



BID DOCUMENT FOR

Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor.

TRACK WORKS CONTRACT PACKAGE

Issued on: **11.07.2016**

Bid Document No.: HQ/EN/EC/Track/MGS-DGO&KWDN-CPBH-SEBN

PART-1 to Part-4

Employer:
DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)

MINISTRY OF RAILWAYS
COUNTRY: INDIA

INVITATION FOR BID
DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED

Our Ref.:

Date

To

From
Managing Director,
DFCCIL
5TH Floor, Pragati Maidan Metro
Station Building Complex
New Delhi-110001.

Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor.

This Bidding process is open for pre-qualified bidders.

The Bid document consists of Five Parts i.e. Technical Bid in Part-1, Part-2, Part-3, & Part-4 and Financial Bid – Part-5, The contents of these Parts are as under:

TECHNICAL BID :

PART 1 – Bidding Procedures

- Section I. Instructions to Bidders
- Section II. Bid Data Sheet
- Section III. Evaluation and Qualification Criteria (Following Prequalification)
- Section IV. Bidding Forms

PART 2 – Employer’s Requirements

- Section V. Employer’s Requirements
 - Volume 1: Scope of Works**
 - Volume 2: General**
 - Volume 3: Design Procedures and Processes**
 - Volume 4: Design Criteria and Specifications**
 - Volume 5: Construction, Testing and Commissioning**
 - Volume 6: Appendices**

PART 3 – Conditions of Contract and Contract Forms

- Section VI. General Conditions of Contract (GCC)
- Section VII. Particular Conditions of Contract (PCC)
- Section VIII. Contract Forms

PART 4 – Reference Documents

Site data (As detailed in Part-4).

FINANCIAL BID:

PART – 5 - Price Schedules (To be submitted separately)

1. Preamble
2. Price Proposal Submission Sheet (BDF-10)
3. Schedule – A (Form for Lump sum cost of the Bid)
4. Schedule – B
 - Apportionment of contract Price for Payment according to Cost Centres
 - Contract Price Weightages for interim Payment

Note: Bids duly filled in must be submitted at the place by the time and date as specified in the Bid Document. Late or delayed Bids shall not be accepted.

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Section V. Employer’s Requirements

Volume 1: Scope of Works

Volume 2: General

Volume 3: Design Procedures and Processes

Volume 4: Design Criteria and Specifications

Volume 5: Construction, Testing and Commissioning

Volume 6: Appendices

PART 3 – Conditions of Contract and Contract Forms

Section VI. General Conditions (GCC) As per FIDIC Yellow Book 1999-Edition.

Section VII. Particular Conditions of Contract (PCC)

Section VIII. Contract Forms

PART 4 – Reference Documents

Site data (detailed in Part-4)

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1. Preamble

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PART 1

Bidding Procedures

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Instructions to Bidder (ITB)

Section 1. Instructions to Bidders (ITB)

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Section 1: Instructions to Bidders

A.	General
1.	Scope of Bid
1.1	In connection with the Invitation for Bids indicated in the Bid Data Sheet (BDS), the Employer, as indicated in BDS, issues this Bidding Document for “ Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor ” and as specified in Section V Employer’s requirements.
1.2	Throughout these Bidding Documents: <ul style="list-style-type: none"> 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.
1.3	Besides the information given in the Invitation for Bids, following further information are as under:- <ul style="list-style-type: none"> a. Date of commencement of works – within 42 days from the date of receipt of ‘Letter of Acceptance’ or as indicated in the ‘Letter of Acceptance’. b. Period of completion – 730 days from the date of commencement. c. Defect Liabilities Periods – Defect Notification Period for the Works shall be One year from the date of Taking Over of the Works (Sub-clause 10.1 of GCC) and issue of Taking-Over Certificate by the Engineer.
2.	Source of Funds
2.1	The required funds will be arranged by the employer.
3.	Eligible Bidders
3.1	A Bidder shall be a private, public or Govt. owned legal entity or any combination of them in the form of joint venture (JV) 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: <ul style="list-style-type: none"> a. In case of Single Entity: <ul style="list-style-type: none"> (i) The applicant should be an Indian firm (ii) Submit Power of Attorney authorizing the signatory of the bid to commit the bidder. b. In case of Joint Venture: <ul style="list-style-type: none"> (i) Separate identity/name shall be given to the Joint Venture Firm. (ii) Maximum number of partners in the JV shall be limited to 3 (Three).

<ul style="list-style-type: none"> (iii) A member of JV firm shall not be permitted to participate either in individual capacity or as a member of another JV firm in the same Bid. (iv) The Bid Document can be purchased in the name of the Bidder/JV Firm or Lead Member of JV firm. (v) One of the members of the JV firm shall be its lead member who shall have majority (at least 51%) share of interest in the JV firm. The other members shall have a share of not less than 20% each in case of JV firms with upto 3 members. (vi) In case of JV firm with foreign member(s), the lead member has to be an Indian firm with a minimum share of 51%. (vii) Bidder from a country may be excluded if as a matter of law or official regulations the Government of India (GOI) prohibits commercial relations with the country. (viii) <u>Joint And Several Liability</u> - Members of the JV Firm to which the contract is awarded, shall be jointly and severally liable to the Employer (DFCCIL) for execution of the project in accordance with General and Particular Conditions of Contract. The JV members shall also be liable jointly and severally for the loss, damages caused to the DFCCIL during the course of execution of the contract or due to non-execution of the contract or part thereof. (ix) <u>Duration of the Joint Venture Agreement</u> - shall be valid during the entire currency of the contract including the period of extension, if any and the defect liability period after the work is completed. (x) <u>Governing Laws</u> - The Joint Venture Agreement shall in all respect be governed by and interpreted in accordance with Indian Laws. (xi) The JV shall nominate a representative (from lead partner only) who shall have the authority to conduct all business for and on behalf of JV during the bidding process and subsequent stages. (xii) BID SECURITY shall be submitted by JV Firm/Lead Member of the JV firm. The BID SECURITY submitted by the Lead Member shall be deemed as BID SECURITY submitted by JV Firm. (xiii) A copy of Memorandum of Understanding (MOU) executed by the JV members shall be submitted by the JV Firm along with the Bid. The complete details of the members of the JV firm, their share and responsibility in the JV firm etc. particularly with reference to financial, technical and other obligations shall be furnished in the MOU. (xiv) Once the Bid is submitted, the MOU shall not be modified / altered / terminated during the validity of the Bid. In case the bidder fails to observe/comply with this stipulation, the full Bid Security Deposit shall be liable to be forfeited. (xv) Approval for change of constitution of JV Firm shall be at the sole discretion of the Employer (DFCCIL). The constitution of the JV Firm shall not be allowed to be modified except when modification becomes inevitable due to succession laws etc. and in any case

	<p>the minimum eligibility criteria should not get vitiated. However, the Lead Member shall continue to be the Lead Member of the JV Firm. Failure to observe this requirement would render the offer invalid.</p> <p>(xvi) Similarly, after, the contract is awarded, the constitution of JV Firm shall not be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract conditions.</p> <p>(xvii) On award of contract to a JV Firm, a single Performance Guarantee shall be submitted by the JV Firm as per Bid conditions. All the Guarantees like Performance Guarantee, Bank Guarantee for Mobilization Advance, Machinery Advance, etc. shall be accepted only in the name of Employer "Dedicated Freight Corridor Corporation India Limited" by the JV Firm and no splitting of guarantees amongst the members of the JV Firm shall be permitted.</p> <p>(xviii) On issue of LOA (Letter Of Acceptance), an agreement among the members of the JV Firm (to whom the work has been awarded) shall be executed and got registered before the Registrar of the Companies under Companies Act or before the Registrar/Sub-Registrar under the Registration Act, 1908. This JV Agreement shall be submitted by the JV Firm to the DFCCIL before signing the contract agreement for the work. In case the Bidder fails to observe/comply with this stipulation, the full BID SECURITY shall be forfeited and other penal actions due shall be taken against partners of the JV and the JV.</p> <p>(xix) No member of the Joint Venture Firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the employer (DFCCIL) in respect of the said Bid/contract.</p> <p>(xx) In case one or more of the members of the JV Firm is/are partnership firm(s), following documents shall be submitted :</p> <ol style="list-style-type: none"> a) Notary certified copy of the Partnership Deed, b) Consent of all the partners to enter into the Joint Venture /Agreement on a stamp paper of appropriate value (in original), c) Power of Attorney (duly registered as per prevailing law) in favour of one of the partners of the partnership firm to sign the JV Agreement on behalf of the partnership firm and create liability against the firm. <p>(xxi) In case one or more members is/are Proprietary Firm or HUF, the following documents shall be enclosed :</p> <p>Affidavit on Stamp Paper of appropriate value declaring that his/her Concern is a Proprietary Concern and he/she is sole proprietor of the Concern OR he/she is in position of "KARTA" of Hindu</p>
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	<p>Undivided Family (HUF) and he/she has the authority, power and consent given by other partners to act on behalf of HUF.</p> <p>(xxii) In case one or more members is/are limited companies, the following documents shall be submitted :</p> <ul style="list-style-type: none"> a) Notary certified copy of resolutions of the Directors of the Company, permitting the company to enter into JV agreement, authorizing MD or one of the Directors or Managers of the Company to sign JV Agreement, such other documents required to be signed on behalf of the Company and enter into liability against the company and/or do any other act on behalf of the company. b) Copy of Memorandum and Articles of Association of the Company. c) Power of Attorney (duly registered as per prevailing law) by the Company authorizing the person to do/act mentioned in the para (a) above.
<p>3.2</p>	<p>A firm that is under a declaration of ineligibility by the Employer in accordance with ITB 35, on the date of the deadline for bid submission or thereafter, shall be disqualified.</p>
<p>3.3</p>	<p>A Bidder shall not have any conflict of interest with any other party involved with the project, either as a bidder or in any other capacity during the project formulation and developmental stage. Any Bidder (s) including all members of JV 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:</p> <ul style="list-style-type: none"> (a) If they participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of this Bid; or (b) Where a firm, or a firm from a same economic or financial group, in addition to consulting, also has the capability to manufacture or supply goods or to construct works, that firm, or a firm from the same economic or financial group, cannot normally be a supplier of goods or works, if it provided consulting services for the contract corresponding to this Bid, unless it can be demonstrated that there is not a significant degree of common ownership, influence or control.
<p>3.4</p>	<p>The Bidder shall be considered disqualified / in-eligible if:</p> <ul style="list-style-type: none"> (a) The Bidder or any of its partners and/or subcontractors included in the Bid has been banned for business with Ministry of Railways along with any of its attached and subordinate offices through an order issued by Ministry of Railways as per list available on Web site (http://www.indianrailways.gov.in/railwayboard) of Civil Engg Directorate of Railway Board pertaining to Banning of Business, with the Banning being valid as on the last date of submission of the Bid. (b) The Bidder or any of its partners has suffered bankruptcy /

	insolvency or it is in the process of winding-up or there is a case of insolvency pending before any Court on the deadline of submission of Bid.
3.5	Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.
3.6	In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified bidders.
4.	Eligible Materials and Equipment
4.1	The materials and equipment to be supplied under the Contract shall be from the approved sources as specified in Part -2, Section V: Employer's Requirements. In addition to above, materials not covered under approved sources specified in Section V: Employer's Requirements should be procured as per the approval of Engineer.
B.	Contents of Bidding Document
5.	Sections of Bidding Document
	<p>The Bid document consists of Five Parts i.e. Technical Bid in Part-1, Part-2, Part-3, & Part-4 and Financial Bid – Part-5</p> <p>The contents of these Parts are as under:</p> <p>TECHNICAL BID :</p> <p>PART 1 – Bidding Procedures Section I. Instructions to Bidders (ITB) Section II. Bid Data Sheet (BDS) Section III. Evaluation and Qualification Criteria Section IV. Bidding Forms</p> <p>PART 2 – Employer's Requirements Section V. Employer's Requirements As per contents detailed in section – V.</p> <p>PART 3 – Conditions of Contract and Contract Forms Section VI. General Conditions (GCC) As per FIDIC Yellow Book 1999-Edition Section VII. Particular Conditions of Contract (PCC). Section VIII . Contract Forms</p> <p>PART 4 – Reference Documents As per contents detailed in Part – 4.</p> <p>FINANCIAL BID:</p> <p>PART – 5 : Price Schedules (To be submitted separately)</p> <ol style="list-style-type: none"> 1. Preamble 2. Price Proposal Submission Sheet (BDF-10) 3. Schedule – A (Form for Lump sum cost of the Bid) 4. Schedule – B

	<ul style="list-style-type: none"> • Apportionment of contract Price for Payment according to Cost Centres • Contract Price Weightages for interim Payment <p>The contents of all these sections listed above shall be read in conjunction with any addenda issued in accordance with ITB-7.</p>
5.1	The Invitation for Bids (IFB) issued by the Employer is not part of the Bidding Document.
5.2	A bid can be submitted only on a set of bidding documents obtained directly from the Employer or downloaded from DFCCIL's website. Cost of Bid document shall be as specified in Invitation for Bids (IFB).
5.3	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.
6.	Clarification of Bidding Document, Site Visit, Pre-Bid conference
6.1	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 in accordance with ITB 6.4 . The Employer will respond in writing to any request for clarification provided that such request is received upto 3 days prior to the pre-bid conference. 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 7 and ITB 19.2 .
6.2	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.
6.3	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 himself 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.
6.4	The Bidder's designated representative is invited to attend a pre-bid conference, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions related to the subject work that may be raised at that stage.
6.5	The Bidder is requested to submit any questions/queries in writing, to reach the Employer not later than 3 days before the Pre-Bid-Meeting.
6.6	Minutes of the pre-bid meeting, including the text of the questions/queries 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 directly from the Employer. 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/ corrigendum pursuant to ITB 7 and not through the minutes of the Pre-Bid-Meeting.
6.7	Non-attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
7.	Amendment of Bidding Document
7.1	At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing addenda
7.2	Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 5.2 . This will also be uploaded on DFCCIL website www.dfccil.gov.in . All prospective Bidders are advised to see the DFCCIL website www.dfccil.gov.in before submitting their bid to check for any Amendments/Corrigendum issued in regard to this Bid.
7.3	To give prospective Bidders reasonable time 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 19.2 .
C.	Preparation of Bids
8.	Cost of Bidding
8.1	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.
9.	Language of Bid
9.1	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 pages in English as certified by the Embassy/High Commission/ Consulate of Indian origin of the bidder or the Embassy /High Commission / Consulate of the country of origin of the bidder in India. For the purpose of interpretation and evaluation of the bid, translation certified by Embassy/High Commission/ Consulate shall prevail.
10.	Documents Comprising the Bid
10.1	The Bid shall comprise two separate envelopes submitted simultaneously, one containing the Technical Proposal and the other Financial Proposal , enclosed together in an outer single envelope.
10.2	Initially, only the Technical Proposals will be opened at the address, date and time specified in ITB Sub-Clause 21.1 . The Financial Proposals remain sealed and are held in custody by the Employer. The Technical Proposals are evaluated by the Employer. No amendments or changes

	to the Technical Proposals are permitted. Bids with Technical Proposals which do not conform to the specified requirements will be rejected as deficient Bids.
10.3	Financial Proposals of technically compliant Bids will be opened in public at a date and time advised by the Employer. The Financial Proposals will be evaluated and the Contract is awarded to the Bidder whose Bid has been determined to be the lowest evaluated substantially responsive Bid.
10.4	The Technical Proposal shall contain the following : (a) Technical Proposal Submission Sheet in accordance with ITB 14 ; (b) Bid Security, in accordance with ITB Clause 16 ; (c) Written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB Clause 17.2 ; (d) Relevant forms as specified for establishing eligibility criteria of the bidder in Part-1 Section IV of the bid document; (e) All the information needed in the eligibility criteria as contained in Part-1 - Section III of the Bid Document . (f) any other document required in the BDS.
10.5	The Financial Proposal shall contain the following : (to be submitted separately) (a) Price Proposal Submission Sheet. (b) Price Schedule as per the format given in Part-5 Price Schedule of the Bid Document. (c) Any other document required in the BDS.
11.	Bid Submission Sheets and Price Schedules
11.1	The Bidder shall submit the Technical Proposal and the Financial Proposal using the appropriate Submission Sheets furnished in Section IV (Bidding Forms) of the Bid Document . 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.
11.2	The Bidder shall submit, as part of the Financial Proposal a Lump-Sum cost for the entire work as per the format given in Schedule A of Part – 5 - Price Schedule of the Bid Document.
12.	Bid Prices
12.1	The bidder shall quote the lump sum cost for the entire work in BDF -10 & Schedule A as contained in Part -5 of the Bidding Document. The cost should cover all the items of the work as detailed in the employer's requirement of the contract. The cost should also be inclusive of all constructional Equipment, plant, labour, supervision, materials, erection, maintenance, insurance, profit, duties, taxes, levies, royalties together with all general risks, liabilities and obligations set out or implied in the Contract under the applicable law as on the date of opening of bid.
12.2	PVC as given in clause 13.8 of Particular Conditions of Contract will be applicable on the Lump-sum cost of the bid with respect to the base date as defined in the GCC.
13.	Currencies of Bid and Payment

13.1	The bidder shall quote a lump sum cost in Indian Rupees. Payments shall be made as per billing process laid down in Part-5 – Price Schedules of Bidding Document.
14.	Documents Comprising the Technical Proposal
14.1	The bidder shall furnish all the information as detailed in Technical Proposal Section –III Evaluation and Qualification criteria of bidding document,
14.2	The Bidder shall furnish a commitment in Technical Proposal Submission Sheet (BDF -1) for deployment of equipment and personnel as stipulated in Part-1 Section - III, Evaluation and Qualification criteria.
15.	Period of Validity of Bids
15.1	Bids shall remain valid for a period of 180 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.
15.2	In exceptional circumstances, prior to the expiration of the bid validity period, 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 16 , it shall also be extended Sixty (60) days beyond the deadline of the extended validity period. 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.
16.	Bid Security
16.1	The Bidder shall furnish as a part of its bid, a Bid Security in favour of DFCCIL, New Delhi in original form as specified in BDS .
16.2	The bid security shall be valid for period up to Ninety (90) days beyond the original validity period of the bid, or sixty (60) days beyond any period of extension if requested under ITB 15.2 whichever is later.
16.3	Any bid not accompanied by an enforceable and compliant bid security, if one is required in accordance with ITB 16.1 , shall be rejected by the Employer as non-responsive. The bid security of unsuccessful Bidders shall be returned on award of contract.
16.4	The bid security of the successful Bidder shall be dealt as per BDS .
16.5	The bid security shall be forfeited: (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, except as provided in ITB 15.2 or (b) if a Bidder misrepresents or omits any material facts in order to unfairly influence the procurement process; (c) if the successful Bidder fails to: (i) Sign the Contract in accordance with ITB 34; (ii) furnish a performance security in accordance with ITB 33; (iii) accept the correction of its Bid Price pursuant to ITB 28.2;
16.6	The Bid Security of a JV shall be as per ITB 3.1b (xii).
17.	Format and Signing of Bid

17.1	The Bidder shall prepare one original of the Technical Proposal and one original of the Financial Proposal as described in ITB Clause 10 and clearly mark each “ORIGINAL - TECHNICAL PROPOSAL” and “ORIGINAL - FINANCIAL PROPOSAL”. In addition, the Bidder shall submit 2 copies of the Technical Proposal and clearly mark them “COPY NO... - TECHNICAL PROPOSAL” . In the event of any discrepancy between the original and the copies, the original shall prevail. In addition one soft copy (Read Only) of Technical proposal should also be submitted along with the Bid.
17.2	The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid, where entries and amendments have been made shall be signed or initialed by the person signing the bid.
17.3	Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.
D.	Submission and Opening of Bids
18.	Sealing and Marking of Bids
18.1	The Bidder shall enclose the original of the Technical Proposal, the original of the Financial Proposal, and two copies of the Technical Proposal, in separate sealed envelopes, duly marking the envelopes as “ORIGINAL - TECHNICAL PROPOSAL”, “ORIGINAL - FINANCIAL PROPOSAL” and “COPY NO... - TECHNICAL PROPOSAL” , as appropriate. These envelopes containing the original and the copies shall then be enclosed in one single envelope. One single envelope containing the envelopes of Technical bid, Financial bid & Bid security, cost of the Bid Document (if document is downloaded) shall be signed and stamped by the authority who has signed the bids. Each copy shall be Serially numbered, Indexed and Hard Bound.
18.2	The inner and outer envelopes shall: (a) bear the name and address of the Bidder; (b) be addressed to the Employer in accordance with BDS; (c) bear the specific identification IFB No. HQ/EN/EC/Track/MGS-DGO&KWDN-CPBH-SEBN dated 11.07.2016 of this bidding process indicated in the BDS; and (d) The outer envelope and the inner envelopes containing the Technical Proposals shall bear a warning not to open before the time and date for the opening of Technical Proposals, in accordance with ITB Sub-Clause 21. (e) The inner envelope containing the Financial Proposals shall bear a warning not to open until advised by the Employer in accordance with ITB Sub-Clause 21.

18.3	If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.
18.4	In case Financial Proposal in a bid is received unsealed then the bid shall be considered as non-responsive and will not be dealt with. If, financial proposal is submitted in the technical proposal then also the bid shall be considered as non-responsive and will not be dealt with.
19.	Deadline for Submission of Bids
19.1	Bids must be received by the Employer at the address and no later than the date and time indicated in the BDS.
19.2	The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 7 , 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.
20.	Late Bids
20.1	The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 19 . Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.
21	Bid Opening
21.1	The Employer shall conduct the opening of Technical Proposals in the presence of Bidders' representatives who choose to attend, at the address, date and time specified in the BDS.
21.2	The financial Proposals will remain unopened and will be held in custody of the Employer until the time of opening of the Financial Proposals. The date, time, and location of the opening of Financial Proposals will be advised in writing by the Employer to all the bidders who have been determined qualified in technical evaluation.
21.3	All other envelopes holding the Technical Proposals shall be opened one at a time, and the following read out and recorded : (a) the name of the Bidder; (b) whether there is a modification or substitution; (c) the presence of a Bid Security, and (d) any other details as the Employer may consider appropriate.
21.4	Only Technical Proposals read out and recorded at bid opening shall be considered for evaluation. No Bid shall be rejected at the opening of Technical Proposals except for late bids, in accordance with ITB Sub-Clause 20.1 .
21.5	The Employer shall prepare a record of the opening of Technical Proposals that shall include, as a minimum: the name of the Bidder and the presence or absence of a Bid Security. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.

21.6	At the end of the evaluation of the Technical Proposals, the Employer will invite bidders who have submitted substantially responsive Technical Proposals and who have been determined as being qualified for award to attend the opening of the Financial Proposals. The date, time, and location of the opening of Financial Proposals will be advised in writing by the Employer. Bidders shall be given reasonable notice of the opening of Financial Proposals.
21.7	The Employer shall conduct the opening of Financial Proposals of all Bidders who have submitted substantially responsive Technical Proposals and who have been determined qualified as a result of technical evaluation, in the presence of Bidders' representatives who choose to attend at the address, date and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
21.8	Envelope containing Financial Proposal of technically responsive bidders shall be opened one at a time and the following read out and recorded: (a) the name of the Bidder (b) the Bid Price(s), including any discounts (c) any other details as the Employer may consider appropriate.
21.9	Only Financial Proposals, discounts, read out and recorded during the opening of Financial Proposals shall be considered for evaluation. No Bid shall be rejected at the opening of Financial Proposals.
21.10	The Employer shall prepare a record of the opening of Financial Proposals that shall include, as a minimum: the name of the Bidder, the Bid Price including any discounts. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.
E.	Evaluation and Comparison of Bids
22.	Confidentiality
22.1	Information relating to the examination, evaluation & comparison 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.
22.2	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.
22.3	Notwithstanding ITB Sub-Clause 23.2 , from the time of opening the Technical Proposals 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.
23.	Clarification of Bids
23.1	To assist in the examination, evaluation & comparison 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, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Financial Proposals, in accordance with ITB Clause 28.
23.2	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.
24.	Deviations, Reservations, and Omissions
24.1	<p>During the evaluation of bids, the following definitions apply:</p> <ul style="list-style-type: none"> (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.
25.	Determination of Responsiveness
25.1	The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB 10 .
25.2	<p>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,</p> <ul style="list-style-type: none"> (a) if accepted, would: <ul style="list-style-type: none"> (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; <li style="text-align: center;">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; <li style="text-align: center;">or (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.
25.3	The Employer shall examine the technical aspects of the bid submitted in accordance with ITB 14 , Technical Proposal, in particular, to confirm that all requirements of Part -1 Section III (Evaluation and Qualification criteria) have been met without any material deviation or reservation.
25.4	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. The employer's decision in this connection shall be final and binding.
26.	Nonconformities, Errors, and Omissions - DELETED.
27.	Evaluation of Technical Bids

27.1	The Employer shall determine to its satisfaction during the evaluation of Technical Proposals whether Bidders are qualified to perform the Contract satisfactorily.
27.2	The determination shall be based upon an examination of the documentary evidence of the Technical Proposal submitted by the Bidder, pursuant to ITB Clause 14 , to clarifications in accordance with ITB Clause 23 and the Evaluation and qualification criteria indicated in Part-1, Section-III , Evaluation and Qualification Criteria.
27.3	The Employer will carry out a detailed evaluation of the technical proposals in order to determine whether the technical aspects are in compliance with the Bidding Document. In order to reach such a determination, the Employer will examine and compare the technical proposals on the basis of the information supplied by the bidders, taking into account overall completeness and compliance with the Employer's Requirements and the technical merits;
27.4	An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Financial Proposal. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Financial Proposal to the Bidder.
28.	Correction of Arithmetical Errors
28.1	Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors as under: If there is a discrepancy between words and figures, the amount in words shall prevail.
28.2	If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its bid shall be disqualified and its bid security may be forfeited.
29.	Evaluation of Financial Bids
29.1	The Employer shall evaluate Financial Proposals of each Bid for which the Technical Proposals have been determined to be substantially responsive as per evaluation criteria given in Part-1 Section-III, of the Bid Document
29.2	To evaluate the Financial Proposal of a bid, the Employer shall consider the following: i) Total lump sum bid price; ii) Unconditional Discounts offered if any.
29.3	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.
30.	Comparison of Bids
30.1	The Employer shall compare all substantially responsive bids to determine the lowest evaluated bid, in accordance with ITB 29 .
31.	Employer's Right to Accept Any Bid, and to Reject Any or All Bids

31.1	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 returned to the Bidders.
F.	Award of Contract
32.	Notification of Award
32.1	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. 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.
32.2	Until a formal contract is prepared and executed, the Letter of Acceptance shall constitute a binding Contract.
33.	Performance Security
33.1	Within Thirty (30) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, using for that purpose the Performance Security Form included in Part-3, Section VIII: Contract Forms of the Bid Document or another form acceptable to the Employer.
33.2	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.
34.	Signing of Contract
34.1	After notification and submission of performance security, the Employer shall send the successful Bidder the Contract Agreement.
34.2	Within Thirty (30) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.
35.	Corrupt Practices
35.1	It is the Employer’s policy that Bidder, suppliers, and contractors and their subcontractors, observe the highest standard of ethics during the procurement and execution of such contracts. ¹ In pursuance of this policy, the Employer

¹ In this context, any action taken by a Applicant, supplier, contractor, or a sub-contractor to influence the procurement process or contract execution for undue advantage is improper.

² “another party” refers to a public official acting in relation to the procurement process or contract execution]. In this context, “public official” includes employees of other organizations taking or reviewing procurement decisions.

³ a “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

	<p>(a) defines, for the purposes of this provision, the terms set forth below as follows:</p> <ul style="list-style-type: none"> (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party² ; (ii) "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation³; (iii) "collusive practice" is an arrangement between two or more parties⁴ designed to achieve an improper purpose, including to influence improperly the actions of another party. (iv) "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party⁵ or the property of the party to influence improperly the actions of a party; (v) "obstructive practice" is <ul style="list-style-type: none"> (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; <li style="text-align: center;">or (bb) acts intended to materially impede the exercise of the Employer's inspection and audit rights provided for under sub-clause 35.1 (d) below. <p>(b) will reject a proposal for award if it determines that the Applicant recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;</p> <p>(c) will sanction a firm or individual, at any time, including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time, Employer if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing.</p> <p>(d) will have the right to get the accounts , records and other documents relating to the bid submission and contract performance of the Applicants, suppliers, contractors and their sub-contractors audited by auditors appointed by the Employer.</p>
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⁴ "parties" refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁵ a "party" refers to a participant in the procurement process or contract execution.

Section – II

Bid Data Sheet
(BDS)

Section 2: Bid Data Sheet

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. General	
ITB 1.1	The number of the Invitation for Bids is IFB No.: HQ/EN/EC/Track/MGS-DGO&KWDN-CPBH-SEBN dated 11.07.2016
ITB 1.1	The Employer is: Dedicated Freight Corridor Corporation of India Limited, NEW DELHI
ITB 1.1	The name of the IFB is: “ Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor. ”
B. Contents of Bidding Document, Site Visit, Pre-bid conference	
ITB 6.1	All communication between the Employer and the Bidder shall be in writing. For the purposes of seeking clarification, the Employer's address is: Dedicated Freight Corridor Corporation of India Limited Attention : Mr. Mukesh Kumar Jain, Designation : General Manager/CO/ EC Address : Room # 513; 5 th Floor Pragati Maidan Metro Station Building Complex , New Delhi - 110001, India Telephone : +91 - 11 - 23454680 Facsimile number : +91 - 11 - 23454682
ITB 6.4	Pre Bid Conference: A pre-Bid conference will be held to clarify the issues related to this Bid document on the date, time and venue of the Pre Bid conference indicated below. Bidders should give their queries in writing upto 3 days prior to the pre-Bid Conference. All interested Bidders may attend the Pre-Bid Conference. DFCC response to queries will be posted on the DFCCIL's website. Non-attendance at the pre-Bid conference will not be a cause for disqualification of the Bidder. Date : 03.08.2016 Time: 15:00 Hrs. Venue : Conference Room, Dedicated Freight Corridor Corporation of India Limited, 4 th Floor, Pragati Maidan Metro Station Building Complex, New Delhi-110001. Website of DFCC : www.dfccil.gov.in . Site visit is not proposed to be organized by the Employer. However, the bidders are advised to visit the site before pre-bid conference.

C. Preparation of Bid	
ITB 11.2	The prices quoted by the Bidder shall be adjustable in accordance with the provisions in Sub Clause 13.8 of Particular Conditions of Contract.
ITB 15.1	The bid validity period shall be 180 (One hundred and Eighty) days.
ITB 16.1	<p>The Bidder should submit along with the bid, a bid security for Rs. 1.55 crore (Rupees One Crore Fifty Five Lakhs only) in the following form :</p> <p>i) FDR (Fixed deposit receipt) / Demand Draft / Banker's Cheque / Pay Order for Rs.1.00 Crore</p> <p style="text-align: center;">and</p> <p>ii) Bank Guarantee as per format enclosed as BDF-9A for Rs. 0.55 crore.</p> <p>in favour of "Dedicated Freight Corridor Corporation of India Ltd., New Delhi" from Nationalised / Indian Scheduled Commercial Bank in original form.</p> <p>The validity of FDR should not be less than 270 days.</p>
ITB 16.4	<p>The bid security of the successful Bidder submitted in the form of Bank Guarantee shall be returned on Execution of contract Agreement and submission of Performance Guarantee.</p> <p>However, bid security of the successful Bidder submitted in the form of FDR (Fixed deposit receipt) / Demand Draft / Banker's Cheque / Pay Order for Rs. 1.00 Crore shall be retained as Retention Money and adjusted against the Retention money (reference GCC/PCC sub-clause 14.9).</p>
ITB 17.2	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of:</p> <p>In case of Companies</p> <ul style="list-style-type: none"> • Power of Attorney authorizing the signatory of the bid to commit the bidder. <p>In case of Joint Venture</p> <ul style="list-style-type: none"> • Power of Attorney for Authorised Signatory of Joint Venture.
D. Submission and Opening of Bids :	
ITB 19.1	<p>Tender Box for submission of Bid shall remain open: From 10.00 Hrs to 17:00 Hrs on 13.09.2016 & 14.09.2016 and Upto 15:00 hrs. of 15.09.2016 at the address given below: General Manager/CO/ EC Room # 513; 5th Floor Pragati Maidan Metro Station Building Complex, New Delhi - 110001, India Telephone: +91-11- 23454680 Facsimile number: +91-11-23454682</p>

ITB 21.1	The Technical bid opening shall take place at: Dedicated Freight Corridor Corporation of India Limited, Conference Hall; 4 th Floor, DFCCIL, Pragati Maidan Metro Station Building Complex , New Delhi - 110001, India <u>Technical Bid Opening:</u> Date: 15.09.2016 Time: 15:30 hrs.
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Section III

Evaluation and Qualification Criteria

Section III. Evaluation and Qualification Criteria

The purpose of this Section is to establish that the Bidder continues to meet the criteria stipulated in sub-clause no.1 of section-III of PQ document used at the time of prequalification. It contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders in accordance with ITB 25, ITB 27, ITB 29 and ITB 30 Part-1. The Bidder shall provide all the information requested in this section as well as in the forms included in Part –1, Section IV, Bidding Forms of the Bid Document.

Technical Proposals

1. Evaluation

The documents required for submission and evaluation of Technical Proposal are detailed in Annexure – I of this section. In addition, the following factors shall apply in proposal evaluation.

2. Qualification

2.1 Updation of Information

The Bidder shall continue to meet the criteria stipulated in sub-clause no.1 of section-III of PQ document used at the time of prequalification and shall give an undertaking to this effect. The Bidder shall fill up Form number BDF-2 and BDF-3 (applicant information & applicant party information) included in Section IV, Bidding Forms, Part -1 of Bidding Documents.

2.2 Personnel

The Bidder shall give an undertaking to arrange the following minimum no. of key personnel during the execution of work commensurate with the planning of work, in addition to required semi-skilled and skilled staff:

SN	Key Position	Minimum No. of Persons	Minimum Qualifying Requirement		
			Total Work Experience (years)	In Similar Works Experience (years)	Minimum Education Qualification
1	Chief Project Manager	1	10	6	B.E. (Civil)
2	Track Design & Track Alignment Engineer	1	5	03	B.E. (Civil), should be preferably with Rly. Background having knowledge of Track laying and linking, Layout calculation, curve calculations, etc.
3.	Project Manager	2	8	5	B.E. (Civil).
4	Planning Engineer	1	07	03	B. Tech. or B.Sc. in IT (should be well conversant with Primavera-P6)
5	Contract Manager/ Quantity Surveyor	1	05	03	B.E. Civil

6	Railway Track Engineer	3	5	05	Diploma Certificate
7	Quality Control Expert	1	05	03	Diploma in Civil Engg.
8	Surveyor	1	05	03	Diploma in Civil Engg., (should be well conversant with use of Total Stations and Levelling Instruments)

2.3 Equipment

The Bidder shall demonstrate that it will have access to essential equipments/plants during the execution of Works. Capacity and number of machines shall be commensurate with the Works program submitted by the Bidder to enable him to finish the work in stipulated time. The Bidder shall provide ownership/renting/leasing/ arrangement details of proposed items of equipment using Form BDF-9 in Part-1, Section IV of Bidding Document.

SN	Name of Equipment
TRACK	
1.	Machines / Equipments for laying of Sleepers
2.	Machines / Equipments for laying of Rails
3.	Flash Butt Welding Plant: Mobile / Stationary
4.	Vehicles / Equipments for handling of Ballast
5.	Transport vehicles for materials
6.	Total Stations and Levelling Instruments
7.	Toe Load measuring device
8.	Moped Trolley etc. for inspection

List of Equipments /Plants are indicative and not exhaustive.

