Payment Certificate,

- (c) the Contractor does not receive the amount due under an Interim Payment Certificate within 42 days after the expiry of the time stated in Sub-Clause 14.7 [Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Employer’s Claims]),
- (d) a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged Suspension], or
- (e) the Employer becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.

In any of these events or circumstances, the Contractor may, upon giving 14 days’ notice to the Employer, terminate the Contract. However, in the case of sub-paragraph (d) or (e), the Contractor may by notice terminate the Contract immediately.

The Contractor’s election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract or otherwise.

16.3 Cessation of Work and Removal of Contractor’s Equipment

After a notice of termination under Sub-Clause 15.5 [Employer’s Entitlement to Termination], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.1 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

- (a) cease all further work, except for such work as may have been instructed by the Engineer for the protection of life or property or for the safety of the Works,
- (b) hand over Contractor’s Documents, Plant, Materials and other work, for which the Contractor has received payment, and
- (c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

16.4 Payment on Termination

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Employer shall promptly:

- (a) return the Performance Security to the Contractor,
- (b) pay the Contractor in accordance with Sub-Clause 19.1 [Optional Termination, Payment and Release], and
- (c) should the contract be terminated under sub-clause 15.5 of this clause and the contractor claims payment for expenditure incurred by him in the expectation of completing the whole of the work, the Employer shall admit and consider such claims as are deemed reasonable and are supported by vouchers to the satisfaction of the Engineer. The Employer’s decision on the necessity and propriety of such expenditure

shall be final and conclusive.

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

17. Risk and Responsibility

17.1 Indemnities

The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

- (a) bodily injury, sickness, disease or death, of any person including railway user whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and
- (b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel,, their respective agents, or anyone directly or indirectly employed by any of them.

The Employer shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in subparagraphs (d)(i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property].

17.2 Contractor's Care of the Works

The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Sub-Clause 10.1 [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Employer. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Employer.

After responsibility has accordingly passed to the Employer, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been

completed.

If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 17.3 [Employer's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.

The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

17.3 Employer's Risks The risks referred to in Sub-Clause 17.4 below, insofar as they directly affect the execution of the works in the Country, are:

- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country,
- (c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel,
- (d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,
- (e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
- (f) use or occupation by the Employer of any part of the Permanent Works, except as may be specified in the Contract,
- (g) design of any part of the Works by the Employer's Personnel or by others for whom the Employer is responsible, and
- (h) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions.

17.4 Consequences of Employer's Risks If and to the extent that any of the risks listed in Sub-Clause 17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Engineer and shall rectify this loss or damage to the extent required by the Engineer.

If the Contractor suffers delay and/or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be

delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

- (b) payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (f) and (g) of Sub-Clause 17.3 [Employer's Risks], Cost shall be payable.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

17.5 Intellectual and Industrial Property Rights

In this Sub-Clause, “infringement” means an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and “claim” means a claim (or proceedings pursuing a claim) alleging an infringement.

Whenever a Party does not give notice to the other Party of any claim within 28 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.

The Employer shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:

- (a) an unavoidable result of the Contractor’s compliance with the Contract, or
- (b) a result of any Works being used by the Employer:
 - (i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or
 - (ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.

The Contractor shall indemnify and hold the Employer harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

17.6 Limitation of Liability

Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, provided that this exclusion shall not apply to any obligation of the Contractor to pay Delay Damages to the Employer under Sub-Clause 8.7 [Delay Damages].

The total liability of the Contractor to the Employer, under or in connection

with the Contract other than under Sub-Clause 4.19 [Electricity, Water and Gas], Sub-Clause 4.20 [Employer’s Equipment and Free-Issue Material], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum as specified in the Contract Data or if nothing is specified in the Contract Data, the accepted Contract Amount.

This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

17.7 Use of Employer’s Accommodation/Facilities

The Contractor shall take full responsibility for the care of the Employer provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).

If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Employer is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Engineer.

18. Insurance

18.1 General Requirements for Insurances

In this Clause, “insuring Party” means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Employer. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

Wherever the Employer is the insuring Party, each insurance shall be effected with insurers and in terms consistent with the details annexed to the Special Conditions of Contract.

If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Employer shall act for Employer’s Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

The relevant insuring Party shall, within the respective periods stated in the Contract Data (calculated from the Commencement Date), submit to the other Party:

- (a) evidence that the insurances described in this Clause have been effected, and
- (b) copies of the policies for the insurances described in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].
- (c) If the contractor fails to submit evidence and copies of the policies as mentioned in (a) & (b) above to prove that the policies have been obtained within the period specified in the contract data, and submits the same later on and from the submitted evidence it is found that the policies have not been obtained within the period specified, the Employer shall recover double the cost of the premium for the period the policies have been delayed.

When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer.

Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.

Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay double the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.

Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Employer, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Employer in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the

omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.

Payments by one Party to the other Party shall be subject to Sub-Clause 2.5 [Employer’s Claims] or Sub-Clause 20.1 [Contractor’s Claims], as applicable.

The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause 18) with insurers from any eligible source country.

The Contractor shall insure the Works, Plant, Materials, including those issued by the Employer and Contractor’s Documents for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit, subject to a maximum value indicated in Contract Data. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 18.1 [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.

18.2 Insurance for Works and Contractor’s Equipment

The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under Clause 11 [Defects Liability]).

The insuring Party shall insure the Contractor’s Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor’s Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor’s Equipment.

Unless otherwise stated in the Special Conditions of Contract, insurances under this Sub-Clause:

- (a) shall be effected and maintained by the Contractor as insuring Party,
- (b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated between the Parties for the sole purpose of rectifying the loss or damage,
- (c) shall cover all loss and damage from any cause not listed in Sub-Clause 17.3 [Employer’s Risks],
- (d) shall also cover loss or damage to a part of the Works which is attributable to the use or occupation by the Employer of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 17.3 [Employer’s Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated in the Contract Data (if an amount is not so stated, this sub-paragraph (d) shall

not apply), and

- (e) may however exclude loss of, damage to, and reinstatement of:
 - i) part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in subparagraph (ii) below),
 - ii) a part of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,
 - iii) a part of the Works which has been taken over by the Employer, except to the extent that the Contractor is liable for the loss or damage, and
 - iv) Goods while they are not in the Country, subject to Sub-Clause 14.5 [Plant and Materials intended for the Works].

If, more than one year after the Base Date, the cover described in subparagraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Employer, with supporting particulars. The Employer shall then (i) be entitled subject to Sub-Clause 2.5 [Employer's Claims] to payment of an amount equivalent to such commercially reasonable terms as the Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 18.1 [General Requirements for Insurances].

18.3 Insurance against Injury to Persons and Damage to Property The insuring Party shall insure against each Party’s liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor’s Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [Insurance for Contractor’s Personnel]), which may arise out of the Contractor’s performance of the Contract and occurring before the issue of the Performance Certificate.

This insurance shall be for a limit per occurrence of not less than the amount stated in the Contract Data, with no limit on the number of occurrences. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply.

Unless otherwise stated in the Special Conditions of Contract, the insurances specified in this Sub-Clause:

- (a) shall be effected and maintained by the Contractor as insuring Party,
- (b) shall be in the joint names of the Parties,
- (c) shall be extended to cover liability for all loss and damage to the Employer’s property including Railways Property (except things insured under Sub-Clause 18.2) arising out of the Contractor’s performance of the Contract, and
- (d) may however exclude liability to the extent that it arises from:
 - (i) the Employer’s right to have the Permanent Works executed on, over, under, in or through any land, and to occupy this land for the Permanent Works,
 - (ii) damage which is an unavoidable result of the Contractor’s obligations to execute the Works and remedy any defects, and
 - (iii) a cause listed in Sub-Clause 17.3 [Employer’s Risks], except to the extent that cover is available at commercially reasonable terms.

18.4 Insurance for Contractor’s Personnel The Contractor shall abide by the provisions of ESIC Act, 1948 (extended from time to time) to take care of insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness or disease. In addition the contractor shall also maintain insurance against liability for claim of death of any person employed by the Contractor or any other of the Contractor’s Personnel.

The Employer and the Engineer shall also be indemnified under the policy of insurance, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Employer or of the Employer’s Personnel.

The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a

Subcontractor’s employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause.

19. Force Majeure

If at any time, during the continuance of this contract, the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, serious loss or damage by fire, explosions, epidemics, strikes, lockouts or acts of God (hereinafter referred to ‘events’) provided, notice of the happening of any such event is given by either party to the other within 14 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance of delay in performance, and works under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and decision of the Engineer as to whether the works have been so resumed or not shall be final and conclusive, PROVIDED FURTHER that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a continuous period exceeding 84 days, either party may at its option terminate the contract by giving notice to the other party.

19.1 Payment and Release in case of Optional Termination

Upon such termination, the Engineer shall determine the value of the work done and issue a Payment Certificate which shall include :

- (a) The amount payable for any work carried out for which a price is stated in the contract;
- (b) The Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the contractor is liable to accept delivery; this Plant and materials shall become the property of (and be at the risk of) the Employer when paid for by the Employer, the Contractor shall place the same at the Employer’s disposal;
- (c) Other Costs or liabilities supported by necessary documentary evidence which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works as per mutually agreed programme.
- (d) the Cost of removal of Temporary Works and Contractor’s Equipment from the Site and the return of these items to the Contractor’s works in his country (or to any other destination at no greater cost).

20. Claims, Disputes and Arbitration

20.1 Contractor’s If the Contractor considers himself to be entitled to any extension of the Time

Claims

for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Engineer. Without admitting the Employer's liability, the Engineer may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Engineer to inspect all these records, and shall (if instructed) submit copies to the Engineer.

Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Engineer may reasonably require; and
- (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.

Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Engineer and approved by the Contractor, the Engineer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each Payment Certificate shall include such amounts for any claim as have

been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

20.2 Amicable Settlement

In case any dispute between the Engineer and the Contractor for which claim has already been made by the contractor, remains unresolved, the Contractor shall, then, give notice of dissatisfaction and intention to commence arbitration to the Employer duly specifying the subject of the dispute or difference as also the amount of claim item wise. The Parties shall make attempts to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, demand for arbitration may be made by the contractor after ninety days from the day on which a notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

20.3 Arbitration

Any dispute, in respect of which amicable settlement has not been reached, arising between the Employer and the Domestic or Foreign Contractor related to any matter arising out of or connected with this contract, then the contractor shall be entitled to demand in writing that the dispute or difference be referred to arbitration.

Only such dispute(s) or difference(s) in respect of which the demand had been made for amicable settlement under GCC 20.2 but could not be settled, shall be referred to arbitration subject to the condition that cumulative amount of claims in the contract is not exceeding 20% of the contract price. In case the cumulative amount of claims exceeds 20% of the contract price, arbitration clause will not be applicable.

The Arbitration proceedings shall commence from the day, a written and duly quantified demand for arbitration is received by Managing Director/HORCL (EMPLOYER).