3. Financial Bid

The financial proposal will comprise the documents required as per ITB-10.5.

3.1. Evaluation

The evaluation of the financial bid shall be carried out in accordance with the provisions of ITB 29. Bidders shall submit financial Bid as per the Form BDF-10 – Price Proposal submission sheet as given in Part – 5 of the Bidding Document.

3.2 Time Schedule for Completion of Works:

The designated period for the completion and taking over the entire Works shall be **730 days** from the Commencement Date, as indicated with further details in Para 8.2 of GCC. Bidders shall confirm that their Technical Proposals and Financial proposal are based on this Time Schedule for Completion. No credit of any kind will be given in the evaluation of Technical Proposals and Financial proposals, to a Proposal and/ or a Bid offering to complete the Works earlier than this designated period. However, Technical Proposals and Financial Bids offering to complete the Works later than this designated period shall be rejected by the Employer.

Annexure- I

Documents Required For Bid Submission and Evaluation of Technical Proposal

1 Type of Contract

Technical and Financial Proposals are being invited for a Lump-Sum Contract, for Design and Construction, based on the Employer’s Requirements.

The detailed design of components and construction shall be done as specified in “Employer’s Requirement” and “General Conditions of Contract read with Particular conditions of Contract”.

2 Documents Required for Technical Proposal

The Technical Proposal will comprise of the following documents in addition to the documents required as per Clause ITB 10:

2.1 General Submittal

S.N.	Form	Contents
1.	BDF-1	Technical proposal submission sheet.
2.	BDF-2	Applicant information Form
3.	BDF-3	Applicant’s party information Form
4.	BDF-4	Draft Memorandum of understanding (MOU) for joint venture participation.
5.	BDF-5	Draft format for JV Agreement
6.	BDF-6	Proforma - letter of participation from each member of JV.
7.	BDF-7	Power of Attorney for authorize signatory of JV.
8.	BDF-8	Power of Attorney for lead partner of joint venture
9.	BDF-9	Contractors’ Equipment
10.	BDF-9A	Form of Bid Security (Bank Guarantee)

2.2 Technical Submittal

2.2.1 Methods Statement

The Bidder shall submit a methods statement which demonstrates the Bidder’s understanding of the Project and comprehension of the Works involved. In these methods statement, the Bidder shall submit method statement for :

- a detailed plan for procurement of mainline sleepers, special sleepers, turnout sleepers, Thick web switches, weldable CMS crossings, Insulated glued joints, SEJs, Fastenings (ERC MK-V, GFN 66 liners, other track components), etc.
- a detailed plan for transportation of rails,
- a detailed plan for setting-up of stationary/moving welding depots,
- a detailed plan for procurement/ leasing/hiring of machines / equipments,
- a detailed plan for laying of sleepers and rails for construction of track,
- a detailed plan for testing & commissioning,
- a detailed plan for handing over the completed Works to the Employer

in strict compliance with the Contract requirements. This shall correspond to Site organization, Contractor's equipment, construction schedule and Work Plan being submitted by the Bidder as a part of bid documents.

2.2.2 Organization and Management

The Bidder shall submit an organization chart identifying the management and reporting structure for key positions and all site teams. The Bidder shall submit a commentary that describes the roles and responsibilities of the various key positions in the organization structure, the minimum qualifications, channel of communication, organization they come from and how this organization structure will manage the execution of the works within the scheduled period.

2.2.3 Work Plan

The Bidder shall submit a Work Plan which shall indicate how the Bidder intends to organize and carry out the Works by breaking them into various activities and completing those activities by appropriate Milestones so that the whole of the work gets completed within the time of completion as mentioned in GCC para 8.2. The Work Plan shall be prepared in terms of weeks from the Date of Commencement of Works, taking D as the Commencement Date and other time schedules marked in D + format. (Refer to Explanatory Note 1 at the end of this Section).

2.2.4 Documents for Safety and Quality Plans

The Bidder shall submit the following documents, which shall demonstrate clearly the Bidder's proposals for achieving effective and efficient Safety and Quality procedures:

- a) Outline Safety Plan
- b) Outline Quality Plan

(Refer to Explanatory Note 2 at the end of this Section)

Reference Paragraph 2.2.3 Work Plan of Annexure-I**Requirements of Work Plan**

- (1) The Bidder shall submit a Work Plan which shall indicate how the Bidder intends to organize and carry out the Works by breaking them into various activities and completing those activities by appropriate Milestones so that the whole of the work gets completed within the time of completion as mentioned in GCC para 8.2. The Work Plan shall be prepared in terms of weeks from the Date of Commencement of Works, taking D as the Commencement Date and other time schedules marked in D+ format. This may be in form of an Excel spread sheet/primavera or similar programme output.
- (2) The Work Plan shall follow the instructions given in **Part 2, Section V, “Employer’s Requirements/ Volume 6 Appendix 3, PROJECT PROGRAM REQUIREMENTS”**
- (3) The Works Plan shall take into account the Bidder’s proposed Design Submission Programme and should:
 - (a) take due account of the design co-ordination interface periods during which the Contractor shall be required to undertake and complete all aspects of design co-ordination with other consultants engaged in the review of the design of the Project such design will be compatible and coordinated with others and allowing adequate time for the Employer’s assessments and decisions.
 - (b) be consistent with the overall Work Plan and in accordance with the Employer's Requirements;
 - (c) make adequate allowance for periods of time for review by authorities whose approval is necessary
 - (d) include a schedule identifying, describing, cross-referencing and explaining the Design packages and submissions which the Bidder intends to submit.
- (4) The Work Plan shall contain sufficient detail to assure the Employer of the feasibility of the plan and approach proposed by the Bidder.
- (5) The Work Plan shall be accompanied by a narrative statement that shall describe Programme activities, assumptions and logic, and highlight the Bidder's perception of the construction and completion of the work. This narrative statement shall also indicate which elements of the Works the Bidder intends to carry out off-Site with details of the proposed locations of where any such work is to be carried out, the facilities available. In particular the Bidder must state the assumptions made in respect of the interfaces with the Employer, other contractors and any requirements for information on matters which would affect his works.
- (6) All programmes shall include design, procurement periods, major material, on site, offsite, temporary construction, interface and periods for System wide, utility and adjacent contractors, testing and commissioning and integrated testing along with other relevant information.
- (7) The proposed submission of the Work Plan and Design Submission Programme shall not, in any event, be construed as a submission under Clause 8.3 (Programme) of the General Conditions of Contract.

Reference Paragraph 2.2.4 - Annexure-I - Documents for Safety and Quality plans

OUTLINE SAFETY PLAN

The Bidder shall submit as part of his bid an Outline Safety Plan which shall contain sufficient information to demonstrate clearly the Bidder's proposals for achieving effective and efficient safety procedures. The Outline Safety Plan should include an outline of the safety procedures and regulations to be developed and the mechanism by which they will be implemented for ensuring safety as required under the Employer's Requirements and Sub Clause 4.8 and 6.7 of the GCC.

The Outline Safety Plan shall be headed with a formal statement of policy in relation to safety and shall be sufficiently informative to define the Bidder's safety plans and set out in summary an adequate basis for the development of the Site Safety Plan to be submitted in accordance with Sub Clause 4.8 and 6.7 of the GCC including a testing and commissioning strategy/plan for the whole of the Works.

OUTLINE QUALITY PLAN

The Bidder shall submit as part of his bid an Outline Quality Plan which shall contain sufficient information to demonstrate clearly the Bidder's proposals for achieving effective and efficient Quality Assurance and Control System. The Plan should include an outline of the procedures and regulations to be developed and the mechanism by which they will be implemented for ensuring Quality as required in terms of the Employer's Requirements. It shall also include an outline of procedures, verification and validation for all tests and materials for all the Works being done by him under this Contract.

Section IV

Bidding Forms

Section IV. Bidding Forms

Table of Forms

Form No.	Description
BDF-1	Technical Proposal Submission Sheet
BDF-2	Applicant Information form
BDF-3	Applicant's Party Information form
BDF-4	Draft Memorandum of Understanding (MOU ²) For Joint Venture Participation
BDF-5	Draft Format of Joint Venture Agreement
BDF- 6	Pro-forma Letter of Participation from each partner of Joint Venture (JV)
BDF- 7	Format for Power of Attorney for Authorised Signatory of Joint Venture (JV) Members – Power of Attorney
BDF- 8	Format for Power of Attorney to Lead Partner of Joint Venture (JV)
BDF- 9	Contractor's Equipment
BDF-9A	Form of Bid Security (Bank Guarantee)
BDF- 10	Price Proposal Submission Sheet

² In case of existing joint venture, the certified copy of JV Agreement be furnished.

Technical Proposal Submission Sheet (TPSS)

Date:

Invitation for Bid No.: HQ/EN/EC/Track/MGS-DGO&KWDN-CPBH-SEBN

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-7);
- (b) We confirm that our offer is fully compliant with Bid Document and Technical Proposals submitted by us are in clause by clause compliance with Employer’s Requirement and other specifications, including Addenda thereon. We offer to execute the works in conformity with the Bidding Document;
- (c) We continue to meet the criteria used at the time of prequalification;
- (d) Our bid shall be valid for a period of 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;
- (e) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;
- (f) If our bid is accepted, we commit to deploy key equipment and key personnel consistent with the requirements stipulated in Section- III : Evaluation and Qualification criteria and Section-V : Employer’s Requirements;
- (g) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 3.3;
- (h) We understand that this bid, together with your written acceptance thereof included in your notification of award/Letter of Acceptance (LOA), shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (i) We have 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 summery 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.
- (j) We understand that you are not bound to accept the lowest 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

Applicant Information Form

Date: *[insert day, month, year]*

IFB Bid Document No.: HQ/EN/EC/Track/MGS-DGO&KWDN-CPBH-SEBN

Applicant's legal name <i>[insert full legal name]</i>
In case of Joint Venture (JV), legal name of each partner: <i>[insert full legal name of each partner in JV]</i>
Applicant's Actual or Intended country of constitution: <i>[indicate country of Constitution]</i>
Applicant's actual or Intended year of constitution: <i>[indicate year of Constitution]</i>
Applicant's legal address in country of constitution: <i>[insert street/ number/ town or city/ country]</i>
Applicant's authorized representative information Name: <i>[insert full legal name]</i> Address: <i>[insert street/ number/ town or city/ country]</i> Telephone/Fax numbers: <i>[insert telephone/fax numbers, including country and city codes]</i> E-mail address: <i>[indicate e-mail address]</i>
Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation or Documents of Constitution, and documents of registration of the legal entity named above <input type="checkbox"/> In case of JV, JV agreement, in accordance with ITB 3.1b.

Applicant’s Party Information Form

[The following form shall be filled in for the Applicant’s parties including partner(s) of a joint venture]

Date: *[insert day, month, year]*

IFB Bid Document No.: HQ/EN/EC/Track/MGS-DGO&KWDN-CPBH-SEBN

JV applicant legal name: <i>[insert full legal name]</i>
Applicant’s Party legal name: <i>[insert full legal name of Applicant’s Party]</i>
Applicant’s Party country of registration: <i>[indicate country of registration]</i>
Applicant Party’s year of constitution: <i>[indicate year of constitution]</i>
Applicant Party’s legal address in country of constitution: <i>[insert street/ number/ town or city/ country]</i>
Applicant Party’s authorized representative information Name: <i>[insert full legal name]</i> Address: <i>[insert street/ number/ town or city/ country]</i> Telephone/Fax numbers: <i>[insert telephone/fax numbers, including country and city codes]</i> E-mail address: <i>[indicate e-mail address]</i>
Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation or Documents of Constitution, and Registration Documents of the legal entity named above, in accordance with ITB 3.1 (b).

Note :

Separate BDF form is required for all individual participants (members) in the JV.

**Draft Memorandum of Understanding (MOU)*
For
Joint Venture Participation
Between**

M/s having its registered office at (hereinafter referred to as) acting as the Lead Partner of the first part,

and

M/shaving its registered office at (hereinafter referred to as ‘ ’) in the capacity of a Joint Partner of the other part.

and

M/shaving its registered office at (hereinafter referred to as ‘ ’) in the capacity of a Joint Partner of the other part.

The expressions of and shall wherever the context admits, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as “the Parties” and individually as “ the Party”

WHEREAS:

Dedicated Freight Corridor Corporation of India Limited (DFCCIL) [hereinafter referred to as “Client”] has invited bids for ... “[Insert name of work].....”

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. The following documents shall be deemed to form and be read and construed as an integral part of this MOU.

- i) Notice for Bid, and
- ii) Bidding document
- iii) Any Addendum/Corrigendum issued by Dedicated Freight Corridor Corporation of India Limited
- iv) The bid submitted on our behalf jointly by the Lead Partner.

2. The ‘Parties’ have studied the documents and have agreed to participate in submitting a ‘bid’ jointly.

3. M/sshall be the lead member of the JV for all intents and purpose and shall represent the Joint Venture in its dealing with the Client. For the purpose of submission of bid proposals, the parties agree to nominate as the leader duly authorized to sign and submit all documents and subsequent clarifications, if any, to the Client. However M/s shall not submit any such proposals, clarifications or commitments before securing the written clearance of the other partner which shall be expeditiously given by M/s.....to M/s.....

4. The ‘Parties’ have resolved that the distribution of responsibilities and their proportionate share in the Joint Venture is as under:

- (a) Lead Partner;
 - (i)
 - (ii)
 - (iii)
 - (b) Joint Venture Partner
 - (i)
 - (ii)
 - (iii)
- [Similar details to be given for each partner]

5. JOINT AND SEVERAL RESPONSIBILITY

The Parties undertake that they shall be jointly and severally liable to the Client in the discharge of all the obligations and liabilities as per the contract with the Client and for the performance of contract awarded to their JV.

6. ASSIGNMENT AND THIRD PARTIES

The parties shall co-operate throughout the entire period of this MOU on the basis of exclusivity and neither of the Parties shall make arrangement or enter into agreement either directly or indirectly with any other party or group of parties on matters relating to the Project except with prior written consent of the other party.

7. EXECUTIVE AUTHORITY

The said Joint Venture through its authorized representative shall receive instructions, payments from the Client. The management structure for the project shall be prepared by mutual consultations to enable completion of project to quality requirements within permitted cost and time.

8. BID SECURITIES

Till the award of the work, JV firm/Lead Partner of JV firm shall furnish Bid Security to the Client on behalf of the joint venture which shall be legally binding on all the members of the Joint Venture.

9. BID SUBMISSION

Each Party shall bear its own cost and expenses for preparation and submission of the bid and all costs until conclusion of a contract with the Client for the Project. Common expenses shall be shared by all the parties in the ratio of their actual participation.

10. INDEMNITY

Each party hereto agrees to indemnify the other party against its respective parts in case of breach/default of the respective party of the contract works of any liabilities sustained by the Joint Venture.

11. For the execution of the respective portions of works, the parties shall make their own arrangements to bring the required finance, plants and equipment, materials, manpower and other resources.

12. DOCUMENTS & CONFIDENTIALITY

Each Party shall maintain in confidence and not use for any purpose related to the Project all commercial and technical information received or generated in the course of preparation and submission of the bid.

13. ARBITRATION

Any dispute, controversy or claim arising out of or relating to this agreement shall be settled in the first instance amicably between the parties. If an amicable settlement cannot be reached as above, it will be settled by arbitration in accordance with the Indian Arbitration and Conciliation Act 1996 or any amendments thereof. The venue of the arbitration shall be Delhi / Mughalsarai.

14. VALIDITY

This Agreement shall remain in force till the occurrence of the earliest to occur of the following, unless by mutual consent, the Parties agree in writing to extend the validity for a further period.

- a. The bid submitted by the Joint Venture is declared unsuccessful, or
- b. Cancellation/ shelving of the Project by the client for any reasons prior to award of work
- c. Execution of detailed JV agreement by the parties, setting out detailed terms after award of work by the Client.

15. This MOU is drawn in number of copies with equal legal strength and status. One copy is held by M/s and the other by M/s.....&M/s and a copy submitted with the proposal.

16. This MOU shall be construed under the laws of India.

17. NOTICES

Notices shall be given in writing by fax confirmed by registered mail or commercial courier to the following fax numbers and addresses:

Lead Partner	Other Partner(s)
.....
.....
(Name & Address)	(Name & Address)

IN WITNESS WHEREOF THE PARTIES, have executed this MOU the day, month and year first before written.

M/s.....	M/s.....
.....
(Seal)	(Seal)

Witness

1.....(Name & Address)

2..... (Name & Address)

***Note:** In case of existing joint venture, the certified copy of JV Agreement may be furnished.

Draft Format of Joint Venture Agreement

(To be executed on non-judicial stamp paper of appropriate value in accordance with relevant Stamp Act and to be registered with appropriate authority under Registration Act.)

The JV agreement shall be structured generally as per contents list given below:

A. CONDITIONS AND TERMS OF JV AGREEMENT

1. Definitions and Interpretation
2. Joint Venture – Include Equity of members, transferability of shareholding of equity of a partner leaving during the subsistence of the contract.
3. Proposal Submission
4. Performance – To indicate scope of responsibility of each member
5. Language and Law
6. Exclusively
7. Executive Authority
8. Documents
9. Personnel
10. Assignment and Third Parties
11. Severability
12. Member in Default
13. Duration of the Agreement
14. Liability and sharing of risks
15. Insurance
16. Sharing of Promotion and Project Costs, Profits, Losses and Remuneration
17. Financial Administration and Accounting
18. Guarantees and Bonds
19. Arbitration
20. Notices
21. Sole Agreement and Variation

B. SCHEDULES

1. Project and Agreement Particulars
2. Financial Administration Services
3. Allocation of the obligations
4. Financial Policy and Remuneration

Pro-forma Letter of Participation From Each Partner of Joint Venture (JV)

(To be executed on non-judicial stamp paper of appropriate value in accordance with relevant Stamp Act and to be registered with appropriate authority under Registration Act.)

No....

Dated

From:

.....
.....

To,

The Managing Director,
Dedicated Freight Corridor Corporation of India Limited
5th Floor, Pragati Maidan Metro Stn. Building Complex.,
New Delhi 110001.

Gentlemen,

Re: ...“*[Insert name of work]*.....”.

Ref: Your notice for Invitation for Bid (IFB) No. HQ/EN/EC/Track/MGS-DGO&KWDN-CPBH-SEBN dated

- 1. We wish to confirm that our company/firm has formed a Joint Venture with(i)..... & ii)..... for the purposes associated with IFB referred to above.

(Members who are not the lead partner of the JV should add the following paragraph).*

- 2. ‘The JV is led by ... whom we hereby authorise to act on our behalf for the purposes of submission of Bid for and authorise to incur liabilities and receive instructions for and on behalf of any and all the partners or constituents of the Joint Venture.’

OR

*(Member(s) being the lead member of the group should add the following paragraph)**

- 2. ‘In this group we act as leader and, for the purposes of applying for Bid, represent the Joint Venture:

3. In the event of our JV being awarded the contract, we agree to be jointly with i) & ii) (names of other members of our JV) and severally liable to the Dedicated Freight Corridor Corporation of India Limited, its successors and assigns for all obligations, duties and responsibilities arising from or imposed by the contract subsequently entered into between Dedicated Freight Corridor Corporation of India Limited and our JV.

4. *I/We, further agree that entire execution of the contract shall be carried out exclusively through the lead partner.

Yours faithfully,

(Signature)

(Name of Signatory).....

(Capacity of Signatory).....

Company Seal

* Delete as applicable

Note : In case of existing joint venture, the certified copy of JV Agreement may be furnished.

Format for Power of Attorney for Authorised Signatory of Joint Venture (JV) Partners

POWER OF ATTORNEY*

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney)

Know all men by these presents, we ... do hereby constitute, appoint and authorise Mr/Ms. who is presently employed with us and holding the position ofas our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our bid for the work of ...Including signing and submission of all documents and providing information/responses to Dedicated Freight Corridor Corporation of India Limited , representing us in all matters, dealing with Dedicated Freight Corridor Corporation of India Limited in all matters in connection with our bid for the said project.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

Dated this the day of 2016

(Signature of authorised Signatory)

Signature of Lead Partner

Signature of JV Partner(s)

.....

.....

**(Signature and Name in Block letters of Signatory)
Seal of Company**

Witness

Witness 1:

Name:

Address:

Occupation:

Witness 2:

Name:

Address:

Occupation:

**Notes:*

- i) To be executed by all the partners jointly, in case of a Joint Venture.

Format for Power of Attorney to Lead Partner of Joint Venture (JV)

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney)

POWER OF ATTORNEY *

Whereas Dedicated Freight Corridor Corporation of India Limited has invited Bids for the work of **“Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailpathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor”**.

Whereas, the members of the Joint Venture comprising of M/s., M/s., M/s., and M/s. are interested in submission of bid for the work of ...*[Insert name of work]*... in accordance with the terms and conditions contained in the bidding documents.

Whereas, it is necessary for the members of the Joint Venture to designate one of them as the Lead Partner, with all necessary power and authority to do, for and on behalf of the Joint Venture, all acts, deeds and things as may be necessary in connection with the Joint Venture's bid for the project, as may be necessary in connection the Joint Venture's bid for the project.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT:

We, M/s., hereby designate M/s., being one of the partners of the Joint Venture, as the lead partner of the Joint Venture, to do on behalf of the Joint Venture, all or any of the acts, deeds or things necessary or incidental to the Joint Venture's bid for the contract, including submission of bid, participating in conferences, responding to queries, submission of information/ documents and generally to represent the Joint Venture in all its dealings with the DFCCIL or any other Government Agency or any person, in connection with the Bid/contract for the said work until culmination of the process of bidding till the contract agreement if successful, is entered into with the Dedicated Freight Corridor Corporation of India Limited and thereafter till the expiry of the contract agreement.

We hereby agree to ratify all acts, deeds and things lawfully done by lead member, our said attorney, pursuant to this power of attorney and that all acts deeds and things

done by our aforesaid attorney shall and shall always be deemed to have been done by us/ Joint Venture.

Dated this the Day of 2016

.....
(Signature)

.....
(Name in Block letters of Executants)
Seal of Company

Witness 1:
Name:
Address:
Occupation:

Witness 2:
Name:
Address:
Occupation:

** To be executed by all the members of the JV except the lead member.*

The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.

Contractor's Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key Contractor's equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of equipment	
Equipment information	Name of manufacturer
	Capacity
Current status	Current location
	Details of current commitments
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured

Omit the following information for equipment owned by the Bidder.

<i>Owner</i>	<i>Name of owner</i>	
	<i>Address of owner</i>	
	<i>Telephone</i>	<i>Contact name and title</i>
	<i>Fax</i>	<i>Telex</i>
<i>Agreements</i>	<i>Details of rental / lease / manufacture agreements/Consent letter specific to the project</i>	

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(Clause ITB-16; Section-I & II)

Form of Bid Security (Bank Guarantee)

BANK GUARANTEE

..... **Bank's Name, and Address of Issuing Branch or Office**.....

Beneficiary: **Name and Address of Employer**

Date:

Bid Security No.:

We have been informed that **name of the Bidder**. (hereinafter called "the Bidder") has submitted to you its bid dated (hereinafter called "the bid") for the execution of [insert]. . of . . . **name of work** under Invitation for Bid No. ("the IFB").

Furthermore, we understand that, according to your conditions, bid must be supported by a bid guarantee.

At the request of the Bidder, we **name of Bank**. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of amount in figures (. **amount in words**) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn its bid during the period of bid validity specified by the Bidder in the Form of bid;
- or
- (b) having been notified of the acceptance of its bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) **Ninety days (90) after the expiration of the Bidder's bid.**

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, **ICC Publication No. 758.**

..... **Bank's seal and authorized signature(s)**

Note: All italicized text is for use in preparing this form and shall be deleted from the final document

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Price Proposal Submission Sheet

.....

Please refer Part-5 (Price Schedule) for this form

PART 2

Employer's Requirement

Section V. Employer's Requirement

Contents

- Volume 1: Scope of Works**
- Volume 2: General**
- Volume 3: Design Procedures and Processes**
- Volume 4: Design Criteria and Specifications**
- Volume 5: Construction, Testing and Commissioning**
- Volume 6: Appendices**
 - Appendix 1 Utilities
 - Appendix 2 Design and Construction Interfaces
 - Appendix 3 Project Programme Requirements
 - Appendix 4 Monthly Progress Reports
 - Appendix 5 Quality Assurance
 - Appendix 6 Project Calendar
 - Appendix 7 First Aid Base
 - Appendix 8 Design Certificate
 - Appendix 9 Site Safety Plan
 - Appendix 10 Traffic Bloc (Possession) Management
 - Appendix 11 Design Standards

Section V Employer's Requirement

Volume 1 – Scope of Works

CONTENTS

- 1.0 General**
- 2.0 Project Information**
- 3.0 Salient Features**
- 4.0 Scope of Works**

1.0 General

- 1.1 Dedicated Freight Corridor Corporation of India (DFCCIL) is a Special Purpose Vehicle set up under the administrative control of Ministry of Railways to undertake planning & development, mobilization of financial resources and construction, maintenance and operation of the Dedicated Freight Corridors. In the first phase, DFCCIL will be constructing two corridors - the Western DFC and Eastern DFC- spanning a total length of about 3300 route km. The Eastern Corridor, starting from Ludhiana in Punjab and pass through the states of Haryana, Uttar Pradesh, Bihar, Jharkhand and terminate at Dankuni in West Bengal. The Western Corridor will traverse the distance from Dadri to Mumbai, passing through the states of UP, Delhi, Haryana, Rajasthan, Gujarat and Maharashtra.

The route alignment of Freight Corridors is mostly parallel to existing adjacent Indian Railway Track. However alignment is on detour at some locations to avoid social/environmental/wild life impact.

The project entails construction of mostly double-track electrified railway lines. Bridges and embankment would be fit for 32.5 Tonne Axle load and Track structure would be designed for handling 25 Tonne axle load with train speed up to 100 Kmph.

The Eastern Corridor will handle single stack containers whereas Western Corridor is planned to cater to double stack containers. Up gradation of transportation technology, increase in productivity and reduction in unit transportation costs have been taken as guiding principles for freight corridor.

1.2 Project Information:

DFCCIL has awarded different Civil & Structures work contracts in Mughalsarai-Sonnagar section of Eastern Dedicated Freight Corridors for which most of the stretches are in advance stage of completion including important bridge over Sone river.

In order to commission the entire section of Mughalsarai to Chirailapathu & New Sonnagar with IR connections, DFCCIL intends to carry out the Construction of Track & Track related works from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya - New Durgauti Section) which includes track works over newly constructed DFC Sone Bridge in the present scope of works. Proposed works fall in the districts of Chandauli of UP state and Kaimur, Rohtas & Aurangabad of Bihar state.

- 1.3 Accordingly, DFCCIL intends to carry out the work "Design, Supply and Construction of Track & Track related works including Testing &

Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor”.

1.4 Salient Engineering Features of the project:

The salient engineering features of the section and standards are as under:-

SN	Description	Details
1	Route Length	Route Length : 69 Kms (Approx.) Track Length : 147.6 Kms (Approx.)
2	Formation	As per RDSO specifications GE-14.
	Bank width for Double line	13.5 m/14.5 m
	Bank width for Single line	7.6 m
	Slope Embankment	2:1 (H:V) (minimum)
3	Ruling Gradient	1:200 (compensated)
4	Steepest Gradient in yards	1:1200, 1:400 in exceptional cases with approval of DFCC
5	Curves	
	Maximum degree of curvature	2.5 Degree (700 metre Radius)
	Curve Compensation	@ 0.04% per degree of curvature
	Vertical Curves.	Shall be provided with Radius 4000 metre as per provision of IR P.Way Manual
6	Bridges loading Standards	As per DFC loading (32.5 T Axle load)
7	Track Centres	
	Between two tracks of DFC	6 m (minimum) / 6.25m bet. ML to LL in yards.
	Between Existing IR track and DFC	As per indicative Alignment Plan given in Reference Documents.
8	Moving Dimensions- Vertical Maximum Moving Dimension (MMD)	5.1m
9	Schedule of Dimensions	As per SSOD for EDFC
10	Important Bridge	1 No. (Approx. 3.06 Kms. long)
11	No. of Major Bridges	19 Nos.
12	No. of Minor Bridges	121 Nos.
13	Viaduct	1 No. (Approx. 1.9 Km. long)
14	Rail Flyover	2 Nos.
15	Yard and Junctions	As per Yard Plan
16	Track Structure	25 T axle loading as per IR standards
17	Gauge	1676 mm
18	Ballast	IRS GE-1 Specifications 350 mm Cushion on M/L 250 mm Cushion on other lines
19	Rails	Rails UIC 60Kg 90UTS IRS T12-2009

2.0 Scope of works :

The main scope of works are :

Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – Durgauti Section) of Eastern Dedicated Freight Corridor.

2.1 The Track & Track related works on main line, yards, etc. shall be undertaken between following stretches :

(A). Mughalsarai to Durgauti:

Construction of UP and DN DFC Tracks between Mughalsarai to Durgauti. Following junctions/connections/additional track are to be provided as per yard plan/part yard plan/connection plan given in the reference document:

- (i) DFC Tracks to be connected with Mughalsarai yard of IR at approx. Ch.120.05 near east cabin of Mughalsarai and upto the junction point of APL-2 (approx. Ch.119.55) with crossover in between DN DFC & UP DFC and another crossover in between UP line of IR and UP connecting line DFC at Ch.120.05 (Dead End of IR), along with a point insertion at Ch.119.422 for provision of APL-2 connection as per connection shown in yard plan,

Released steel material from dismantling of dead end/buffer will be staked at Mughalsarai as per direction of Engineer in charge of DFCCIL.

- (ii) At Ganjkhwaja station yard one loop will be connected from Ganjkhwaja dead end (approx. Ch. 115.00) to DN DFC main line at Ch. 112.95 (approx.) including one crossover in between Ch. 112.93 (approx.) to Ch. 112.82 (approx.) in between UP and DN DFC track and one overrun line of 120 metre takeoff point at Ch. 113.05 (approx.) as indicated in Yard Plan along with provision of connections shown with red lines.
- (iii) At Durgawati-UP DFC track to be connected with existing UP DFC track at approx. Ch.79.164 near Durgauti and DN DFC track will be connected with existing DN DFC track at approx. Ch. 79.408. However, the existing DN DFC track between Ch. 79.408 to 79.164 may be re-aligned as per design requirement.

This includes dismantling of dead end/buffer, over run line, Points & crossing on existing UP DFC track up to heel of crossing of Turnout on IR line.

Existing DN DFC line connecting DFC to IR has also to be dismantled from Ch. 79.408 to approx. Ch. 79.504 (heel of crossing of turnout on IR line).

Released track material from over run line will be utilized by contractor in new linking. Other released material such as buffer, points and crossing rails and sleeper, Derailing Switches etc. will be handed over to DFCCIL by contractor and will be stacked at suitable location as per direction Engineer and will be property of DFCCIL.

(B). New Karwandiya to New Sonnagar:

Construction of UP and DN DFC Tracks from New Karwandiya approx. UP Line approx. Ch.14.450 & DN line from approx. Ch.14.164 to New Sonnagar yard, construction of New Sonnagar Yard as per approved Yard Plan and connection of DFC tracks with IR tracks at approx. Ch. 8.415 (Heel of Crossing) and at approx. Ch. 8160 (heel of crossing) near Bagahabishnupur as per approved plan to facilitate to & fro traffic movement.

This includes dismantling of existing DN DFC line connection from approx. Ch. 14.323 to approx. Ch. 13.983 i.e. upto heel of crossing of turnout in IR DN line at New Karwandiya. All released material have to be stacked and deposited to DFCCIL as per direction of Engineer at Site.

N.B. – The above Chainages are with reference to HWH end abutment of DFC Sone Bridge as Ch. 0.00. New Karwandiya connection is at approx. Ch. 14.450 towards Mughalsarai from this reference point, however, New Sonnagar is in opposite direction towards Garwah from this reference point Ch. 0.00. Thus the approximate total length between New Karwandiya to New Sonnagar connection works out to $14.450 + 8.415 = 22.865$ Kms. (approx.).

(C). DFC Connection at Sonnagar (near DFC Sone Bridge HWH end approach) to Chirailapathu:

Construction of UP & DN DFC tracks taking off from approx. Ch. 0.100 (near Sone Bridge) to Chirailapathu yard with connections to IR track at Chirailapathu.

Following junctions/connections are to be provided as per yard plan given in the reference document :

- (i) Connection of UP & DN DFC track to be taken off from approx. Ch. 0.100 (near Son Bridge), fixing of turnout, derailing switches and construction of over run line as per DFC connection Plan at Sonnagar to continue UP & DN DFC tracks towards Chirailpathu.
- (ii) DN DFC to be connected with IR line at approx. Ch. 7.225 (heel of Crossing of IR Turnout) and a crossover connection in between UP DFC and IR DN line in between approx. Ch.5130 and approx. Ch.5309 (heel of crossing of IR Turnout) to facilitate to & fro traffic movement between DFC and IR tracks at Chirailpathu as per yard plan.

Note :

1. The above chainage are with reference to HWH end abutment of DFC Sone bridge as 0.00.
2. In case of connection with IR and DFC, the scope of track work under this bid shall start from heel of crossings of turnouts on IR track connecting UP DFC and DN DFC. These are based on approved yard plans showing connection of DFC with Indian Railways.
3. Any work in existing IR yard or in IR main lines on account of DFCC is beyond the scope of this work.

3.0 If any work is executed by IR on DFCC which otherwise is within scope of the track works under this bid/contract will lead to negative variation.

4.1 Track Works:

- 4.1.1 The permanent works shall comprise of but not limited to the design, construction, manufacture, supply, installation, testing and commissioning of:
- a) Track on main line, yards, special location like level crossings, points and crossings, bridges, Rail Flyover, Viaducts, etc. complete including its connection with the heel of crossing of turnouts on existing IR track connecting UP DFC and DN DFC separately as per the plans approved by the Employer.
 - b) Track super structure including but not limited to setting out, benchmarking, rail and sleepers with fastenings, turnouts, dead ends, expansion joints, track signage;
 - c) Remodeling, fixing of CC blocks, check rails and fencing of Level Crossing Gates of Existing Indian Railways located on DFCC alignment. Fencing should be on all four sides of LCs as per plan approved by DFC and IR.
 - d) DFCC Yard complexes including fencing,
 - e) Wherever DFC alignment is passing through/ adjacent to Indian Railway yards a provision of a permanent continuous un-scalable but see-through fencing made up of steel section between Indian Railways and DFC tracks shall be made covering a length between outer most points and crossings only on one side between IR and DFC tracks. Such provision has to be made at all stations where DFC is passing adjacent to Indian

Railway Yard. In case of Blockhut / flag station of IR, the length of such fencing shall be length of platform plus 50 m on each side of platform. Existing fencing if any, released from IR shall be handed over to IR at nominated location by the contractor.

- f) Any other activity connected with the construction of track commissioning.

4.1.2 Permanent Way

- The Permanent Way layout for the Works shall generally be based on the provisions contained in Indian Railways Permanent Way Manual, Track Manual, LWR Manual & relevant IRS specifications with latest amendments/corrections.
- Permanent Way Work includes supply (except rails being free supply items ex Bhilai) and fixing of:
 - Rails, pre-stressed concrete sleepers (at all locations), elastic fastenings, GFN liners, turnouts (switches and crossing), track signages, dead end etc. on already completed ballast bed by existing civil (D&B) contractor.
 - Welding of rails into 130 mtr panel in depot and then laying the track on carpeted bed of ballast by mechanised track laying method with Contractor's machines and equipments.
 - Spreading & profiling of ballast for boxing, multiple tamping of the track with employers machines so as to make the track fit for 100 kmph. However, the initial kaccha packing has to be done by the contractor's own track tampers (hand held/off track).
- Permanent work of entire geographical jurisdiction shall be completed in stages as detailed in PCC Sub Clause 8.2 'Time of Completion'.