The disputes so referred to arbitration shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996 and any statutory modification or re-enactment thereof.

Further, it is agreed between the parties as under:

20.3.1

Number of Arbitrators: The arbitral tribunal shall consist of three arbitrators.

20.3.2

Procedure for Appointment of Arbitrators: The arbitrators shall be appointed as per following procedure:

- (a) The Contractor, while invoking demand for arbitration, shall submit to MD/EMPLOYER, claims duly quantified along with name and contact details of his nominee arbitrator. Thereafter, he Employer will nominate his nominee arbitrator within a period of 30 days from receipt of such demand from the Contractor and will issue letter of appointment to both the arbitrators appointed by the parties with a copy to the Contractor.
- (b) The third Arbitrator shall be chosen by the two Arbitrators so appointed by the parties and shall act as Presiding Arbitrator. In case of failure of the two Arbitrators appointed by the parties to reach upon consensus within a period of 30 days from the appointment of the Arbitrators subsequently appointed, then, upon the request of either or both parties, the Presiding Arbitrator shall be appointed by the Chairman and Managing Director, Haryana Orbital Rail Corporation Limited.
- (c) If one or more of the arbitrators appointed as above refuses to act as arbitrator, withdraws from his office as arbitrator, or vacates his/their office/offices or is/are unable or unwilling to perform his functions as arbitrator for any reason whatsoever or dies or in the opinion of the MD/EMPLOYER fails to act without undue delay, the MD/EMPLOYER shall appoint new arbitrator/arbitrators to act in his/their place except in case of new Presiding Arbitrator who shall be chosen following the same procedure as mentioned in para (b) above. Such re-constituted Tribunal may, at its discretion, proceed with the reference from the stage at which it was left by the previous arbitrator(s).

20.3.3

Qualification and Experience of Arbitrators (to be appointed as per sub-clause 20.3.2 above): The contract being of specialized nature requiring knowledge and experience of dealing with construction contracts, the arbitrators to be appointed shall have minimum qualification and experience as under:

Arbitrator shall be;

a working/retired officer (not below E-9 grade and above in a PSU with which EMPLOYER has no business relationship) of any discipline of Engineering or Accounts/Finance department, having experience in Contract Management of construction contracts; or

a retired officer (retired not below the HAG level) of any Engineering/Accounts Services of Central Government, having experience in Contract Management of construction contracts; or a retired officer who should have retired more than 3 years previously from the date of appointment as Arbitrator (retired not below E-9 grade in EMPLOYER or a PSU with which EMPLOYER has a business relationship) of any Engineering discipline or Accounts department, having experience in Contract Management of construction contracts.

No person other than the persons appointed as per above procedure and having above qualification and experience shall act as Arbitrator. In case any person having the qualification and experience other than that mentioned above is nominated as arbitrator, the arbitration clause shall cease to exist and shall not be applicable.

20.3.4 No new claim, except as otherwise mutually agreed by the Parties, shall be added during proceedings by either party. However, a party may amend or supplement the original claim or defence thereof during the course of arbitration proceedings subject to acceptance by Tribunal having due regard to the delay in making it.

20.3.5 Neither party shall be limited in the proceedings before such arbitrators to the evidence nor did arguments previously put before during amicable settlement.

20.3.6 The reference to arbitration may proceed, notwithstanding that the Works shall not then be or be alleged to be complete, provided always that the obligations of the Employer, the Engineer and the Contractor shall not be altered by the reason of the arbitration being conducted during the progress of the Works. Neither party shall be entitled to suspend the Works, nor shall payment to the Contractor be withheld on account of such proceedings

20.3.7 If the contractor(s) does/do not prefer his/their specific and final claims in writing, within a period of 90 days of receiving the intimation from the Employer/Engineer that the final bill is ready for signature of the contractor(s), he/they will be deemed to have waived his/their claim(s) and the Employer shall be discharged and released of all liabilities under the contract in respect of these claims.

20.3.8 Arbitration proceedings shall be held at Gurugram, India or at a place where EMPLOYER's (dealing the contract) office is located, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.

The Arbitral Tribunal should record day to day proceedings. The proceedings

20.3.9 shall normally be conducted on the basis of documents and written statements.
All arbitration awards shall be in writing and shall state item wise, the sum and detailed reasons upon which it is based.

20.3.10 Any ruling on award shall be made by a majority of members of Tribunal. In the absence of such a majority, the views of the Presiding Arbitrator shall prevail.

A party may apply for correction of any computational errors, any typographical or clerical errors or any other error of similar nature occurring in the award of a tribunal and interpretation of specific point of award to tribunal within 60 days of the receipt of award.

A party may apply to tribunal within 60 days of receipt of award to make an additional award as to claims presented in the arbitral proceedings but omitted from the arbitral award.

20.3.11 Where the Arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period till the date on which the award is made.

20.3.12 The fees and other charges of the conciliator/arbitrators shall be as per the fee structure fixed by the employer (enclosed as Annexure 3 to section 7) and as amended from time to time irrespective of the fact whether the Arbitrator(s) is/are appointed by the parties or by the Court of law unless specifically directed by Hon'ble Court otherwise on the matter, and shall be shared equally by the Employer and the Contractor. However, the expenses incurred by each party in connection with the preparation, presentation will be borne by itself.

21. Jurisdiction of Courts The Contract Agreement shall be subject to exclusive jurisdiction of Courts as indicated in the Contract Data.

The Contract Agreement shall be subject to exclusive jurisdiction of Courts as indicated in the Contract Data.

22. Risk Allocation and mitigation measures

Various Risk events anticipated, potential impact of such events, risk allocation and mitigation measures have been identified and tabulated as Annexure 5 of Particular Conditions of Contract.

**SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS
ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK**

(The laws as current on the date of bid opening will apply)

- a) **Workmen Compensation Act 1923:** The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- b) **Payment of Gratuity Act 1972:** Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- c) **Employees P.F. and Miscellaneous Provision Act 1952 (since amended):** The Act Provides for monthly contributions by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:
 - (i) Pension or family pension on retirement or death, as the case may be.
 - (ii) Deposit linked insurance on the death in harness of the worker.
 - (iii) payment of P.F. accumulation on retirement/death etc.
- d) **Maternity Benefit Act 1951:** The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- e) **Contract Labour (Regulation & Abolition) Act 1970:** The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.
- f) **Minimum Wages Act 1948:** The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.

- g) **Payment of Wages Act 1936:** It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.
- h) **Equal Remuneration Act 1979:** The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- i) **Payment of Bonus Act 1965:** The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3500/-per month or less. The bonus to be paid to employees getting Rs.2500/- per month or above upto Rs.3500/- per month shall be worked out by taking wages as Rs.2500/-per month only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.
- j) **Industrial Disputes Act 1947:** The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- k) **Industrial Employment (Standing Orders) Act 1946:** It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.
- l) **Trade Unions Act 1926:** The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- m) **Child Labour (Prohibition & Regulation) Act 1986:**The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.
- n) **Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979:** The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upto the establishment and back, etc.

- o) **The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996:** All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

As per Central Government's Notification No.S.O.2899 dated 26.09.1996 under this act, the cess shall be levied @1% of cost of construction works which shall be deducted from each bill of the payment due to the contractor.

- p) **Factories Act 1948:** The Act lays down the procedure for approval at plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.
- q) **The Employees State Insurance Act, 1948 (Act No. 34 of 1948) (Provisions as extended from time to time):**An Act to provide for certain benefits to employees in case of sickness, maternity and 'employment injury' and to make provision for certain other matters in relation thereto

Section 7

Special Conditions of Contract

Part A: Contract Data

Section 7 - Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC

Part A - Contract Data

Conditions	Reference to GCC	Data
Contract Type	-	S&T Contract
Employer's name and address	1.1.2.2 & 1.3	Haryana Orbital Rail Corporation Limited (HORCL), Plot No 143, 5th Floor, RailTel Tower, Sector-44, Gurugram, Haryana-122003 E-mail: gminfrahrdc@gmail.com
Employer's Representative	1.1.2.6	Chief Project Manager (West), Haryana Rail Infrastructure Development Corporation Limited (HRIDC), Plot No 143, 5th Floor, RailTel Tower, Sector-44, Gurugram, Haryana-122003 E-mail: gminfrahrdc@gmail.com
Engineer's name and address	1.1.2.4 & 1.3 (b)	RITES Limited in Consortium with SMEC International Pty Ltd, 4th Floor, Plot No.144, RITES Limited, Sector-44, Gurugram, Haryana-122003
Defects Notification Period	1.1.3.7	365 days
Sections	1.1.5.6; 1.1.3.3 & 8.2	NA
Electronic transmission systems	1.3 (a)	By Email
Address for Communication to Employer	1.3 (b)	Plot No 143, 5th Floor, RailTel Tower, Sector-44, Gurugram, Haryana-122003 E-mail: gminfrahrdc@gmail.com
Governing Law	1.4	The Laws of Republic of India

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Conditions	Reference to GCC	Data
Ruling language	1.4	English
Language for communications	1.4	English
Time for access to Site	2.1	On the Commencement Date.
Performance Security	4.2 & 11.9	The Performance Security shall be for an amount of 5% (Five percent) of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract amount in the prescribed form for the stated amount valid for a period of 14 days beyond issue of performance certificate.
Performance Security	4.2	Rate of addition or Reduction of Performance Security due to variation in contract price: 5%
Normal working hours	6.5	Sunrise to Sunset (This may be modified to suit the work requirements).
Commencement of works	8.1	within twenty one (21) days from the date of issue of Letter of Acceptance.
Delay damages for the Works when delay is fully attributable to the contractor	8.7(a)	(i) 0.5% of the Contract Price per week or part thereof in the currencies and proportions in which the Contract Price is payable in case of delay in completion for entire works.
Maximum amount of delay damages	8.7	5% (five percent) of the Contract Price.
Amount of bonus for early completion	8.13	Not Applicable
Adjustment for Changes in Cost	13.8	Not Applicable
Mobilization advance payment	14.2.1	Not Applicable
Advance Payment against Plant and Machinery	14.2.2	Not Applicable

Conditions	Reference to GCC	Data
Interest on Advance Payment	14.2.1 & 14.2.2	Not Applicable
Repayment rate of Advance payment	14.2.4	Not Applicable
Percentage of Retention Money	14.3(c)	Retention money shall be deducted @ 6%
Limit of Retention Money	14.3 (c)	5% of the Contract Price
Plant and Materials intended for the Works	14.5 (b) (i)	Not applicable
	14.5(c) (i)	Plant and material when delivered are listed in Price Bid
Employers' Bank details for LC	14.7.1	Not Applicable
Interest Rate	14.8	Not Applicable
Maximum Total Liability of the Contractor	17.6	Accepted Contract Amount
Periods for submission of insurance: a) evidence of insurance b) relevant policies	18.1	a) 14 days b) 28 days
Maximum amount of deductibles for insurance of Employer's risks.	18.2 (d)	NIL
Minimum amount of insurance by the Contractor for Works and Contractor's Plant and Materials including loss or damage to equipment.	18.2	100 (hundred) percent of Contract price

Conditions	Reference to GCC	Data
Minimum amount of insurance by the Contractor for Third party insurance including damage to Other Property and personal injury or death insurance for: a) for other people, and b) for Contractor's Employees.	18.3	<u>Rs.2 (two) crores per occurrence without any limit for number of occurrences.</u>
Jurisdiction of Courts	21	Gurugram, Haryana
Risk Allocation and mitigation measures	22	Deleted

Section 7

Special Conditions of Contract

Part B: Specific Provisions

SECTION – 7
SPECIAL CONDITIONS OF CONTRACT

PART B : Specific Provisions

Whenever there is a conflict or inconsistency between the provisions of the Special Conditions of Contract–Section 7 PART B and the General Conditions of Contract–Section 6, the provisions stipulated in Special Conditions of Contract–Section 7 PART B shall prevail and supersede those appearing in the General Conditions of Contract–Section 6.