4.1.3 Works in Station area and yards

Contractor shall validate the yard plans provided in the bidding document for **crossing and junction stations. However, IR yard remodelling work, shifting of Points and crossing, insertion of turn out or any Civil work of IR** yards is not a part of the scope of work of this contract.

Contractor shall Design, construct and provide on DFCC alignment - Yard complex with track, fencing, signages and any other facility as detailed in the Employer's Requirement. Contractor would be required to work with other Contractors in the DFC yards for signalling, electrification and other requirements.

4.1.4 Level Crossings

Contractor is required to do regrading of road approaches/road corrections if required, fixing of CC blocks in DFCC portion and in between nearest IR track and DFCC track, check rails and fencing (un-scalable but see through fencing) of Level Crossing Gates on either approaches of Existing Indian Railways located on DFC alignment as per provisions of IRPWM. However, diversion of road, road signage and height gauge are not the part of scope of work.

4.1.5 Temporary Work

The Contractor shall execute all Temporary Works required to facilitate construction and the cost thereof shall be included in the overall bid price. All temporary arrangements and Works shall be designed and necessary drawings developed to ensure that these remain safe during construction. As a rule temporary Works shall be subsequently dismantled and removed by the Contractor

after construction at his own cost. The Engineer however may permit retention of some of the temporary works with mutual consent between the Contractor and the Engineer.

4.1.6. Incidental Works

In addition to above the Contractor shall undertake various incidental Works to complete the entire project successfully. The Contractor shall include cost of such incidental Works in his Bid price. Some of the incidental Works are listed below:

- (i) **Site Safety Compliance:** The Bidder shall submit as part of his bid a Site Safety Plan which shall be in accordance **Part -2, Volume -6, Appendix- 9.**
- (ii) **Quality Assurance:-**The Bidder shall submit as part of his bid a Quality Assurance Plan which shall include Quality Assurance procedures and regulations to be developed and the mechanism by which these will be implemented for ensuring Quality compliance as per the Employer's Requirements detailed in **Part-2, Volume-6,Appendix 5 of Bidding Document**
- (iii) **Interface Management:** - The Contractor for this Work shall also act as an Interface manager for the whole Works and shall bear the overall responsibility for Interface management with other Contractors and agencies. After award of Contract the Contractor shall submit an Interface Management Plan which shall include procedures and regulations to be developed and the mechanism by which Interfacing will be implemented as per the Employer's Requirements detailed in **Part 2, Volume 6,Appendix 2 of Bidding Document.**
- (iv) **Integrated Testing and Commissioning:-** The Contractor for this Work shall be required to conduct Integrated test for the entire System in coordination with other Contractors and agencies to meet the requirements as mentioned in the bidding documents.
- (v) Restoration of existing roads and services affected by contractor's machines /equipments has to be done by the contractor at his own cost. In case the management of traffic around the worksite becomes necessary, the Contractor shall carry out the same at his cost. The Engineer however, may at times request the Contractor to leave the temporary diversion of the road in place. All such requests by the Engineer shall be entertained by the Contractor.
- (vi) While working in close proximity of existing IR track, the Contractor shall obtain permission for Works with or without traffic block from concern Railway authority/interfacing agencies wherever applicable and DFCC shall assist in obtaining such permits. Extra precautions to be observed by the Contractor while working in close proximity of existing Indian railway track as listed in **Part2 Volume 5, Construction, Testing and Commissioning, Employer's Requirements.**
- (vii) Benchmarking, setting out, photography, videography, report submission, permanent markers like , signages, boards etc. As Built drawings, inspection books, registers for record & maintenance of track/ alignment etc. as specified in **Part2, Volume 5, Construction, Testing and Commissioning, Employer's Requirements.**
- (viii) The Contractor shall be responsible for obtaining relevant certificates or clearances from local/civil authorities' viz. completion certificate, fire clearance or any other mandatory clearances which may be specified by these authorities from time to time.

4.2. There are five main parts of this work

4.2.1 Track Design criteria

- (1) **Design Axle Load of 25 tonnes** with train speed of up to 100 kmph and trailing load up to 15,000 tonnes. The track infrastructure will also comprise of providing crossing stations with loops of 750 m, level crossings, turn-outs, switch expansion joints, rail insulated joints, sidings. The yard plans for crossing stations shall be made showing the future provision for extension upto 1500m.
- (2) **The track layout** shall be based on the provisions contained in Indian Railways Permanent Way Manual, Track Manual & relevant IRS specifications with latest amendments/corrections upto the date of opening of bid.

A) Employers' Obligation :

RDSO Drawings for various items as detailed in this para should be procured by the Contractor from RDSO. Necessary assistance shall be provided by the Employer if required by way of recommendation letter.

S. No	Description of Drawings	Drawing no. & Location
1.	Pre stressed Concrete Sleeper for 25T Axle Load for BG	RDSO/T-7008
2.	Rail seat Assembly on concrete sleeper with 60 kg UIC rails.	RDSO / T- 7009
3	PSC sleepers for 1 in 12 Turnouts	RDSO -T-4218
4.	ERC MK - V	RDSO/T- 5919
5.	10 mm thick composite Groove Rubber Pads	RDSO/T-7010
6.	Improved Switch Expansion Joints (SEJs)	RDSO /T - 6922, (65 mm gap) RDSO /T - 6902, (80 mm gap)
7.	Fish plates and Fish bolts for UIC 60 rail	RDSO /T- 5916
8.	Pre stressed concrete sleeper for SEJ for long welded rails, BG 1676 mm, 60kq (UIC)	RT- 8224 SEJ
9.	PSC sleeper for BG (1676 mm), 60kg (UIC) running rail & 60kq (UIC) guard rail on Bridge approaches	RT - 8229 Bridge approach
10.	PSC guard rail sleeper for 60 kg running rail & 60 kg (UIC) guard rail for BG (1676 mm)	RT- 8228 Ballasted Bridge Deck
11.	PSC sleeper for level crossing with 60 kg (UIC) running rail, 52 kg check rail for 25 t axle load BG (1676 mm)	RT - 8225 Level Crossing
12.	Rail seat assembly for level crossing on PSC sleeper with 52 kg check rail for BG (1676 mm) 60 kg (UIC)	RT- 8226 Level Crossing
13.	CI Bracket for 52kg check rail to be used on PSC sleeper BG (1676 mm) 60 kg (UIC)	RT- 8227 Level Crossing
14.	Glass filled Nylon- 66 insulating liner for use with ERC MK-V on concrete sleeper (RT – 7008) suitable to 60kg UIC rail for 1676mm gauge	RT- 8222 & RT- 8223 Rail Seat
15	Insulated Glued joints	RDSO-T-5483
16	Steel Channel Sleeper on Girder Bridges	RDSO/T-5155 to 5164 with modification to suit 1676 mm

	gauge as per drawing provided in reference document.
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Some of these drawing have been issued for 1673mm gauge, for 1676 mm gauge same drawing shall be used and adjustment of gauge will be carried out by using GFN 66 insulating liner (RT-8222 and RT-8223) with ERC MK-V as applicable. In case these are not suitable then new suitable liners shall be designed by the contractor.

B) Contractor’s Obligations :

I. Validation of RDSO Drawings as stated above :

Contractor should validate the above drawings by making a test track of 3 rail lengths and checking the required track parameters under floating conditions as per IRPWM provisions. If any corrections are required in these drawings on account of checking of track parameters then the same should be done by the contractor in consultation with the employer.

II. Design :

For other items including but not limited to the following shall have to be designed by the contractor and submitted to the employer for its clearance by RDSO/Employer. It will be prime responsibility of the contractor to get the necessary clearance for these components. DFCC will extend all help in getting requisite clearance from RDSO as and if required.

- (i) The items requiring clearance from RDSO/DFCCIL are Design of :
 - a) Canted Points and crossings with Thick web switch alongwith corresponding modification in PSC turnout sleeper sets.
 - b) Weldable CMS crossings
 - c) Any other component for completion of the work as required

- (ii) The RDSO/DFCCIL has already cleared the design of canted turnout in another project of DFCCIL. Alternatively, the contractor can also use these approved design/drawings duly fulfilling the requirements for the use of the same i.e. after obtaining the rights from the owner/developer of the same.

- (iii) Items requiring clearance of Engineer/Employer :
 - (a) Design of Track alignment based on the formation alignment and location of yards given in the bid document. The designed alignment includes the design of Horizontal and vertical curves, transition curves.
 - (b) Preparation of LWR/CWR plans
 - (c) Any other item required for completion of the work like Design of unscalable see-through fencing etc.

III) Other items:

- a) Validation of Yard layout

IV) General Information:

The alignment as shown in project sheets is to be considered only indicative and the Contractor is to acquaint and satisfy himself regarding the site conditions.

Interlocking of switches, earthing and bonding of electrical circuit arrangements in the track will be done by the Systems & other Contractor. The Contractor shall do necessary interfacing with the Systems & other Contractor so that there is no delay/holdup.

4.2.2 Procurement of P-Way materials

4.2.2.1 Rails:

13/26m (**Length is indicative**) long Rails will be supplied to the contractor ex. Works Bhilai by the employer required for:

- construction of main line,
- turnout, Switch Assembly, Lead rails in turnouts, Check rails in turnouts
- additional rail required during flash butt welding*
- Insulated Glued Joints
- 52 Kg check rails for level crossings and
- 60Kg guard rails on bridges

The transportation for the same either through Railway wagons or by Road will be responsibility of the Contractor. For the information of the contractor to bring rails from Bhilai, the details of booking stations may be enquired from IR. However, Employer does not take any responsibility for change in booking stations.

* Extra Rail as per the extant provisions of flash butt welding manual will be supplied by the Employer to compensate the loss of Rails on account of Flash Butt Welding of joints.

* No extra rail will be supplied by the employer to compensate the loss of rails on account of rejection of joints beyond permissible limit as per Indian Railway Flash Butt Welding Manual. Additional rail required on account of failure of FB joints beyond permissible limits will be procured by the employer at the cost of Contractor.

The scrap generated on account track laying/welding will be the property of the employer.

4.2.2.2 Check Rail for Level Crossings shall be supplied from suitable locations other than Bhilai by the Employer. The contractor should transport these rail to site.

4.2.2.3 Sleepers (Main line/Turnouts/Special):

Mainline & Turnout PSC sleepers shall be procured by the contractor through any RDSO approved sleeper manufacturer or by setting up of their own plant as per the existing guidelines of RDSO. In case of procurement of sleepers by setting up of the plant by the contractor himself DFCC may assist the contractor for RDSO inspection for clearance of the plant for mass production of sleepers.

For procurement of sleepers for 25T axle load from a particular plant, the contractor has to arrange RDSO approval for manufacture of the said sleepers. DFCC will provide necessary assistance by way of forwarding their letter to RDSO for giving necessary approval. However, inspection charges of the sleepers shall be borne by the Employer/DFCCIL.

4.2.2.4 Other Components:

Components Designed by RDSO – to be procured from RDSO approved vendor/manufacturers. If the vendor is not approved for that item then it can be procured from the RDSO approved vendors for similar items e.g. if approved vendors for GFN-66 (RT-8222 and 8223) is not available then it can be procured from RDSO approved vendors for standard GFN-66 (Liners).

Components designed by the Contractor:

From any other sources provided the equipment / item meets the technical requirements / acceptance criteria.

Note : The list of suppliers / vendors approved for various items are available at the website of RDSO (www.rdsso.gov.in). Procedures for registration of the new suppliers / vendors for railway equipments / items are also available at the website of RDSO.

4.2.3 Laying of P-Way

The contractor has to do the laying and linking of track with suitable equipments to achieve desired progress. Centre line of tracks shall be fixed/marked as per designed alignment of track. Civil works in this section is also in progress for which some of the bridge/earthwork construction take place simultaneously. This may lead discontinuity in the stretch of track laying. Therefore contractors may suitably plan to complete the maximum of track works leaving these discontinuities pending for completion in final phase. Sleepers shall be transported and stacked at appropriate locations along the alignment or at base depots / moving depots / temporary depots depending upon the method of track laying adopted by the contractor.

4.2.3.1 Laying of Sleepers

The laying of Sleeper shall be done in such a manner to ensure the proper spacing and squaring of Sleepers on the Ballast Bed. For this purpose the contractor may use some small machines like Wheeled / Crawler mounted cranes/hydra attached with octopus sleeper spacing assembly or any suitable mechanical means to ensure proper spacing and squaring of the sleepers with all precautionary measures to avoid any damage of sleepers.

4.2.3.2 Laying of Rails

The rails brought to site shall be welded by flash butt welding machines in stationary / moving depots to make the rail panel of 130 metre or more. Stationery or moving depot for flash butt welding can be located at convenient locations (on spare land /formation) keeping in view the discontinuity in the alignment. These rail panels shall be placed on Sleepers with the help of suitable mechanical equipments with the help of rollers/suitable devices placed at appropriate spacing and fixed on sleepers with the help of rail threader or suitable mechanical device etc. Further rail panels shall be moved through wheeled devices like rail dolly, dip lorry or any suitable mechanical means and placed on sleepers by pulling with proper placement of rollers and taking other precautionary measures to avoid damage of rails and sleepers.

Rail panels, after laying in track, shall be welded to make Continuously Welded Rail (CWR) track for as much length as possible, for which the Contractor shall prepare the CWR plans for the approval of the Engineer in advance under design submission schedule in accordance with the design principles / provisions contained in LWR Manual.

4.2.3.1 Laying of turnouts :

The turnouts which includes switches, crossings, lead rails, etc. should be laid using suitable mechanical means to ensure proper spacing of the sleepers with all precautionary measures to avoid any damage of sleepers and rails as per design requirements.

4.2.4 Welding of Rails –

The rail panels, used for CWR track shall be of length not less than 130 metre. All rails joints shall be welded in stationery or moving depot using Flash Butt welding process. The rails panels of length 130mtr or more shall be welded together in-situ to make LWR/CWR panels as per the approved plans using mobile flash butt welding plant. USFD testing of all flash butt welded joints should simultaneously be done so that defective joints detected if any, are removed and welded with flash butt joints. In exceptional cases, panels of less than 130 metre can be permitted with the approval of Engineer. In exceptional cases of isolated welds, Alumino Thermic(AT) weld process may be used, with prior permission of the Employer.

4.2.4.1 USFD testing of welds

Contractor has to organise the USFD testing as per Indian Railway USFD manual of

- the welded joints in the welding depot
- Isolated welds on formation (for converting long welded rails {130 mtr}to continuous welded rails, lead rails on turnouts, SRJs, SEJs joints, glued joints, etc.)

4.2.5. Destressing of Track :

Destressing of track shall be done as per the provisions of LWR manual.

4.2.6. Testing Commissioning and Interfacing:

Contractor will have to take the overall responsibility for the testing and commissioning of his work and all interfacing issues with other contractors deployed by the Employer on the project.

Section V Employer's Requirement

Volume 2 – General

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1.0 Preamble

The work under the scope of this bid consists of **Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor.** The Employer requires that these works are designed and constructed to the highest standard using proven upto date good practices.

Henceforth all these works in this chapter would be termed as permanent works. All works required to facilitate construction of permanent works would be termed as temporary works.

- (1) The Employer's Requirement has been divided into six (6) Volumes as under:
1. **Scope of Works.**
 2. **General:** these apply throughout the Contract.
 3. **Design Procedures and Processes:** these apply in respect of procedures and processes relating to the design of the Track & Track Related works.
 4. **Design Criteria and Specifications:** these apply in respect of Employer's Requirement/Performance Specifications relating to the design of Track & Track related works.
 5. **Construction, Testing and Commissioning:** these apply in respect of duties and other requirements relating to the construction of the Track & Track related works.
 6. **Appendices.**

2.0 DEFINITIONS AND INTERPRETATIONS

- (1) In addition to the words and expressions defined in the Conditions of Contract, further following words and expressions shall have the meaning assigned to them except where the context otherwise requires:
- (a) **"As-Built Drawings":** means those drawings produced by the Contractor and endorsed by it as true records of construction of the Permanent Works and which have been agreed with the Engineer.
 - (b) **"Condition of Contract":** shall mean General Conditions of Contract (Section VI, Part 3) read in conjunction with Particular Condition of Contract, **Part 3 Section VII of Bidding Documents.**
 - (c) **"Construction and/or Manufacture Documents"** means all drawings, calculations, computer software, samples, patterns, models, operation and maintenance manuals and other manuals and information of a similar nature to be submitted by the Contractor.
 - (d) **"Defect"** is any part of the Work which is not in accordance with the Contract.
 - (e) **"Definitive Design":** prepared and accepted part of drawings, documents, standards, and instructions, which give the abilities for supply, installation and testing. Giving clearance by the Engineer, to the Definitive Design is an obligatory condition for the commencement of construction Works. "Definitive Design" has the meaning identified in **Para 2, Part 2 Section V, Volume 3,**

- “Employer’s Requirement, Design Procedures and Processes for Track & Track related works”** of the Bidding Documents.
- (f) **“Definitive Design Submission”**: means the submission of Contractor’s Documents which comprise the whole or parts of the proposed Definitive Design and for which the Contractor seeks a Notice.
- (g) **“Design Criteria”**: means the governing specifications and conditions as specified in **Part-2, Volume 4**, Employer’s Requirement of Bidding Documents.
- (h) **“Design Data”**: means all survey and investigations, specifications, plans, drawings, details, graphs, sketches, models, levels, setting-out dimensions, calculations and other documents related to the design of the Works.
- (i) **“Design Phase”**: has the meaning identified in para 4 of this chapter.
- (j) **“Designer”** means the Contractor or part of the group forming the Contractor, person, firm or company or group of companies, or any replacement carrying out the Design of Works or part thereof.
- (k) **“Drawings”** means the Employer’s Drawings and the Drawings submitted by the Contractor and any modification of such drawings, if any, furnished from time to time, or for which the Engineer has issued a Notice of No Objection.
- (l) **“Good for Construction Drawings ”**: shall be derived directly from the Definitive Design and shall detail and illustrate in full the Permanent & Temporary Works. These drawings are the ones which the Contractor considers sufficient in detail for construction and is cleared by the Engineer for construction.
- (m) **“Interfacing Contractor”** means the Contractor engaged by the Employer or other agencies having an interface issue with the Contractor for this Work.
- (n) **“Notice”**: means a Notice of No Objection.
- (o) **“Outline Quality Plan”** means the quality plan setting out in summary form, the Contractor’s proposed means of complying with his obligations in relation to quality assurance as prescribed in the Employer’s Requirements.
- (p) **“Outline Safety Plan”** means the safety plan setting out in summary form, the Contractor’s proposed means of complying with his obligations in relation to construction safety as prescribed in the **Part 2, Section –V - Employer’s Requirements**.
- (q) **“Preliminary Design”**: means the submission of Contractor’s Documents which comprise the initial stage of the design phase.
- (r) **“Preliminary Drawings”** means the drawings prepared by the Contractor that are built on the Reference Drawings and accompany the Contractor’s Preliminary Design submissions.
- (s) **“Railway”** means Railway or any portion of a Railway for public carriage of passengers and goods as defined in the Railway Act 1989. Any reference to railway means the Indian Railways and the respective Zonal Railway.
- (t) **“Railway Envelope”**: means the zone or zones within the Works which contain the track, platforms and equipment necessary for the operation of the railway by the DFCC.
- (u) **“Reference Drawings”** means the drawings prepared by the Employer and included in the bidding document.
- (v) **“Safety Procedures”**: these shall be the procedures as detailed as detailed in Part-2, Section –V, Volume-6, Appendix -9, Employer’s requirement.

- (w) **“System Works”**: means the work connected with design, construction, manufacture, supply, installation, testing and commissioning related with electrification of Railway line, new signaling and control systems, new telecommunication system. SCADA control system, rolling stock monitoring system, removal of any temporary works and diversion of utility service of IR and other authorities as included in the scope of work for system works.
- (x) **“Systems Contractor”**: means the Contractor engaged by the Employer to carry out Works related to Systems part of the project.
- (y) **"Technical Specification"**: means the combined specifications prepared by the Contractor in a format which combines the Technical Specifications and those parts of the Contractor's Technical Proposals which specify standards for design, procurement, manufacture, installation and construction-testing-commissioning which are developed during the Design Phase and fully comply with the Employer's requirements.
- (z) **“Works”** also means the work, both permanent and temporary, or services to be carried out, survey and investigation, designed, manufactured, fabricated, delivered to Site, erected, installed, completed, tested, commissioned, (including Integrated Testing and Commissioning) or supplied in accordance with the Contract and include Plant, Equipment and Materials and their accessories.
- (aa) **"Working Drawings"**: comprise the drawings and documents, such as construction drawings, manufacturing drawings, installation drawings, and testing and commissioning documents as are necessary to amplify the Good for construction Drawings for construction etc purposes and endorsed, as required, by the Engineer.
- (bb) **“Works Programme”** means the programme showing the sequence, method and timing of investigations, design, issue of No Objection Notices, execution, manufacture, delivery to site, erection, installation, testing, commissioning of the Works (including Integrated Testing and Commissioning), indigenization (where applicable) and related activities in the form and content prescribed by the Employer's Requirements, or any amended or varied version thereof, as submitted by the Contractor and for which the Employer's Representative has issued a Notice of No Objection.
- (cc) **Gauge** – The distance between the running facing of the rail measured at 14mm below the Rail top.
- (dd) **Check Gauge** – the dimension from the running edge of the crossing to the check face of the check rail.
- (ee) **Grade Rail** : The inside rail on curves and either rail of straight track, used as the datum for vertical alignment and application of cant.
- (ff) **Junction Station** – A location where running lines converge, diverge or crossing. A junction is a station where there is a connection of DFCC with Indian Railway and may comprise one or more turnouts.
- (gg) **Crossing Stations** : It is a station on DFC alignment having one or more loop lines.
- (hh) **Switch Expansion Joint (SEJ)** – A joint provided in the running rails to accommodate thermal movements in the track.
- (ii) **Running Line** – the Railway track on which passenger/goods trains service operate including overrun, etc.

- (jj) **Supporting Structure**–The structure which supports the track (Rail, Sleepers & Ballast).
- (kk) **Track works** – a system of rails, sleepers, turnouts, fastenings etc.
- (ll) **Turnouts** – A set of switches, crossing, stretcher bars, check rails, lead and closure rails, complete with all base plates, pads, clips and holding down assembly, etc. For the purpose of this specification, turnout shall be deemed to include Trap Points.
- (mm) **Trap Points (Derailing switch)** – A set of switches, stretcher bars, lead rails, slide plates usually installed in a length of secondary track prior to its junction with a primary track to prevent unauthorized entry of rolling stock onto the primary track.
- (nn) Abbreviations used :
 - LWR – Long welded rails
 - CWR – Continuous welded rails
 - SWR – Short welded rails
 - PSC – Pre-stressed concrete
 - ERC – Elastic rail clip
 - GFN – Glass filled Nylon liners
 - USFD – Ultra Sonic Flaw Detection
 - IRJ – Insulated Rail Joints
 - SEJ – Switch Expansion joints
 - IS – Indian Standards
 - IRS – Indian Railway standards
 - RDSO – Research Design and Standard Organisation (India)
 - UIC- International Union of Railways
 - SOD – Schedule of dimensions

3.0 RELEVANT DOCUMENTS

- (1) These documents shall be read in conjunction with the Conditions of Contract (General and Particular), Employer’s Requirement and any other document forming part of the Contract. This design-build contract shall be fulfilled, managed and commissioned in accordance with the applicable legislation in India, specific IR regulations and railway operations manuals and where none exist with applicable international norms where appropriate. Tentative list of standards is enclosed in **Part -2, Section V, Volume 6, Appendix-11 “Employer’s Requirement, - Design Standards”**

4.0 TRACK DESIGN & CONSTRUCTION PHASES

- (1) The Contractor shall execute the Track and track related works in four (4) phases;
 - (a) Phase 1 - Design Phase - comprising the submission of the Contractor’s Documents
 - (b) Phase 2 - Construction Phase.
 - (c) Phase 3 - Testing, Commissioning & Acceptance; and
 - (d) Phase 4 - Defect Liability Phase.
- (2) The Design Phase shall begin from the Commencement Date of the Contract. This phase shall include the preparation and submission of:
 - (a) Definitive Design and Drawings;

- (3) The requirements for Definitive Design and Drawing are stated in **Part 2, Section V, Volume 3, “Employer’s Requirement, Design Procedures and Processes for Track and track related works”**.
- (4) The Construction Phase for the whole or a part of the Track & Track related Works shall commence immediately upon the issue by the Engineer of a Notice in respect of the relevant Drawings Submission and shall terminate when the section is taken over by the Engineer in terms of clause **10.1 of General Conditions** of Contract.
- (5) Such Notice may be issued by the Engineer in respect of a Drawings Submission covering a major and distinctive part of the Track & track related Works.
- (6) The defect liability phase shall commence immediately upon taking over of the section and issue of necessary certification thereof by the Engineer/ Employer.
- (7) However, construction shall not commence until the original copies of the appropriate Definitive Design and Drawings have been endorsed by the Contractor and approved by the Engineer.
The Construction Phase shall include the completion and submission of the Final Design and the preparation and submission of the As Built Drawings and other records as specified.
- (8) Notwithstanding the above, for those elements identified under Design of Track, the Construction Phase may commence immediately upon the issue of the Notice in respect of the Definitive Design Submission.
- (9) This Notice may be in respect of each such element subject to availability of the site in accordance with agreed programme.

5.0 SPECIFICATIONS

- (1) This Specification describes the technical requirements for Design, Supply, Manufacture, Installation, Testing and Commissioning of the track work systems on the Section included in this contract.
- (2) The Contract shall include for the manufacture and supply of all materials including turnouts, crossovers complete with their fittings, rail fastenings for all tracks, including mainline and depot lines and shall include verification, delivery, survey, setting-out, installation, testing, including Integrated Testing and Commissioning, technical support and documentation for a complete system necessary to deliver the requirements of this specification.
- (3) The Technical Specifications for the Works shall comply with Standards and Design Codes which are in accordance with or defined and listed in the Design Criteria and also the outline materials and workmanship specifications if any.
- (4) In accordance with the provisions of these documents, the Contractor shall develop the Technical Specifications during the Design stage and submit it as part of the Definitive Design Submission.
- (5) When the Specifications have received a Notice of No Objection from the Engineer, these shall become the Technical Specifications.

6.0 UNITS OF MEASUREMENT

- (1) The Contract shall utilise the SI system of units.

7.0 WORKS PROGRAMME

- (1) The Contractor shall prepare and submit its Works Programme and three (3) months rolling programmes as defined in the detailed requirements contained in **Part 2 Section V “Employer’s Requirement, , Volume 6, Appendix 3 - Project Program Requirements”**.

8.0 MONITORING OF PROGRESS

- (1) The Contractor shall submit to the Engineer five copies of a Monthly Progress Report (MPR) in English and on CD/DVD, as described in **Part-2, Section V “Employer’s Requirement, Volume 6 Appendix 4 - Monthly Progress Reports”**.
- (2) Engineer will require the Contractor to attend monthly management meeting or any other meetings in order to review the arrangements for future Work, Works progress or other issues set out in the agenda of the meeting. The minutes of the meeting signed by the Contractor and the Engineer, shall constitute an official record of matters discussed, but shall not replace any requirement in the Contract for approval, instruction or decision (to be submitted in writing). Such meetings may be attended by representatives of all Interfacing Parties and other stakeholders as deemed fit by the Engineer or Employer at his discretion. The Employer may also be present in the meeting.

9.0 SITE SAFETY PLAN

- (1) The Contractor shall establish and maintain various provisions of Site Safety plan as detailed in **Part 2 Section V “Employer’s Requirement, , Volume 6, Appendix 9**.

10.0 QUALITY ASSURANCE

- (1) The Contractor shall establish and maintain a Quality Assurance System in accordance with **Part 2 Section-V, Employer’s Requirement, Volume 6, Appendix-5 Quality Assurance”** for the design, construction procedures and the interfaces between them.
- (2) The Quality Assurance Plan shall, without limitation, include for quality assurance procedures for Design, Construction, Manufacturing, Supply, Installation, Testing and Commissioning and shall control processes for each stage in the Works such as for design verification and validation, management of change control, non conformance procedures, inspection, testing, auditing and the like.

11.0 CO-ORDINATION WITH INTERFACING AND OTHER PARTIES

- (1) The Contractor is responsible for detailed co-ordination of his design, manufacturing, installation, construction, testing and commissioning activities and will take the lead in the management of the coordination process with IR, interfacing contractors, utility agencies, statutory authorities, private service providers, consultants and other contractors whether or not specifically mentioned in the contract that may be working on or adjacent to the site for the purpose of the Project. It is anticipated that Systems Contractor(s) shall be in place after the Commencement Date of Works. Contractor shall plan his interfacing requirements accordingly. For certain urgent requirements and non availability of requisite information certain assumptions can be made in consultation with the Engineer so that progress of Work is not adversely affected.
- (2) For the purpose of these requirements, Contractor’s responsibilities are listed at **Part 2 Section V “Employer’s Requirement, Volume 6, Appendix 2 - Design and Construction Interfaces”**.

12.0 SURVEY AND SITE INVESTIGATIONS

- (1) The Contractor shall carry out survey and all further site investigations as necessary for the design of the Track & track related Works and to enable the determination of the methods of construction and the nature, extent and design of the Temporary Works.

13.0 LANGUAGE OF CONTRACTOR'S DOCUMENTS

- (1) All documents, reports, drawings, calculations and correspondence and the like shall be submitted by the Contractor in English.

14.0 ALIGNMENT

- (1) The alignment of formation and location of DFCCIL yards are final and there will not be any change. However, suitable changes may be made in these plans to suite or design requirements.
- (2) The contractor has to design the track alignment based on the formation alignment and location of the yards given in the Bid Document.
- (3) The Contractor is permitted to propose minor deviations in the track alignment (within the top width of formation) to suit his construction proposals, but he must demonstrate that any such deviations shall comply with good design practice and the alignment requirement of the Design Criteria mentioned in **Part 2 Section V "Employer's Requirement,**.

15.0 CLEARANCES

- (1) The Permanent Works shall not infringe the schedule of dimensions and should be laid within the top width of formation of DFCC as shown on the drawings as provided in **Part 4; Reference Documents "Site Data"**.
- (2) In addition, the Contractor shall formulate all necessary drawings, plans, documents etc. in accordance with the applicable legislation in India, in compliance with the Contractor definitive design for all clearances.

16.0 CLIMATIC CONDITIONS

The project length included in this contract falls along the Tropic of Cancer.

- (1) **Project Area:** The Works will be carried out in the section included in this contract which falls in the districts of Chandauli of U.P. and Kaimur, Rohtash & Aurangabad in the state of Bihar. The proposed alignment will pass across the almost flat Indo Gangatic plain and will be parallel to the existing Indian Railways Track.
- (2) **Hydrology:** The project area is generally flat and is prone to flooding during the monsoon. Flooding is generally attributed to the high ground water table and silting of water courses coupled with rainfall intensity and low hydraulic gradients.
- (3) **Climate:** The climate of the project is a Tropical Monsoon Climate Marked by three distinct seasons:
- (4) **Summer** (march-June): Hot & dry with average temperatures of 45°C sometimes reaching 47-48°C with low relative humidity (20%) and dust laden winds.
- (5) **Monsoon** (June-September): 85% of the average annual rainfall of 990 mm precipitates during this period and temperatures range from 40-45 °C on rainy days.

-
- (6) **Winter** (October-February): Cold with temperatures in the range of 3-4°C sometimes dropping below freezing in elevated areas. Foggy conditions can occur in some tracts.

17.0 PLANNING SUBMISSIONS

- (1) Submissions for approval of planning works for the project shall be made by the Contractor through Employer to various authorities as detailed in **Part 2 Section V, “Employer’s Requirement, Volume 3”**.

18.0 STANDARDS

1. All track materials, component and assembly shall comply with the codes and standards as given in **Part-2, Section V, “Employer’s Requirement” Volume 6 Appendix -11- Design Standards**. The contractor shall be responsible to adopt the latest version of these codes and standards including all amendments thereof.
2. Should the contractor wish to adopt standards other than those particularly mentioned in these specifications, he shall provide copies of the proposed standards for approval and shall simultaneously provide evidence that these proposed standards are equal to or better than those specified. Where no specification or standard is given, the contractor shall propose a standard for approval based on accepted industry standards for the material, component or assembly.
These standards shall be for the sole use of the Engineer and Employer and, upon completion of the Contract, shall become the property of the Employer.

19.0 PUBLICITY

- (1) The Contractor / Sub-Contractors shall not publish, present at seminars, forums or otherwise circulate alone or in conjunction with any other person, any articles, photographs or other materials relating to the Contract, the Site, the Works, the Project or any part thereof, nor impart to the Press, or any radio or television network any information relating thereto, nor allow any representative of the media access to the Site, Contractor’s Works Areas, or off-Site place of manufacture, or storage except with the permission, in writing, of the Employer. The provisions of this Sub-Clause shall not exempt the Contractor from complying with any statutory provision in regard to the taking and publication of photographs.

Section V Employer's Requirement

Volume 3 – Design Procedures and Processes

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7.0 DESIGN SUBMISSIONS – CONSTRUCTION PHASE

8.0 DESIGN SUBMISSIONS - REVIEW PROCEDURES

9.0 CALCULATIONS

10.0 DOCUMENT REQUIREMENTS

1.0 INTRODUCTION

- (1) This document specifies the procedural requirements for the preparation of the Design of the Permanent Works.
- (2) In addition to the express requirements stated herein, the Contractor shall, whenever the Engineer so requests, provide information and participate in discussions that relate to Design matters.
- (3) Engineer shall obtain specific written consent of the Employer before communicating clearance for all definitive design & drawings submitted by the Contractor for Track alignment, layout calculation, calculation of speed on curves and Works requiring sanction of Commissioner of Railway Safety.
- (4) The Contractor shall, in accordance with Clause 5.1 of the General Conditions of Contract engage the designer(s) who shall undertake and prepare the Design of the Works.
- (5) The Contractor shall establish an office for his core design team at suitable location between the proposed section. All meetings and discussions relating to design shall be held in that office or the office of Engineer/Office of Employer (either in Field or in HQ).
- (6) The Contractor shall ensure that the Designer and his team continue to be represented in India at all times by staff whose seniority and experience in their respective fields of activity, are to the satisfaction of the Engineer and whose representative is available on the Site as necessary or as required by the Engineer.
- (7) The key Designers who shall formally sign the Design must have the necessary qualification required by the applicable legislation in India, as well as their engineer's degree/diploma being recognised in India.
- (8) The Contractor shall submit his Quality Assurance Plan for the Design required in the Contract as specified in **"Part 2 Section V, Employer's Requirement, Volume 6, Appendix 5 - Quality Assurance"**

2.0 REQUIREMENTS DURING THE DESIGN PHASE

- (1) The principal requirements of the Design Phase are the production of the documents by the Contractor, which shall fully describe the Works and include the Definitive Design and "Good for Construction Drawings".
- (2) The volume and contents of the documents shall be in accordance with the applicable regulations/legislation in India, existing codes, manuals and standards applicable on Indian Railways, or suitable international norms.
- (3) The Contractor shall obtain all necessary approvals and agreements for his designs on his account in accordance with the applicable legislation in India & current practices.
- (4) The Definitive Design shall be prepared in accordance with the requirements for technical design in the codes, manuals & standards applicable on Indian Railways, applicable regulations/legislation in India and existing international norms/standards as agreed with the Engineer.
- (5) All technical solutions, schemes, structures, materials should be fully compatible with requirement of DFCC and should not be in conflict with the applicable rules/codes/manuals & standards as well as the legislation in India.
- (6) The Contractor shall prepare the necessary sets of his designs in English for submitting to the relevant authorities responsible for the approvals in accordance with the contractual provisions & the applicable legislation in India.