Section 7 – PART B - Special Conditions of Contract

The following Special Conditions of Contract (SCC) Section 7-Part B shall supplement the General Conditions of Contract (GCC) Section 6. Whenever there is a conflict, the provisions herein shall prevail over those in the GCC Section 6.

13) Table of Clauses

Reference to Sub Clause	Subject	Page No.	Remarks
4.8	Safety Provisions	Annexure 1	Amended
14.7.1	Replace entire Sub-Clause 14.7.1 with the following: Payment Terms A) Supply of Material (Item No. 1 to 30 of BoQ) 70% of payment for items shall be made to the Contractor on receipt of: <ul style="list-style-type: none"> a) Bill/ Tax invoice b) Receipt of material at site/ Employer’s project depot managed by the Contractor c) Insurance of material for the project execution period d) Inspection certificate from the competent inspecting authority e) Indemnity Bond f) Delivery Challan g) Certificate from the Contractor & OEM that material being supplied is new with latest version and complies with the Specification h) Commitment from OEM for support to the Contractor/ HORCL/ Railway for the product being supplied till DNP. ii) 20% payment shall be made on installation & commissioning of equipment/ material at site ii) 10% payment shall be made on commissioning of complete work & issue of Taking Over Certificate.		Amended

Reference to Sub Clause	Subject	Page No.	Remarks
	<p>B) Installation, Testing & Commissioning (Item No. 31 to 54 of BoQ):</p> <p>i) 90% payment shall be made on execution/ installation & commissioning of item at site.</p> <p>ii) 10% of the payment shall be made on commissioning of complete work & issue of Taking Over Certificate.</p>		
22	Risk allocation and Mitigation		Not Applicable

Annexure 1 to Section 7

Safety Provisions

- (1) The Contractor shall comply with all the precautions as required for the safety of the workmen by the I.L.O Convention No.62 as far as they are applicable to the Contract. The Contractor shall provide all necessary safety appliances; such as safety goggles, helmets, masks, etc to the workmen and the staff.
- (2) Suitable scaffolds shall be provided for workmen for all work that cannot safely be done from the ground, or from solid construction except for such short period work as can be done safely from ladders. When a ladder is used, an extra labourer shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable foot-holds and hand-holds shall be provided on the ladder, which shall be given an inclination not steeper than 1/4 to 1 (1/4 horizontal in 1 vertical)
- (3) Scaffolding or staging more than 3.25 metres above the ground or floor, swung or suspended from an overhead support or erected with stationary support, shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 metre high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as maybe necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying in from the support or structure.
- (4) Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally, and if the height of any platform or gangway or stairway is more than 3.25 metres above ground level or floor level, it shall have closely spaced boards, have adequate width and be suitably provided with guard rails as described in (3) above.
- (5) Every opening in the floor of a structure or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of one metre.
- (6) Safe means of access and egress shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length. The width between side rails in a rung ladder shall in no case be less than 30 cm for ladders up to and including 3 metres in length. For longer ladders the width shall be increased at least 6 mm for each additional 30 cm of length. Spacing of steps shall be uniform and shall not exceed 30 cm.
- (7) Adequate precautions shall be taken to prevent danger from electrical equipment. Adequate safety measures shall be taken when any work is undertaken near any live highly charged electric wire. Necessary shutdown may be arranged, where and whenever essential. All rules in force in this connection shall be fully complied with. The Contractor shall ensure all precautions to prevent any accidents due to electrocution or otherwise.

- (8) No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Contractor shall provide all necessary fencing and lights to protect the public from accidents and shall be bound to bear the expenses of defending every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the Contractor be paid to compromise any claim by any such person.
- (9) Excavation and Trenching : All trenches, 1.5 metres or more in depth, shall at all times be supplied with at least one ladder for each 20 metres in length or fraction thereof, Ladders shall be extended from the bottom of the trench to at least 1 metre above the surface of the ground. The sides of a trench, which is 1.5 metres or more in depth shall be stepped back to provide a suitable slope, or be securely held by timber bracing so as to avoid the danger of side collapse. Excavated material shall not be placed within 1.5 metres of the edge of any trench or half the depth of the trench, whichever is more. Excavation shall be made from the top to the bottom. Under no circumstances shall undermining or undercutting be done.
- (10) Demolition : Before any demolition work is commenced and also during the process of the work :
- (e) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - (f) No electric cable or apparatus, which is liable to be a source of danger other than a cable or apparatus used by operators, shall remain electrically charged:
 - (g) All practical steps shall be taken to prevent danger to persons employed by the Employer, from risk of fire or explosion, or flooding. No floor, roof or other part of a building shall be so overloaded with debris or materials as to render it unsafe.
- (11) All necessary personal safety equipment as considered adequate by the Engineer shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use; and the Contractor shall take adequate steps to ensure proper use of such equipment by those concerned.
- (a) Workers employed on mixing asphaltic materials, cement, lime mortars, concrete etc. shall be provided with protective footwear and protective goggles.
 - (b) Those engaged in handling any material, which is injurious to the eyes, shall be provided with protective goggles.
 - (c) Those engaged in welding works shall be provided with welder's protective eye-shield.

- (d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - (e) When workers are employed in sewers and manhole, which are in use, the contractor shall ensure that manhole covers are open and manholes are ventilated at least for an hour before workers are allowed to go into them. Manholes so open shall be cordoned off with suitable railing and provide warning signals or boards to prevent accidents to the public.
- (12) The Contractor shall not employ men below the age of 18 years and women, on the work of painting with products containing lead in any form. Whenever men above the age of 18 years are employed on the work of lead painting, the following precautions shall be taken:
- (a) No paint containing lead or lead products shall be used except in the form of paste or ready made paint.
 - (b) Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
 - (c) Overalls shall be supplied by the Contractor to workmen and adequate facilities shall be provided to enable workers to wash during and at the close of any day's work.
- 14) When work is performed near any place where there is risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- (14) Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following:
- (a) (i) These shall be of good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good working order, be regularly inspected and properly maintained.
 - (ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from defects
 - (b) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 shall be in charge of any hoisting machine including scaffold equipment. Only trained men over the age of 21 shall be permitted to give signals to such plant and appliance operators.

- (c) For every hoisting machine and every chain hook, shackle, swivel and pulley block used in hoisting, lowering or as means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of a hoisting machine or a variable safe working load, each safe working load and conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to in the paragraph above shall be loaded beyond safe working load except for the purpose of testing.
- (d) In case of the Employer's machine, safe working load shall be notified by the Engineer or his Representative. As regards Contractor's machines, the Contractor shall notify safe working load of each machine to the Engineer or his Representative, whenever he brings it to the site of work and get it verified by him.
- (15) Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards; hoisting appliances shall be provided with such means as will reduce the risk of accident during descent of load to the minimum. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energised, insulating mats, working apparel such as gloves, sleeves and boots, as may be necessary, shall be provided. Workers shall not wear any rings, watches and carry keys or other materials which are good conductor of electricity.
- (16) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.
- (17) These safety provisions shall be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work location. Persons responsible for ensuring compliance with the Safety Code shall be named therein by the Contractor.
- (18) To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the contractor shall be open to inspection by the Engineer or his Representative.
- (19) Notwithstanding anything contained in conditions (1) to (17) above, the Contractor shall at its own costs, remain liable to comply with the provisions of all acts, rules, regulations, and bylaws for the time being in force in India and applicable in this matter.
- (20) For work carried out in the vicinity of any wharf or quay, the Contractor shall abide by all the provisions of the Dock Workers (Safety, Health and Welfare) Scheme, 1961.

- (21) The Contractor shall at his own expense provide protective safety Equipment like gloves and footwear for all labour engaged on concrete mixing work and all other types of working involving the use of tar, cement, etc. to the satisfaction of the Engineer or his Representative, and on his failure to do so, the employer shall be entitled to provide the same and recover the cost from the Contractor.
- (22) The Contractor shall be responsible for observance, by the sub-contractors, of the foregoing provisions.

Section 8

Contract Forms

Section 8 - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

All italicized text is for guidance how to prepare the various forms and shall be deleted from the final documents.

Table of Forms

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Letter of Acceptance

[on letterhead paper of the Employer]

..... date.

To: *[name and address of the Contractor]*

Subject: *[Insert Name and Identification number]* *[Notification of Award]*

This is to notify you that your Bid dated *[Insert Date]*. . . for execution of the . . . *[name of the contract and identification number, as given in the Contract Data]* . . . for the Accepted Contract Amount of the equivalent of INR . . . *[Insert amount in numbers and words and name of the currency]*. . . , as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the *of* the Performance Security Form No. COF/3 included in Section 8 (Contract Forms) of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Contract Agreement

THIS AGREEMENT made theday of, between [*Name of the Employer.* (hereinafter “the Employer”), of the one part, and [*name of the Contractor*].¹(hereinafter “the Contractor”), of the other part:

WHEREAS the *Employer* desires that the Works known as [*name of the Contract*]. should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (b) - the Letter of Acceptance
 - (c) - the Letter of Technical Bid
 - (d) - the Letter of Price Bid
 - (e) - the Addenda Nos. [*insert addenda numbers if any*].
 - (f) - the Special Conditions of Contract
 - (g) Part A : Contract Data
 - (h) Part B : Specific Provisions
 - (i) - the General Conditions of Contract;
 - (j) - the Specification
 - (k) - the Drawings;
 - (l) - the Work’s Requirements
 - (m) - the completed Schedules including (priced Bill of Quantities)
 - (n) - Any other documents
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

¹In case Contractor is a Joint Venture the ‘name of the contractor’ shall be inserted as under :
“the Joint Venture under the name and title of, comprising of[Lead Partner] ;; and”

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of [*name of the borrowing country*].on the day, month and year indicated above.