- (7) The Definitive Design shall accord with, and incorporate the Contractor's Proposals and shall be the design developed to the stage at which all elements of the track & track related works are fully defined and specified.
In particular the Definitive Design shall be complete when:
- (a) all calculations and analyses are complete including verification;
 - (b) all main and other significant elements are defined;
 - (c) all tests, trials and selection of materials and equipments are complete;
 - (d) The effects
 - on the Permanent works of the proposed methods of construction, installation, testing and commissioning and
 - on the Temporary Works are assessed.
- (8) During the preparation of the Definitive Design, all surveys, and testing necessary to complete the Design of the permanent works shall be undertaken by the Contractor.
- (9) One hard and soft copy of the Design of Permanent works shall be submitted for approval to the Engineer. After approval of the definitive design of Permanent works, three additional hard copies and one softcopy should be provided by the Contractor.
- (10) After approval of the Engineer the Contractor may proceed to the next stage of the Project for obtaining notice of No Objection.
- (11) Upon issue of the Notice in respect of the Definitive Design Submission, the Contractor shall complete the Design in all respects and produce the Good for Construction Drawings, the purpose of which is to illustrate all the Permanent works and to be the drawings governing the Construction.
- (12) These drawings shall fully detail the Construction of the elements covered by the Definitive Design, and shall show in full, the Works to be constructed.

3.0 REQUIREMENTS DURING CONSTRUCTION PHASE

- (1) The principal requirements relating to the Contractor's documents during the construction Phase are
- the production by the Contractor of Working Drawings and documents,
 - the preparation of technical submissions as required under the Contract,
 - the compilation of the final design and
 - the production of the As-Built Drawings and final documentation.
- (2) The final design is the design of the Permanent Works embodied in:
- (a) The latest revisions of the documents comprising the Definitive Design, taking account of comments in the schedules appended to Notices of No Objection;
 - (b) The latest revisions of all the drawings;
 - (c) The calculations (see **Clause 9** herein); and
 - (d) Such other documents as may be submitted by the Contractor at the request of the Engineer to illustrate and describe the Permanent Works and for which a Notice has been issued.

4.0 DESIGN INTERFACES WITH INTERFACING CONTRACTORS

- (1) The Contractor shall be responsible for all co-ordination of all design and installation work with the various interfacing parties including interfacing contractors as detailed

in **Part 2 “Employer’s Requirement, Section V, Volume 6, Appendix 2 - Design and Construction Interfaces”**.

- (2) The Contractor shall co-ordinate with all Interfacing Contractors and Parties to produce a detailed programme of access dates, equipment delivery routes and occupation periods for each equipment room and area inside the railway envelope. It is anticipated that Systems Contractor(s) shall be in place after the Commencement Date of Works. Contractor shall plan his interfacing requirements accordingly. For certain urgent requirements and non availability of requisite information certain assumptions can be made in consultation with the Engineer so that progress of Work is not adversely affected.

5.0 DESIGN SUBMISSION

The Design Submission shall be a complete set of Contractor’s documents, properly consolidated and indexed and shall fully describe the proposed Design.

In particular, and where appropriate, it shall define but not be limited to:

5.1 General

- a) The dimensions of all major features, elements and members;
- b) Schedules of all materials;
- c) Potential forces and movements due to all possible loadings and actions on the structures, and their accommodation;
- d) All stress calculations due to secondary loading;
- e) Standard details;
- f) Proposed Good for Construction drawings pertaining to each component for consideration of the Engineer;
- g) Erection methods;
- h) IR interface requirements;
- i) Report on interfacing contracts;
- j) Provisions and proposals for construction interfacing with the Interfacing Contractors;
- k) Maintenance report;

5.2 Track

- (a) Survey on site and review of technical requirement as given in the Bid Document and recommendations if any.
- (b) Design of Track alignment based on the formation alignment and location of yards given in the bid document. This includes :
 - Location plans, geometry (vertical & horizontal), yard plans, yard diagrams and setting out drawings;
 - Track layouts(Horizontal & Vertical Alignment);
- (c) Drawings of Track components which includes
 - 1 in 12 Canted Points and crossings with Thick web switch alongwith corresponding modification in PSC turnout sleeper sets.
 - 1 in 12 Weldable CMS crossings
 - Derailing switches as per IRS standard
 - Any other track component if required.
- (d) Preparation of LWR and CWR plans
- (e) Level crossing arrangements with detailing
- (f) Methodology of construction in detail

- (g) Signage requirements and plan
- (h) Temporary construction depots & depot equipment layouts;
- (i) Schedules of all machines and equipment
- (j) Testing and commissioning proposals

5.3 DOCUMENTS

5.3.1.1 Technical specifications

5.3.1.2 The Specifications included in the Contractor's technical proposals together with the Design criteria shall be amplified so as to comprehensively specify the design and construction of the Works.

(1) **Report on interfacing contracts**

The Report shall include details of the Design and Construction of the Works being undertaken adjacent to other contracts, during interfacing stage.

5.3.1.3 Testing and commissioning reports

(1) The report shall include details of proposals for testing and commissioning procedures for all relevant elements and equipment contained in the Permanent Works.

5.3.1.4 Maintenance reports

(1) The report shall be updating the statement of maintainability in the Contractor's technical proposals and detailing maintenance routines necessary for the achievement of the required life of the various elements of the Works.

5.3.2 Supporting documents

(1) Where relevant or required, these documents shall be accompanied by a design note stating clearly how the information has been used in the design of the Permanent Works.

5.3.2.1 Construction / manufacturing / installation analysis reports

(1) A report shall be containing a stage-by-stage construction / manufacturing / installation sequence for all track components / equipment.

5.3.2.1 Construction method statements

A report shall provide sufficient information on the methods of Construction / Installation of the Contractor's Equipment to allow the Engineer to assess their effects on the Permanent Works and to enable these to be taken into account in the review of the Definitive Design.

5.3.2.2 Project schedule review

- (1) The Contractor shall, prior to submitting the Design Submission, review the project schedule.
- (2) The Design submission should be in accordance with the Project Schedule.
- (3) In the event that the Contractor considers there to be any discrepancies or inconsistencies between the design submission and the project schedule, the Contractor shall submit with the Definitive design, its proposed revisions to the project schedule such that the discrepancies or inconsistencies are removed.
- (4) The Contractor shall provide details of submissions of the proposed Working Drawings and documents and their anticipated timing during the construction phase.
- (5) The Contractor shall identify information required from or actions to be undertaken by the Employer or others and which are necessary to permit the completion of the design of the Permanent Works and the Working Drawings and documents.
- (6) Dates of the receipt required by the Contractor of such information or for the completion of such actions shall be included with appropriate justification.

6.0 DESIGN SUBMISSIONS – GOOD FOR CONSTRUCTION DRAWINGS

- (1) These drawings shall form part of the Working Drawings to be used for construction purposes.

7.0 DESIGN SUBMISSIONS – CONSTRUCTION PHASE

- (1) On the issue of a Notice in respect of the Good for Construction Drawings, the Contractor shall produce the proposed Working Drawings.
- (2) Prior to submission of the proposed Working Drawings, the Contractor shall endorse the appropriate original paper drawings as "Good for Construction" and take No Objection for these drawing from Engineer.
- (3) The Contractor shall finalise details of the proposed method of construction and submit such finalised details to the Engineer for review.
- (4) As-Built Drawings and documents, endorsed by the Contractor shall be submitted to the Engineer for agreement in accordance with para 10.0 below.

8.0 DESIGN SUBMISSIONS - REVIEW PROCEDURES

- (1) Design submissions shall be reviewed by the Engineer who shall coordinate the design review for the Employer and communicate the decision within 28 days of receipt of complete information on the subject matter.
- (2) The Contractor shall, prior to the submission of the Design Data, obtain all required and/or statutory approvals that relate to that submission including, where appropriate, the approval of the concerned government authorities and municipalities and utility undertakings, and demonstrate that all required approvals have been obtained.
- (3) All submissions for Temporary and Permanent Works shall be accompanied by two original copies of a 'Design Certificate' as set out in **Part 2 “Employer’s Requirement, Section V, Volume 6, Appendix 8 – Design Certificate”** hereto and signed by the Contractor and the Designer.
- (4) As-built Drawings and documents shall be submitted to the Engineer for approval within the time period as mutually agreed by the Engineer and the Contractor.

9.0 CALCULATIONS

- (1) Comprehensive set of calculations relevant to the Construction proposals, Definitive Design and Good for Construction Drawings and any Design change shall be submitted for review with the respective Design packages in soft as well as hard copies.
- (2) The Engineer may require the submission of applicable software including in house software programmes/ worksheets developed by the Contractor, computer input and programme logic for its review prior to the acceptance of the computer output.
- (3) Calculations to be included as part of the submission herein shall comprise the up-to-date calculations in respect of the Definitive Design, the Good for Construction Drawings and such further calculations which the Contractor has prepared during the production of Working Drawings.

10.0 DOCUMENT REQUIREMENTS

- (1) Drawings shall be prepared on CAD to the standard sizes as prevalent on Indian Railways
- (2) All submissions shall be made to the Engineer's requirement in a format reviewed without objection by the Engineer in accordance with the requirements in the Contract;
- (3) The titles & numbering scale of drawings shall be as per Indian Railway Works Manual (IRWM) as well as above CAD standards to be decided mutually by the Contractor and the Engineer.
- (4) Plans of Continuously Welded Rails shall be prepared as per IR's Manual of Instructions on LWR (Latest revision).
- (5) The Contractor shall submit 2 hard copies and a soft copy of the Definitive Design and drawings including calculations for review by the Engineer. After receipt of the Notice from the Engineer, the Contractor shall submit 3 hard copies and a soft copy of the final Design and drawings for the use of the Engineer.
- (6) The approval of drawings shall however be certified on the hard copy only.

Section V. Employer's Requirement

Volume 4 – Design Criteria and Specifications

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1.0 GENERAL DESIGN CRITERIA

1.1 DURABILITY AND MAINTENANCE

The Permanent Works shall be designed and constructed as per the relevant codal provision in a serviceable condition as described in the Design Criteria and standards contained in the technical specifications to minimise the cost of operation and maintenance whilst not compromising safety or the performance characteristics of the railway.

1.2 OPERATIONAL REQUIREMENTS

- (1) The Permanent Works shall be designed to permit the railway to operate satisfactorily at a maximum design speed of 100Km/h for freight trains. The track shall be constructed for an axle load of 25 tonnes.
- (2) The Contractor's attention is directed to requirements concerning the role of the Commissioner of Railway Safety (CRS) as mentioned in para 14.1 (Construction, Testing & Commissioning) of **Section V, Volume 5, Part 2 ‘Employer’s Requirement’**. Sanction of CRS will also be required in terms of Chapter XIII of IRPWM.
- (3) It is a requirement that the Indian Railway (IR) remains operational during the construction phase.

1.3 RESPONSIBILITY FOR THE TRACK & TRACK RELATED WORKS

- (1) The Contractor shall be responsible for detailed design, layout, construction, manufacture, supply, installation, testing and commissioning of the track & track related works wherever applicable under this Contract.

1.4 QUALITY CONTROL

- (1) Quality control aspects shall be kept in mind during the Design/construction and testing & commissioning phase, requirement for which has been specified at appropriate places in the bidding document as well as in **Part 2 ‘Employer’s Requirement, Section V, Volume 6, Appendix 5 - Quality Assurance’**. It shall be the overall responsibilities of the Contractor to ensure deliverables of quality products at all times conforming to the provisions mentioned in this bidding document.

2.0 TRACK DESIGN CRITERIA

2.1 TRACK DESIGN

2.1.1 General

- (1) The track layout shall be based on the provisions contained in Indian Railways Permanent Way Manual, Track Manual & relevant IRS specifications with latest amendments/corrections upto the base date.
- (2) The Contractor while designing the Track alignment should give due cognizance to the DFC alignment given in the Bid.
- (3) The final designs of the track layouts, including horizontal and vertical alignment, station yard layout, LWR/CWR plans, etc. shall be agreed by the Engineer before execution of track works.
- (4) Interlocking of switches, earthing and bonding of electrical circuit arrangements in the track will be done by the Systems Contractor. The Contractor shall do necessary interfacing with the Systems Contractor so that there is no delay/ holdup.

(5) General Design parameters are as under :

NO.	Criteria	Dimension
1	Gauge	1676 mm
2.	Maximum axle load – loaded condition	25 Tonne
3.	Maximum Speed	100 kmph
4.	Ruling Gradient	1 in 200 (compensated)
5.	Grade Compensation for curves	@ 0.04% per degree of curve
6.	Maximum gradient in station yard	1 in 1200 in exception case 1 in 400
7.	Minimum Radius of Horizontal Curve	Upto 700m (2.5 Degree)
8.	Vertical Curve	0.4%
9.	Minimum radius of vertical curve	4000m
10.	Rails	UIC 60 Kg/mtr conforming to IRS-T-12-2009
11.	Turnouts	1 in 12
12.	Minimum Ballast Cushion	350 mm Cushion on M/L, 250 mm Cushion on other lines
13.	Standard length of rail	13/26m
14.	Switches	1 in 12 thick web switches
15.	Crossing	1 in 12 Weldable CMS
16.	Maximum Cant	165 mm
17	Maximum cant deficiency	75mm
18	Maximum cant excess	65mm
19	Welding of Rails	Flash Butt joints
20.	Cant on turnout	1 in 20

2.1.2 Track Gauge

(1) The nominal DFC track gauge shall be 1676 mm measured at 14 mm below the top of the rail.

2.1.3 Horizontal Curves

- (1) Horizontal curve in the DFCC tracks shall be circular with transition curves at either end of such circular curve.
- (2) The horizontal curve radius is measured on the track centre line between the two rails. The DFCC tracks will have concentric curves unless otherwise approved by the Engineer.
- (3) Curves shall be designed for average running speed of 75 km/h with minimum limit of cant deficiency.
- (4) The normal minimum horizontal curve radius will be 700m (2.5 degree).
- (5) On entry to the existing IR operational system curvature may be up to 438m(4 degree).
- (6) The maximum actual cant shall be limited to 165mm.
- (7) The maximum cant deficiency shall be 75mm and cant excess shall be 65mm.
- (8) All curves on mainlines shall be provided with transition curves to the straight which shall take the form of a cubic parabola with the equation as $y = x^3 / 6RL$

- (9) The minimum length of the transition shall be the maximum length obtained from the following equation:

$$\begin{aligned} L &= 0.008*Ca*V \\ &= 0.008*Cd*V \\ &= 0.72Ca \end{aligned}$$

Where, Ca & Cd = Value of actual cant & cant deficiency respectively in mm
 V = Maximum permissible speed in km/h

- (10) For the design of transition length, the value of Ca shall be calculated for speed of 100 km/h with Cd = 0, and V shall be taken as 100km/h, where it is not practical to use 100km/h a reduced speed may be utilised with the approval of the Engineer.
- (11) Transitions between reverse curves may adjoin each other if the rate of change of cant and the cant gradient are constant through both transitions.
- (12) Horizontal curves and transition length shall be avoided at turnout portion locations.

2.1.4 Gradients

- (1) The ruling gradient of the section on the main line shall be 0.5% (1 in 200). Contractor shall select sectional gradients for the alignment as per this ruling gradient so as to enable smooth train operations taking into consideration the required optimum tractive effort, curvature and other obligatory parameters.
- (2) The gradients shall be compensated for curves @ 0.04% per degree of curve and the maximum gradient shall not be steeper than the ruling gradient of the section.
- (3) The maximum gradient at stations yards shall not exceed 1 in 1200 (approx. 0.083%) and 1 in 400(0.25%) in exceptional cases, requiring specific approval of the Engineer.
- (4) Change of gradient shall not be done at turnout locations.

2.1.5 Vertical Curves

- (1) A vertical curve is to be provided when the algebraic difference in change of gradient at the locations is more than 0.4%.
- (2) Minimum radius of vertical curve shall be 4000 m.

2.1.6 Formation levels

- (1) The formation levels at various chainages along the alignment are indicated in the project sheets for the guidance of the Bidders.

2.1.7 Track Layouts in DFC Station Yards

- (1) Track layout in DFC station yards should be as per the approved layout plans given in **Part 4 “Site Data; Reference Document; of Bidding Document”**.
- (2) Minor modification if required in the approved yard plans will have to be done by the Contractor with the approval of Engineer.

2.2 RAILS

13/26m (**Length is indicative**) UIC 60Kg long Rails (IRS T12-2009) will be supplied to the contractor ex. Works Bhilai by the employer. Contractor while receiving the rails on behalf of employer at Bhilai must ensure the following:

Description	Parameters
Rail Section profile	As per Appendix-II of IRS T12-2009 for UIC 60kg/m
Class of Rail	As per purchase order by DFCCIL
Rail Ends	Undrilled
Colour Code	As per Appendix IV of IRS T12-2009

Length of Rail	13/26m
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2.2.1 Laying of P-Way

The contractor has to do laying and linking of track as per method detailed in as defined in para 4.2.3 of Volume 1-Scope of Works.

2.2.2 Welding of Rails –

- (1) The rail panels, used for CWR track shall be of length not less than 130m. In exceptional cases, panels of less than 130 metre can be permitted with the approval of Engineer. All rails joints shall be welded in stationary or moving construction depot or manufacturing unit using Flash Butt welding process.
- (2) The rails panels of length 130m or more shall be welded together in-situ to make LWR/CWR panels as per the approved plans using mobile flash butt welding plant. In special locations where the use of mobile flash butt welding plant is not practicable, Alumino Thermic (AT) weld process may be used, with prior permission of the Engineer. The detailed process of all rail welding shall be submitted along with acceptance tests & acceptance criteria by the Contractor for acceptance for approval by the Engineer. The design concepts & performance criteria for Flash Butt welding of rail joints are given in detail in **Indian Railway's Manual for Flash Butt Welding of Rails-2004 (herein after referred as FBW Manual)**
- (3) The use of rails with holes shall not be allowed unless specifically permitted by the Engineer. Wherever holes in the rails are made, they shall be done by Machines.
- (4) Drilling of holes, insulation of track, ROB/ FOB etc. will be required for earthing and bonding will be done by the System Contractor at appropriate locations with its own resources. Contractor shall provide necessary interfacing arrangements in this regard.

2.3 CONTINUOUSLY WELDED RAIL TRACK

2.3.1 General

- (1) Rail panels, after laying in track, shall be welded to make Continuously Welded Rail (CWR) track for as much length as possible, for which the Contractor shall prepare the CWR plans for the approval of the Engineer in accordance with the design principles/provisions contained in LWR Manual.

2.3.2 Rail Laying Temperature

- (1) The project length falls in the temperature zone as specified in LWR manual.
- (2) The temperature range for the fastening of CWR rail to the sleepers without the destressing operation shall be as per the provisions of LWR manual.
- (3) CWR track lengths installed outside this temperature range shall be destressed before the laying and final setting of Switch Expansion Joints (SEJ) at the end of breathing length.
- (4) Neutralization of the stresses in the rails during construction shall be carried out as required by the provisions of the LWR Manual.
- (5) The Contractor shall submit detailed process of neutralisation of stresses in the rails during construction ensuring that the rails in track remain distressed in the prescribed temperature range and shall form part of CWR plans submitted by the Contractor.

2.4 TURNOUTS

2.4.1 General

- (1) On the DFCCIL system modern turnouts shall be used with following parameters:

(a) Gauge	1676 mm
(b) Crossing Angle (on main lines and loop lines)	1 in 12
(c) Rail Profile	60 kg (UIC 60 kg/m)
(d) Speed potential on the Main Lines	100 km/h
(e) Axle Load	25 tonne
(f) Canted Points and crossings with Thick web switch and weldable CMS crossing alongwith corresponding modification in PSC turnout sleeper sets.	
- (2) The Contractor shall be responsible for the detailed design, manufacturing and assembling of the turnouts suitable for above requirements. Derailing switches shall be provided as per requirements.
- (3) LWR/CWR shall be carried through the turnout assembly, keeping in view the provisions of LWR manual.
- (4) The turnouts shall be suitable for pre-stressed concrete (PSC) bearers/sleepers with fan shaped layouts and shall have provision of cant for the rails, anti-creep fastenings and other relevant fastenings and fixtures.
- (5) The signaling system shall be designed and installed by System Contractor and the Contractor shall be required to interface with appointed System Contractor for all the information/details, pertaining to signaling installations/equipment for the detailed design of turnouts. The turn-outs shall meet with relevant provisions set out in Indian Railways Signal Engineering Manual.
- (6) The Contractor shall procure
 - Turnout sleeper sets from RDSO approved manufacturers
or
 - by setting up his own plant as detailed in 4.2.2.2 Part-2, Section – V, Volume-1 of Employers Requirement.
 - Switches and Crossings from any source approved by DFCCIL/Engineer provided the equipment/item meets the technical requirements/acceptance criteria.
- (7) Prior to the mass procurement of turnouts, at least one turnout shall be completely pre-assembled for inspection and clearance by the Engineer.
- (8) All turnouts shall be pre-assembled at a workshop. After these are cleared by the Engineer these shall be dismantled and carried to site in special vehicles for assembling using cranes.
- (9) All turnouts shall be designed, manufactured and laid at site such as to permit the use of standard on-site tamping and lining equipment for maintenance purposes.
- (10) The Contractor shall be fully responsible for procuring all the raw materials as per laid down performance and design criteria under his own arrangements.
- (11) Most of the IR drawings are for 0 cant turnouts. Contractor shall design and provide 1 in 20 cant turnouts.

2.4.2 Rails for Turnouts

- (1) For manufacturing stock, lead, intermediate sections and closure rails, 90 UTS (UIC 60 kg/m) section with IRS: T-12-2009 specifications of rail shall be used.
- (2) Rails for turnouts will be supplied by the Employers as detailed in Scope of Work.

- (3) For switch rails, thick web section manufactured out of asymmetrical rail section shall be used. Both switch & stock rails shall be of special grade steel (minimum 880 grade as per IRS: T-12-2009) and shall be defect free.
- (4) The rails, for the turnouts, shall have no drilled holes. Drilling of holes will be required for connecting the interlocking arrangements and will be done by the System Contractor at appropriate locations. Contractor shall provide necessary interfacing arrangements in this regard.

2.4.3 Switch Assembly

- (1) Each thick web switch device shall consist of 2 stock rails, one left hand and one right hand and two switch rails, one left hand and one right hand, complete set of PSC sleepers along with all fittings e.g. slide chairs, base plates/special base plates, brackets, rail pads, insulating bushes, washers, all stretcher bars, various blocks, bolts and nuts, any special fittings like spring setting device etc..
- (2) The switch rail shall be one piece without any weld or joint within the switch rail length.
- (3) The end of the asymmetrical switch rail shall be forged to UIC 60 rail profile and shall be suitable for welding or for installation of insulated glued joint.
- (4) The switch shall provide suitable flange way clearance, between the stock rail and switch rail at the end of the head in open position as specified by the Engineer.
- (5) In the cleared position, the switch rail shall house properly against the stock rail and shall bear evenly against all the distance blocks and slide base plates.
- (6) Spring setting device (Contractor may refer IR drawing number RDSO: T-6216, which is under trial).
- (7) The turn-out system shall be designed to prevent the switch lifting.
- (8) Switches made from asymmetrical thick web rails shall be machined carefully to achieve the profile at different locations. Such machining is required to be done by CNC milling machine to achieve correct profile and good quality.
- (9) The manufacturer shall be responsible to make provisions in switches (stock rail and switch rail) for all the required connections for point machine, clamp lock and any other provisions necessary for connecting the signaling equipment duly interfacing with appointed signaling Contractor.

2.4.4 Intermediate Section

- (1) The fittings for intermediate rails shall be validated to ensure full compatibility and effective fixation of the rails with PSC sleepers with the desired toe load as that of the elastic fastenings in the main line.

2.4.5 Crossing Assembly

- (1) Weldable CMS crossings shall be provided on all crossings.
- (2) All crossings on the DFC shall be 1 in 12 weldable Cast Manganese Steel (CMS) {manufactured from Austenitic Manganese steel as defined in IRS: T-29-2000} crossing for the turnouts. Contractor may refer Indian Railways drawing no: RDSO/T-6412, which is under trial.
- (3) Check rails in all turnouts shall have the facility for the adjustment of check rail clearances up to 10 mm over and above the initial designed clearance .
- (4) Each check rail end shall be properly flared by machining.
- (5) All the check rail tables shall be higher by 20 mm above running rails.

2.4.6 Elastic Fastenings for turnouts

- (1) Fastenings for the turnouts shall be elastic type and compatible with the main line rail to sleeper fastening system.

- (2) The design of the fastenings for the turnouts shall be suitable for 25 Tonne axle loads and 60kg (UIC 60 kg/m) section of rails laid on PSC sleepers, conforming to Indian Railway standards.

2.4.7 PSC Sleepers for Turnouts

- (1) 1 in 12 Fan shaped PSC sleeper turnout as per RDSO drawing/design shall be used. However, suitable modification in turnout sleeper sets shall be carried out by the contractor so as to provide cant on turnouts. The sleeper set should be procured from RDSO approved manufacturer or by setting up of his own plant as per the existing guidelines of RDSO.

2.5 PRESTRESSED CONCRETE SLEEPERS

2.5.1 Main Line PSC Sleepers & Sleepers for Special locations like Level Crossing, Bridge Approaches, Guard Rails, SEJs, Turnouts.

Mainline PSC sleepers as well as Special PSC Sleepers for Level Crossing, Bridge Approaches, guard rails SEJs, Turnout etc. (for 25 T Axle Load) shall be procured by the contractor through any RDSO approved sleeper manufacturer or by setting up of his own plant as per the existing guidelines of RDSO. In case of procurement of sleepers by setting up of the plant by the contractor himself DFCC will assist the contractor for RDSO inspection for clearance of the plant for mass production of sleepers as and if required.

General

- (1) Mono-block pre-stressed precast concrete sleepers shall be used on all DFC tracks for main lines, loop lines, sidings, conforming to the following general requirements and parameters.
- a) Gauge (measured at 14 mm from the top of the rail) 1676 mm
 - b) Maximum speed of trains 100 km/h
 - c) Maximum Axle Load 25.0 tonnes
 - d) The track shall be track circuited for which adequate electrical resistance as stated in IRS:T-39-1995 required
 - e) Type of traction 2 x 25 KV electric
 - f) Rail section to be catered for is 60 kg/m (UIC 60 kg/m)
 - g) Sleeper Density in main lines, to be 1660 per km with 1540 per km in loop lines and other yard lines.
 - h) ERC MK-V Fastening (rail to sleeper) to be used.
 - i) Ballast cushion below bottom of sleeper is to be a minimum of 350mm on main lines and 250mm in other lines in the yard lines. Slope of ballast profile below the sleeper shall be taken as H:V = 1.5:1

2.5.2 Design Requirements

- (1) For the design and manufacture of main line sleepers Contractor should refer to Drawing no T-7008.

2.5.3 Design parameters, Design Qualification Test, Manufacture of PSC Sleeper, Manufacturing tolerance and type of Input materials (concrete, cement, steel) - These shall be as per IRS specification T-39/1985 with latest amendments.

2.6 RAIL TO SLEEPER ELASTIC FASTENING SYSTEM

- (1) All ballasted tracks, laid on PSC sleepers shall be equipped with self tensioning elastic fastening system (ERC MK-V) on 10mm thick rubber pad with GFN liners should be used.

- (2) ERC MK –V, 10mm thick composite Rubber Pad and GFN liners for 1676 gauge should be procured through RDSO approved manufacturers.

2.7 INSULATED GLUED JOINTS (RDSO T-5483)

- (1) No insulated glued joints will be provided on main line except in turn out zone. Efforts will be made to avoid the use of glued joints in turnout zone. In case these are required then all Insulated Glued Joints (IGJs) shall be factory manufactured to be compatible with the UIC 60 Kg rail of 880 grade as per, IRS T-12-2009.
- (2) The Glued Insulated Rail Joints shall comply with the requirements of RDSO's Manual for Glued Insulated Rail Joints of 1998 with latest amendments upto the base date, or equivalent International Standard or as agreed by the Employer.
- (3) Contractor shall procure the insulated glued joint (RDSO T-5483) from the RDSO approved manufacturer.
- (4) J Clips or any other clip approved by RDSO should be provided at all insulated glued joint locations to fasten the rails with sleepers.

2.8 IMPROVED SWITCH EXPANSION JOINTS (RDSO T-6922 or T-6902)

- (1) Contractor should procure Improved Switch **Expansion** Joints (SEJs) for 60kg rail section (RDSO T-6922 or T-6902) from RDSO approved manufacturers and lay it in the track alongwith full compliments of Sleepers, fitting, fastening and fixtures with the approval of Engineer/Employer.

2.9 BALLAST

- (1) DFCCIL has procured / is procuring the ballast all along the sections. Major quantity of ballast has been procured / is being procured at suitable locations along the alignment.
- (2) Approximately up to 200 mm thick carpet of ballast has been spread and compacted along the main line track alignment and 150 mm at loop lines in yards.
- (3) The ballast procured / being procured will be available in stacks all along the alignment at some locations which has to be utilised by the contractor for spreading, packing and boxing of track.
- (4) The spreading of ballast on track for packing and boxing may be undertaken by the contractor either through hoppers or ballast trolleys.
- (5) Minimum ballast cushion and ballast profile below the bottom of sleeper on main lines and on other lines in the yard shall be as indicated in clause 2.5.1(1) (i) above.

2.10 FISH PLATES AND FISH BOLTS

- (1) At Fish plated joints, Fish plates and fish bolts for UIC 60 Kg rail shall be of the 6 bolt type manufactured Contractor may refer IR drawing Drg. No.T-5916 & connected technical specification IRS: T-1 of 1966.
- (2) Contractor should procure fish plates and fish bolts from RDSO approved manufacturer.
- (3) ERC "J" Clip and matching GFN liners to be provided for Fish plated joints and glued joint locations and procured by the contractor through RDSO approved vender.

2.11 Guard Rails :

Contractor has to provide 60 Kg Guard Rails on PSC sleepers at all minor bridges having linear length >9.15mtr, at all major bridges & locations of Road Over bridge as per IR P-Way manual and Bridge manual.

2.12 TRACK STRUCTURE AND ROAD SURFACE AT LEVEL CROSSINGS

- (1) Ballasted track structure will be continued through the level crossing.
- (2) The concrete sleepers at level crossing will have the same design as provided on their approaches except that the elastic fastening system will be modified to incorporate the check rails.
- (3) The level crossing will have a track friendly maintenance free road surface. Road surface may consist of Cement Concrete Blocks which can be easily removed manually to enable continuous working of track maintenance machine through the level crossing.

3.0 FENCING

- (1) Fencing to be provided as defined in the scope of work.
- (2) Fencing can be designed as RCC/ Pre-cast or Metal grill of suitable strength having 1.8m height.
- (3) All fencing construction shall comply with the applicable Indian building standards and codes.
- (4) The design shall be capable of allowing the construction to be carried out in the minimum time possible and to the required quality standards.
- (5) The fencing shall be designed to withstand severe weather conditions of exposure as per the Indian building codes.
- (6) The architecture and profile of all fencing shall conform to the local buildings, aesthetics, architecture and environment.
- (7) While working in vulnerable locations from safety and security point of view like in close proximity of the running track of Indian Railways the Contractor shall construct temporary fencing, and shall follow the provisions of para 12 of **Part 2 Section V, "Employer's Requirement, Volume 5"**.
- (8) Contractor shall submit plans of all types of fencing to the Engineer for prior agreement.

4.0 LEVEL CROSSING DESIGN CRITERIA

- (1) **At all level crossing locations falling on the DFC alignment** Contractor has to provide:
 - i) Track structure along with check rails, blocks, brackets, etc. as per IRPWM provisions/bidding document.
 - ii) CC blocks for smoothening the road surface over level crossings.
 - iii) Suitably regrade the roads on approaches only on DFC side if required as per provisions of IRPWM.
 - iv) Suitably regrade the road surface between DFC and IR track.
- (2) The plan including methodology of work on IR level crossings shall be approved by the Engineer before commencement of works at site.

Section V. Employer's Requirement

Volume 5 – Construction, Testing And Commissioning

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1.0 CONTRACTOR'S SUPERINTENDENCE

- (1) The Contractor shall submit a staff organisation plan in accordance with the bidding document along with the details of the qualifications and experience of all proposed staff to the Engineer for his approval. This plan shall be updated and resubmitted whenever there are changes to the staff.
- (2) The plan shall show the management structure and state clearly the duties, responsibilities and authority of each staff member.

2.0 CONTRACTOR'S TEMPORARY WORKS DESIGN

- (1) The Contractor shall, prior to commencing the construction of the Temporary Works, submit a certificate to the Engineer signed by him certifying that the Temporary Works have been properly and safely designed and checked and that the Contractor has checked the effect of the Temporary Works on the Permanent Works and has found this to be satisfactory.

3.0 THE SITE

3.1 GENERAL

- (1) Site details furnished by the Employer are those as identified in **Part 4 "Site Data – Reference Documents"**.

3.2 USE OF THE SITE

- (1) The Site as well as Contractor's equipment shall not be used by the Contractor for any purposes other than for carrying out the Works, except that, with the consent in writing of the Engineer.
- (2) The location of stockpile of P-way materials within the Site shall be as permitted by the Engineer. Stockpiles shall be maintained at all times in a safe and stable condition with all documentary records.

3.3 ACCESS TO THE SITE

- (1) Access to the Railway Envelope by the Contractor shall be in accordance with any procedures, requirements and conditions defined in **Part 2, Section V, "Employer's Requirement, Volume 6, Appendix 3 - Project Program Requirements"**.

3.4 CLEARANCE OF THE SITE

- (1) All Temporary Works which are not to remain on the Site after the completion of the Works shall be removed after approval by the Engineer.
- (2) The Site shall be cleared and reinstated as stated in the Contract.

4.0 SAFETY MEASURES

4.1 GENERAL

- (1) The Contractor shall be fully responsible for the safety of the Works, his personnel, sub contractors' personnel, the public and all persons directly or indirectly associated with the Works or on or in the vicinity of the Site.
- (2) The Contractor shall treat safety measures as a priority in all his activities throughout the execution of the Works.
- (3) The project site safety requirements have been provided in **Part 2 Section V, "Employer's Requirement, Volume 6, Appendix 9 - Site Safety Plan"**.

- (4) The Contractor shall comply with these requirements provided that the standards set out in the project Site Safety requirements and Contractor's Site Safety plan shall be regarded as the minimum to be achieved and shall not relieve the Contractor of any of his statutory duties or his responsibilities under the Contract.
- (5) The provisions of the Contract regarding safety shall apply to and be binding upon the Contractor for any part of the Works and the persons employed by sub-contractors of any tier.
- (6) The Engineer reserves the right to order the immediate removal and replacement of any item of Contractor's equipment or Temporary Works which, in his opinion, is unsatisfactory for its purpose or is in an unsafe condition.

5.0 CARE OF THE WORKS

5.1 GENERAL

- (1) Unless otherwise permitted by the Engineer all work shall be carried out in dry conditions.
- (2) The Works, including materials for use in the Works, shall be protected from damage due to exposure of weather condition, including ingress of water.
- (3) Water on the Site and water entering the Site shall be promptly disposed of. .

5.2 PROTECTION OF THE COMPLETED WORK

- (1) The finished works shall be protected from any damage that could arise from any activities on the adjacent site/ works, water inflow etc.

6.0 DAMAGE AND INTERFERENCE

- (1) Work shall be carried out in such a manner that there is no damage to or interference with:
 - a) watercourses or drainage systems;
 - b) utilities especially those pertaining to train operations of existing IR system like working signaling, telecommunication, civil, mechanical, electrical etc.;
 - c) structures (including foundations), roads, or other properties;
 - d) public or private vehicular or pedestrian access;
- (2) Any claims by utility agencies due to damage of utilities by the Contractor shall be borne by the Contractor. The Contractor shall negotiate a settlement in respect of such claims and indemnify the Engineer and the Employer in respect of all claims, proceedings, damages, costs, charges and expenses in relation thereto.

7.0 UTILITIES

- (1) Manner of dealing with all types of utilities are defined in **Part 2 Section V, "Employer's Requirement, Volume 6, Appendix 1 - Utilities"**.

8.0 STRUCTURES, ROADS AND OTHER PROPERTIES

8.1 GENERAL

- (1) The Contractor shall immediately inform the Engineer of any damage to structures, roads or other properties.

8.2 ACCESS

- (1) Alternative access shall be provided to all premises if interference with the existing access, public or private, is necessary to enable the Works to be carried out.

- (2) The arrangements for the alternative access shall be as agreed by the Engineer and the concerned agency.
- (3) Unless agreed otherwise, the permanent access shall be reinstated as soon as practicable after the work is complete and the alternative access shall be removed immediately as it is no longer required, and the ground surfaces reinstated to the satisfaction of the Engineer.
- (4) Where ever required service road for construction activity, connectivity to the existing road network for the sake of Works has to be made by the Contractor and no extra payment shall be made for the same.
- (5) Proper signage and guidance shall be provided for the traffic / users regarding diversions.

8.3 PROTECTION OF THE ADJACENT STRUCTURES AND WORKS

- (1) The Contractor shall take all necessary precautions to protect the structures or works being carried out by others adjacent to and, for the time being, within the Site from the effects of vibrations.

All operations for the execution of the Works shall be carried out so as not to interfere unnecessarily with the convenience of the public or the access to public or private roads or footpaths or properties owned by the Employer or by any other person.

If during the execution of the Works, the Contractor receives any claim arising out of the execution of the Works in respect of damage to highways or bridges etc., he shall immediately report the facts to the Engineer. The Contractor shall negotiate a settlement in respect of such claims and indemnify the Engineer and the Employer in respect of all claims, proceedings, damages, costs, charges and expenses in relation thereto.

9.0 USE OF ROADS AND FOOTPATHS

9.1 GENERAL

- (1) Surfaced roads on the Site and leading to the Site shall not be used by tracked vehicles unless protection against damage is provided.

10.0 SITE ESTABLISHMENT

10.1 CONTRACTOR'S SITE ACCOMMODATION

- (1) The Contractor shall provide and maintain its own site accommodation at locations consented to by the Engineer. Offices, sheds, stores, mess rooms, garages, workshops, Wash rooms and other accommodation on the Site shall be maintained in a clean, safe and secure condition.

10.1.1 Contractor's Labour Camp

10.1.2 General

- (1) The Employer will not provide living accommodation for the use of the Contractor or any of his staff or labour employed on the Works.
- (2) Living accommodation shall not be established on any land provided to the Contractor by the Employer without prior approval of the Engineer.
- (3) It should be ensured by the Contractor that the camp area is cleared of the debris and other wastes and upon completion of construction, the land should be restored back to its original form.

10.1.3 Provision of Labour Camp

- (1) The Contractor shall, at his own expense, make adequate arrangements for the housing, supply of drinking water and provision of bathrooms, Washroom and urinals, with adequate water supply, for his staff and workmen.
- (2) No labour camp shall be allowed at any Work site or at any unauthorized place.
- (3) The Contractor at his own cost shall maintain all camp sites in a clean and hygienic condition.
- (4) The Contractor shall obey all health and sanitation rules and regulations, and carry out at his cost all health and sanitary measures that may from time to time be prescribed by the local/medical authorities and permit inspection of all health and sanitary arrangements at all times by the Employer, Engineer and the staff of the local municipality or other authorities concerned.
- (5) The Contractor shall at his own cost, provide first aid and medical facilities at the labour camp and at work sites on the advice of the medical authority in relation to the strength of the Contractor's staff and workmen, employed directly or through sub-contractors.
- (6) The Contractor shall at his own cost, provide the following minimum requirements for fire precautions:
 - a) Portable Fire Extinguishers.
 - b) Making and marking exit plan at locations for exit during fires.
- (7) The Contractor at his own cost shall provide necessary arrangements for keeping the camp area sufficiently illuminated to avoid accidents to the workers.
- (8) The Contractor shall ensure that electrical works are executed by trained electricians and these installations shall be maintained and daily maintenance records be made available for inspection of the Engineer.
- (9) Periodic health check-ups may be conducted. These activities may be provided by the Contractor in consultation with State Public Health Department

10.1.4 Camp Discipline

- (1) The Contractor shall take requisite precautions, and use his best endeavours to prevent any riotous or unlawful behaviour by or amongst his workmen, and others, employed directly or through sub-contractors.
- (2) These precautions shall be for the preservation of peace and protection of the inhabitants and to secure property in the neighbourhood of the Works.
- (3) The sale of alcoholic drinks or other intoxicating drugs or beverages upon the work, in any labour camp, or in any of the buildings, encampments or tenements owned or occupied by, or within the control of, the Contractor or any of his employees directly or through sub-contractors employed on the work, shall be forbidden, and the Contractor shall exercise his influence and authority to secure strict compliance with this condition.
- (4) The Contractor shall also ensure that no labour or employees are permitted to work at the Site in an intoxicated state or under the influence of drugs.
- (5) The Contractor shall remove from his camp such labour and their families, who refuse protective inoculation and vaccination when called upon to do so by the Engineer on the advice of the medical authority.
- (6) Should cholera, plague or any other infectious disease break out, the Contractor shall at his own cost burn the huts, bedding, clothes and other belongings of or used by the infected parties.

- (7) The Contractor shall promptly erect new accommodation on healthy sites as required by the Engineer, within the time specified by the Engineer, failing which the work may be done by the Engineer and the cost recovered from the Contractor.
- (8) Identification card/ badges incorporating the name and photograph of the person and the name of the direct employer (Contractor, Sub-Contractor, etc.) shall be provided to all staff.

10.1.5 Labour Accommodation

- (1) The Contractor shall provide living accommodation for all staff employed by himself or his sub-contractors that is equal to or exceeds the minimum criteria established in the following sub-sections.
- (2) The buildings shall be constructed so as to have a minimum life of not less than the length of the Contract.
- (3) The roofs shall be watertight and laid with suitable non-flammable materials permissible for residential use under local regulations and for which the consent of the Engineer has been obtained.
- (4) Each unit shall have suitable ventilation with all doors, windows and ventilators provided with security leaves and fasteners and back to back units are to be avoided.
- (5) The minimum height of each unit shall be 2.10m and each shall have a separate cooking place.
- (6) The Contractor may provide a common cooking place.
- (7) A suitable number of common toilet/bath shall be provided with separate toilets for ladies.

10.1.6 Water Supply

- (1) The Contractor shall provide an adequate supply of water in the Camp.
- (2) Where piped water supply is available, supply shall be at stand posts and where the supply is from wells or river storage tanks shall be provided.
- (3) The Contractor shall also at his expense make arrangements for the provision and laying of water pipe lines from the existing mains wherever available.

10.1.7 Drainage and Sanitation

- (1) The Contractor shall provide efficient arrangements for draining away surface water so as to keep the camp neat and tidy.
- (2) Surface water shall be drained away from paths and roads and shall not be allowed to accumulate into ditches or ponds where mosquitoes can breed.
- (3) The Contractor shall make arrangements for conservancy and sanitation in the labour camps according to the rules and regulations of the local public health and medical authorities.
- (4) The Contractor shall provide a sewage system that is adequate for the number of residents in the camp, and which meets the requirements of the municipal authorities.
- (5) The Contractor shall provide washrooms and wash places for the use of its personnel and all persons who will be on the Site.
- (6) The size and disposition of toilet and wash places shall accord with the numbers and dispositions of persons entitled to be on the Site, which may necessitate their location on structures and, where necessary there shall be separate facilities for males and females.
- (7) The Contractor shall arrange regular disposal of effluent and sludge in a manner that shall be in accordance with local bye-laws/ regulations.

- (8) The Contractor shall be responsible for maintaining all latrines and wash places on the site in a clean and sanitary condition and for ensuring that they do not pose a nuisance or a health threat.
- (9) The Contractor shall also take such steps and make such provisions as may be necessary or directed by the Engineer to ensure that vermin, mosquito breeding etc. are at all times controlled.

11.0 SECURITY

- (1) The Contractor shall be responsible for the security of the Site for the full time the Site is in its possession, except for the specific case of the Railway Envelope after handover to the Employer.
- (2) The Contractor shall always maintain all Site boundary fences in good condition, and shall so arrange site boundary fences at all access drainage points of work areas that it's use of such access points etc., is not restricted by the system or method of achieving the required security measures.
- (3) Notices shall be displayed at intervals around the Site to warn the public of the dangers of entering the Site.
- (4) During the progress of the Works the Contractor shall maintain such additional security patrols over the areas of the Works as may be necessary to protect its own and its sub-contractor's work and equipment and shall co-ordinate and plan the security of both the work under this Contract and the work of others having access to and across the Site and the Works.
- (5) The Contractor shall liaise with the sub-contractors and the contractors responsible for the adjacent and other interfacing contracts and ensure that coordinated security procedures are operated, in particular in respect of vehicles permitted to pass through the Site and/or the adjacent sites in the latter periods of the Contract.

12.0 CONSTRUCTION- PRECAUTIONS

12.1 PRECAUTIONS WHILE WORKING IN CLOSE PROXIMITY OF EXISTING INDIAN RAILWAY TRACK

12.1.1 General

- (1) Any construction activity involving the existing embankment/formation/ running track of the Indian Railways shall be carried out only with the prior specific authorization of the Engineer.

12.1.2 Works being executed outside running lines are further divided into following 3 sub groups depending upon their distance from the IR track:-

- a) works being done within 3.5 meters from centre of track.
- b) works being done between 3.5 meters and 6 meters from centre of track
- c) works being done beyond 6 meters from centre of track

If a work site is located far away from the existing track but the vehicles in connection with the work are required to ply within the distance from center of track as mentioned above, it will be construed that the work in being executed under above classification.

12.1.2.1 Works being done within 3.5 meters from centre of track.

- (i) All works planned within 3.5 meters from centre of running line or which involve working of machineries and vehicles within this zone, are to be done essentially under block protection and necessary safety precautions for

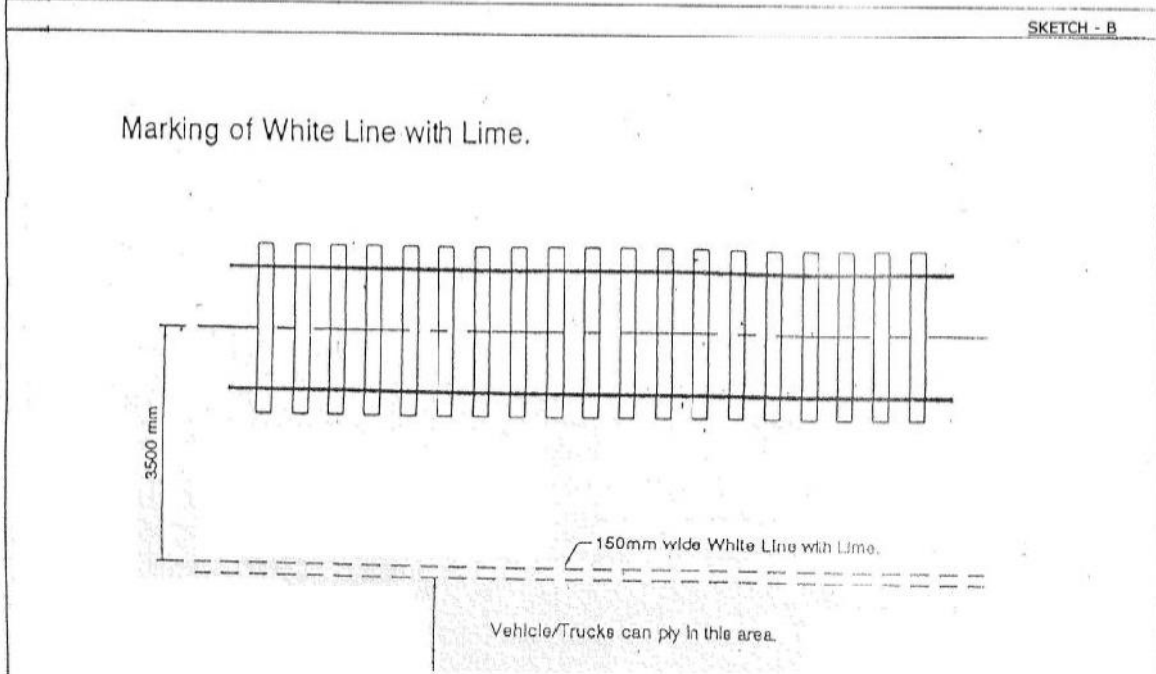
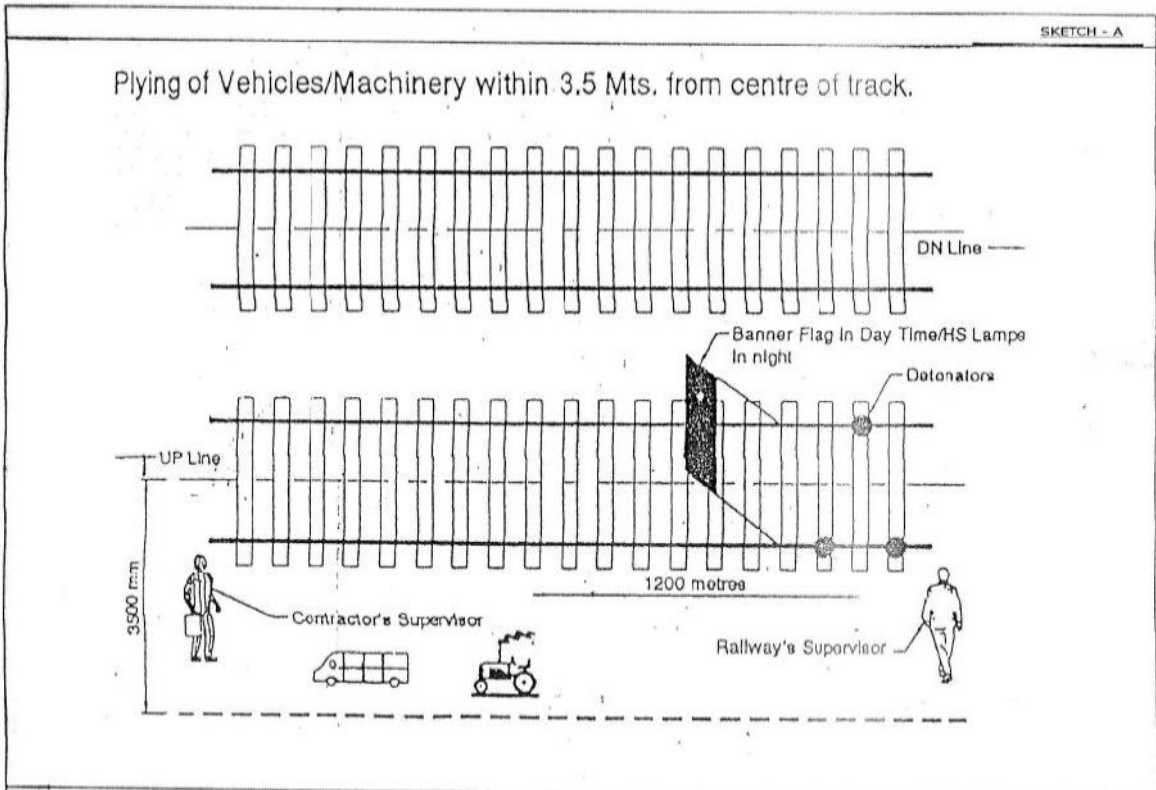
protection of track as per para 806 and 807 of IRPWM be taken. This includes even occasional plying of vehicles/ machineries for short durations.

12.1.2.2 Works being done between 3.5 meters and 6 meters from centre of track.

Following precautions be taken when works are required to be done between 3.5 meters to 6 meters from track centre or machines/vehicles are required to work/ply within this zone.

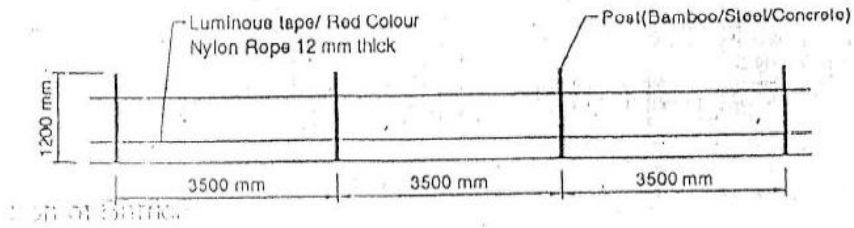
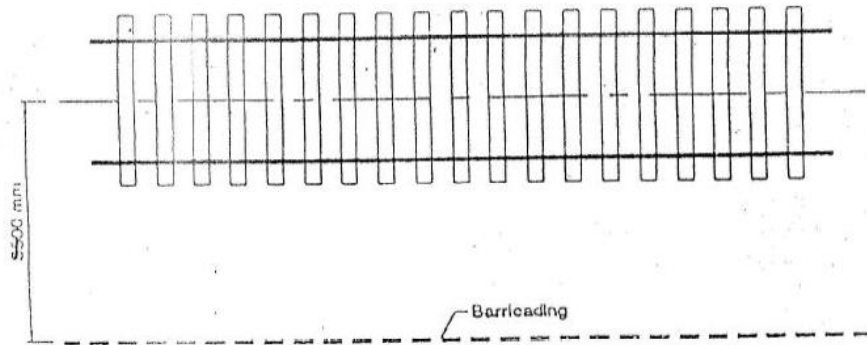
- (i) Before start of work demarcation should be done parallel to running track at a distance of 3.5 meters from centre of track in advance, as per sketch B, by 150 mm wide white line of lime. Any work or movement of machinery infringing this line will need block protection. Barricading should be put up at such locations, as per sketch C, to ensure that even by carelessness or over sight, vehicles do not infringe fixed dimensions. Barricading design shall be approved by the Engineer.

SAFTY/PROTECTION ARRANGEMENT SKETCHES



SKETCH - C

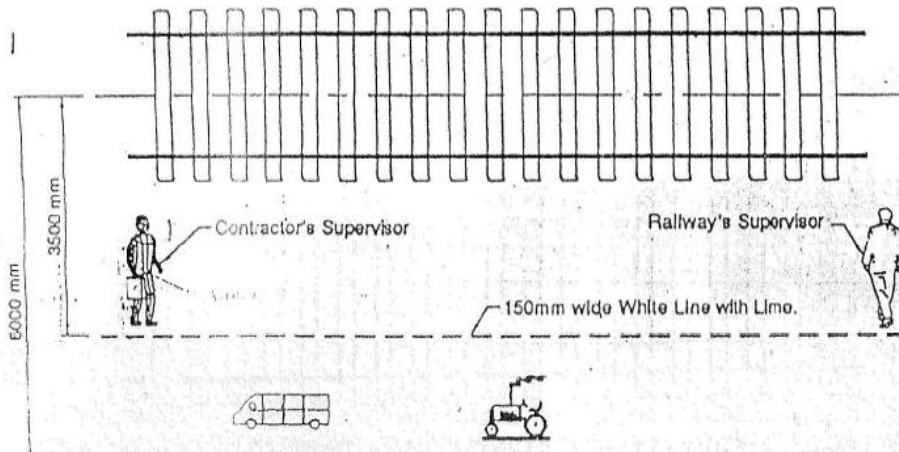
Provision of Barricading.



Elevation of Barricading

SKETCH - D

Plying of Vehicles/Machinery between 3.5 Mts. to 6.0 Mts. from centre of track.



-
- (ii) In case vehicles have to ply or machineries have to work within this zone, railway's and contractor's supervisors be positioned as shown in sketch D except for the following:
Instead of a Railway supervisor it would be a responsible and trained staff of the Contractor as mentioned in para 12.1.2.2 (ii) above.
 - (iii) Additional trained staff of the Contractor, as mentioned in para 12.1.2.2 (ii) above, shall be posted where turning of vehicles is required during working. Location for reversing vehicles should be nominated and it should be selected in such a way that there is no danger to running trains at such a location. Such trained staff of the Contractor should be available with hand flags so that vehicles do not come closer to track by 3.5 meters. Wherever vehicles have to take turn, it should be done in such a way that the driver is invariably facing the running track at all times.
 - (iv) Look out men should be posted along the track at a distance of 800 meters from location of work with red flag and to whistle in face of road vehicles and approaching trains. Look out men shall also be suitably trained staff of Contractor as mentioned in para 12.1.2.2 (ii) above.
 - (v) In addition to look out men, caution order needs to be issued to trains and speed restrictions imposed wherever considered necessary through Employer.
 - (vi) Arrangements should be made to protect the track in case of emergency at work site.
 - (vii) All temporary arrangements required during execution should be done in a manner that moving dimension is not fringed.
 - (viii) Individual vehicle/machinery shall not be left unattended at site of work. If it is unavoidable and essential to stable it near running track, it shall be properly secured and manned even during non working hours with all arrangements to protect the track from infringement.
 - (ix) Any materials unloaded or shifted along the track should be kept clear of moving dimensions and stacked at a specified distance from running track.
 - (x) Movement of vehicle/working of machineries should be prohibited at night. However, in case of emergency when night working is unavoidable, adequate lighting shall be provided with all protection measures as mentioned above in full force. All night working near IR track shall require Engineer's prior approval.
 - (xi) The work site should be suitably demarcated to keep public and passengers away. Necessary signages, boards, such as "work in progress" etc should be provided at appropriate location to warn public/passengers.
 - (xii) Contractor's drivers/operators handling vehicles/machineries shall be issued a fitness certificate by the safety officer of the Contractor after educating them about safety norms and after taking assurance in writing for working within vicinity of railway's track.
 - (xiii) While working on cuttings with machineries or when there is movement of vehicles above cutting, if there is possibility of any of the following circumstances, work has to be done under block protection:
 - a) Any possibility exists for machinery/vehicle after toppling/due to loss of control come over track or infringe it.
 - b) Chance of machineries/vehicles to come within 3.5 meters from track centre though working beyond it.

12.2.2.3 Works being done beyond 6 meters from centre of IR track.

No special precautions are needed.

13.0 CONSTRUCTION-TRACK

13.1 GENERAL

- (1) The Contractor shall co-ordinate during the planning and execution of works with designated Contractors for other related activities e.g. signals, overhead electric traction, power supply distribution, communication, SCADA etc. for construction of the complete system of Dedicated Freight Corridor.
- (2) The installation of all machinery and equipment shall be undertaken at all times by suitably trained and competent employees of the Contractor and to the satisfaction of the Engineer.
- (3) The Contractor shall, prior to starting any installation and construction work, identify any possible hazards, and implement measures of eliminating and/or controlling such potential hazards, in line with safe working practices.
- (4) The Track construction work pertaining to this contract shall include, but not be limited to the following:
 - a) Survey on site, review and confirm the technical requirements shown in this contract and the Reference Drawings.
 - b) Finalization of the construction and installation program.
 - c) Production of the calculation sheets and construction drawings for Site works and installation.
 - d) Construction and Installation in accordance with the finalized construction Drawings.
 - e) Co-ordination with various designated contractors.
 - f) Obtaining clearances from various stakeholders and authorities.
 - g) Submission of the construction and installation reports and records.
 - h) Testing and commissioning as per finalized protocol and programme.
 - i) Production of As Built Drawings, documents, calculation sheets and records.

13.2 SURVEY ON SITE

- (1) The formation alignment has been staked at site and the alignment data, as available with Employer, shall be made available to the Contractor as guidance.
- (2) The setting out of the correct alignment for track construction shall however, be the responsibility of the Contractor.
- (3) As such the alignment and related data, as provided by Employer to the Contractor is to be checked and verified.
- (4) The Engineer may carry out random checks to verify the accuracy of the setting out and Contractor's compliance of the completed works with given alignment and the requirements, however, full responsibility lies with the Contractor for the accuracy of line and level of the tracks.
- (5) It shall be Contractor's responsibility to protect and preserve the integrity of the all control markers, grid points, setting out points etc.
- (6) The Contractor shall establish physically on site such setting out points that may be grid or offset points to be used as the reference system for the track work.
- (7) At each site, the position of the site main reference setting out points shall be maintained throughout construction period.
- (8) The track shall be sited on the basis of alignment given in the Bid document.

- (9) The track siting marks corresponding to both the theoretical centre of the track and to the theoretical level of the track running surface, as defined by the relevant project sheets relating to track layout shall be marked in the straight portion and at the beginning and end of each circular curve, transition curve and vertical curve both in the longitudinal and cross directions.
- (10) The said markings shall be put in:
 - a. - In straight sections: every 200-m,
 - b. - In curved sections: every 50-m.
- (11) The track siting marks for the centre of the track shall be shown by angle plates embedded in concrete foundation or plates or nails sealed on the bridge spans, on the upper surface of the slabs as approved by Engineer.
- (12) The inner rail for curve and any rail for straight shall first be set out in its absolute position from setting out points using co-ordinates computed from the alignment geometry, the elevation of the rail shall be checked using a level, the other rail shall be set correctly relative to the first rail.

13.3 TEMPORARY WORKS

- (1) Any temporary arrangements and works, as required to carry out the track work such as temporary connection and access tracks from IR's system, temporary track depots to handle and stack the track materials, temporary stores, offices, fencings etc. shall be done by the Contractor at his own cost.
- (2) The programme and scheme and design of all such temporary works with full justification of the requirement and the approximate period for which these will be needed, shall be submitted to the Engineer for prior approval.
- (3) Construction Depot
 - a) The Contractor will be required to establish temporary construction depot at the site of works where track materials and equipments etc. could be stored for the construction purposes as per requirements.
 - b) Long rail panels of 130/260m or more length could be brought or formed after flash butt welding of smaller panels, handled and stacked.
 - c) In case spare land is available with the Employer the same can be handed over to the Contractor free of cost for the purpose of establishing temporary construction depot(s). However, whenever Employer requires this portion of land back, the same shall be handed over to the Employer with a month's notice at no extra cost/compensation to the Contractor.
 - d) For this purpose, the Contractor shall be required to lay temporary track, access road other facilities etc. along with the connection with existing connection, if required, at his own cost. Employer shall facilitate the approval from Indian Railways for such connection.
- (4) All temporary works shall be removed on completion of permanent works, or as directed by the Engineer.

13.4 CONSTRUCTION METHODOLOGY

13.4.1 General

- (1) The Contractor shall plan and work out the methodology of track construction in various stages as per the requirements detailed in the following paragraphs in consultation and approval of the Engineer taking into account of the Contractor's co-ordination and integration responsibilities with the interfacing contractors.
- (2) The track construction shall be done by using track laying method specified in the bidding document. This shall mean laying of rail panels of 130 meters or more, welded

by flash butt welding plant under controlled conditions in depots (temporary/movable). Track laying at site shall be done as per provisions given in Volume 1 Section V Employer's Requirements (Scope of Works).

13.4.2 Construction of Ballast Bed

Ballast Bed has already been laid/being laid by the employer on the prepared formation and the support structure like bridge deck slabs. Contractor shall further compact this layer by a minimum of one pass of smooth vibrating roller.

13.4.3 Handling and Spreading of Rails

- (1) The Contractor will be responsible for transportation of the rail panels to its site through suitable mechanical means and shall procure on his own the required equipments, machinery etc for this purpose.
- (2) The panels of rail shall be handled during transportation as well as at the construction site (temporary/movable construction depot as required) in a manner so as to avoid any defects like dents / grip marks, notching or cuts, permanent bends, damage at the ends etc.
- (3) The rail handling during flash butt welding of rail joint, loading and unloading on/to the special rail carriers/lorry/trolley shall be fully by mechanical means.
- (4) Spreading of the rails shall be with suitable mechanical means on rollers at site along the alignment so as to avoid any damage to the rail panels.

13.4.4 Rail Cutting and Drilling

- (1) The cutting of rails shall be bare minimum and shall be carried out under the supervision of Engineer. Rails shall be cut by using abrasive rail cutting machine only.
- (2) The drilling of holes in rails shall be bare minimum and shall be carried out under the supervision of Engineer. Holes shall be drilled by Machines.
- (3) Any holes if required for signal and traction bonds shall be performed by designated contractors but with prior approval of the Engineer.

13.4.5 Handling and Laying of PSC Sleepers

- (1) The PSC sleepers duly inspected by the Engineer's inspector, shall be carefully handled by mechanical means and transported to the site avoiding any damage to the sleepers by way of any cracks, chipping of concrete, dents over the concrete surface etc.
- (2) The PSC sleepers shall be laid over the prepared ballast bed evenly at the design spacing.

13.4.6 Threading of Rails to Sleepers

- (1) The rail panels preferably 130 metre shall be placed on sleepers with the help of suitable mechanical equipments with the help of rollers/suitable devices placed at appropriate spacing and fixed on sleepers with the help of rail threaders or suitable mechanical device etc.

13.4.7 Fixing Elastic Fastening System

- (1) After threading of rails, elastic fastening system consisting of rubber pad, rail liner and elastic clip shall be fixed systematically by the mechanized/manual process with greasing of inserts eye hole and ERC with approved grade of grease.

13.4.8 Top Ballasting, Tamping and Lining

- (1) Prior to the placing of top ballast the track shall be marked in preparation for tamping and lining operations with the following information:
 - a) All horizontal and vertical tangent points
 - b) Transition curve details
 - c) Circular curve details

- d) Cant details
e) Chainages
- (2) Contractor has to lay and link the track and make it fit for 30kmph by suitably packing it with hand held tampers/off track tampers.
 - (3) The ballasting of cribs and shoulders shall be done before tamping of newly laid tracks. Once the top ballast is adequately regulated, the track shall be lifted, leveled and aligned as required using on-track tamping / lining machines as provided by the Employer.
 - (4) The top ballasting, regulating, tamping and lining shall be repeated in stages of maximum 50 mm lift until the track is at the designed horizontal and vertical alignment and desired ballast cushion below the sleeper with the desired profile as specified in para 2.5.1(1) (i) of **Volume 4; Part 2** is achieved.
 - (5) Concurrent with the tamping and lining, the ballast shoulders and the sleeper cribs shall be compacted with suitable equipment as approved by the Engineer.

Note : For the purpose of commissioning the track, Employer will provide Continuous Tampers, UNIMAT and Dynamic Track Stabilizer for Tamping the main line and turnouts. The consumable of the Tamping machines like Diesel & lubricants, welding of tamping tools to be used in the machines shall be provided by the Contractor.

Contractor has to provide sufficient man and machinery to undertake :

- Pre Tamping attention of track
- During Tamping attention of track
- Post Tamping attention of track.

Requirement of Track machine shall be given by the Contractor well in advance to the Engineer.

13.4.9 Welding and Destressing

- (1) The welding of rail joints to convert the track into LWR/CWR shall be done in accordance with the provisions in **Part 2, Section V, Para 2.2.2 of Volume- 4, Bid Documents** followed by de-stressing where needed as per the temperature records maintained at site at the time of threading.

13.4.10 Installation of Turnouts, Derailing Switches and Switch Expansion Joints

- (1) The assembly sequence of turnouts, derailing switches and rail expansion joints shall be submitted for Engineer's approval as part of the overall method statement for preassembly, handling, storage, transportation, unloading and installation
- (2) The Contractor shall provide all gauges and measuring equipments and assistance required for complete check of preassembled lay-outs.
- (3) All turn-outs and derailing switches laid in track shall comply with the relevant provisions given in Para 12.40 of Indian Railway Signal Engineering Manual. The Contractor shall interface and ensure the designed switch opening while fixation of the first stretcher bar by designated signaling contractor.
- (4) The gap at SEJs shall be adjusted after necessary destressing of LWR/CWR on either side and as per the provisions in IR manual.

13.4.11 Installation of Glued Insulated Rail joints

Normally glued insulated rail joints shall not be required over the project due to joint-less technology being adopted for track occupancy detection arrangement. However, wherever these are required following stipulations shall govern:-

- (1) The glued insulated rail joints, manufactured in the plant as per approved design specifications shall be laid in track at predetermined locations in consultation with designated signaling contractor and as approved by the Engineer in Working Drawings.

- (2) Except in the case of Glued Insulated rail joints in the turn-out zone, its positioning with respect to the approach shall be such as to keep a minimum distance of 6.00m from an existing weld in the rail.

13.4.12 Connection to Existing IR Track

- (1) Contractor shall do necessary connection of DFC track to existing IR track as per the approved yard plan after taking specific written approval of Engineer so as not to cause unsafe working in the contiguous area

13.4.13 Track at Special Locations

- (1) Provisions of IRPWM and LWR Manual, shall be followed while laying track at special locations like sand humps in yard, bridge approaches, approaches to yards, SEJ locations, level crossings, Insulated glued joints in LWR/CWR portions etc.

13.5 TRACK DRAINAGE

- (1) The drainage arrangement has been provided by the Employer.

13.6. FENCING

- (1) The fencing shall be constructed as per the agreed Drawings and methodology. .

13.7 DRESSING OF BALLAST AND CLEANING OF TRACKS

- (1) On completing the track works and after making up the desired track geometry up to laid down standards, the ballast in track shall be properly dressed up in the sleeper cribs and in shoulders as per the IRS standards for LWR/CWR track.
- (2) The track and cess shall be thoroughly cleaned to a standard acceptable to the Engineer, immediately after installation and as required thereafter to maintain the standard until the arrangement of service trials.
- (3) All side drains along track for drainage purpose shall be cleaned off the debris as required etc. so as to provide clear water-way.

13.8 PERMANENT MARKERS

- (1) Upon completion of the track installation following permanent markers shall be provided as per IRPWM and prior approval by the Engineer of their information, plates/boards, colour scheme and fixation arrangement :
 - a) Curve reference markers;
 - b) LWR/CWR reference markers;
 - c) SEJ markers including its reference markers;
 - d) Fouling point markers;
 - e) Turnout markers;
 - f) Level crossing markers;
 - g) Fog signal locations;
 - h) Creep posts at SRJ of Turnouts;
 - i) All markers required to be painted on rails for curves, turnouts and SEJs etc. shall be paint marked by the Contractor as per IRPWM.

13.9 INSPECTION and ACCEPTANCE

13.9.1 General

- (1) A thorough track inspection shall be carried out jointly by the Contractor and the Engineer prior to acceptance of the Works.
- (2) The proforma for the measurement of the track parameters to be submitted by the Contractor shall be as per the provisions of IRPWM in this regard.
- (3) The proforma shall show the design requirement against actual and the differences.
- (4) Other than meeting the mandatory requirements of track parameters in floating condition of track stipulated vide para 13.9.3, the track shall also fulfill the

requirements of riding quality stipulated vide para 14.7 below, before declaring as acceptable.

13.9.2 Tests

- (1) The Contractor shall propose the various forms of test and obtain the approval of the Engineer prior to the commencement of the testing, keeping in view the provisions of IRPWM in this regard.

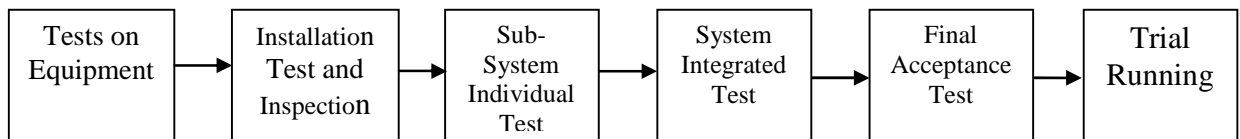
13.9.3 Track Tolerances

- (1) The track parameters for the completed track works shall be measured by the Contractor and confirmed by the Engineer in a format acceptable to the Engineer. Track tolerances as indicated in point (3) below are for measurements taken in floating condition of the track.
- (2) All the track measurement shall be taken in the unloaded condition by methods and equipment approved by the Engineer prior to the commencement of the measurements.
- (3) The dimensional tolerance shall be as per the provision of IRPWM for new Track.
- (4) The measurement of the track shall be done as per the provision of IRPWM.
- (5) No individual component shall exceed the track tolerance limit as specified in IRPWM.
- (6) For the purpose of gauge, the parameter shall be with reference to gauge of 1676mm instead of 1673mm.