Signed by

Signed by

for and on behalf of the Employer

for and on behalf the Contractor

in the presence of

in the presence of

Witness, Name, Signature, Address, Date

Witness, Name, Signature,

Address, Date

**FORM OF CONTRACT PERFORMANCE SECURITY
(BANK GUARANTEE)**

[Refer Clause 41 of Instructions to Bidders]

(On non-judicial stamp paper of the appropriate value in accordance with stamp Act. The stamp paper to be in the name of Executing Bank).

From:

Name and Address of the Bank.....

.....

To:

Haryana Orbital Rail Corporation Limited,

Plot No 143, 5th Floor, RailTel Tower,

Sector-44, Gurugram,

Haryana-122003

WHEREAS, Haryana Orbital Rail Corporation Limited, hereinafter called the Employer, acting through *[Insert Designation and address of the Employer's Representative]*, has accepted the bid of *[Insert Name and address of the Contractor]*, hereinafter called the Contractor, for the work of *[Insert Name of Work]*, vide Notification of Award No. *[Insert Notification of Award No.]*.

AND

WHEREAS, the contractor is required to furnish Performance Security for the sum of *[Insert Value of Performance Security required]*, in the form of bank guarantee, being a condition precedent to the signing of the contract agreement.

WHEREAS, *[Insert Name of the Bank]*, with its Branch *[Address]* having its Headquarters office at *[Address]*, hereinafter called the Bank, acting through *[Designation(s) of the authorised person of the Bank]*, have, at the request of the *[Insert name of the JV partner]*, a JV partner on behalf of the contractor, agreed to give guarantee for performance security and additional performance security as hereinafter contained:

Bid No: HORC/HRIDC/Patli/S&T-01/2023

1. KNOW ALL MEN 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 the Employer the full amount in the sum of [Insert Value of Performance Security required] as above stated.
2. The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal notwithstanding any disputes raised/pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Employer of Bank.
3. On payment of any amount less than aforementioned full amount, as per demand of the Employer, the guarantee shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Employer.
4. The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the contractor and without the Employer being required to show grounds or give reasons for its demand or the amount demanded.
5. The Bank Guarantee shall be unconditional and irrevocable.
6. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Contractor.
7. The Bank 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 Employer and the Contractor, will in any way release us from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the Bank.
8. This guarantee is valid and effective from the date of its issue, which is ***[insert date of issue]***. The guarantee and our obligations under it will expire on ***[Insert the date twenty eight days after the expected end of defect liability period]***. All demands for payment under the guarantee must be received by us on or before that date.
9. The Bank agrees that the Employers 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 Employer or the guarantee is released by Employer before the Expiry date.
10. The Bank agrees that its obligation to pay any amount demanded by the Employer before the expiry of this guarantee will continue until the amount demanded has been paid in full.

11. The expressions Bank and Employer herein before used shall include their respective successors and assigns.
12. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the employer. This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG), ICC Publication No. 758.
13. The Guarantee shall be in addition to and without prejudice to any other security Guarantee (s) of the contractor in favour of the Employer available with the Employer. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Employer.

Date

Place.....

[Signature of Authorised person of Bank]

.....

[Name in Block letters]

.....

[Designation]

.....

[P/Attorney] No.

.....

Bank's Seal

[P/Attorney] No.....

Witness:

1. *Signature*
Name & Address & Seal
2. *Signature*
Name & address & Seal

Notes:

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

Bid No: HORC/HRIDC/Patli/S&T-01/2023

2. In case the guarantee is issued by a foreign Bank, which does not have operations in India, the said bank shall have to provide a counter-guarantee by State Bank of India.
3. In case the Contractor is a JV, the Performance Security is required to be furnished on behalf of the JV in favour of the Employer by the JV Partners in proportion of their respective percentage share specified in the JV Agreement. The percentage share of M/s *[Insert Name of the JV Partner]* in the JV is *[Fill share % in the JV]* percent. All the Bank Guarantee of JV Partners are liable to be encashed cumulatively.

FORM OF ADDITIONAL PERFORMANCE SECURITY (BANK GUARANTEE)

[Refer Clause 35.5 of Instructions to Bidders]

(On non-judicial stamp paper of the appropriate value in accordance with stamp Act. The stamp paper to be in the name of Executing Bank)

From:

Name and Address of the Bank.....

.....

To:

Haryana Orbital Rail Corporation Limited,

Plot No 143, 5th Floor, Railtel Tower,

Sector-44, Gurugram,

Haryana-122003

WHEREAS, Haryana Orbital Rail Corporation Limited, hereinafter called the Employer, acting through *[Insert Designation and address of the Employer's Representative]*, has accepted the bid of *[Insert Name and address of the Contractor]*, hereinafter called the Contractor, for the work of *[Insert Name of Work]*, vide Notification of Award No. *[Insert Notification of Award No.]*.

AND

WHEREAS, the contractor is required to furnish additional Performance Security for the sum of *[Insert Value of additional Performance Security required]*, in the form of bank guarantee, being a condition precedent to the signing of the contract agreement.

Bid No: HORC/HRIDC/Patli/S&T-01/2023

WHEREAS, [Insert Name of the Bank], with its Branch *[Address]* having its Headquarters office at *[Address]*, hereinafter called the Bank, acting through *[Designation(s) of the authorised person of the Bank]*, have, at the request of the *[Insert name of the JV partner]*, a JV partner on behalf of the contractor, agreed to give guarantee for 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 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 the Employer the full amount in the sum of *[Insert Value of additional Performance Security required]* as above stated.
2. The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Employer of Bank.
3. On payment of any amount less than aforementioned full amount, as per demand of the Employer, the guarantee shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Employer.
4. The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the contractor and without the Employer being required to show grounds or give reasons for its demand or the amount demanded.
5. The Bank Guarantee shall be unconditional and irrevocable.
6. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Contractor.
7. The Bank 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 Employer and the Contractor, will in any way release us from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the Bank.
8. This guarantee is valid and effective from the date of its issue, which is [insert date of issue]. The guarantee and our obligations under it will expire on *[Insert the date twenty eight days after the expected end of defect liability period]*. All demands for payment under the guarantee must be received by us on or before that date.

9. The Bank agrees that the Employers 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 Employer or the guarantee is released by Employer before the Expiry date.
10. The Bank agrees that its obligation to pay any amount demanded by the Employer before the expiry of this guarantee will continue until the amount demanded has been paid in full.
11. The expressions Bank and Employer herein before used shall include their respective successors and assigns.
12. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.
13. The Guarantee shall be in addition to and without prejudice to any other security Guarantee(s) of the contractor in favour of the Employer available with the Employer. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Employer.

Date

Place.....

[Signature of Authorised person of Bank]

.....
[Name in Block letters]

.....
[Designation]

.....
[P/Attorney] No.

.....
Bank's Seal

.....
[P/Attorney] No.

Witness:

Bid No: HORC/HRIDC/Patli/S&T-01/2023

1. *Signature*
Name & Address & Seal

2. *Signature*
Name & address & Seal

Note:

1. All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.
2. In case the guarantee is issued by a foreign Bank, which does not have operations in India, the said bank shall have to provide a counter-guarantee by State Bank of India.
3. The Bank Guarantee should be duly attested by Notary public with notarial stamp of appropriate value affixed thereon.
4. In case the Contractor is a JV, the additional Performance Security is required to be furnished on behalf of the JV in favour of the Employer by the JV Partner(s) who is responsible for execution of schedule(s) (as per JV agreement) against which additional Performance Security is required to be submitted in terms of ITB 35.5. All the Bank Guarantee of JV Partners are liable to be encashed cumulatively.

Advance Payment Security

[Refer Clause 14.2 of GCC]

[Not Applicable]

INDEMNITY BOND FOR THE SAFE CUSTODY OF THE PLANT AND MATERIALS SUPPLIED BY THE CONTRACTOR

[Refer Clause 14.5 of GCC]

(To be executed on Non-Judicial Stamp Paper of Appropriate Value and notarised)

THIS INDEMNITY BOND made on this _____ day of _____ 20__ by _____ (*insert the name of the Contractor and its registered address*) (hereinafter called “the Contractor”) which expression shall where the context do admits or implies be deemed to include its executors, administrators and assigns, in favour of the Haryana Orbital Rail Corporation Limited, Plot No 143, 5th Floor, Railtel Tower, Sector-44, Gurugram, Haryana-122003(hereinafter called “Employer”/”HORCL”) on the other part.

WHEREAS by an Agreement/Letter of Acceptance No. _____ dated _____ (hereinafter called “the said agreement”), the Contractor has agreed to execute the _____ (*Name of Work*) (hereinafter called “the Works”).

AND WHEREAS the Contractor has submitted to HORCL/ the Engineer for payment on plants & materials procured by him and brought to the site of the Works or his workshop for use in the Works.

AND WHEREAS HORCL/ the Engineer has agreed to make advance/stage payment to the Contractor the total sum of Rs. _____ (*in Figures*) [Rupees _____ (*in Words*)] in Interim Payment Certificate (IPC) No. _____, the quantities and other particulars of which are detailed in this IPC for the said works signed by the Contractor on _____ for the Plant and Materials brought by the Contractor to site of the works or his workshop. Brief details are also mentioned in schedule 1 appended hereto.

NOW THIS INDEMNITY BOND WITNESS that in pursuance of the said agreement and in consideration of the sum of Rs. _____ (*in Figures*) _____ (*in Words*) on or before the execution of these presents to be paid to the Contractor by HORCL so aforesaid, the Contractor doth hereby covenant and agree with HORCL and declare as follows: -

1. That the said sum of Rs. _____ (*In Figures*) _____ (*in Words*) to be paid by HORCL to the Contractor as aforesaid shall be utilized by the Contractor in or towards the execution of the said works and for no other purpose whatsoever.
2. That the Plant and Materials detailed in the said IPC which have been offered to and accepted by HORCL/ the Engineer, are absolutely the Contractor’s own property and free from encumbrances of any kind and the Contractor will not make any application for or receive any further payment on the Plant and Materials which are not absolutely his own property and free from encumbrances of any kind, the Contractor indemnifies the HORCL

Bid No: HORC/HRIDC/Patli/S&T-01/2023

against all claims on any Plant and Materials in respect of which payment is to be made to him as aforesaid.

3. That the Contractor undertakes that the Plant and Materials shall be used exclusively for the performance / execution of the Contract strictly in accordance with the terms and conditions of the Contract and no part of the Plant and Materials shall be utilized for any other work or purpose whatsoever.
4. That the Contractor is obliged and shall remain absolutely responsible for the safe transit / protection and custody of the Plant and Materials against all risks whatsoever including acts of the God till the Plant and Materials are duly incorporated in the works, commissioned and are taken over by HORCL/Railway (including surplus Plant and Materials, if required as instructed by HORCL/ the Engineer) in accordance with the terms of the Contract. The Contractor undertakes to keep HORCL harmless against any loss or damage that may be caused to the Plant and Materials.
5. That the said Plant and Materials shall not on any account be removed from the site of the works except with the written permission of HORCL/ the Engineer. Further, HORCL/ the Engineer shall always be free at all times to take possession of the materials in whatever form the materials may be in, if in its opinion, the Plant and Materials are likely to be endangered, mis-utilized or converted to uses other than those specified in the Contract, by any acts or omission or commission on the part of the Contractor or any other person or on account of any reason whatsoever and the Contractor binds himself and undertakes to comply with the directions of demand of HORCL to return the Plant and Materials without any demur or reservation.
6. That the said plant and materials shall, at all times, be open to inspection by HORCL/ the Engineer or any authorized representative. In the event of the said material or any part thereof at any time being found to be in lesser quantity than for which payment has been released or the same has been stolen, destroyed or damaged or becoming deteriorated, the Contractor will forthwith replace the same or repair and make good the same as required by HORCL/ the Engineer.
7. That making payment does not mean that Plant and Materials are of required specifications and quality or that whole of the quantity brought to site by Contractor will be used in the work. The Contractor is fully responsible for the materials to conform to required quality and specification and if at any time HORCL/ the Engineer do not find the material satisfactory, the Contractor at his own cost would replace these. HORCL/ the Engineer would be at liberty to recover cost of these from any dues of the Contractor. Also any Plant and Materials which are in excess of what is finally required under the contract would be the Contractor's property without any liability on HORCL/ the Engineer who would recover the cost of this from the Contractor.
8. That this Indemnity Bond is irrevocable. If at any time, any loss or damage occurs to the

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Plant and Materials or the same or any part thereof is mis-utilized in any manner whatsoever, then the Contractor hereby agrees that the decision of HORCL/ the Engineer as to assessment of loss or damage to the Plant and Materials shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Plant and Materials at its own cost and/or shall pay the amount of loss to HORCL without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to HORCL/ the Engineer against the Contractor under the Contract or under this Indemnity Bond.

9. That if the Contractor shall at any time make any default in the performance or observance in any respect of any of the terms and provisions of the said agreement or of those presents, the total amount of the payment shall immediately on the happening of such default be recovered by HORCL/ the Engineer from any dues of Contractor. It is also clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purpose including legal / penal consequences.
10. IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorized representative, the day, month and year first above mentioned.

11. SCHEDULE 1

Particulars of the Plant and Materials	Quantity	Value of the Plant and Materials

Signed, Sealed and Delivered by the said Contractor

(Contractor's Name)

Dated:

(AUTHORISED SIGNATORY)

Place:

SEAL OF COMPANY

IN THE PRESENCE OF:

Bid No: HORC/HRIDC/Patli/S&T-01/2023

WITNESS: SIGNATURE _____

NAME: _____

ADDRESS : _____

Note:

The contractor has the option to submit the Indemnity Bond to cover all the items and quantities of Plant and Materials of stage payment or to submit indemnity bond each time the stage payment is to be taken or Plant and Materials advance is to be taken.

FORM OF BANK GUARANTEE FOR RELEASE OF BALANCE RETENTION MONEY

Q. *(On non-judicial stamp paper of the appropriate value in accordance with stamp Act. The stamp paper to be in the name of Executing Bank).*

From:

.....

.....*Name and Address of the Bank*.....

.....

To:

Haryana Orbital Rail Corporation Limited,

Plot No 143, 5th Floor, RailTel Tower,

Sector-44, Gurugram,

Haryana-122003.

- a) WHEREAS, Haryana Orbital Rail Corporation Limited, (hereinafter called the **Employer**), acting through *[Insert Designation and address of the Employer's Representative]*, has entered into a contract with *[Insert Name and address of the Contractor's Representative]*, (hereinafter called the **Contractor**), for the work of *[Insert Name of Work]*, vide Notification of Award No. *[Insert Notification of Award No.]*.
- b) WHEREAS as per conditions of contract Employer has deducted an amount of RS *[Insert Amount deducted as retention money]* towards retention money till date, and WHEREAS now the contractor has requested the Employer for releasing the said amount on submission of a bank guarantee of equivalent amount which has been accepted by the Employer.****

OR

WHEREAS as per conditions of contract Employer has deducted an amount of RS *[Insert Amount deducted as retention money]* towards retention money till date, out of a total amount of Rs *[Insert total Amount of retention money deductible as specified in the contract]* which is due to be deducted as retention money as per Contract agreement and WHEREAS now the Contractor has requested the Employer to accept a bank guarantee of the equivalent amount of the total retention money due as per contract

Bid No: HORC/HRIDC/Patli/S&T-01/2023

agreement so that the amount already deducted may be released in favour of the contractor and that no further deduction towards retention money will be made in future which has been accepted by the Employer. ****

c) WHEREAS, *[Insert Name of the Bank]*, with its Branch *[Address]* having its Headquarters office at *[Address]*, hereinafter called the **Bank**, acting through *[Designation(s) of the authorised person of the Bank]*, have, at the request of the contractor, agreed to give guarantee as hereinafter contained:

1. KNOW ALL MEN 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 the Employer to pay the full amount in the sum of *[Insert Value of the Bank Guarantee being submitted]* as above stated.
2. The Bank undertakes to immediately pay to the Employer any amount up to and including aforementioned full amount upon written order/orders from the Employer without any demur, reservation or recourse.
3. On payment of any amount less than aforementioned full amount, as per demand of the Employer, the guarantee shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Employer.
4. The Bank shall pay the amount so demanded without any reference to the contractor and without the Employer being required to show grounds or give reasons for its demand or the amount demanded.
5. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Contractor.
6. The Bank 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 Employer and the Contractor, will in any way release us from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the Bank.
7. This guarantee is valid and effective from the date of its issue, which is *[insert date of issue]*. The guarantee and our obligations under it will expire on *[Insert the date twenty eight days after the expected end of defect liability period.]* All demands for payment under the guarantee must be received by us on or before that date.
8. The Bank agrees that the Employers right to demand payment of aforementioned full amount in one instance or demand payments in parts totaling up to the aforementioned full amount in

several instances will continue until either the aforementioned full amount is paid to the Employer or the guarantee expires.

9. The Bank agrees that its obligation to pay any amount demanded by the Employer before the expiry of this guarantee will continue until the amount demanded has been paid in full.
10. The expressions Bank and Employer herein before used shall include their respective successors and assigns.
11. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the employer. This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG), ICC Publication No. 758.

Date
Place.....
[Signature of Authorised person of Bank]
[Name in Block letters]
[Designation]
Address
.....

Witness :

1. *Signature*
Name & Address & Seal
2. *Signature* *Bank's Seal*
Name & address & Seal *Authorisation No.....*

Note :

- 1) *All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.*
- 2) *In case the guarantee is issued by a foreign Bank, the said bank shall have operations in India and should be countersigned by Indian operations branch of the said bank.*
- 3) *The Bank Guarantee should be duly attested by Notary public with notarial stamps of appropriate value affixed thereon.*
- 4) ***** strike out whichever is not applicable*

Bid Document for Works

(Two-Envelope Bidding Process)

Name of work: Shifting of S&T Cables and Associated Works, at Patli station of N. Rly. in Delhi-Rewari, section in connection with laying of tracks for HORC project.

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Contract title: Patli S&T Tender (Cable Shifting and associated works)

Project: Haryana Orbital Rail Corridor Project

Employer: Haryana Orbital Rail Corporation Limited

Country: INDIA

Issued on: 21.11.2023

Summary

Invitation for Bids (IFB)

Volume-I

PART 1 – BIDDING PROCEDURES

- Section 1: Instructions to Bidders (ITB)
- Section 2: Bid Data Sheet (BDS)
- Section 3: Evaluation and Qualification Criteria (EQC)
- Section 4: Bidding Forms (BDF)

PART 2 – WORKS’ REQUIREMENTS

- Section 5: Works’ Requirements (WRQ)

PART 3 – CONDITIONS OF CONTRACT AND CONTRACT FORMS

- Section 6: General Conditions of Contract (GCC)
- Section 7: Special Conditions of Contract (SCC)
 - Part A: Contract Data (CD)
 - Part B: Specific Provisions (SP)

- Section 8 – Contract Forms (COF) – Annexures to SCC

Volume-II

Bill of Quantities (BOQ)

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Volume II
Bill of Quantities

Bill of Quantities

1. Preamble

- 1.1. The Bills of Quantities (BOQ) shall be read in conjunction with the Instructions to Bidders, the General Conditions of Contract, the Special Conditions of Contract, General Specifications, Particular Specifications, the Drawings and the Addenda/Corrigenda (if any).
- 1.2. The quantities given in the Bills of Quantities are estimated and provisional and are given to provide a common basis for Bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.
- 1.3. The rates quoted in the priced Bill of Quantities are for complete and finished items of the work in all respects. The rates and prices shall, except in so far as it is otherwise provided under the Contract, shall include all design, manufacture, supply, installation, testing commissioning, all necessary survey work, plants, tools, machinery, labour, compliance of labour laws, supervision, materials, transportation, handling, loading & unloading, storage, sampling, testing, fuel, oil, consumables, electric power, water, all leads & lifts, dewatering, all temporary works including temporary accesses, staging, form works and false works, stacking, provision and maintenance of all temporary works area, construction of temporary store and buildings, fencing, barricading, lighting, drainage arrangements, erection & maintenance of inspection facilities above and below ground such as brick, concrete and steel etc.), restatement, remedy of any defects during the Defects Notification Period, safety measures for workmen and road users, preparation of design and drawings pertaining to the Works, & traffic diversion works, mobilization and demobilization, establishment and overhead charges, labor camps, insurance cost for labor and works, contractor's profit, all taxes including GST, insurance, royalties, duties, cess, octroi, other levies and other charges together with all general risks, liabilities and obligations set out or implied in the Contract.
- 1.4. The cost of all the items as detailed in General Specifications and Particular Specifications shall be deemed to have been included in the rates and prices in the priced Bill of Quantities unless otherwise specified in the Contract.
- 1.5. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bills of Quantities. References to the relevant sections of the Contract Documents shall be made before entering rates and prices in the priced Bill of Quantities.

- 1.6. The Bidders shall quote percentage rate (%) Excess(+)/Less (-) against total value of each Bill number.
- 1.7. The description of items in the BOQ are not exhaustive, and hence the Contractor shall be required to execute all necessary works required for completion of the concerned item of the BOQ in accordance with the Contract.

2. Deleted

3. Measurement and Payment

- a. As already stated under 1.1, the prices and rates quoted shall be comprehensive and must include cost for complying in all respects with the Bill of Quantities, Instruction to Bidders, the General Conditions, the Special Conditions, Specifications and Drawings and for all matters and things necessary for the proper construction, completion, and making good of any defect in of the whole of the Works.
- b. No claims for additional payment will be allowed for any error or misunderstanding by the Contractor of the work involved.
- c. The measurement shall be made as per Bill of Quantities, General Specifications, Particular Specifications, the Drawings and other relevant provisions of the Contract.