14.0 TESTING AND COMMISSIONING

14.1 GENERAL

- (1) The Contractor shall provide and perform all forms of testing procedures applicable to the Works and various components including all necessary site acceptance tests required therein and for the interfacing of the Works with the other Contract works. Until the time the Works are taken over by the Employer, Contractor shall maintain the same in a manner so as to continuously meet the acceptance criteria for all aspects, as per the requirements mentioned in the **Employer’s Requirement, Part 2 of Bidding Documents**. Contractor shall make a consolidated list of all the tests required for Testing and commissioning alongwith the testing procedures and applicable codes/ manuals and submit the same to the Engineer for enabling a joint program of testing.
- (2) The commissioning activity shall include a period of Integrated Testing of System followed by a period of trial running attended by the CRS or other authorized official. Accordingly a typical test sequence may be as shown below:-



- (3) All testing procedures shall be submitted at least twenty eight (28) days prior to conducting any test. The testing procedures shall show unambiguously the extent of testing covered by each submission, the method of testing, the acceptance criteria, the relevant drawing (or modification) status and the location.
- (4) The Engineer, the Employer's Personnel and authorized agencies 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 check the progress of manufacture of Plant and production and manufacture of Materials.

- (5) Ample time shall be allowed within the testing programmes for necessary alterations to equipment, systems and designs to be undertaken, engagement of Engineer, together with re-testing prior to final commissioning.
- (6) All costs associated with the testing as above shall be borne by the Contractor, unless otherwise specified, including the services of any specialised personnel or independent assessors concerned to the work done by him. The Contractor shall also bear any expenses incurred due to resetting caused by defects or failure of equipment to meet the requirements of the Contract in the first instance for the works done by him.
- (7) Unless agreed in writing by the Engineer, the personnel engaged on testing shall be independent of those directly engaged in the design or installation of the same equipment.
- (8) All testing equipment shall carry an appropriate and valid calibration labels.
- (9) If any defect or damage is one requiring immediate attention from a safety, environment or operational aspect, the Engineer has the authority to proceed with the rectification in any manner suitable and deduct the cost from the next due interim payment.

14.2 TESTING

- (1) The Contractor shall be responsible for all on-site and off-site testing and for all in-situ testing.
- (2) In-situ tests shall be done in the presence of the Engineer.
- (3) Equipment, apparatus and materials for in-situ tests carried out by the Contractor shall be provided by the Contractor.
- (4) The equipment and apparatus shall be maintained by the Contractor and shall be calibrated before the testing starts and at regular intervals as permitted by the Engineer.
- (5) The equipment, apparatus and materials for in-the situ tests shall be removed by the Contractor as soon as practicable after the testing is complete.
- (6) Attendance on tests, including that by the Engineer, Contractor and Designer, shall be as laid down in the Quality Assurance procedures.

14.3 RECORDS OF TESTS

- (1) Records of in-situ tests carried out by the Contractor shall be kept by the Contractor on the Site and a report shall be submitted to the Engineer within seven (7) days, or such other time stated in the Contract or in the Quality Assurance Programme, after completion of each test.
- (2) Contractor shall produce the original copies of all test certificates / inspection certificates carried out by RDSO/RITES/Zonal Railways for various p-way materials procured from RDSO approved manufacturers. However, the inspection charges will be reimbursed by the Employer/DFCCIL.
- (3) Record of such tests should be signed by the Contractors Authorised Representative , authorized of the Contractor.

14.4 POST INSTALLATION TESTS (ON SITE)

- (1) During and on completion of the installation, the Contractor shall undertake testing of all points and crossings, glued joints, derailing switches, switch expansion joints, buffer stops and other devices, in a progressive sequence and in accordance with the overall testing programme.

- (2) These tests shall culminate in functional tests to verify the correct operation of full apparatus and, where appropriate, correct response to the respective control and physical operation of the device/ components.

14.5 ACCEPTANCE TESTS

- (1) The Contractor shall prepare and organise a comprehensive programme of acceptance tests to demonstrate to the Engineer that all systems, sub-systems and apparatus defined under the Contract meet the specified performance requirements in all respects.
- (2) These tests shall be conducted by the Contractor in the presence of the Engineer.

14.6 INTEGRATED SYSTEM TESTS

- (1) The Contractor shall submit to the Engineer requirements and procedures, in respect of the Contractor’s scope of work, for Integrated System Tests in conjunction with the interface contractors to demonstrate that the complete system provided under the Contract is fully operational and meets the specified performance criteria.
- (2) The conducting of these Integrated System Tests, by the Contractor and the interface contractors, shall include a period of test running. Necessary interfacing required with the other contractors shall be done by the Contractor as detailed in **Part 2 Section V, “Employer’s Requirement, Volume 6, Appendix - 2 - Design and Construction Interfaces”**
- (3) Tests on Completion shall also include Integrated Testing. The Contractor shall, following satisfactory completion of tests on his Works, equipment, sub-systems or system, perform, at the direction of the Engineer, programme of tests to verify and confirm the compatibility and complete performance of his Works, equipment, sub-systems or system with the Works, equipment, sub-systems or system provided by others.
- (4) The results of the Integrated Testing and Commissioning shall be compiled and evaluated by the Engineer and the Contractor.
- (5) If the Works, or a part thereof, or a section, fail to pass the Integrated Testing and Commissioning, the Engineer shall require such failed tests, to be repeated under the same terms and conditions. If such failure and retesting result from a default of the Contractor and cause the Employer to incur additional costs, the same shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any money due, or to become due, to the Contractor.
- (6) If the Works, or a part thereof, or a Section, fail to pass Integrated Testing and Commissioning and the Contractor in consequence proposes to make any adjustment or modification to the Works or a part thereof, or a section, the Engineer may instruct the Contractor to carry out such adjustment or modification, at his own cost or to other contractor(s) if the item(s) of Works is attributable to other contractor(s) and to satisfy the requirements of Integrated Testing and Commissioning within such time as the Engineer may deem to be reasonable.
- (7) The Contractor along with others shall carry out all statutory tests and trials, under the supervision of the Engineer, necessary for obtaining sanction of the competent authority, if required, for opening the railway system.
- (8) During integrated testing, the Contractor shall be required to carry out coordination with all interfacing contractors and agencies.

14.7 TEST ON COMPLETION

- (1) Following satisfactory completion of the acceptance tests and the Integrated System Test the Engineer will commence an extended period of trial running to prove all technical systems, to the satisfaction of the CRS or any other authorized official, who

will check the system from safety point of view and to allow all technical systems to settle and to train staff in working procedures.

- (2) Contractor shall allow for attendance in respect of the Contractor's scope of work over the whole of this period, which shall include repair/ correction activities and also further opportunity for technical staff training.

15.0 RECORDS

15.1 DRAWINGS PRODUCED BY THE CONTRACTOR

- (1) Drawings produced by the Contractor including Drawings of Site layouts, Temporary Works, etc. for submission to the Engineer shall generally be to ISO A1 size.
- (2) They shall display a title block with all the relevant information.
- (3) The number of copies to be submitted to the Engineer shall be as stated in the Contract, or as required by Engineer.
- (4) The Contractor shall provide 3 sets of As Built Drawings along with read only electronic version of the same on CD/DVD to the Engineer.

15.2 PROGRESS PHOTOGRAPHS AND VIDEOGRAPHY

- (1) The Contractor shall provide monthly progress photographs which have been properly recorded to show the progress of the works to the Engineer. All important events shall be photographed.
- (2) Two sets of photographs shall be provided on CD ROM format with two sets of colour prints (minimum 20 nos.) of 175 mm x 125 mm size in albums duly labeled.
- (3) The Contractor shall mount each set of each month's progress photographs in a separate album of a type to which the Engineer has given his consent, and shall provide for each photograph two typed self-adhesive labels, one of which shall be mounted immediately below the photograph and one on the back of the photograph.
- (4) Each label shall record the location, a brief description of the progress recorded and the date on which the photograph was taken.
- (5) All photographs shall be taken by a skilled photographer.
- (6) Photo processing shall be carried out by a competent processing firm to the satisfaction of the Engineer.
- (7) The Contractor shall ensure that no photography is permitted on the Site without the consent of the Engineer.
- (8) Important events, construction activities, site visits of VIPs, working of new machinery, weather effects or any occasion advised by the Engineer shall be video graphed. The recording shall be done or converted to .avi format and presented in a CD/DVD with appropriate voice recording describing the event.

15.3 RECORDS OF WAGE RATES

- (1) The Contractor shall keep monthly records of the average, high and low wage rates for each trade/tradesman employed on the Site and records shall be made available to the Engineer during inspection.

15.4 REGISTERS FOR MAINTENANCE

- (1) After completion of works, Contractor shall produce the following registers similar to the ones in use over IR and as per IRPWM, IRPWWM as under:-
 - i) Level Crossing
 - ii) Points and Crossing
 - iii) LWR
 - iv) Ballast
 - v) Zero Missing Fitting

- vi) L-Section
- vii) Index Plan and Section
- viii) Curve Register
- ix) Gradient Register
- x) SEJ Register
- xi) Track Diagram
- xii) Yard Plan
- xiii) Yard Diagram
- xiv) USFD Testing, weld registers
- xv) Creep register
- xvi) Gap Survey Register
- xvii) Toe load register
- xviii) Register containing weld details (of each weld of both rail) in increasing Km (of each Track)
- xix) Data base of Track/Asset register for the purpose of maintenance aspects (as per Track Management System prevailing in IR).
- xx) The above list is not exhaustive and Contractor is required to prepare an Asset database which identifies all infrastructures along the route. This database shall be expandable to allow maintenance requirements to be called up together with an Asset Management and Planned Preventative Maintenance Schedule of DFCC.
Any other registers as directed by Engineer to be used during maintenance.

16.0 MATERIALS

- (1) Materials and goods for inclusion in the Permanent Works shall be new.
- (2) Certificates of tests by manufacturers which are to be submitted to the Engineer shall be current and shall relate to the batch of material delivered to the Site.
- (3) Certified true copies of certificates may be submitted if the original certificates could not be obtained from the manufacturer.
- (4) Parts of materials which are to be assembled on the Site shall be marked to identify the different parts.
- (5) Contractor shall deposit Track material with the representative of Employer as per the inventory list included in Bidding Forms, Section IV, Part 1 of Bidding Documents.

17.0 DEFECT NOTIFICATION PERIOD

- (1) After the Works are taken over by the Employer in terms of para 10.1 of General conditions of Contract it will be followed by the **Defect Notification Period** of 12 (twelve) months.
During this period Contractor shall replace/ remedy the defects occurring under normal usage of Works by the Employer, except for normal wear and tear under such usage. Maintenance activities to be done during Defect Liability Period shall be done by the Employer at its own cost and if required through separate agency.

Section V . Employer's Requirement

Volume 6 – Appendices

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APPENDIX 1 – UTILITIES

- I) All the chartered (visible) and unchartered (un-visible) utilities have been removed/Relocated by the employer. However, any utility or materials falling on the track alignment shall be promptly intimated to the Employer for arranging its removal.

APPENDIX 2
DESIGN AND CONSTRUCTION INTERFACES

1 GENERAL

- (1) Interfaces exist between the Contractor and Designated Contractors for systems, where the systems are mutually dependent, or interactive for satisfactory and safe operation. The Contractor shall maintain close coordination/interface during design, manufacturing, testing, commissioning, Integrated Testing & Commissioning, trial run and defect liability period with the Designated Contractors and consultants who may be working on the Project, whether or not specifically mentioned in the Contract. The Contractor shall perform all design duties and provide all materials, equipment and labour to ensure the satisfactory accomplishment of interface of the systems for which the Contractor is responsible.
- (2) The Contractor shall approach the Employer for the general interface information such as interface requirements, contact points of the Designated Contractors, and once information is received, would coordinate with them for interface activities including the Employer in the information loop.
- (3) The Contractor shall submit and maintain an agreed Interface Management Plan. At all stages of the work, all interfaces shall be discussed and agreed upon, through the Employer between the Contractor and the Designated Contractors. Interfaces should essentially be with Civil Infrastructure, Power Supply & Traction, E&M, Telecommunications and other Designated Contractors advised by the Employer. The Employer's Requirements - General Specification outlines the requirements of the Interface Management Plan.
- (4) The Contractor shall liaise with the Designated Contractors directly to discuss and agree on interfaces. However, the Contractor shall keep the Employer apprised in writing of all such discussions, agreements and conclusions
- (5) It will be the responsibility of the Contractor that interface requirements be finalised as early as possible. Contractual delays and consequential implications as a result of delay in such co-ordination on account of reasons attributable to the Contractor, as concluded by Employer, shall be the sole responsibility of the Contractor.
- (6) It would be the responsibility of the Contractor to settle all disagreements with the Designated Contractors. If such disagreement cannot be resolved by the Contractor, despite all reasonable efforts, then the decision of the Employer shall be final and binding on both parties.
- (7) Broad interface requirements between the Contractor and the Designated Contractors detailing the interfacing issues and division of responsibility are summarised in the Employer's Requirements - General Specification.
- (8) The above interface obligations placed on the Contractor shall be read in conjunction with the interface obligation mentioned in Employer's Requirements - General Specification, Conditions of Contract and other Contract documents.
- (9) Interface requirements describe the principle interfaces between the contractor and designated contractors. These shall be developed, updated and expanded as necessary to encompass all the relevant interface issues encountered during the execution of Contract.
- (10) The Contractor shall take all reasonable steps to keep himself informed of the activities of all Designated Contractors and to identify actual and potential interfaces with Works.
- (11) Track work Interfaces with Designated Contractors
- (12) The list of interface requirements is as shown below:
 - i. Interface requirements between Signaling (SIG) and Track work Contractor (TRW)

- ii. Interface requirements between Traction Electrification, Power Supply, Power Distribution and SCADA System (PST) and Track work Contractor (TRW)
- (13) The Track works Contractor will be responsible for the interface of all the interface planning and management of all the interface issues between the Track and track related Contract and the Systems Contract.
- (14) The Contractor shall co-ordinate with the Engineer on all matters relating to works that may affect the IR operation on the existing railway such works shall be carried out in accordance with IR Rules and Regulations.

2. EMPLOYER'S/ENGINEER'S INPUT

- (1) The Engineer will coordinate the activities of the Contractor with reference to interfacing with other contractors and agencies during all the phases of the Contract.
- (2) The Employer/Engineer, within the scope of the relevant Contract provisions, will support and assist the Contractor in the following fields:
 - (a) Interfacing with Indian Railways Authorities, State and local authorities for timely receipt of the required permits, certificates and approvals related to the design and construction process;
 - (b) Interfacing with State and local tax authorities for VAT reimbursement arrangements;
 - (c) Any other fields of activities related to the Contract as may be required with the purpose of facilitating the Contractor's performance.
- (3) This support and assistance of the Employer/Engineer shall **not** release the Contractor of any of his obligations under this Contract.

3. CO-ORDINATION WITH OTHER CONTRACTORS AND INDIAN RAILWAYS

- (1) The Contractor shall undertake design co-ordination with the other contractors and Indian Railways.
- (2) The Contractor shall undertake a lead role in the co-ordination of the activities associated with integrated systems testing including the co-ordination of other contractors and/or Indian Railways to test and monitor their systems to prove the design and integrity of the systems as a whole.
- (3) It shall be the responsibility of the Contractor to secure from the other contractors and/or Indian Railways, in a timely and correct manner whatever interface provision is required for the Contractor to carry out its duties under the Contract.
- (4) Any additional costs arising to the Contractor due to his late and/or improper interfacing with the other contractors and/or Indian Railways, shall be to the Contractor's account. Such improper interfacing shall include, but not be limited to:
 - a) Late provision of interfacing information
 - b) Failure to adhere to agreed interface
 - c) Changing an interface after it has already been agreed and signed off
- (5) Track Contractor shall give the approved track alignment to system contractor.
- (6) Works will be taken over by the Employer as per clause 10.1 of Contract conditions.

APPENDIX 3
PROJECT PROGRAM REQUIREMENTS

1. GENERAL

- (1) In accordance with the General Conditions of Contract Clause 8.3 the Contractor shall submit his detailed time program to the Engineer within twenty eight (28) days of the Commencement Date of the Works.
- (2) In compiling its Works Programme and in all subsequent updating and reporting, the Contractor shall make provision for the time required for coordinating and completing the design, construction, procurement, manufacture, supply, installation, testing, commissioning and integrated testing of the Works.
- (3) This period shall include but not be limited to design co-ordination periods during which the Contractor shall co-ordinate its design with those of interfacing parties, review procedures, determining and complying with the requirements of all government departments and obtaining all necessary permits.
- (4) This period will include co-ordination with all others whose consent, permissions, authority or license is required prior to the execution of any work.
- (5) The Works Programme shall take full account of the Design submission programme.
- (6) This supplementing, however, shall not relieve the Contractor from his obligation to observe the overall Contract performance term as mentioned in Contract conditions.
- (7) The Contractor shall, during the progress of the Works, constantly monitor his progress against the programmes described below.
- (8) The Works Programme, and all more detailed or revised versions, shall be submitted to the Engineer for his consent in accordance with the provisions of the conditions of Contract.

2. MILESTONES

- (1) Milestones have been derived from clauses 8.2, 8.7 and 10.1 of Conditions of Contract. These are the broad key deliverables and Contractor is required to develop project program to achieve these deliverables and dates. Accordingly he should set his own internal targets which are commensurate with these Milestones and incorporate in his all internal schedules for approval of Engineer. The details of Milestones are mentioned under appropriate clauses in Appendix to Tender, Part 3 of Bidding Documents.

3. PMIS REQUIREMENTS AND PROCEDURES

- (1) Timely performance is of the essence on this project. The Contractor may complete the project or any part of the Project earlier than is stipulated in the Contract.
- (2) All design and/or construction work, including all sub-contractors' work, under this Contract shall be planned, scheduled, executed, reported and accomplished using the precedence diagramming Critical Path Method (hereinafter referred to as CPM). The work required by this section includes the requirement to prepare, maintain, and update all detailed schedules as described in this section. The CPM schedules shall be prepared in such a manner as to permit the orderly planning, organization, and execution of the Work and be sufficiently detailed to accurately depict all the work required by the Contract. The Contractor shall resource (labor and equipment) and cost load its schedule as specified herein.
- (3) All schedules and schedule submittals under this Contract shall be computerized by the Contractor utilizing the latest version of ORACLE PRIMAVERA P6/MS PROJECT LATEST VERSION/EXCEL SPREADSHEET. The Contractor shall have sufficient

-
- capabilities to perform this work and share the PMIS with the Engineer and the Employer.
- (4) The Contractor shall formally transmit all schedule submittals and schedule narratives identified herein to the Engineer in the form of four (4) hard copies and one (1) soft copy on a CD at the times identified herein or at the request of the Engineer.
 - (5) The primary objectives of the requirements of this section are:
 - a) To insure adequate planning and execution of the Works by the Contractor;
 - b) To assist the Engineer in evaluating progress of the Works;
 - c) To provide for optimum coordination by the Contractor of its trades, Sub-contractors, and design consultant, and of its work with the Works or services provided by any separate contractors;
 - d) To permit the timely prediction or detection of events or occurrences which may affect the timely prosecution of the Works;
 - e) To provide a mechanism or tool for use by the Engineer and the Contractor in determining and monitoring any actions of the Contractor which may be required in order to comply with the requirements of the Contract documents relating to the completion of the various portions of the Works by the Contract Milestones and Contract completion specified in the Contract documents.
 - (6) The Contractor is responsible for determining the sequence of activities, the time estimates for the detailed design and construction activities and the means, methods, techniques and procedures to be employed. The schedules identified herein shall represent the Contractor's best judgment of how it will execute the Work in compliance with the Contract requirements. The Contractor shall ensure that the schedule is current and accurate and is properly and timely monitored, updated and revised as project conditions may require and as required by the Contract documents.
 - (7) The Contractor shall provide the basic data relating to activities, durations, specified Contract Milestones, and sequences to the Engineer, as part of Contractor required schedule submittals. This data shall reflect the Contractor's actual plan for the project, and shall fully comply with all requirements of the Contract documents.
 - (8) Subject to the Engineer's agreement and unless identified elsewhere in the Contract documents, the Contractor shall determine when, where, and how it will interface with others performing work on the program and to coordinate its activities with all parties including the Employer and its consultants, suppliers and other contractors.

4. SCHEDULER QUALIFICATIONS

- (1) The Contractor shall have within its employment or under contract, throughout the execution of the Work, such expertise in CPM scheduling and experience with ORACLE PRIMAVERA P6 so as to ensure its effective and efficient performance under this Contract.

APPENDIX 4
MONTHLY PROGRESS REPORTS

1. GENERAL

- (1) The Contractor shall submit to the Engineer, a monthly progress report in accordance with the Conditions of Contract.
- (2) This Report shall be submitted no later than the 7th day of each calendar month and shall account for all work actually performed during the last month.
- (3) It shall be submitted in English in five hard copies and one copy in CD/DVD.
- (4) It shall be submitted in a format agreed to by the Engineer and shall contain sections/sub-sections for, but not be limited to the topics listed in Clauses 2 to 10 below.
- (5) The results of quality audits shall be summarized in the Contractor's monthly reports.

2. SAFETY

- (1) A review of all safety aspects during the month including reports on all accidents and actions proposed to prevent further occurrence including details of safety training and drive conducted during the period and proposed in coming months. This shall be the first item of Monthly Progress Report.

3. FINANCIAL STATUS

- (1) A narrative review of all significant financial matters, and actions proposed or taken in respect to any outstanding matters.
- (2) A spread sheet indicating the status of all payments due and made including recoveries if any.
- (3) A report of the status of any outstanding claims even if these is NIL.
- (4) The report shall in particular provide interim updated accounts of continuing claims.

4. PHYSICAL PROGRESS

- (1) It shall describe the status of work performed in descriptive form, significant accomplishments, including critical items and problem areas including current and anticipated delaying factors and their impact, corrective actions taken or planned and other pertinent activities, and shall, in particular, address interface issues with all agencies involved, problems and resolutions during the period or anticipated.
- (2) It shall include a simplified representation of progress measured in percentage terms compared with percentage planned as derived from the Works Programme.

5. PROGRAMME UPDATE (For entire Project)

- (1) Programme updating shall include:
 - a) The monthly programme update which shall be prepared by recording actual activity completion dates and percentage of activities completed up to the last day of the month and expected activity completion based on current progress.
 - b) The Programme update shall be accompanied by an activity report and a narrative statement.
 - c) The narrative statement shall explain the basis of the Contractor's submittal:
 - i. Early Work and baseline submittals – explains determination of activity duration and describes the Contractor's approach for meeting required Milestones as specified in the Contract “**Employer's Requirement, Section V, Volume 6, Appendix 3 – Project Program Requirements**”.
 - ii. Updated detail programme submittals – state in the narrative the Works actually completed and reflected along critical path in terms of days ahead or behind allowable dates, specific requirements of narrative are:

- If the updated detailed work programme indicates an actual or potential delay to the Milestones, identify causes of delays and provide explanation of work affected and proposed corrective action to meet Milestones or mitigate potential delays.
 - Identification of any deviation from previous month's critical path.
 - Identify by activity number and description, activities in progress and activities scheduled to be completed.
 - Discuss variation work order items, Value Engineering items, if any.
- d) Programme Status which shall:
- i. Show Works Programme status up to and including the current report period, display cumulative progress to date and a forecast of remaining work.
 - ii. Be presented as a bar-chart size A3 or A4 and as a time-related logic network diagram on an A1 media, including activity listings.
- e) The activity variance analysis which shall analyse activities planned to start prior to or during the report period but not started at the end of the report period as well as activities started and/or completed in advance of the Works Programme.

6. THREE-MONTH ROLLING PROGRAMME

- (1) The three month rolling programme shall be issued on a monthly basis.

7. PLANNING AND CO-ORDINATION

- (1) A summary of all planning/co-ordination activities during the month and details of outstanding actions.
- (2) A schedule of all submissions and consents/approvals obtained/outstanding.

8. PROCUREMENT REPORT

- (1) A summary of all significant procurement activities during the month, including action taken to overcome problems.
- (2) A report listing major items of plant and materials which will be incorporated into the Works.
- (3) The items shall be segregated by type and the report should show as a minimum the following activities:
- a) Purchase order date - scheduled/actual;
 - b) Manufacturer/supplier and origin;
 - c) Letter of credit issued date;
 - d) Manufacturer/supplier ship date - scheduled/actual;
 - e) Method of transportation;
 - f) Arrival date at site - scheduled/actual.

9. PRODUCTION AND TESTING

- (1) A review of all production and manufacturing activities during the month.
- (2) Summaries of all production and manufacturing outputs during the month together with forecasts for the next month.
- (3) Review of all testing activities (both at Site and at the manufacture's premises) during the month

10. DEPLOYMENT OF MANPOWER MATERIAL AND EQUIPMENT AT SITE

- (1) Detail showing the extent of deployment of manpower, equipments and stock of important construction materials utilized at the Site.
- (2) A list of major construction equipment used on **the Project during the reporting period.**
- (3) **A list of all major or critical materials and equipment**, indicating current availability and anticipated job Site delivery dates.
- (4) The total number of personnel by craft actually engaged in the work during the reporting period, defined separately as to office, supervisory, and field personnel.
- (5) A manpower and equipment forecast for the upcoming twenty eight (28) days, stating the total number of personnel by craft, defined separately as to office, supervisory and field personnel.
- (6) Changes or additions to Contractor's supervisory personnel that occurred from the preceding Monthly Progress Report. The Monthly Progress Report shall accompany the Application for Payment and monthly schedule update.

11. PHOTOGRAPHS and VIDEOGRAPHY

- (1) Submission requirements for photographs and videography are defined in Clause 15.2, **Part 2 "Employer's Requirement, Section V, Volume 5, Construction, Testing and Commissioning"**.

APPENDIX 5
QUALITY ASSURANCE

1. GENERAL

- (1) The Contractor shall implement a project quality management plan in accordance with EN ISO-9001-2001, international (ISO 9001-2000), "Quality System" - Model for Quality Assurance in Production, Installation and Servicing" to ensure that all materials, workmanship, plant and equipment supplied and work done under the Contract meets the requirements of the contract.
- (2) This plan shall apply to all activities related to the quality of items, including designing, purchasing, inspecting, handling, assembling, testing, storing, and shipping of materials and equipment and different elements of construction work and installations of components.
- (3) The Contractor shall, within Thirty (30) days of the Commencement Date, prepare and submit to the Engineer for review his proposed Quality Assurance Plan, which shall comply with the requirements as mentioned in this **Appendix**.

2. QUALITY ASSURANCE MANAGEMENT PLAN

- (1) The Project Quality Management Plan (PQMP) shall as a minimum address the quality system elements as required by EN ISO 9001-2001, generally noting the applicability to the Contractor's Works Programme for the Project.
- (2) Procedures or quality plans to be prepared by others (suppliers, sub-contractors, etc) and their incorporation in the overall PQMP shall be identified.
- (3) The Contractor shall provide and maintain with the Engineer a Quality Assurance (QA) plan to regulate methods, procedures, and processes to ensure compliance with the Contract requirements.
- (4) The QA Plan, including QA written procedures, shall be submitted to the Engineer for his review.
- (5) Adequate records shall be maintained in a readily retrievable manner to provide documented evidence of quality monitoring and accountability.
- (6) These records shall be available to Engineer at all times during the term of the Contract and during the Defects Notification Period.

3. PLAN IMPLEMENTATION AND VERIFICATION

- (1) The Plan shall clearly define the Quality Assurance (QA) organisation. Management responsibility for the QA shall be set forth on the Contractor's policy and organisation chart.
- (2) The plan shall define the requirements for QA personnel, their skills and training.
- (3) Records of personnel **certifications shall be maintained** and monitored by the QA personnel. These records shall be made available to the Engineer for review, upon request.
- (4) The QA operations shall be subject to the Engineer's, Employer or his authorised representative's verification at any time.
- (5) Verification will include: surveillance of the operations to determine that practices, methods and procedures of the plan are being properly applied; inspection to measure quality of items to be offered for acceptance; and audits to ensure compliance with the Contract documents.
- (6) The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer to carry out on-Site and off-Site surveillance of QA audits to verify that the quality system which has the consent of the Engineer is being implemented fully and properly.

APPENDIX 6

PROJECT CALENDAR

1.0 The Project Calendar

- (1) The Project Weeks shall be commenced on a Monday.
- (2) A day shall be deemed to commence at 00:01 hour on the morning of the day in question.
- (3) Where reference is made to the completion of an activity or Milestone by a particular week, this shall mean by midnight on the Sunday of that week.
- (4) A 7 day week calendar shall be adopted for various (Work) programme **schedules for scheduling purposes, which shall also display the rest day and holidays.**
- (5) **For Project purposes, the presentation shall be in ‘Week’ units.**

APPENDIX - 7
FIRST AID BASE

1. FIRST AID BASE

- (1) First aid bases shall be located at each of the Contractor's principal Works Area.
- (2) The base shall consist of a treatment room fitted with two treatment couches, a hand wash basin, sterilising equipment and lockable cupboards to contain sufficient medical supplies for the Contractor's personnel, the Employer's personnel, the Engineer's personnel and the interfacing contractor working in the area and any visitors to the Site.
- (3) In addition, two stretchers shall be stored, available for instant use.
- (4) The first aid base shall contain a recovery room that shall be furnished with six chairs and a centre table.

2. STAFFING

- (1) A qualified doctor shall be available on call during all times when work is being undertaken on Site.
- (2) In each Site office and location at least one employee of the Contractor shall be trained in first aid and shall be available during all working hours for the purpose of attending to emergencies.
- (3) The Contractor may conclude a contract with the local health centres where they are unable to implement any of the above services

3. EQUIPMENT

- (1) A fully equipped ambulance and driver shall be available on call during all working hours.
- (2) The ambulance shall be equipped with emergency life support equipment suitable for application in construction Site accidents.
- (3) Portable first aid boxes will be maintained fully equipped at each of local Site offices.

APPENDIX 8
DESIGN CERTIFICATE

DESIGN CERTIFICATE

This Design Certificate refers to Submission No. which comprises:
[*Definitive Design and Drawing 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.

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 ‘Authorised Representative’
(for Designer)
Name
Position/ Designation

CONTRACTOR’S CERTIFICATION

This is to certify that all design has been performed utilising 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 ‘Authorised Representative’ (for Contractor)
Name
Position/Designation
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 Definitive Design

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

[*
Definitive Design Submission No...../ }
Good for Construction Drawing Submission }
No./ }

Date of Issue of Notice of No Objection }
]

The Contractor is required to provide this information in respect of each document in Section B

(* Delete as appropriate)

Section C

[Contractor to attach copies of necessary and required approvals]

APPENDIX - 9
SITE SAFETY PLAN

1. GENERAL

- (1) The Contractor shall, within Thirty (30) days of the Commencement Date, prepare and submit to the Engineer for review his proposed safety plan, which shall contain as a minimum 2 to 13 items as mentioned in this Appendix.
- (2) Procedures for updating the site safety plan and associated assurance system shall be given.
- (3) The compensation for affected workers or their relatives shall be paid by the Contractor in such cases utmost expeditiously in accordance with the Workmen's Compensation Act.

2. STATEMENT OF THE CONTRACTOR'S SAFETY POLICY

- (1) The Contractor shall produce a policy statement signed by the managing director of the Contractor or other senior officer acceptable to the Engineer, or the managing directors or other senior officers acceptable to the Engineer of each company of the joint venture comprising the Contractor, declaring that the Contractor shall ensure that safety and industrial health are given priority consideration in all aspects of the Works and by the Contractor in discharging his contractual obligations;
- (2) An understanding of and means of ensuring due compliance with the statutory regulations and standards relating to construction work in India;
- (3) The statutory and contractual obligations regarding safety, rescue and industrial health imposed on the Contractor; and the means by which the Contractor will supervise, monitor and audit his site safety assurance system to ensure due compliance with these obligations.

3. APPOINTMENT, DUTIES AND RESPONSIBILITIES OF SAFETY STAFF

- (1) The safety staff and organizational structure, which should identify the personnel to be engaged solely for site safety assurance, the responsibilities of the participants and the subdivision of the site safety assurance tasks into elements which can be effectively controlled, technically and managerially.
- (2) Names, addresses, telephone and facsimile numbers of all participants shall be listed where known (supplements to the site safety plan will update and complete this information);
- (3) The powers vested in the safety staff, which shall be sufficient to enable them to take urgent and appropriate action to make safe the site and prevent unsafe working practices or other infringements of the safety plan or statutory regulations;

4. POLICY FOR IDENTIFYING HAZARDS

- (1) The means by which the Contractor will identify hazards, assess the risks and develop procedures and method statements to minimise the risk for those risks which will occur during the works
- (2) The Contractor shall produce a list of safety and health hazards identified for this Contract and the procedures and method statements for achieving effective and efficient minimization of the risks associated with such hazards;

5. SAFETY EQUIPMENT

The means by which safety equipment, scaffolds, guard-rails, working platforms, hoists, ladders and other means of access, lifting, lighting, signing and guarding

equipment shall be inspected, tested and maintained and the standards below which such items will be removed from the site and replaced shall be elaborated.

6. CONTRACTOR'S EQUIPMENT

- (1) The Contractor shall produce policy and procedures for ensuring that all his plant and equipment used on the works site is maintained in a safe condition and is operated in a safe manner;
- (2) Also regulations and procedures covering all safety and health aspects of the Works, including where appropriate but not limited to the following shall be produced by the Contractor:
 - a) housekeeping
 - b) working on or near operating railways
 - c) fire prevention precautions and firefighting equipment
 - d) hot weather working
 - e) electrical equipment
 - f) welding/cutting operations and equipment
 - g) personal protection clothing and equipment
 - h) cranes
 - i) hoists
 - j) other lifting appliances
 - k) manual lifting
 - l) power tools
 - m) hand tools and portable power driven tools
 - n) hazardous substances
 - o) working at height
 - p) structural steel erection
 - q) lighting
 - r) protection against falling objects

7. SUB-CONTRACTORS

- (1) The means by which safety, rescue and industrial health matters and requirements will be communicated to sub-Contractors of all tiers and their due compliance with the site safety plan and all relevant statutory regulations is ensured by the main Contractor.

8. DISCIPLINARY PROCEDURES

- (1) The Contractor's disciplinary procedures with respect to dealing with safety related matters both with his own staff and that of sub-Contractors shall be given.

9. ACCIDENT REPORTING

- (1) The Contractor's procedure for reporting and investigating accidents, dangerous occurrences or occupational illness.

10. SAFETY PROMOTION

- (1) The Contractor shall provide details of the frequency, coverage and intent of site safety meetings together with the rationale for attendance.

11. SITE SECURITY

- (1) The Contractor's system for the protection of authorised and unauthorised visitors to the site
- (2) The Contractor's proposals to ensure that construction methods do not compromise the Contractor's commitment to the site safety plan or its compliance with the statutory regulations.

12. LABOUR SAFETY

- (1) The activities of Contractor shall be coordinated with Indian Railways so as to ensure safety of all Contractors' personnel.
- (2) Labour safety arrangements by the Contractor shall be in accordance with the applicable legislation in India.
- (3) The design and construction shall comply with the applicable legislation in India.
- (4) The Contractor shall provide the equipment needed for the labour safety during the operation of the line.