2. Procedures for Payment

- a. The Employer shall make interim payments to the Contractor in accordance with the provisions of Sub-Clause 14.6 [Issue of Interim Payment Certificates] of the General Conditions, as certified by the Engineer on the basis of the progress achieved for the items of works/stages of the works.
- b. The Contractor shall base his claim for interim payment in accordance with Sub-Clause 14.3 [Application for Interim Payment Certificates] of the General Conditions for various items of work on the basis of actual progress of work executed till the end of the month for which the payment is claimed in relation to the Contractor's total executed quantity, supported with documents and updated programme in accordance with the Works Requirements.
- c. The Employer may carry out necessary test checks, either directly or through an independent agency, of the Works done by the Contractor for which payment has been accepted and certified by the Engineer. The payment shall depend upon the outcome of such test checks.

- d. Format for the Contractor's application for payment shall be agreed between the Engineer and the Contractor.
- e. All necessary supplementary details to support progress claims, including all certified Request for Inspection in hard bound copy, shall be included with application for payment. Sketches, drawings, approvals, calculations, test reports etc. shall accompany an application for payment to be substantiated by the Contractor, certified by the Engineer and submitted to the Employer.
- f. Even if no work is executed during the month, or the Contractor does not choose to issue an application for payment, a 'NIL' application shall be submitted.
- g. The Employer may deploy external agencies, other than the Engineer, to cross check the work done by the Contractor. If at a later stage it is discovered that excess payment has been released to the Contractor or the work is found to be defective, suitable recoveries would be affected from the first available bill of the Contractor.
- h. The Engineer is not obliged to issue an Interim Payment Certificate until such breakdown structure of payment schedule has been submitted and accepted by the Engineer.

3. Methodology for Claiming Payment

- a. The Contractor shall prepare his monthly application for payment in the agreed format in six hard copies and one soft copy. This shall be accompanied by supplementary details in accordance with Sub-Clause 14.3 [Application for Interim Payment Certificates] of the General Conditions. All hard copies shall bear the original signatures of the Contractor's Representative and be submitted to the Engineer.
- b. If these are found in order, in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] of the General Conditions, then the Engineer shall forward two certified copies of the application along with certified supplementary details to the Employer, with his recommendation for payment; otherwise, all documents shall be returned to the Contractor for rectification and resubmission.

4. Work Items

The Bill of Quantities usually contains the following part Bills, which have been grouped according to the nature or timing of the work:

Bill No. 1: Signalling and Telecommunication - Supply of Material and execution of the work

5. Payment Terms

a. Supply of equipment & material:

- i) 70% of payment for items shall be made to the Contractor on receipt of:
 - a) Bill/ Tax invoice

- b) Receipt of material at site/ Employer's project depot managed by the Contractor
 - c) Insurance of material for the project execution period
 - d) Inspection certificate from the competent inspecting authority
 - e) Delivery Challan
 - f) Certificate from the Contractor & OEM that material being supplied is new with latest version and complies with the Specification
 - g) Commitment from OEM for support to the Contractor/ HORCL/ Railway for the product being supplied and minimum for 7 years.
- ii) 20% payment shall be made on installation & commissioning of equipment/ material at site
 - iii) 10% payment shall be made on commissioning of complete work & issue of Taking Over Certificate.

b. For : Installation & Commissioning:

- i) 90% payment shall be made on execution/ installation & commissioning of item at site.
- ii) 10% of payment shall be made on commissioning of complete work & issue of Taking Over Certificate.

Bill of Quantities

Patli cable shifting Bill of Quantity

SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
1	Supply of Armoured Optical Fiber Cable (OFC) (24 Fiber) Mono Mode as per Spec. No. IRS-TC – 55/2006 (rev.1) Amdt1.1 & RDSO/SPN/TC/110/2020.	Kms.	₹ 1,06,925	2	₹ 2,13,850
2	Supply of permanently lubricated HDPE duct, 40 mm outer dia, as per RDSO spec. No. RDSO/SPN/TC/45/2013 Rev.2 Amndt.2 or latest, along with all accessories like end caps, collars, bends, couplers etc.	Kms.	₹ 82,731	2	₹ 1,65,462
3	Supply of basic material to construct unit maintenance free earth as per RDSO Specs. No. RDSO/SPN/197 Ver. 1.0 or latest to achieve a resistance less than 1 ohm. It consist of following: (a) Copper bonded steel electrode of minimum 3.0 meter long, minimum 17.0 mm dia with copper bonding thickness of minimum 250 microns and UL listed and marked = 1 No. (b) Earth enhancement material supplied in sealed bags of minimum 10 kg = 3 Nos. (c) Copper strip of 150x25x6 mm, to terminate earth rod = 1 No. (d) Copper strip of 300x25x6 mm (MEEB) = 1 No. (e) Copper strip of 150x25x6mm (SEEB) = 1 No. (ii) Supply of 35 sq. mm multi strand single core PVC insulated copper cable as per IS: 694 for connecting main earth electrode to MEEB in the equipment room in duplicate.(minimum 10 meter.) (iii) Supply of 16 sq. mm multi strand single core PVC insulated copper cable as per IS: 694 for connecting MEEB to SEEB and SPD to MEEB (minimum 10 meter.) (iv) Supply of 10 sq. mm multi strand single core PVC insulated copper cable as per IS: 694 for connecting various equipments to SEEB (v) Supply of copper lug sleeve for 3/16 cable	Set	₹ 17,941	2	₹ 35,882

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
4	Supply of underground railway jelly filled 6 Quad cable 0.9 mm dia copper conductor as per RDSO Spec IRS TC 30/2005 (Ver-I) (Amnd 1 to 5) or latest	Kms.	₹ 3,91,842	3	₹ 11,75,526
5	supply of 12 core x 1.5 Sqmm (copper conductor) PVC Insulated armoured unscreened underground railway signalling cable as per RDSO spec. IRS:s-63/2014 (Rev. 4.0) or Latest	Kms.	₹ 2,53,137	38	₹ 96,19,206
6	supply of 6 core x 1.5 Sqmm (copper conductor) PVC Insulated armoured unscreened underground railway signalling cable as per RDSO spec. IRS:s-63/2014 (Rev. 4.0) or Latest	Kms.	₹ 1,62,510	8	₹ 13,00,080
7	Supply of 24 fiber optical fiber cable straight joint enclosure (SJC) complete with all accessories along with enclosures with heat shrinkable splice protection sleeve as per RDSO spec. RDSO/SPN/TC68/2014 Revision 1.0, Amndt. 1.0 or latest. Splice losses in no case should be more than 0.1 dB.	Nos.	₹ 6,195	2	₹ 12,391
8	Supply of Q-Series Track Relay (QTA2 Type), AC immunized, 9 Ohms, 2F/1B along with plug board (base plate), connectors, retaining clips etc and conforming to BRS:939A & 966(Appendix F2) or latest and RDSO Specn.No.IRS:S-34, S-23 , S-60 or latest, as applicable. Th e interlocking code for this unit shall be "FGHKX"	Nos.	₹ 4,281	15	₹ 64,209
9	Supply of Q-Series Line Relay (QNA1 Type),AC immunized, 8F/8B, 24 V DC along with plug board (base plate), connectors, retaining clips etc and conforming to BRS931A and RDSO Specn.No.IRS:S-34, S-23 , S-60 or latest, as applicable. Th e interlocking code for this unit shall be "ABDGH"	Nos.	₹ 5,014	20	₹ 1,00,283

Bid No: HORC/HRIDC/Patli/S&T-01/2023

Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
10	Supply of Key Lock Checking Relay (KLCR) working on 24V DC, AC Immunized, metal to metal, with different ward combinations and contact configuration 4F/4B with 2 extra ward plates, RDSO spec No. RDSO/SPN/219/2016 Ver 1.0 with Amendment-1 or latest.	Nos.	₹ 9,029	5	₹ 45,146
11	Supply of 16/0.2 mm (0.5 sq mm) PVC insulated multi strand, single core, tinned copper conductor, as per RDSO Specn.No.IRS:S-76/89 (Amnd-3) or latest. Each coil should be of 100/200/500 meters length.Colour of the wire will be specified by the Engineer incharge.	mts.	₹ 12	1600	₹ 19,584
12	Supply of 1 x 6 Sq mm (Red/Black/Green) multi strand copper power wire , 85 conductor each dia 0.30 +/- 0.01 with insulation thickness of 0.8 mm and nominal conductor resistance of 3.3 ohms/km and test parameters as per RDSO Specn.No.IRS:S-76/89 (Amnd.3) or latest.Colour of the wire will be specified by the Engineer incharge.	mts.	₹ 54	200	₹ 10,800
13	Supply of Track Lead Junction Box(TLJB), 4 way, 250 mm x 255 mm x120 mm made from FRP, as per Drg.No. 20101/M(IRS) or latest, including brass bolts and hylam board sheet with terminals etc. The FRP material shall be as per RDSO spec. RDSO/SPN/151/1997 or latest.The technical specifications are as follows: (a) TLJB complete with cover to be in black/red/grey with all the holes required for mounting on FRP stump (vertical two for each FRP angle) HDPE pipe , cable etc. (b) Each TLJB shall have two bakelite terminal block fitted horizontally, each bakelite terminal block shall have two nickel chrome plate with brass terminal. Alongwith each TLJB , nickel chrome plated brass links(two nos.of adequate strength for vertical linking of the terminals to be supplied. (c) HDPE pipe alongwith two nuts for fixing on the TLJB hole . (d) The FRP stump for mounting the TLJB	Nos.	₹ 6,006	30	₹ 1,80,191

SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
14	Supply of Adjustable Track Feed Resistance 30 Ohms (Disc Type), Phenolic moulded base, as per RDSO Drg. No.SA-20161-66/M or latest	Nos.	₹ 2,566	15	₹ 38,492
15	Supply of Track feed Battery Charger as per RDSO Specn. No.IRS: S-89/2013 Ver.1.0 or latest. Charging capacity rating should be suitable for charging 80 AH Battery.	Nos.	₹ 6,641	15	₹ 99,613
16	Supply of B Type Choke as per RDSO Specn.No.IRS:S-65/83 (Amnd. 3) or latest.	Nos.	₹ 6,651	30	₹ 1,99,530
17	Supply of uncharged Low Maintenance Lead Acid (LMLA) secondary cell, 2V, 80 AH, in dry condition, shelf mounting type, conforming to RDSO Specn.No.IRS:S-88/2004 or latest, with inter cell connectors, nuts and bolts, washers, microporous vent plug, float etc.	Nos.	₹ 3,500	45	₹ 1,57,494
18	Supply of Apparatus Case/Location Box Full as per RDSO drg. no. RDSO/S-11500 or latest, with 'E' type lock and key ward no. 42, . The key and handle should be supplied at the rate of one no. per four Apparatus cases. The 'E' type key lock is as per RDSO Spec. IRS;S-30/64 or latest, RDSO drg. no.SA 3376/M or latest and Key is as per Drg. No. 3377/M or latest.Note: This item includes the supply of 2 Nos E Type Lock fitted on both doors, along with two Key.	Nos.	₹ 30,951	15	₹ 4,64,265

SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
19	Supply of Apparatus Case/Location Box Half as per RDSO drg. no. RDSO/S-11507 or latest, with 'E' type lock and key ward no. 42, . The key and handle should be supplied at the rate of one no. per four Apparatus cases. The 'E' type key lock is as per RDSO drg. no.SA 3376/M or latest and Key is as per Drg. No. 3377/M or latest.Note: This item includes the supply of 2 Nos E Type Lock fitted on both doors, along with two Keys.	Nos.	₹ 21,503	10	₹ 2,15,033
20	Supply of phenolic laminated Sheet, resin bonded, grade P3 in standard size of 1220 X 1220 x 12 mm as per spec. No. IS 2036 of 1995 or latest. Test report of manufacture to be supplied.	Nos.	₹ 6,476	25	₹ 1,61,888
21	Supply of Cartridge Fuse block, made of PBT, as per RDSO spec. No. IRS: S-75/2006 (Rev.2) or latest and as per Drawing. No. SA- 23748 (Alt.-4) or latest.	Nos.	₹ 275	100	₹ 27,450
22	Supply of Non deternorating type , Round head type low voltage cartridge fuse as per Spec No IRS:S-78/92 with latest amend. 2/4/6/8/10A rating capacity.	Nos.	₹ 138	100	₹ 13,838
23	Supply of ARA Terminal Block made of PBT as per Drg No SA 23741 alt 3 & spec. No IRS S 75/91 with latest amendments with disconnecting links as per Drg no. RST/11336.	Nos.	₹ 134	2000	₹ 2,67,750
24	Supply of Disconnect Terminal block for four conductors with screwing cage/clamp type, sliding switch disconnect, as per RDSO spec. RDSO/SPN/189/2004 Ver. 3.0 or latest, for each conductor size up to 2.5 sq. mm, equivalent of M6 terminals. Each terminal block equipped with two markers, on top and bottom, an end plate, two end clamps and adequate lenght of rails for fitting terminal blocks.	Nos.	₹ 217	100	₹ 21,713

SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
25	Supply of Medium class GI pipes 100 mm dia (4.5 mm thickness) with thread collars as per IS 1239 (Part 1) 2004 or latest with coupling on culverts/bridges, perforated at a distance of 20 cm or less with 10 mm dia hole, or at any other locations as decided by Site Engineer. It includes supply of all material required for fixing arrangement. Contractor will also supply flexible/corrugated HDPE pipe at the end of GI pipe to protect the cables from sharp edges and sudden bends.	mts.	₹ 1,116	48	₹ 53,568
26	Supply of Double Walled Corrugated (DWC) Pipe/duct with associated collars etc. as per RDSO Specification No. RDSO/SPN/204/2011 or latest anti-rodent & anti-oxidant and non flame propagating type in 6 meters straight length and of size 120 mm outer dia,& 103.5 mm inner dia. (The manufacturers, suppliers must produce valid IS license and should be certified under ISO 9000 and shall submit copy of certificate). One coupler with suitable rubber O-ring should be supplied with every 6m of pipe length. (The total quantity of above items is equal to no. of pipes supplied.) DWC pipe shall be marked at every 1 mtr length in such a way that manufacturer's name, vendor name and year of manufacture can be easily identified.	mts.	₹ 739	480	₹ 3,54,780
27	Supply of thermo shrink jointing kit as per RDSO Specn.No. IRS: TC 77-2012 (Rev.3.0) with (Amdt.-1 to 3) or latest, suitable for 6 Quad/jelly filled cables for straight through/derivation joints. It includes supply of all the accessories, without transformer.	Nos.	₹ 3,782	10	₹ 37,823

SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
28	Supply and installation of earth electrode as per standard practice and as per Drawing no. S&T/CONST/6.4/97. It includes supply of GI pipe of 3m length. It includes connecting the earth electrode to the equipments which are required to be earthed including digging of earth pit 3 mtr deep and fixing earth electrode pipe, casting of cement concrete enclosure with cover (cover as per drawing no. S&T/CONST/6.3/97. It includes installation of 7 strand GI wires as earth lead wires, supported on MS flat size 5mm x 40 mm, soldering and nut bolt both, one end of both earth lead wire and MS flat to earth electrode and other end to Location boxes, block equipments, power equipments, cable sheath, signals etc. as per site requirement and as per instructions given by engineer incharge.	Nos.	₹ 3,882	25	₹ 97,059
29	Supply and laying of RCC Duct cable channel, size 300 mm, height 300 mm (internal/external), length 700 mm/suitable length and cover as per drawing No.GC/HRIDC-SK-GEN-017 dated 09.09.2023. , for laying of signalling/telecom cables	mts.	₹ 3,000	800	₹ 24,00,000

SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
Schedule 'A' Supply of material					
30	Supply, Installation, Testing and Commissioning of High Availability Single Section digital axle counter (HASSDAC) with Dual sensor system as per RDSO/ SPN/177/2012 (Version 3) or latest. Th is includes the supply of High frequency web mounting type Tx coil/Rx coil, VR/PR Box duly wired, Vital relays, PR Relays, Clamp with defl ector plates & hardware, Dual display reset box/monitoring console with auto resetting facility, Surge voltage protection devices and fi lter card to be mounted on DIN rail etc as per OEM for complete installation & testing & commissioning of (HASSDAC) system. Th is include fi xing of track device, relays, wiring, lacing /dressing, cable termination with lug eyelet, drilling holes in rails, Installation of track devices and make it functional along with existing UFSBI/block instrument. Material required other then supply item of HASSDAC shall be arranged by contactor to make it functional. Note: One set of HASSDAC system will include equipment required to monitor One Up line or One Dn line of a full Block Section between two stations.	Set	₹ 7,48,224	1	₹ 7,48,224
Total of Schedule 'A'					₹ 1,83,01,129

Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
31	<p>Installation of DC track circuits (Straight Portion) including supply of materials as per directive of site Engineer. NOTE : (i) This includes drilling 9/32" holes on rails, provision K26 double continuity GI wire bonding, provision of Block Joints 60 Kg/D2752 Kg/90R with machined fish plates, installation of Track lead junction box (separately for (+) and (-) rails), provision of track lead jumper wires/cables, fixing of track circuit equipment i.e. track charger, resistance, fuses, batteries, chokes, relays, anti-titling arrangement and painting, lettering and numbering of DC track circuit equipment etc., (ii) [a] Un-machined fish plates shall be supplied by the Railway's, but machining of fish plates shall be done by the Tenderer. In case of provision of Glued Joints by Engineering Department in lieu of RDSO Block joint, the cost of machining of fish plates@ 100/- per straight track circuit and @ 500/- per point zone track circuit will be deducted. [b] This includes insulation of gauge tie plates, Crossing plates, rod in siding points if required or any other place as instructed by Railway Site Engineer, by Tenderer's insulation materials. Railway will supply Track Charger, B-type choke, Resistance, Un-charged battery, TLJB and relays through a separate schedule/from the stores of railway consignee. These are to be transported to site of work at contractor's cost. Tenderer/Contractor shall supply any other materials that are required for the work.</p>	Nos.	₹ 8,684	5	₹ 43,419

Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
32	<p>Installation of DC track circuits (Point zone) including supply of materials as per directive of site Engineer. NOTE : (i) This includes drilling 9/32" holes on rails, provision of double continuity GI wire bonding, provision of Block Joints 60 Kg/52 Kg/90R with machined fish plates, installation of Track lead junction box (separately for (+) and (-) rails), provision of track lead jumper wires/cables, fixing of track circuit equipment i.e. track charger, resistance, fuses, batteries, chokes, relays, anti-titling arrangement and painting, lettering and numbering of DC track circuit equipments etc., (ii) [a] Un-machined fish plates shall be supplied by the Railway's, but machining of fish plates shall be done by the Tenderer. In case of provision of Glued Joints by Engineering Department in lieu of RDSO Block joint, the cost of machining of fish plates@ 100/- per straight track circuit and @ 500/- per point zone track circuit will be deducted. [b] This includes insulation of gauge tie plates, Crossing plates, rod in siding points if required or any other place as instructed by Railway Site Engineer, by Tenderer's insulation materials. Railway will supply Track Charger, B-type choke, Resistance, Un-charged battery, TLJB and relays through a separate schedule/from the stores of railway consignee. These are to be transported to site of work at contractor's cost. Tenderer/Contractor shall supply any other materials that are required for the work.</p>	Nos.	₹ 14,031	8	₹ 1,12,248

Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
33	Installation of Charging of Lead Acid Batteries, 2V, 80 AH, with contractors own battery grade sulphuric acid and distilled water with minimum two charge - discharge cycles, installation of charged batteries in groups & their connection & wiring. The work shall be done as per the procedure prescribed by the OEM and extant practice of N.C.Rly and instruction of Engineer-in-charge. Detailed measurements of initial charging shall be recorded jointly by contractor & Rly's site-in-charge.	Nos.	₹ 278	45	₹ 12,504
34	Installation of thermo shrink jointing kit as per RDSO Specn.No. IRS: TC 77- 2012 (Rev.3.0) with (Amdt.-1 to 3) or latest, suitable for 6 Quad/jelly filled cables for straight through/derivation joints. It includes supply of all the accessories, without transformer.	Nos.	₹ 1,893	10	₹ 18,934

Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
35	<p>Installation of Unit Maintenance Free Earth to achieve a resistance less than 1 ohm as supplied under item no.3 of BOQ. It includes (i) Digging the earth to the required depth. (ii) Insertion of electrode. (iii) Filling of earth enhancing compound (Approx.30 Kg) (iv) Provision of exothermic weld connections to copper tape of 25 mm x 6 mm x 150 mm to the earth electrodes. All material tools and features required for weld will be arranged by contractor. (v) This also includes CC cover 1.5 ft x 1.5 ft . 1 ft wall thickness 2 inch with cover 3 inch thickness. Cables 35 Sq mm/ 16 Sq mm/10 sq mm for connecting earth to busbar, busbar to busbar and busbars to various equipments. Earth electrode of 17.20 mm dia and 3.00 meter long high tensile low carbon steel circular rods molecularly bonded with copper and outer surface (minimum copper bonding thickness of 250 microns to meet requirement of under writer's laboratories (UL) 467-2007 or latest. Copper strips of 150 mm x 25 mm x 6 mm to be welded with each earth electrode, copper strips of 300 mm x 25 mm x 6 mm for main equip-potential busbar, copper strips of 150 mm x 25 mm x 6 mm sub equip-potential busbar in relay room, power room and panel room. GI strip 25 mm x 2 mm for ring formation of earth pits Earth enhancement material in bags for each Earth Electrode. Inspection chamber of size 300 mm x 300 mm x 300 mm (Inside dimension) of approximate 50 mm thick with pulling hooks to cover the earth pits. Note: The installation of this item shall be carried out by the contractor as per RDSO Specn. No. RDSO/SPN/ 197 Ver 1.0 or latest. Typical RDSO approved drawings referred in the RDSO specification document are : (i) SDO/RDSO/E&B/001 for typical installation of Earth, (ii) SDO/RDSO/E&B/002 for typical bonding and earthing connections, (iii) SDO/RDSO/E&B/003 for typical arrangement for earth resistance measurements.</p>	Set	₹ 8,187	2	₹ 16,373