13. SITE SAFETY PLAN

The brief outline of site safety plan shall cover the following:

13.1 Safety Personnel

- (1) The Contractor shall appoint a safety officer whose duties throughout the period of the Contract shall be entirely connected with the safety and industrial health aspects of the Contractor's activities on the site.
- (2) The Contractor shall ensure that the safety officer maintains a daily site safety diary, such diary comprehensively recording all relevant matters concerning site safety, safety inspections and audits, safety related incidents and the like.
- (3) The site safety diary shall be reviewed and signed on a weekly basis by the Contractor's site representative and shall be available at all times for inspection by the Engineer.

13.2 Site Safety Inspections

- (1) The Contractor will conduct site safety inspections at a regular frequency.
- (2) The findings of the inspections shall be recorded on suitable forms which shall be kept available for inspection by the Engineer.

13.3 Safety / Accident Reporting

- (1) The Contractor shall submit regular site safety reports to the Engineer in accordance with the site safety plan.
- (2) Such reports shall be submitted as part of the Monthly Progress Report. Prior to submission, the site safety report shall be endorsed by the Project Director responsible for the Contract and the Contractor's site representative.
- (3) The Engineer shall be informed by the Contractor verbally immediately after occurrence of any accidents whether on-site or off-site in which the Contractor, its personnel or plant, or those of its sub-Contractors are directly or indirectly involved and which results in any injuries to any persons, loss / damage to plant and machinery, disruption of traffic etc. This shall be followed by a written comprehensive report within 24 hours of the accident.

13.4 Sub-Contractors

- (1) The Contractor shall provide its sub-Contractors with copies of the site safety plan and shall incorporate into all sub-contract documentation provisions to ensure the compliance with such plan at all tiers of the sub-contracting.

13.5 Safety Meetings

- (1) The Contractor shall convene regular safety meetings in accordance with the safety plan and shall ensure attendance by the safety officer and safety representatives of sub-Contractors unless otherwise agreed by the Engineer.
- (2) All safety meetings shall be notified in advance to the Engineer who may attend in person or by representative at his discretion.
- (3) The minutes of all safety meetings shall be taken and sent to the Engineer within seven (7) days of the meeting.

13.6 Safety Equipment

- (1) The Contractor shall identify the safety equipment, rescue apparatus and protective clothing which will be required for the Works.
- (2) The Contractor shall ensure that safety equipment and protective clothing as described in the safety plan is available and used on the site at all material times and those measures for the effective enforcement of proper utilisation and necessary replacement of such equipment and clothing is incorporated into the site safety plan.
- (3) The Contractor shall regularly inspect, test and maintain all safety equipment and those found Damaged, dirty, incorrectly positioned or not in working order shall be repaired or replaced immediately.

13.7 First Aid

- (1) The Contractor shall establish, maintain, staff, and fully equip a first aid base as detailed in **Part 2 “Employer’s Requirement, Section V, Volume 6, Appendix 7 – First Aid Base”**.

13.8 Site Publicity

- (1) The Contractor shall ensure that safety, rescue and industrial health matters are given a high degree of publicity to all persons regularly or occasionally on the site.

13.9 Training

- (1) The Contractor shall conduct regular safety training and rescue training drills, the frequency, coverage and application of which shall be in accordance with the site safety plan, and in any case shall not be more than every six months. Engineer may monitor the content of such training programs.

13.10 Breach of Safety Regulations

- (1) Any employees of the Contractor or sub-Contractor of any tiers who commit a serious breach of the safety regulations shall be liable to summary dismissal and shall not be re-employed on the Contract or allowed on any of the sites.
- (2) The due notice of this sanction shall be prominently displayed on the site.

13.11 Safety Devices

- (1) All plant and equipment used on or around the site shall be fitted with appropriate safety devices which shall be operational at all times and shall be regularly inspected and tested.

13.12 Testing and Certification of Lifting Gear

- (1) The Contractor shall provide and maintain safe mechanical cranes, hoists and conveying facilities for the lifting and **transport of materials and shall comply with all** relevant codes of practice for safe use of cranes.
- (2) All cranes, hoists and the like shall be fitted with audible overload warning devices.
- (3) All such equipment shall be regularly maintained in accordance with manufacturers' recommendations and standards having regard to local legislation and recommendations from the appropriate statutory authority.

13.13 Fire Regulations and Safety

- (1) The Contractor shall provide and maintain all necessary temporary fire protection and fire fighting facilities on the site during the construction of the Works, and shall comply with all requirements of the local fire services department.
- (2) These facilities may include, without limitation, sprinkler systems and fire hose reels in temporary site buildings, raw water storage tanks and portable fire extinguishers suitable for the conditions on the site and potential hazards.
- (3) The Contractor shall submit details of these facilities to the Engineer for review prior to commencement of work on the site.

13.14 Interface with Indian Railway Operations

- (1) The Contractor will review the interfaces with Indian Railway's operations and prepare a specific safety **plan for all works that may affect the operating** railway.
- (2) The Contractor will comply with and incorporate Indian Railway's rules and regulations for track, signalling and operations possessions into his safety plan and will operate a permit to work system for all works which may affect the operations of the existing railway.
- (3) Similarly, the site safety plan shall consider with other interfacing contractors in the closed vicinity of the Employer.

13.15 Standby Equipment

- (1) The Contractor shall provide adequate stand-by equipment to ensure the **safety of personnel, the Works and the public.**

13.16 Co-operation

- (1) The Contractor shall provide full co-operation and assistance in all safety surveillance carried out by the Engineer or the Employer. Any breaches of the site safety plan or the statutory regulations or others disregard for the safety of any persons may be the reason for the Engineer to exercise his authority to require the Contractor's site representative's removal from the site. Besides this Engineer may impose token penalty for such lapses as considered fit.

APPENDIX 10
TRAFFICE BLOCK (POSSESSION) MANAGEMENT

1. GENERAL

- (1) The Contractor shall comply with the traffic block (Possession) management system operated by Indian Railways (IR).
- (2) The Contractor shall appoint a responsible person who shall coordinate with IR and with the other adjacent Track and track related contractors and the systems contractor as applicable and who will act as the traffic block coordinator for the Contractor only.
- (3) The person appointed must have experience of IR operations and must be fully aware of IR rules and regulations related to possession of track for construction of railway works and in accordance with IR regulations to issue possession requests.
- (4) For the purpose he shall be duly certified in accordance with the said rules.

2. POSSESSION PERIODS

- (1) The Contractor may use possessions on the line for execution of works as per approved plan following strict safety procedures.
- (2) Line closures may be agreed subject to IR approval.
- (3) The Employer gives no warranty that line closures and possession periods will be available during the period of the Works.
- (4) The Employer will however provide any assistance necessary to the Contractor to enable him to obtain the line closures and possessions required by him for the Works but will not be responsible if any Possession requests are refused by IR.
- (5) The Contractor shall prepare technological and organizational schedule for construction which shall include the work times in the weekends and during the dark part of the day.
- (6) The Contractor shall submit his requests for 'possessions' at least fourteen (14) days earlier and inform IR at least 48 hours earlier if he is not able to use the permitted 'possessions'.
- (7) Any fees which may become leviable on account of track possessions required by the Contractor for permanent or temporary works shall not be payable by the Contractor. However penalties, if any, levied by Indian Railways caused due to any careless working or otherwise of violation of the Terms and Conditions of the track possessions, shall be payable by the Contractor.

APPENDIX 11
DESIGN STANDARDS

Following is the indicative list of Design standards. All codes and manuals with correction slips issued upto 28 days prior to last date of submission of bid shall be applicable for this bid. The technical specifications and manuals of Indian Railways shall only be used.

Research Design and Standards Organization (RDSO), Lucknow, India, an organization of Ministry of Railways, Government of India has standardized the technical specifications for various components of railway systems in India as Indian Railway Standard (IRS) Specifications, which are generally based on International Specifications and adopted to Indian conditions.

Track

- a) Indian Railway Permanent Way Manual.
- b) IRS T 12-2009 for UIC 60KG/m.
- c) UIC Leaflet 860 8th edition.
- d) Manual of Instructions on LWRs of IR.
- e) IR Manual for Flash Butt Welding of Rails 2004.
- f) IR Standards Specification for Fusion Welding of Rails Alumino-Thermic Process.
- g) IRS T 29 2000 Cast manganese Steel Crossings.
- h) IRS T 39 1985 Pretress Concrete Sleepers.
- i) IS:1785-Part 1 High Tensile Steel Wire.
- j) IRS GE 1 June 2004 Ballast specification.
- k) IRS T 1966 Fish Plates and Fish Bolts.
- l) Manual for USFD Testing of Rails & Welds by RDSO,
- m) SSOD of Eastern DFC

Fire Standards

- a) IS 1641 : 1988 Code of practice for fire safety of buildings (general) : General principles of fire grading and classification (first revision).
- b) IS 3844 : 1989 Code of practice for installation and maintenance of internal fire hydrants and hose reels on premises (first revision).
- c) IS 1646 : 1997 Code of practice for the safety of buildings (general) : Electrical installations (second revision).
- d) IS 11360 : 1985 Specification for smoke detectors for use in automatic electrical fire alarm system.
- e) IS 1644 : 1988 Code of practice for fire safety of buildings (general) : Exit requirements and personal hazard (first revision).
- f) IS 2175 : 1988 Specification for heat sensitive fire detectors for use in automatic fire alarm system (second revision).
- g) IS 11360 : 1985 Specification for smoke detectors for use in automatic electrical fire alarm system.
- h) IS 2189 : 1999 Code of practice for selection, installation and maintenance of automatic fire detection and alarm system (second revision).
- i) IS 884 : 1985 Specification for first-aid hose reel for firefighting (first revision).
- j) IS 940 : 1989 Specification for portable fire extinguisher, water type (gas cartridge) (third revision).
- k) IS 2878 : 1986 Specification for fire extinguisher, carbon-dioxide type (portable and trolley mounted) (second revision).
- l) IS 11833 : 1986 Specification for dry powder fire extinguisher for metal fires.

Electricity Standards

- a) Power supply installations and other electric installations shall comply with Indian Electricity Standards.
- b) Internal wiring of buildings shall comply with Indian Building code of practice.
- c) All electrical installations shall be earthed as per relevant Indian standard code for earthing of electric installations.
- d) In station buildings electric fittings and electric gadgets shall be provided as per Indian Railways Boards letter No. 99/Electric/(G)/136/1 dated 17.03.2006.
- e) Deviations if any to improve performance standards shall be with the approval of Engineer.
- f) Regulations for Power line Crossings of Railway tracks as per Indian Railways Manual of AC Traction

Additional Codes and Standards

The following Indian Codes and Standards shall be referred to where applicable:

- The Energy Conservation Act, 2001
- Guidelines on Equipment issued by the Bureau of Energy Efficiency
- Energy Conservation Building Code
- IR General and Subsidiary rules
- IR Safety Rules
- Relevant pollution control codes
- Applicable labour laws like Workmen's Compensation Act etc.

PART – 3

Section - VI

General Conditions of Contract (GCC)

As per FIDIC Yellow Book 1999-Edition

GENERAL CONDITIONS OF CONTRACT (GCC)

REFER TO

The conditions of Contract comprise the “General Conditions” which form part of the conditions of Contract for Plant and Design Build first edition 1999 published by the Federation Internationale Des Ingenieurs – Conseils (FIDIC) and the following “Particular Conditions” which include amendments and addition to such General Conditions.

Copies of the above FIDIC publication i.e. “Conditions of Contract for Plant and Design Build” can be obtained from

International Federation of Consulting Engineers
FIDIC Bookshop – Box- 311 – CH – 1215 Geneva 15 Switzerland
Fax: +41 22 799 49 054
Telephone: +41 22 799 49 01
E-mail: fidic@fidic.org
www.fidic.org

PART – 3

Section -VII

Particular Conditions of Contract (PCC)

Particular Conditions

The Conditions of Contract comprise the “**General Conditions**”, which form part of the “Conditions of Contract for Plant and Design Build for Electrical and Mechanical, and for Building and Engineering Works designed by the Contractor”, First Edition, 1999 published by the Fédération Internationale des Ingénieurs-Conseils (**FIDIC**), and the following “**Particular Conditions**”, which include amendments and additions to such General Conditions. The General Conditions are incorporated herein by reference only and are not set out at length. The Contractor is deemed to have obtained for himself and read and fully understood the General Conditions in their entirety. The following Particular Conditions shall supplement the General Conditions in Section VI. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions.

Clause	PROVISIONS
Sub-Clause 1.1.3.10	Insert additional Sub-Clause 1.1.3.10 “Milestone” means the completion of a part of the Works, or the occurrence of an identified event.
Sub-Clause 1.1.3.11	Insert additional Sub-Clause 1.1.3.11 “Stage” means the part of the Works identified as such and more particularly described in the Price Schedules, Part 5 Bidding Document
Sub-Clause 1.1.6.9	Delete the existing clause and modified as under: “Variation” means any change to the scope of works, design criteria and specifications, and criteria for the testing and performance of the completed works specified in the Employer’s Requirements.
Sub-Clause 1.2. Interpretation	Insert the following sub-paragraphs after sub-paragraph (d): (e) the word “tender” is synonymous with “bid”, and “tenderer” with “bidder” and the words “tender documents” with “bidding documents”.
Sub- clause 1.7 Assignment	Delete Sub-clause 1.7 (a)
Sub- clause 1.9 Errors in Employer’s Requirements	Delete sub-clause 1.9 and replace with “If the Contractor suffers delay and/or incurs Cost as a result of an error in the Employer's Requirements with reference to purpose, scope, design and /or other technical criteria for the works and an experienced contractor exercising due care would not have discovered the error when scrutinizing the Employer's Requirements with respect to purpose, scope, design and/or other technical criteria for the works under Sub-Clause 5.1 [General Design Obligations], 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

	<p>(b) payment of any such Cost plus reasonable 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 (i) whether and (if so) to what extent the error could not reasonably have been so discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.”</p>
<p>Sub- clause 1.14 Joint and Several Liability</p>	<p>Delete Sub- clause (b) and replace with:</p> <p>If the contractor constitutes (under applicable laws) a Joint Venture, etc, the following provisions will be applicable :</p> <ul style="list-style-type: none"> (i) One of the members of the JV firm shall be its lead member who shall have majority (at least 51%) share of interest in the JV firm. The other members shall have a share of not less than 20% each in case of JV firms with upto 3 members. (ii) <u>Joint And Several Liability</u> - Members of the JV Firm to which the contract is awarded, shall be jointly and severally liable to the Employer (DFCCIL) for execution of the project in accordance with General and Special/Particular Conditions of Contract. The JV members shall also be liable jointly and severally for the loss, damages caused to the DFCCIL during the course of execution of the contract or due to non-execution of the contract or part thereof. (iii) <u>Duration of the Joint Venture Agreement</u> - shall be valid during the entire currency of the contract including the period of extension, if any and the defect liability period after the work is completed. (iv) <u>Governing Laws</u> - The Joint Venture Agreement shall in all respect be governed by and interpreted in accordance with Indian Laws. (v) Once the Bid is submitted, the MOU shall not be modified / altered / terminated during the validity of the bid. In case the bidder fails to observe/comply with this stipulation, the full Bid Security Deposit/Earnest Money shall be liable to be forfeited. (vi) Approval for change of constitution of JV Firm shall be at the sole discretion of the Employer (DFCCIL). The constitution of the JV Firm shall not be allowed to be modified after submission of the tender by the JV Firm, except when modification becomes inevitable due to succession <i>laws</i> etc. and in any case the minimum eligibility

	<p>criteria should not get vitiated. However, the Lead Member shall continue to be the Lead Member of the JV Firm. Failure to observe this requirement would render the offer invalid.</p> <p>(vii) Similarly, after, the contract is awarded, the constitution of JV Firm shall not be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract conditions.</p> <p>(viii) On issue of LOA (Letter of Acceptance), an agreement among the members of the JV Firm (to whom the work has been awarded) shall be executed and got registered before the Registrar of the Companies under Companies Act or before the Registrar/Sub - Registrar under the Registration Act, 1908. This JV Agreement shall be submitted by the JV Firm to the DFCCIL before signing the contract agreement for the work. In case the tenderer fail to observe/comply with this stipulation, the full BID SECURITY shall be forfeited and other penal actions due shall be taken against partners of the JV and the JV.</p> <p>(ix) No member of the Joint Venture Firm shall have the right to assign or transfer the interest right or liability in the contract without the <i>written</i> consent of the other members and that of the employer (DFCCIL) in respect of the said bid/<i>contract</i>.</p>
<p>New Sub- clause 1.15 Fraud & Corruption</p>	<p>If the Employer determines that the Contractor and/or any of its personnel, or its agents, or its Subcontractors, sub-consultants, services providers, suppliers and/or their employees has engaged in corrupt, fraudulent, collusive coercive, or obstructive 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.</p> <p>For the purposes of this Sub-Clause,</p> <p>(i) “corrupt practice” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of</p>

	<p>value to influence improperly the actions of another party¹;</p> <p>(ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation²;</p> <p>(iii) “collusive practice” is an arrangement between two or more parties³ designed to achieve an improper purpose, including to influence improperly the actions of another party;</p> <p>(iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party⁴ or the property of the party to influence improperly the actions of a party;</p> <p>(v) “obstructive practice” is</p> <p>(aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or</p>
<p>Sub- clause 2.1 Right of Access to Site</p>	<p>Delete Sub- clause (b) in para 3 . Add the word “Formation” after the word plant in 5th line of Para 1.</p>
<p>Sub-Clause 3.1 Engineer’s Duties and Authorities</p>	<p>Add the following at the end of this Sub-Clause: Notwithstanding anything contained hereinabove, the Engineer is required to obtain approval of the Employer before exercising specific authorities as listed below:</p> <p>i) giving consent to proposed Subcontractors pursuant to Sub-Clause 4.4 (b) for Track & Track related Works;</p> <p>ii) clearance of concept design & drawings, and Yard Plans submitted by the Contractor for alignment and</p>

¹ “Another party” refers to a public official acting in relation to the procurement process or contract execution]. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

² “Party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

³ “Parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁴ “Party” refers to a participant in the procurement process or contract execution.

	<p>Works requiring sanction of Commissioner of Railway Safety;</p> <ul style="list-style-type: none"> iii) Taking action in connection with variation in the Employers’ requirement which has been initiated by the Employer. iv) Employer’s taking over of the work as per clause 10. v) Issue of performance certificate as per sub clause 11.9; vi) Approving any extension of time for completion of work, vii) Instructing or approving Variations pursuant to Sub-Clauses 13.1, 13.2 and 13.3; except in an emergency affecting the safety of life or of the works or of adjoining property or track, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. <p>In case the emergency mentioned above occurs on account of failure of Contractor, by way of not adhering to the sound industry practice or not taking adequate safety precautions, then no amounts shall be paid to the Contractor for attending to such emergencies.</p>
<p>Sub-clause 4.2 Performance Security</p>	<p>Add the following at the end of para 4(d) – in which event the Employer shall forfeit the amount of the Performance Security as indicated in Subclause 15.4. Delete paragraph 5 of Sub-clause 4.2 “The Employer ... claim.” and substitute by the following: In case the Employer makes a claim on the Performance Security, which it was not entitled to make, the Employer shall forthwith refund such amount of claim to the Contractor.</p>
<p>Sub-clause 4.4 Subcontractors</p>	<p>Delete first line and substitute by the following: The contractor shall not subcontract more than 50% of the total Works. The work pertaining to supply of sleepers and track fittings shall be considered out of ambit of total Works for this purpose.</p>
<p>Sub-clause 4.7 Setting Out</p>	<p>Delete paragraph 2,3 &4 of Sub-clause 4.7 and substitute by the following: Accuracy of these specified items of reference shall be deemed to have been verified by the Contractor. Accordingly, the Contractor shall have no right to claim towards time or cost caused due to errors in these specified items of reference.</p>
<p>Sub-Clause 4.10</p>	<p>Paragraph 1 of Sub-Clause 4.10.</p>

<p>Site Data</p>	<p>Add at the end of the paragraph Accordingly, the Contractor shall have no claim in this regard.” Paragraph 2 of Sub-Clause 4.10. Delete the words - To the extent which was practicable (taking account of cost and time). Start the word “the” with a capital letter. Delete “To the same extent” from the fourth line and Start the word “the” with a capital letter.</p>
<p>Sub-clause 4.12 Unforeseeable Physical Conditions</p>	<p>Delete the Sub-Clause and Substitute by the following: In this Sub-Clause, "physical conditions" means man-made or natural physical conditions including sub-surface and hydrological conditions which the Contractor encounters at site during the execution of the Works. Except as otherwise stated in the Contract: (a) the Contractor accepts total responsibility for having foreseen all difficulties and physical conditions; and (b) the Contract Price shall not be adjusted to take account of any unforeseen physical conditions</p>
<p>Sub-clause 4.25 Change of Control</p>	<p>Insert the following additional Sub-clause Any change in Control of the Contractor, or in case if the Contractor is a JV, any change of Control of any of the members of the JV, shall require prior approval of the Employer. Such approval shall be not be unreasonably withheld, unless, such change in Control, if had taken prior to the date of submission of the bid, would have rendered the Contractor or any such member in case the Contractor is a JV, ineligible to bid for the Project in terms of the Instructions to Bidders or in the opinion of the Employer such change in Control shall jeopardize national security or interest. For the purposes of this clause “Control” shall mean the possession, directly or indirectly, of the power to direct or cause the direction of the management and affairs of such person, whether through the legal and beneficial ownership of more than 50% (fifty percent) of the voting securities of such person, by agreement or otherwise or the power to elect majority of directors, partners or other individuals exercising similar authority with respect to such person.</p>
<p>Sub-clause 5.1 General Design Obligations</p>	<p>Delete Sub-Clause 5.1 and substitute the following: The Contractor shall carry out, and be responsible for, the design of the Works. Design shall be prepared by qualified designers who are engineers or other professionals who comply with the criteria (if any) stated in the Employer's Requirements with</p>

	<p>reference to purpose, scope, design and/or other technical criteria for the works. Unless otherwise stated in the Contract, the Contractor shall submit to the Engineer for consent the name and particulars of each proposed designer and design Subcontractor.</p> <p>The Contractor warrants that he, his designers and design Subcontractors have the experience and capability necessary for the design. The Contractor undertakes that the designers shall be available to attend discussions with the Engineer at all reasonable times, until the expiry date of the relevant Defects Notification Period.</p> <p>Upon receiving notice under Sub-Clause 8.1 [<i>Commencement of Works</i>], the Contractor shall scrutinise the Employer's Requirements with reference to purpose, scope, design and /or other technical criteria for the works (including design criteria and calculations, if any). Within the period stated in the Appendix to Tender, calculated from the Commencement Date, the Contractor shall give notice to the Engineer of any error, fault or other defect found in the Employer's Requirements with reference to purpose, scope, design and /or other technical criteria for the works.</p> <p>After receiving this notice, the Engineer shall determine whether Clause 13 [<i>Variations and Adjustments</i>] shall be applied, and shall give notice to the Contractor accordingly. If and to the extent that (taking account of cost and time) an experienced contractor exercising due care would have discovered the error, fault or other defect when examining the Site and the Employer's Requirements with reference to purpose, scope, design and/or other technical criteria for the works before submitting the Bid, the Time for Completion shall not be extended and the Contract Price shall not be adjusted.</p>
<p>Sub-Clause 6.12 Employment of Foreign Nationals</p>	<p>New Sub-Clause</p> <p>The Contractor acknowledges, agrees and undertakes that employment of foreign personnel by the Contractor and/or its Subcontractors may be subject to grant of requisite regulatory permits and approvals including employment/residential visas and work permits, required if any, and the obligation to apply for and obtain the same shall always be of the Contractor. Notwithstanding anything to the contrary contained in the Contract, refusal of or inability to obtain any such permits and approvals by the Contractor or any of its Subcontractors shall not constitute Force Majeure event, and shall not in any manner excuse the Contractor from the performance and discharge of its obligations and liabilities under the Contract.”</p>

	The Employer, on a best effort basis, will provide reasonable assistance in obtaining such visas and permits, but without thereby incurring any liability whatsoever towards the Contractor.
Sub-Clause 7.4 Testing	Insert the following at the end of this Sub-Clause: The Contractor shall not be released from any liability or obligation under the Contract by reason of any such inspection or testing or witnessing of testing, or by the submission of reports of inspection or testing to the Engineer.
Sub-Clause 8.2 Time for Completion	Delete this Sub-Clause and substitute by the following: The Permanent Works of entire geographical jurisdiction shall be completed in stages as under:- 1. For the temporary use by the Employer or by Employer’s other contractors for construction and/or for running of material trains, tower wagons, rail cum road vehicle etc. a) 30% Track KM length of total scope within 365 days, b) 60% Track KM length of total scope within 500 days c) 100% Track KM length (approx.) of total scope within 650 days of the commencement Date. (Milestone 1a, 1b, 1c) (Sub clause 9.1 of GC) and without taking over of the works, (Sub-clause 10.1 of GC) 2. For carrying out Tests on Completion (Clause 9 of GC), including Integrated Testing, required for taking over entire Permanent Works completed in all respects as per Employer’s Requirement mentioned in the Contract within 680 days of Commencement Date. (Milestone 2) 3. For completing all necessary Works required as per the Contract to enable certification of track fit for 100 kmph by an authority nominated by the Employer and taking over the entire Works within 730 days from the Commencement Date. (Milestone 3).
Sub-Clause 8.3	Delete para 3 of Sub- Clause 8.3 “The Contractor shall [Variation Procedure].”
Sub-Clause 8.4	Delete Sub-Clauses (c) Delete “(d)” and substitute as under:- Unforeseeable shortages in the availability of Goods caused due to changes in laws in accordance with the provisions of Sub-Clause 13.7

	<p>Add subclause (f) - A cause of delay in handing over possession of Site in accordance with the provisions of Sub-clause 2.1</p>
<p>Sub-Clause 8.7 Delay Damages</p>	<p>Delete Sub-Clause 8.7 and substitute by the following: The Contractor shall complete the Works in accordance with the programme set forth in Sub-Clause 8.2 [Time for Completion]. In the event that the Contractor fails to achieve any Milestone on the date set forth for such Milestone in the Time for Completion, unless such failure has occurred due to Force Majeure or for reasons solely attributable to the Employer, it shall pay Delay Damages to the Employer in a sum calculated at the rate stated in the Appendix to Tender until such Milestone is achieved; provided that if the construction period for any or all Milestones is extended in accordance with the provisions of this Contract, the dates set forth in the Sub-Clause 8.2 [Time for Completion] shall be deemed to be modified accordingly and the provisions of this Contract shall apply as if Appendix to Tender has been amended as above; provided further that in the event Project is completed within the Time for Completion as stated in the Appendix to Tender, the Delay Damages paid under this Sub-Clause shall be refunded by the Employer to the Contractor, but without any interest thereon. It is agreed that recovery of Damages under this Sub-Clause shall be without prejudice to the rights of the Employer under this Contract including the right of Termination thereof.</p> <p>The Parties hereby accept that delays cause loss to the public and the national economy for whose benefit the Works is meant, and that the loss is not susceptible to precise measurement. The Parties hereby agree that the rate of Delay Damages agreed in this Clause 8.7 is a reasonable pre-determined amount, and that the Delay Damages are not by way of penalty.</p> <p>The Employer shall notify the Contractor of its decision to impose Delay Damages in pursuance with the provisions of this Sub-Clause. Provided that no deduction on account of Delay Damages shall be effected by the Employer without notifying the Contractor its decision to impose the Damages. Further, the total amount of Delay Damages under Sub-Clause 8.7 shall not exceed the maximum amount of delay damages (if any) stated in the Appendix to Tender.</p>
<p>Sub-Clause 8.8 Suspension of Work</p>	<p>Delete Sub-Clause 8.8, Substitute deletion by the following: In the event of the failure of the Contractor to duly and effectively perform any of its obligations or to perform proper</p>

	<p>execution of the Works in accordance with the provisions of this Contract, the Engineer may by notice require the Contractor to suspend forthwith the performance of any obligations under the Contract or the whole or any part of the Works.</p> <p>The Contractor shall, pursuant to the notice under this Sub-Clause, suspend the Works or any part thereof for such time and in such manner as may be specified by the Engineer and thereupon carry out remedial measures to rectify the defects and secure the safety of the suspended works. The Contractor may by notice require the Engineer to inspect such remedial measures forthwith, with a request that the suspension hereunder may be revoked. The Engineer shall either revoke such suspension or instruct the Contractor to carry out such other and further remedial measures as may be necessary and the procedure set forth in this Sub-Clause shall be repeated until the suspension hereunder is revoked.</p> <p>All reasonable costs incurred for maintaining and protecting the Works and remedying the defects during the period of suspension shall be borne by the Contractor.</p> <p>During the period of Suspension, the Employer may at its own discretion, on behalf of the Contractor, undertake to fulfill any of the Contractor's obligations for remedying and rectifying the cause of Suspension. Provided that any cost incurred by the Employer in fulfilling the obligations of the Contractor for the remedying or rectifying the cause of Suspension shall be borne by the Contractor. The Employer shall have the right to deduct any such expense incurred and another twenty percent thereof as Damages from any payment due or to be due to the Contractor under the provisions of this Contract.</p> <p>If and to the extent the cause for the suspension is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10, and 8.11 shall not apply.</p> <p>The Contractor shall not be entitled to extra cost (if any), incurred by him, during the period of suspension of Work, if such suspension is:</p> <ul style="list-style-type: none"> (a) provided for in the Contract; or (b) necessary for proper execution of Woks or by reasons of weather condition or by some default on the part of the Contractor; or (c) necessary for the safety of Works or any part thereof; or
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	<p>(d) necessary for the safety of adjoining public or other property or safety of the public or workmen or those who have to be at the site; or</p> <p>(e) to ensure safety and to avoid disruption of traffic and utilities, as also to permit fast repairs and restoration of any damaged utilities.</p>
Sub-Clause 10.2 Taking Over of Parts of the Works	Delete
Sub-Clause 13.3 Variation procedure	<p>Add the following below the last paragraph:</p> <p>For varied works of items due to variation as per Sub-Clause 1.1.6.9 determination of adjustment to the Contract Price shall be based on the following:</p> <ol style="list-style-type: none"> a. Inputs of man-days, machine hours and quantities of materials; b. (i) Prevailing market rates for Materials, hiring of equipment; (ii) Rates being paid by the Contractor for unskilled, semi-skilled and skilled worker as per the records maintained by the Contractor in accordance with the Laws; c. Contractor's overheads and profit at the rate of 15 (fifteen) per cent of the cost arrived at on the basis of (a) and (b) above and; d. Applicable taxes. <p>No price adjustment shall apply.</p> <p>The approval for Variation shall state the period of extension of time, if any, allowed for the Variation. If no extension of time is allowed, the same shall be stated.</p>
Sub-Clause 13.4 Payment in Applicable Currencies	<p>Delete Sub-Clause 13.4 and Substitute deletion by the following:</p> <p>The contract provides for payment of contract price in Indian Rupees only.</p>
Sub-Clause 13.7 Adjustments for Changes in Legislation	<p>Delete first paragraph of the Sub-Clause and Substitute deletion by the following:</p> <p>The Contract Price shall be adjusted to take account of any increase or decrease in Cost after the Base Date resulting from:</p> <ol style="list-style-type: none"> a. a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws); or

	<p>b. in the judicial or official governmental interpretation of such Laws, or</p> <p>c. the commencement of any Indian law which has not entered into effect until the Base Date; or</p> <p>d. any change in the rates of any of the Taxes or royalties on Materials that have a direct effect on the Project which affect the Contractor in the performance of obligations under the Contract.</p> <p>End of the Sub-Clause Insert at the end of the Sub-Clause: If as a result of change in law, interpretation, or rates of taxes or royalties, the Contractor benefits from any reduction in costs for the execution of this Contract, save and except as expressly provided for in this Sub-Clause or in accordance with the provisions of this Contract, the Contractor shall, within [28] days from the date he becomes reasonably aware of such reduction in cost, notify the Employer with a copy to the Engineer of such reduction in cost.</p>
<p>Sub-Clause 13.8 Adjustment for Changes in Cost</p>	<p>Delete Paragraph 3 of this Sub-Clause and Substitute deletion by the following: The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the amount certified in Payment Certificates, shall be determined from formulae.</p> <p>The formula for adjustment for changes in cost shall be as follows:</p> $P_n = a + b(L_n/L_0) + c(C_n/C_0) + d(S_n/S_0) + e(F_n/F_0) + f(M_n/M_0)$ <p>where:</p> <p>'P_n' is the adjustment multiplier to be applied to the contract amount paid against cost center / stage as per Price Schedule for the completed stage of work;</p> <p>'a' is a fixed coefficient, stated in the table of adjustment data as given below, representing the non-adjustable portion of the work;</p> <p>'b' is a fixed coefficient, stated in the table of adjustment data as given below, representing the adjustable portion for labour component;</p> <p>'c' is a fixed coefficient, stated in the table of adjustment data as given below, representing the adjustable portion for cement component;</p> <p>'d' is a fixed coefficient, stated in the table of adjustment data as given below, representing the adjustable portion for steel component;</p>

<p>“e” is a fixed coefficient, stated in the table of adjustment data as given below, representing the adjustable portion for fuel & lubricant;</p> <p>“f” is a fixed coefficient, stated in the table of adjustment data as given below, representing the adjustable portion for Machinery & Machine tools;</p> <p>Values of a, b, c, d, e, and f are as under :</p> <table border="0"> <tr> <td>Fix Component (a)</td> <td>0.15</td> </tr> <tr> <td>Labour (b)</td> <td>0.22</td> </tr> <tr> <td>Cement (c)</td> <td>0.15</td> </tr> <tr> <td>Steel (Bars & rods) (d)</td> <td>0.25</td> </tr> <tr> <td>Fuel & Lubricant(e)</td> <td>0.05</td> </tr> <tr> <td>Machinery & Machine Tools(f)</td> <td>0.18</td> </tr> </table> <p>Values for “Ln”, “Cn”, “Sn”, “Fn” and “Mn” correspond to the date 49 days prior to the last day of the period (to which the particular payment certificate relates) and shall be as follows :</p> <table border="1"> <tr> <td>“Ln”</td> <td>The All India Consumer Price Index for Industrial Works as published by the Labour Bureau, Ministry of Labour, Govt. of India.</td> </tr> <tr> <td>“Cn”</td> <td>The Wholesale Price Index for Cement Code-1309030001 as published by Economic Advisor, Ministry of Commerce, Govt. of India.</td> </tr> <tr> <td>“Sn”</td> <td>The Wholesale Price Index for Steel (Rebars Code : 1310010201)) as published by Economic Advisor, Ministry of Commerce, Govt. of India.</td> </tr> <tr> <td>“Fn”</td> <td>The Wholesale Price Index for Fuel (High Speed Diesel – code: 1200020005) as published by Economic Advisor, Ministry of Commerce, Govt. of India.</td> </tr> <tr> <td>“Mn”</td> <td>The Wholesale Price Index for Machinery and Machine Tools - Code: 1311000000 as published by Economic Advisor, Ministry of Commerce, Govt. of India.</td> </tr> </table> <p>Values for “Lo”, “Co”, “So”, “Fo” and “Mo” correspond to the base date and shall be as follows :</p> <table border="1"> <tr> <td>“Lo”</td> <td>The All India Consumer Price Index for Industrial Works as published by the Labour Bureau, Ministry of Labour, Govt. of India.</td> </tr> <tr> <td>“Co”</td> <td>The Wholesale Price Index for Cement Code-1309030001) as published by Economic Advisor, Ministry of Commerce, Govt. of India.</td> </tr> </table>		Fix Component (a)	0.15	Labour (b)	0.22	Cement (c)	0.15	Steel (Bars & rods) (d)	0.25	Fuel & Lubricant(e)	0.05	Machinery & Machine Tools(f)	0.18	“Ln”	The All India Consumer Price Index for Industrial Works as published by the Labour Bureau, Ministry of Labour, Govt. of India.	“Cn”	The Wholesale Price Index for Cement Code-1309030001 as published by Economic Advisor, Ministry of Commerce, Govt. of India.	“Sn”	The Wholesale Price Index for Steel (Rebars Code : 1310010201)) as published by Economic Advisor, Ministry of Commerce, Govt. of India.	“Fn”	The Wholesale Price Index for Fuel (High Speed Diesel – code: 1200020005) as published by Economic Advisor, Ministry of Commerce, Govt. of India.	“Mn”	The Wholesale Price Index for Machinery and Machine Tools - Code: 1311000000 as published by Economic Advisor, Ministry of Commerce, Govt. of India.	“Lo”	The All India Consumer Price Index for Industrial Works as published by the Labour Bureau, Ministry of Labour, Govt. of India.	“Co”	The Wholesale Price Index for Cement Code-1309030001) as published by Economic Advisor, Ministry of Commerce, Govt. of India.
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	<p>“Mo”</p>	<p>The Wholesale Price Index for Machinery and Machine Tools - Code: 1311000000 as published by Economic Advisor, Ministry of Commerce, Govt. of India.</p>
<p>Sub-Clause 14.1 Contract Price</p>	<p>Add the following after the last paragraph –</p> <p>The Contract Price includes all duties, taxes, royalties, premiums for various insurances, licenses and fees that may be levied in accordance with the laws and regulations in force as on the Base Date on the Contractor's Equipment, Plant, Materials and supplies acquired for the purpose of the Contract and on the services performed under the Contract.</p> <p>Nothing in the Contract shall relieve the Contractor from its responsibility to pay any tax including any tax that may be levied in India on profits made by it in respect of the Contract.</p>	
<p>Sub-Clause 14.2 Advance Payment</p>	<p>Delete Paragraph 1 and substitute by the following :</p> <p>The Employer shall make an advance payment, as an interest bearing loan for mobilisation and design, when the contractor submits a guarantee in accordance with this Sub-clause. The total advance payment, the number and timing of installments (if more than one), the rate of interest, and the applicable currencies and proportions shall be as stated in the Appendix to Tender.</p> <p>Delete Paragraph 14.2(a) and substitute by the following :</p> <p>Deductions shall commence in the Payment Certificate in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds twenty five per cent (25%) of the Accepted Contract amount less provisional Sums; and</p>	