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Schedule 'B' Installation, Testing & Commissioning					
SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
36	Laying of HDPE duct as per the approved cable route plan in the excavated trenches/other protected works/RCC channel etc. including all accessories like end caps, collars, bends, couplers etc. The ends of the duct to be sealed with end plugs till OFC blowing is done.	Kms.	₹ 9,104	2	₹ 18,207
37	Laying of S&T Cables of various cores/ pairs/ quads in trenches/ GI pipes/ RCC pipes/ DWC pipes etc. as per the site requirement and as per approved cable route plan. This also includes laying of cables in track crossings & road crossings.(Cables will be meggered before and after its laying by contractor under supervision of Railway Representative and he will submit the meggering report of each testing). Length of the cable laid includes the length of the cable coiled for termination purpose	mts.	₹ 8	49,000	₹ 3,77,055
38	Laying and fixing of Medium class GI pipes 100 mm dia (4.5 mm thickness) as per IS 1239 (Part 1) 2004 or latest with coupling on culverts/bridges, perforated at a distance of 20 cm or less with 10 mm dia hole, or at any other locations as decided by Site Engineer.The GI pipe is to be filled with chattered compound. It includes supply of all material required for fixing arrangement. Contractor will also supply flexible/corrugated HDPE pipe at the end of GI pipe to protect the cables from sharp edges and sudden bends. The laying and fixing to be done as per RDSO drawings no. SDO/cable laying/011 and SDO/cable laying/012, issued vide RDSO document no. RDSO/SI/G/2010 Version 1.1 dated 04.02.2014, or latest	mts.	₹ 398	48	₹ 19,116

Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
39	Fabrication and fixing of phenolic laminated sheet of grade P3, minimum 10 mm thick, as per Apparatus case diagram/plan, in location box by providing all fixtures like ARA/Disconnect terminals, fuse blocks, fuses, relays on square bars etc. including fixing of PVC coated string rods at the back side for cable support with contractor's own material like iron angle, nuts, bolts etc. The iron angle for fixing shall be minimum 3 mm thick. This also includes fixing of teak wood shelf minimum 25 mm thick for holding track circuit equipments. This includes letting of all termination & equipments details in a sheet and fixing in the location box. The work shall be done as per instructions of engineer at site. (Apparatus case Full)	Nos.	₹ 5,039	15	₹ 75,583
40	Fabrication and fixing of phenolic laminated sheet of grade P3, minimum 10 mm thick, as per Apparatus case diagram/plan, in location box by providing all fixtures like ARA/Disconnect terminals, fuse blocks, fuses, relays on square bars etc. including fixing of PVC coated string rods at the back side for cable support with contractor's own material like iron angle, nuts, bolts etc. The iron angle for fixing shall be minimum 3 mm thick. This also includes fixing of teak wood shelf minimum 25 mm thick for holding track circuit equipments. This includes letting of all termination & equipments details in a sheet and fixing in the location box. The work shall be done as per instructions of engineer at site. (Apparatus case Half)	Nos.	₹ 2,733	10	₹ 27,326
41	Fixing of ARA(M-6) Terminals /Screw less connectors / modular disconnect terminal blocks and fuse blocks on phenolic laminated sheets and fixing by stainless steel/brass nuts & bolts. This includes provision of two additional holes on the board on either side for cable conductor entry. The work shall be carried out as per instructions of railway Engineer in charge. (Supply of all above terminals has been covered separately).	Nos.	₹ 20	2,000	₹ 40,500

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Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
42	Termination of Outdoor Cables (Main Cables /tail cables) at ARA/Disconnect type terminals provided in Apparatus Cases, Cable termination rack in relay room, station building, generator room etc. The item includes dressing of cables and wires with dressing threads as per standard practice. All material required for this item will be supplied by contractor. The outdoor cable shall be terminated in Relay Room, DG Room, ASM Room etc under supervision and instructions issued by Engr. incharge of the work	Per Conductor	₹ 17	4,000	₹ 67,500
43	Dismantling and Releasing of existing Location boxes/Apparatus cases/Jn boxes and other associated S&T fittings. All the released material will be transported to the SSE/Consignee depot	Nos.	₹ 1,094	25	₹ 27,338
44	Excavation of cable trench as per cable route plan, 1.2 meter deep and of 0.3 meter to 0.6 meter wide at bottom as per RDSO sketch No. SDO/CABLE LAY- ING/003, issued vide RDSO document No. RDSO/SI/G/2010 Version 1.1 dated 04.02.2014 or latest, alongside the track in normal soil/strata (including soft rock), conforming to distances as per cable route plan and refilling and ramming of loose soil. This work includes clearing of route from bushes etc, covering of cable laid in trench by loose soil for a layer of 50mm thickness approximately before covering by bricks. The work shall be done as per the extant practice on North Central Railway and instructions of Railway Engineer at site. In case the full depth is Not available, there shall be no proportionate payment and after the approval of minimum JAG officer, the concreting shall be done as per the RDSO drawing No. SDO/Cable laying/003, issued vide RDSO document No. RDSO/ SI/G/2010 Version 1.1 dated 04.02.2014 or latest.	mts.	₹ 73	2,000	₹ 1,46,250

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Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
45	Horizontal Boring/Manual moling without damage to surface road /track for laying/insertion of DWC/GI/HDPE pipe. The bore shall be done at the depth of minimum 1200 mm from the ground level. The ground level shall be considered ignoring the bank height of the bank of the road. Note:- DWC/HDPE/GI Pipe Supply is not covered under this item. Contactor shall provide all material required for work and adequate nos. of labours for proper laying of cables into the bore. Cable shall be laid cautiously so that it should not get damage due to rough handling & pressure on cable. Payment of boring shall be made only after DWC/HDPE/GI pipe is laid in the bore.	mts.	₹ 693	480	₹ 3,32,640
46	Lettering and Numbering of all S&T gears like Signals, Loc. Boxes, Pt. Machines, TLJBs, Block joints etc. Each item to be taken as one unit.	Nos.	₹ 97	100	₹ 9,675
47	Excavation, casting, curing of foundation and Installation and Erection of Apparatus case Full (App. Case as per drg. no. NR/S&T/CON/2.7/97 or latest) with contractor's own frame, cement and other material in the ratio 1:3:6. 'E' type lock to be supplied and installed with App. case. This includes filling of location foundations with river bed sand and plastering on top with a mixture of 1:4 of cement and sand. Supply & fixing of lamp holder, switch, lamp, scrapping and painting of location boxes in Apparatus Case	Nos.	₹ 13,813	15	₹ 2,07,191

Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
48	Excavation, casting, curing of foundation and Installation and Erection of Apparatus case Half (App. Case as per drg. no. NR/S&T/CON/2,8/97 or latest) with contractor's own frame, cement and other material in the ratio 1:3:6.'E' type lock to be supplied and installed with App. case.This includes filling of location foundations with river bed sand and plastering on top with a mixture of 1:4 of cement and sand. It covers supply & fixing of lamp holder , switch , lamp , scrapping and painting of location boxes in Apparatus Case.	Nos.	₹ 11,624	10	₹ 1,16,235
49	Blowing/drawing of OFC cable in the HDPE pipe duct and protective work already provided in the trench. Th e cable shall be laid only aft er the successful completion of the DIT (Duct Integrity test). Th e DIT should be certifi ed by the Railway engineer at site. All the equipments/machinery required shall be arranged by the contractor.	Kms.	₹ 19,230	2	₹ 38,459
50	Cutting of all types of platforms/road crossing and trenching and excavation to a width and depth of 300 mm x 300 mm, laying of DWC/HDPE/GI pipe in the trench and refilling and concreting it afterwards as per original condition. In hard rocky ground area, cables will be laid normally on layer of soft earth of 0.05 meter thickness previously deposited at bottom of the trench. The cutting to be filled and finished with cement/concrete, as per the RDSO drawing No. SDO/ Cable laying/008, issued vide No. NR/SIG/CABLE LAYING/010	mts.	₹ 178	200	₹ 35,550

Schedule 'B' Installation, Testing & Commissioning					
Sl No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
51	Installation of KLCR & its box in location boxes, supply & installation of heavy duty push button, LED indicator on M.S sheet of 4.5 mm thick inside location box for crank handle locking. The work includes fixing & wiring of magneto telephones, wiring of KLCR, push buttons and termination of tail cables as per instructions of Engineer's representative. All material except KLCR relay & its box and magneto telephone (Covered in this schedule at other Sno.) to be supplied by the contractor. This also includes fixing of wards on point machine.Foundation & installation of location box is covered as separate item of schedule.(Per unit is Per Installation).	Nos.	₹ 15,341	5	₹ 76,703
52	Design, preparation & supply of Six (06) hard copies of each documents along with soft copy for the mention below alongwith original tracing on a standard 7.5 microne polyester film in AUTO CAD FORMAT. (The item includes supply of two sets of drawings for approval and corrections thereon as suggested by HRIDC) , i) Cable route plan , ii) Location box details with location wiring diagram , iii) Cable termination details , iv)Cable corage plan , v) C.T. Rack details , vi) Track bonding plan , vii) Cable jointing details.	Stn.	₹ 49,853	1	₹ 49,853
53	Splicing of 24 core optic fi bre cable and making the splicing joint with contractor's own machine and tools. Joint should be prepared in such a way that the top of the enclosure should be at a depth of minimum 1.2 meter and the enclosure should be covered with soft soil and bricks. Splice loss of each fi bre should be less than 0.05 dB	Nos.	₹ 13,512	2	₹ 27,025

Schedule 'B' Installation, Testing & Commissioning					
SI No.	Description of Item	Unit	Estimated Rate (INR)	Quantity	Total Value (in INR)
54	Supply and fixing of RCC cable route marker, made with concrete in the ratio 1:3:6, engraved "NCR" "S&T" on top portion and painted on both sides, along the route at every 50 meter and at route diversion. The cable marker is to be fabricated as per RDSO drawing No. SDO/cable laying/020, issued vide RDSO document No. RDSO/SI/G/2010 Version 1.1 dated 04.02.2014, or latest. The fix- ing work is to be done as per extant practice of NC Railway and as per Railway site supervisor incharge.	Nos.	₹ 483	60	₹ 28,958
Total of Schedule 'B'					₹ 19,24,642
Grand Total (A+B)					₹ 2,02,25,771