<p>Sub-Clause 14.3 Application for Interim Payment Certificates</p>	<p>Delete first paragraph of this Sub-Clause and substitute by the following: The Contractor shall prepare his monthly bill, in the format agreed with the Engineer, in six copies (hard) and a soft copy. This shall be accompanied by supplementary details in two hard copies and a soft copy. All hard copies shall bear the original signatures of the Contractor and submitted to the Engineer.</p> <p>If these are found in order then Engineer shall forward and the same with copy of supplementary details to the Employer, with Interim Payment Certificate, as per clause 14.6, for payment to the Employer, otherwise return back all documents to the Contractor for rectification and resubmission.</p> <p>Responsibility of preferring the bill and entering the details shall vest with the Contractor. It is his responsibility to ensure that under no circumstances the payment claimed is more than the amount equivalent of Work done for that stage. If it is discovered otherwise during the check by the Engineer or the Employer then a warning will be issued in the first instance and in the second instance amount equivalent to 10% of excess claimed shall be forfeited besides denying the extra claim.</p> <p>While submitting the bills all supplementary details like measurements, sketches, drawings, approvals, calculations etc. shall accompany the bill so that payment can be substantiated by the Engineer as well as the Employer.</p> <p>Even if no stage of work is completed during the month or Contractor does not choose to prefer a bill a 'NIL' bill shall be submitted by him.</p> <p>Paragraph 2 (a) third line Delete the word “(g)” and substitute by “(h)”</p> <p>Add the following paragraph at the end (h) any amount to be deducted for taxes in accordance with the applicable laws.</p>
<p>Sub-Clause 14.4 Schedule of Payments</p>	<p>Delete this Sub-Clause and substitute by the following: The Employer shall make interim payments to the Contractor as certified by the Engineer under Sub-Clause 14.6 on the basis of the estimated value of the Works executed as determined in accordance with the following procedure:</p>

	<p>(a) Schedule 'A' (Part -5 Price Schedule of Bid Document) specifies the lump sum cost given by the contractor and accepted by the employer.</p> <p>(b) The above lump sum cost/contract price has been apportioned in 16 cost centres to facilitate stage payment. (Schedule 'B') (Part -5 Price Schedule of Bid Document).</p> <p>(c) Each cost centres indicated in Schedule 'B' has been further sub-divided into different items of work alongwith their corresponding weightages (i.e. Schedule 'B' has been further sub-divided into Price Schedule B-1 to B-16) (Part -5 Price Schedule of Bid Document).</p> <p>(d) The payment procedure has also been indicated in each Price Schedule (B-1 to B-16) and payment will be done accordingly.</p> <p>(e) The description of items of work in the Schedules does not limit in any way the Contractor's obligations under the Contract to provide all the Works described in the Employer's Requirements.</p> <p>(f) The Bidder shall compute, and supply to the Engineer, the total quantities (in units as described in the Price Schedule) of various items of works and components on the basis of detailed design reviewed/approved by the Engineer.</p> <p>(g) The Contractor shall base its claim for interim payment for each stage for various items of the work on completion till the end of the month for which the payment is claimed, supported with documents and an up-dated programme in accordance with the Employer's Requirements.</p> <p>(h) The weightage/percentage assigned to cost centre will apply only to the Contract Price stated in the Contract Agreement. It shall not apply to any additions or subtractions to the Contract Price arising from the issue of any Variation Orders. Each Variation Order shall specify the manner of interim payments and completion of stages for it.</p>
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Sub Clause 14.6 Issue of Interim Payment Certificates	In the 1 st Paragraph, 2 nd line, '28' is replaced with '15'.
Sub Clause 14.7 Payment	In the Sub Clause 14.7(b), 1 st line, '56' is replaced with '30'.
Sub Clause 14.9 Payment of Retention Money	<p>Delete the contents of first paragraph of this clause and replace with the following:</p> <p>A Retention amounting to 10 (ten) per cent of the value of the work done shall be deducted by the Engineer in the first and following Interim Payment Certificates, until the amount so retained including Rs. 1 Cr. of Bid Security retained and adjusted as Retention Money reaches a limit of Retention Money of 5 (five) percent of the Contract Price. When the Retention Money with the Employer has reached 60% of the limit of the Retention Money, the Contractor may, at his option, replace 50% of limit of Retention Money with an unconditional bank guarantee from the Bank, and valid for the period up to the end of the Defect Notification Period. After the issue of taking over certificate for the complete works, the balance amount of Retention Money can also be replaced with an unconditional Bank Guarantee from the Bank and valid for the period up to the end of Defect Notification Period.</p>
Sub-Clause 15.2 Termination by Employer	Delete the words “the whole of” in Sub-Clause (d) and Substitute the deletion by the following words “ more than the percentage specified in clause 4.4”
Sub-Clause 15.3 Valuation at Date of Termination	<p>Delete the last line of this Sub-clause “work executed Contract” and substitute by the following:</p> <p>Work completed upto any defined stage of payment in accordance with the Contract. Extent of damages to the Employer due to termination under sub-clause 15.2 has been fixed as (1) Forfeiture of Performance Security (2) Forfeiture of Retention money/Security Deposit (3) five percent (5%) of the cost of the balance work at the date of termination. The Parties hereby agree that the rate of these damages agreed in this is a reasonable pre-determined amount, and that these damages are not by way of penalty.</p>
Sub-Clause 15.4 Payment after Termination	<p>Delete the Sub-Clause 15.4 and substitute the following:</p> <p>After a notice of termination under Sub-Clause 15.2 [<i>Termination by Employer</i>] has taken effect, the Employer may:</p> <p>(a) proceed in accordance with Sub-Clause 2.5 [<i>Employer's Claims</i>],</p>

	<p>(b) withhold further payments to the Contractor until the actions in accordance with sub-paragraphs (c), and (d) are completed.</p> <p>(c) encash and forfeit the whole of the amounts of Performance Security and Retention Money and take possession of Plant and Materials delivered to Site, for which payment has been made by the Employer.</p> <p>(d) encash and appropriate the bank guarantee for the Advance Payment to recover the outstanding amount, if any, of the Advance Payment</p> <p>(e) pay to the Contractor any sums due under Sub-clause 15.3 [Valuation at Termination], after the full amounts of the Performance Security and Retention Money/Security Deposit and five percent(5%) of the cost of the balance work (as per clause 15.3) and any other amount due from the Contractor have been received by the Employer. Any outstanding amounts against the Contractor shall immediately become due and payable by the Contractor to the Employer.</p>
<p>Sub-Clause 16.2 Termination by the Contractor</p>	<p>Delete the subclause 16.2 (d) Delete the following words from 16.2 (e) “ of Sub-clause 1.7 [Assignment]”</p>
<p>Sub-Clause 17.3 Employer’s Risks</p>	<p>Sub-paragraph (h) - Delete</p>
<p>Sub-clause 18.1 General Requirement of Insurance</p>	<p>Sub –paragraph 7 (b) Modify as following “copies of the policies for the insurances described in Sub-clause 18.2 (Insurance for works and Contractor’s Equipment), Sub Clause 18.3 (Insurance against Injury to Person and Damage to Property) and Sub Clause 18.5 (Professional Indemnity Insurance)”.</p>
<p>Sub-Clause 18.2 Insurance of Works and Contractor’s Equipment</p>	<p>Sub-paragraph 4 (d) Delete the words “(c), (g) and (h)”, and substitute by the words “(c) and (g)”.</p>
<p>Sub-Clause 18.3 Insurance Against Injury to Persons and Damage to Property</p>	<p>Add the following at the end of this Sub-Clause: The insurance policy shall include a cross liability clause such that the insurance shall apply to the Employer, the Contractor and Subcontractors (wherever applicable) as separately insured.</p> <p>The Employer shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Sub-Contractor (wherever applicable), other than death or injury resulting from any act or default of the Employer, his agents or employees. The Contractor shall indemnify and keep indemnified the Employer against all such damages and</p>

	<p>compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.</p>
<p>Sub-Clause 18.5 Professional Indemnity Insurance</p>	<p>Add new sub-clause</p> <p>The Contractor shall provide evidence of professional indemnity insurance carried by its Designer for the Works. The professional indemnity insurance shall cover the risk of professional negligence in the design of the Works. This insurance shall be for a limit of not less than that set down in the Appendix to Tender and shall be maintained in full force and effect from the Commencement Date of the Works until 03 years after the date of completion of the Defect Notification period.</p> <p>The Engineer will not issue any payment certificate until the Contractor has provided evidence of this insurance and its period of effectiveness.</p>
<p>Sub Clause 20.6 Arbitration</p>	<p>Delete Sub-paragraph 1 (a, b & c) and replace as under –</p> <p>Unless settled amicably, any dispute in respect of which the DAB’s decision (if any) has not become final and binding shall be finally decided by reference to arbitration by a Board of Arbitrators appointed in accordance with sub-clause (i) below. Such arbitration shall be held in accordance with the Indian Arbitration and Reconciliation Act, 1996. The seat of such arbitration shall be New Delhi, and the language of arbitration proceedings shall be English.</p> <p>i) The employer shall provide a panel of five (5) arbitrators to the contractor. The employer at the time of offering the panel of Arbitrator(s) to be appointed as Arbitrator shall also supply the information with regard to the qualification of the said Arbitrators nominated in the panel along with their professional experience, phone no. and address to the contractor. The contractor shall have to choose one Arbitrator from the panel of five. The employer shall also choose one Arbitrator from this panel of five.</p> <p>The third arbitrator shall be appointed by the two arbitrators from the panel of five so selected and shall act as presiding arbitrator. In case of failure of the two Arbitrators, appointed by the parties, to reach upon a consensus within a period of</p>

	<p>28 days from their appointment as Arbitrators, the Presiding Arbitrator shall then be appointed by MD/DFCCIL. Arbitrator's Fee and other admissible expenses shall be as per extant DFCCIL instructions.</p>
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APPENDIX TO TENDER

Item	GC Sub- Clause	Data															
Employer	1.1.2.2, 1.3	Dedicated Freight Corridor Corporation of India Limited, 5 th Floor Pragati Maidan, Metro Station Building Complex New Delhi, India – 110001															
Contractor	1.1.2.3 & 1.3	To be filled in															
Engineer	1.1.2.4, 1.3 & 3.1	to be filled in															
Time for Completion	1.1.3.3	As per Sub-clause 8.2 of GC															
Defects Notification Period	1.1.3.7	Defect Notification Period for the Works shall be One year from the date of Taking Over of the Works (Sub-clause 10.1) and issue of Taking-Over Certificate by the Engineer.															
Communications	1.3	By fax and e-mails but confirmed in hard paper copy within 48 hours.															
Law and Language	1.4	Indian Laws & English Language															
Right of Access to the Site	2.1	<p>The Employer shall give Right to Access to site to the Contractor as per the following schedule subject to the Contractor providing Performance Security in terms of Sub- Clause 4.2 of General Conditions of Contract.</p> <table border="1"> <thead> <tr> <th>SN</th> <th>Period after Commencement Date in days</th> <th>Cumulative percentage of site to be handed over for work with respect to total length</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>90</td> <td>20%</td> </tr> <tr> <td>2</td> <td>180</td> <td>30%</td> </tr> <tr> <td>3</td> <td>360</td> <td>60%</td> </tr> <tr> <td>4</td> <td>600</td> <td>100%</td> </tr> </tbody> </table> <p>The above schedule is indicative. The Employer shall give the Contractor Right of Access to and possession of the site progressively to enable the contractor to complete the work as per schedule. The right and possession may be not be exclusive to the Contractor. The contractor shall draw / modify the schedule for completion of works according to progressive possession / right of such sites.</p> <p>If there is any delay in handing over of site/s, Contractor shall be entitled to only reasonable extension of time and no other claims whatsoever shall be paid or entertained on this account.</p>	SN	Period after Commencement Date in days	Cumulative percentage of site to be handed over for work with respect to total length	1	90	20%	2	180	30%	3	360	60%	4	600	100%
SN	Period after Commencement Date in days	Cumulative percentage of site to be handed over for work with respect to total length															
1	90	20%															
2	180	30%															
3	360	60%															
4	600	100%															
Amount of Performance Security	4.2	(Five) 05 Percent of the Accepted Contract Amount, in INR currency.															
General Design Obligation	5.1	56 days.															
Normal working hours	6.5	(Eight) 8 hours shift in a day and total (Forty eight) 48 hours in a week.															
Amount of Delay Damages	8.7	For Milestone 1(a) - (Rupees Twenty Five thousand) Rs.25,000/- per day of delay. For Milestone 1(b) - (Rupees Twenty Five thousand) Rs.25,000/- per day of delay. For Milestone 1(c) - (Rupees Twenty Five thousand) Rs.25,000/- per day of delay.															

Bid Doc Track Works MGS-DGO&KWDN-CPBH-SEBN

		For Milestone 2 - ` (Rupees Twenty Five thousand) Rs.25,000/- per day of delay. For Milestone 3 - ` (Rupees Twenty Five thousand) Rs.25,000/- per day of delay.
Limit of Delay Damages for the whole of the Works	8.7	(Five) 05 per cent of the Accepted Contract Amount in INR ` Indian currency.
Provisional Sum	13.5	No Provisional Sum is payable under this Contract.
Advance Payment	14.2	Delete Paragraph 1 and substitute by the following : Mobilization Advance: The Employer shall pay on written request by the Contractor a Mobilization Advance up to (Ten) 10 per cent of the Contract Price at an interest rate of 4.5% per annum above the base rate of State Bank of India as effective on the date of approval of payment of mobilization advance by the Competent Authority, compounded yearly. The Mobilization Advance shall be released in two installments as under: (a) Upto (Five) 5 per cent: On Submission of Performance Security and commencement of mobilization process; and (b) Upto (Five) 5 per cent: On Submission of the Preliminary Designs and details of utilisation of initial Mobilization Advance of 5% to the satisfaction of Engineer. The Advance Payment will be released on submission of unconditional Bank Guarantee for an amount equivalent to 110% of the component of the advance payment requested by the Contractor. Note: The Contractor shall have a one time option to reduce the Bank Guarantee for the mobilization advance by the amount already recovered, once the 50% of mobilization advance has been recovered.
Percentage of Retention	14.3 (c)	(Ten) 10 per cent
Limit of Retention Money	14.3 (c)	(Five) 5 per cent of the Contract Price
Payment	14.7	As per Sub-clause 13.4 of GC above
Delayed Payment	14.8	These financing charges shall be calculated at an annual rate of 8% (Eight percent) of Indian Currency.
Currencies of Payment	14.15	Currency of Payment shall be INR.
Evidence of Insurance	18.1 (a), 18.5	Before Commencement Date of Works
Relevant Policies	18.1(b)	Within 84 days of Commencement Date of Works
Insurance of Works and Contractors Equipment	18.2	Full Replacement Cost+15%; The Insurance Policy to cover the Employer's Risk as per Sub-Clause 17.3 of GC shall be taken by the Employer.
Minimum amount of third party Insurance	18.3	Rs.50 lakh for any one occurrence.
Professional Indemnity Insurance	18.5	Rs.50 lakh

Bid Doc Track Works MGS-DGO&KWDN-CPBH-SEBN

Appointment of Dispute Adjudication Board	20.2	The DAB shall comprise of one Sole member and sole member shall be appointed by Managing Director/DFCCIL. List of DAB members will be provided to the contractor by the Employer within three months of commencement date.
Failure to Agree Dispute Adjudication Board	20.3 (d)	Managing Director/DFCCIL

CONTRACT FORMS

**Section VIII
Contract Forms (CF)**

Table of Forms

CF No	Sub- Clause	Description
1	1.1.1.3	Letter of Acceptance
2	1.6	Form of Contract Agreement
3	4.2	Form of Performance Security (Guarantee) By Bank
4	14.2	Mobilization Advance Payment Guarantee Form
5	14.3, 14.9	Form of Retention Money Guarantee
6	5.1, 18.5	Form of Designer's Warranty
7	18	Insurance Requirement

LETTER OF ACCEPTANCE
(Sub-Clause 1.1.1.3)

To

Date:.....

Dear Sir

Project: **Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor.**

To,

This is to notify you that your bid proposal dated.....for execution of the above Project for the firm Contract Price of (INR) and as corrected and modified in accordance with the bidding documents, is hereby accepted by DFCCIL.

You are requested to furnish the performance security as required by the contract and bidding document.

You are hereby instructed to proceed and prepare your mobilization for the execution of the said Contract works. Contract Agreement documents will be prepared and forwarded to you for signature.

Yours truly,

For – Dedicated Freight Corridor Corporation of India Limited

(_____)
Name:.....

Signature

Stamp

CONTRACT AGREEMENT
(Sub-Clause 1.6 of General Conditions of Contract)

THIS AGREEMENT (“Agreement”) is made at New Delhi on the _____ day of _____, _____,
BETWEEN

(1) Dedicated Freight Corridor Corporation of India Limited, incorporated under the laws of India and having its principal place of business at 5th Floor, Pragati Maidan Metro Station Building Complex, New Delhi, India – 110001 (hereinafter called ‘**the Employer**’), and -----
-----, a company/corporation/JV incorporated under the laws of -----
-----having its principal place of business at ----- (hereinafter called ‘**the Contractor**’).

WHEREAS the Employer desires to engage the Contractor to **Design, Supply and Construction of Track & Track related works including Testing & Commissioning for double track electrified railway line on Design Build Lump Sum Basis from Mughalsarai to New Sonnagar and Chirailapathu (excluding New Karwandiya – New Durgauti Section) of Eastern Dedicated Freight Corridor contract package** (“the Works”), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

**Article 1.
Contract
Documents**

1.1 Contract Documents (Reference GC Clause 1.5)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement and the Appendices hereto
- (b) Letter of Acceptance
- (c) Letter of Bid and Price Schedules submitted by the Contractor
- (d) Particular Conditions & Appendix to Tender
- (e) General Conditions
- (f) Employer’s Requirements
- (g) Contractors Technical & Financial Proposal;
- (h) Information furnished in Part 4 of Bidding document
- (i) Other completed bidding forms submitted with the Bid; and
- (j) Any other documents forming part of the Employer’s requirements and Bidding documents.

1.2 Definitions (Reference GC Clause 1 and Employer’s Requirement)

Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the General Conditions & Employer’s Requirements.

**Article 2.
Contract Price and
Terms of Payment**

2.1 Contract Price (Reference GC Clause 14.1)
The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations pursuant to the Contract. The Contract Price shall be as specified in Schedule A Price Schedule, or such other sums as may be determined in accordance with the terms and conditions of the Contract.

2.2 Terms of Payment (Reference GC Clause 14.4)
The terms and procedures of payment according to which the Employer will reimburse the Contractor are given in Terms and Procedures of Payment subject to such additions thereto or deductions there from as may be made under the provisions of the contract at the times and in the manner prescribed by the Contract.
The amount payable under Schedule – B (B1 to B16) is adjusted in accordance with GC 13.8 or with any of the other terms of the Contract.

**Article 3.
Commencement
Date**

3.1 Commencement Date (Reference GC Clause 1.1.3.2)
42 days from the date of issue of Letter of Acceptance or as indicated in the Letter of acceptance.

**Article 4.
Time for
Completion**

4.1 Completion (Reference Clause 1.1.3 GC & ---- Employer’s Requirements)
In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the contractor hereby covenants with the Employer to execute and complete the Works by **730** days and remedy any defects therein in conformity in all respects with the provisions of the Contract.

**Article 5.
Communications**

5.1 The address of the Employer for notice purposes, pursuant to GC 1.3 is:
The Director Project & Planning,
Dedicated Freight Corridor Corporation,
5th Floor Pragati Maidan, Metro Station Building Complex
New Delhi, India – 110001

5.2 The address of the Contractor for notice purposes, pursuant to GC 1.3 is: _____.

**Article 6.
Obligations of the
Contractor**

6.1 Contractor’s General Obligation GC 4.1
The Contractor shall ensure full compliance with the laws of India including taxation and other fiscal laws, with regard to the Contract and the Works shall be solely responsible for the same. The Contractor shall submit copies of acknowledgements evidencing filing of returns every year and shall keep the Employer fully indemnified against liability of levies, custom duties, tax, interest, penalty etc. of the Contractor in respect thereof, which may arise.

IN WITNESS WHEREOF the parties hereto have caused their respective Common Seals to be hereunto affixed/ (or have hereunto set their respective hands and seals) the day and year first above written.

For and on behalf of the Contractor

For and on behalf of the Employer

Signature of the authorized official
Name of the official

Signature of the authorized official
Name of the official

Stamp/seal of the Contractor

Stamp/Seal of the Employer

SIGNED, SEALED AND DELIVERED

By the said

By the said

_____ Name

_____ Name

_____ on behalf of the Contractor in the presence of:

_____ on behalf of the Employer in the presence of:

Witness _____

Witness _____

Name _____

Name _____

Address _____

Address _____

SAMPLE FORM OF PERFORMANCE SECURITY (GURANTEE) BY BANK
(Sub-Clause 4.2)

This deed of guarantee made this day of Between Bank of (hereinafter called the “**Bank**”) of the one part, and Dedicated Freight Corridor Corporation of India Limited called the “**Employer**” of the other part.

Whereas Dedicated Freight Corridor Corporation of India Limited has awarded the contract for (Hereinafter called the Contract) to (Hereinafter called the **Contractor**). (Name of the Contractor)

AND WHEREAS the Contractor is bound by the said Contract to submit to the Employer a Performance Security for a total amount of Rs..... (Amount in figures and words). Now we the undersigned(Name of the Bank) being fully authorized to sign and to incur obligations for and on behalf of and in the name of(full name of the Bank), hereby declare that the said bank will guarantee the Employer the full amount of Rs.(Amount in figures and words).

After the Contractor has signed the aforementioned Contract with the Employer, the Bank is engaged to pay the Employer, any amount up to and inclusive of the aforementioned full amount of the Performance Security upon written order from the Employer to indemnify the Employer for any liability of damage resulting from any defects or shortcomings of the Contractor or the debts he may have incurred to any parties involved in the Works under the Contract mentioned above, whether these defects or shortcomings or debts are actual or estimated or expected. The Bank will deliver the money required by the Employer immediately on demand without delay and demur and without reference to the Contractor and without the necessity of a previous notice or of judicial; or administrative procedures and without it being necessary to prove to the Bank the liability or damages resulting from any defects or shortcomings or debts of the Contractor. The Bank shall pay to the Employer any money so demanded notwithstanding any dispute/disputes raised by the contractor in any suit or proceedings pending before any court, Tribunal or Arbitrator/s relating thereto and the liability under this guarantee shall be absolute and unequivocal.

This guarantee is valid till(the initial period for which this Guarantee will be valid must be for at **least 6 months (six months) longer than the anticipated expiry date of Defects Notification Period as stated in Clause 1.1.3.7 of the Appendix to Tender.**

At any time during the period in which this guarantee is still valid, if the Employer agrees to grant a time extension to the Contractor or if the Contractor fails to complete the Works within the time of completion as stated in the Contract, or fails to discharge himself of the liability or damages or debts as stated in the Contract, or fails to discharge himself of the liability or damages or debts as stated in the Contract, it is understood that the Bank will extend this guarantee under the same conditions for the required time on demand by the Employer and at the cost of the Contractor.

The Guarantee hereinbefore contained shall not be affected by any change in the Constitution of the Bank or of the Contractor.

The neglect or forbearance of the Employer in enforcement of payment of any moneys, the payment whereof is intended to be hereby secured or the giving of time by the Employer for the payment hereof shall in no way relieve the Bank of their liability under this deed.

The expressions “**the Employer**”, “**the Bank**” and “**the Contractor**” hereinbefore used shall include their respective successors and assigns.

Notwithstanding anything contained herein:

Our liability under this bank Guarantee shall not exceed Rs.....(Rupees).

This bank guarantee shall be valid up to

We are liable to pay the guarantee amount or part thereof under this bank Guarantee only and only if you serve upon us a written claim or demand on or before.....

In witness whereof I/We of the Bank have signed and sealed this guarantee on the day of (Month) being herewith duly authorized.

For and on behalf of

Thebank

Signature of Authorized bank Official

Name

Designation

Stamp/seal of the Bank:.....

Signed, sealed and delivered

For and on behalf of the

Bank of the above

Name _____ in

The presence of :

Witness 1.

Signature

Name

Address

Witness 2.

Signature

Name

Address

Mobilization Advance Payment Guarantee Form

(Sub-Clause 14.2)

Bank guarantee made on this Between (hereinafter called “**the Bank**”) of the One Part and Dedicated Freight Corridor Corporation of India Limited. (hereinafter called “**the Employer**”) of the other Part. WHEREAS Dedicated Freight Corridor Corporation of India Limited has awarded the Contract no..... for “.....” (hereinafter called “**the Contract**”) to Having its registered office at (hereinafter called “**the Contractor**”).

AND WHEREAS vide Clause 14.2 of the General Conditions of Contract, Mobilization Advance up to ---% (--- percent) of the original contract value of Rs..... is payable to the contractor against Bank Guarantees, the Contractor hereby applies for Mobilization Advance of --% (--- percent) amounting to Rs...../- (Rupees.....) of the Contract Price, as per Appendix to Tender

AND WHEREAS this Bank Guarantee is for Rs...../- (Rupees.....) being the 1st one of the two Bank Guarantees, totalling to the above Mobilization Advance amount of Rs...../-.

Now, we the undersigned, Bank of, being fully authorized to sign and to incur obligations for and on behalf of and in the name of Bank ofhereby declare that the said Bank will guarantee the Employer the full amount of Rs./- (Rupees.....) as stated above.

We, Bank of, do hereby unconditionally, irrevocably and without demur guarantee and undertake to pay the Employer immediately on demand any or all money payable by the Contractor to the extent of Rs./- (Rupees.....) without any demur, reservation, context, recourse or protest and/or without any reference to the Contractor. Any such demand made by the Employer on the Bank shall be conclusive and binding notwithstanding any difference between the Employer and the Contractor on any dispute pending before any court, Tribunal, Arbitrator or any other authority. We agree that the guarantee herein contained shall be irrevocable and shall continue to be enforceable till the Employer discharges this guarantee.

This guarantee is valid till

At any time during the period in which this guarantee still valid of the Contractor fails to fulfill its obligation under the Contract, it is understood that the Bank will extend this guarantee under the same condition for the required time on demand by the Employer at the cost of the Contractor.

The Guarantee hereinbefore contained shall not be affected by any change in the constitution of the Bank or of the Contractor.

The neglect or forbearance of the Employer in enforcement of payment of any money, the payment whereof is intended to be hereby secured or the giving of time by the Employer for the payment hereof shall in no way relieve the Bank of their liability under this Deed.

The expressions “the Employer”, “the Bank” and “the Contractor” hereinbefore used shall include their respective successors and assigns.

Notwithstanding anything contained herein:

Our liability under this Bank Guarantee shall not exceed Rs...../- (Rupees.....)

this bank Guarantee shall be valid up to.....

We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before(date of expiry of Guarantee).

In witness whereof we of the Bank have signed and sealed this Guarantee on theday ofbeing herewith duly authorized.

For and on behalf of the Bank of.....

Signature of Authorized Bank Official

Name _____

Designation _____

Stamp/Seal of the bank _____

Signed, sealed and delivered for and on
Behalf of the bank by the above named
..... in the presence of

Witness 1

Signature _____

Name _____

Address _____

Witness 2

Signature _____

Name _____

Address _____

FORM OF RETENTION MONEY GUARANTEE

(Sub-Clause 14.3 c, 14.9)

Brief description of Contract

Name and address of Beneficiary

_____ (whom the Contract defines as the Employer).

We have been informed that _____ (hereinafter called the “Principal”) is your Contractor under such Contract and wishes to receive early payment of [part of] the retention money, for which the Contract requires him to obtain a guarantee.

At the request of the Principal, we (*name of bank*) _____ hereby irrevocably undertake to pay you, the Beneficiary / Employer, any sum or sums not exceeding in total the amount of _____ (the “Guaranteed Amount”, say: _____) upon receipt by us of your demand in writing and your written statement stating:

- a) that the Principal has failed to carry out his obligation(s) to rectify certain defect(s) for which he is responsible under the Contract, and
- b) the nature of such defect(s).
- c) That the Principal has failed to carry out his obligation(s) for which he is responsible under the Contract,

At any time, our liability under this guarantee shall not exceed the total amount of retention money released to the Principal by you, as evidenced by your notices issued under Sub-Clause 2.5 and 14.9 of the Conditions of the Contract with a copy being passed to us.

Any demand for payment must contain your signature(s) which must be authenticated by your Bankers. The authenticated demand and statement must be received by us at this office on or before (*the date 56 days after the expected expiry of the Defects Notification Period for the Works*) _____ (the “**Expiry Date**”), when this guarantee shall expire and shall be returned to us.

We have been informed that the Beneficiary may require the Principal to extend this guarantee if the performance certificate under the Contract has not been issued by the date 28 days prior to such Expiry Date. We undertake to pay you such Guaranteed Amount upon receipt by us, within such period 28 days, of your demand in writing and your written statement that the performance certificate has not been issued, for reasons attributable to the Principal, and that this guarantee has not been extended.

This guarantee shall be governed by the laws of Republic of India.

Date

Signature(s)

Designer pursuant thereto. The Designer's right to terminate the Consultancy Agreement or to treat the same as having been repudiated or to discontinue the performance thereof shall cease if, within such period of notice and subject to Clause 4, the Employer shall give notice in writing to the Designer requiring the Designer to accept the instructions of the Employer or his appointee to the exclusion of the Contractor in respect of the carrying out and completion of the Contract Works upon the terms and conditions of the Consultancy Agreement.

4 Any notice given by the Employer under Clause 2 or 3 above shall state that the Employer or his appointee accepts liability for payment of the fees payable to the Designer under the Consultancy Agreement and for performance of the Contractor's obligations under the Consultancy Agreement, including payment of any fees outstanding at the date of such notice.

5 The Employer shall be entitled to assign the benefit of this Warranty at any time without the consent of the Designer being required.

6 All documents arising out of or in connection with this Warranty shall be served:

- (1) upon the Employer at [] marked for the attention of [];
- (2) upon the Designer at [].

7 The Employer and the Designer may change their respective nominated addresses for service of documents to another address in India but only by prior written notice to each other. All demands and notices must be in writing.

8 This Warranty shall be governed by and construed according to the laws for the time being in force in India.

9 (i) In the event that the Contract or the employment of the Contractor under the Contract is terminated for any reason whatsoever and if so requested by the Employer in writing within 21 days of such termination, the Designer shall carry out and complete his obligations under this Warranty and shall enter into a novation agreement with the Employer and the Contractor in which the Designer will undertake inter alia to perform the Design and be bound by its terms and conditions as if the Employer had originally been named as a contracting party in place of the Contractor. The said novation agreement will be in such form as the Employer may reasonably require.

(ii) In the event that the Employer does not require the Designer to enter into a novation agreement as required by Sub-clause 9 (i), the Designer shall have no claim whatsoever against the Employer for any damage, loss or expense howsoever arising out of or in connection with this Warranty.

Except to the extent (if any) expressly permitted by the Consultancy Agreement, the Designer shall not sub-contract any of the Designer's obligations under the Consultancy Agreement without the prior written consent of the Engineer.

10 Without prejudice to its obligations under this Warranty, the Designer shall maintain with well established underwriters of repute and on terms and conditions reasonably acceptable to the Employer, professional indemnity insurance (as per sub-clause 18.5 of the Particular Conditions of Contract) in respect of the Designer and its sub-consultants for Indian Rupees Fifty lakhs (50,00,000 Rupees) in relation to his design of the Works for any one occurrence or series of occurrences arising out of any one event from the date of notification of acceptance until 3 years after the issue of Performance Certificate for the whole of works. The Designer shall immediately inform the Employer if for any reason professional indemnity insurance is not maintained in accordance with this Warranty or becomes void or unenforceable.

- 11 Insofar as the patent, copyright or other intellectual property rights in any Design Data (as defined in the Contract), plans, calculations, drawings, documents, materials, computer software, know-how and information relating to the Works shall be vested in the Designer, the Designer grants to the Employer his successors and assigns a royalty-free, non-exclusive and irrevocable license (carrying the right to grant sub-licenses) to use and reproduce any of the works designs or inventions incorporated and referred to in such documents or materials and any such know-how and information for all purposes relating to the Works (including without limitation the design, construction, reconstruction, completion, reinstatement, extension, repair and operation of the Works). To the extent beneficial ownership of any such patent, copyright or other intellectual property right is vested in anyone other than the Designer or the Contractor, the Designer shall use his best endeavors to procure that the beneficial owner thereof shall grant a like license to the Employer. Any such license granted shall not be determined if the Designer shall for any reason cease to be employed in connection with the Works.
- 12 (i) Any dispute or difference of any kind whatsoever between the Employer and the Designer arising under out of or in connection with this Warranty shall be referred to arbitration in accordance with Clause 20 of GC "Dispute" as defined in the Contract shall be deemed to include any such dispute or difference between the Employer and the Designer.
- (ii) In the event that the Employer is of the opinion that the issues in such a dispute or difference will or may touch upon or concern a dispute or difference arising under out of or in connection with the Contract ("the Contract Dispute") then provided that an Arbitrator has not already been appointed, the Employer may by notice in writing to the Designer require and the Designer shall be deemed to have consented to the referral of such dispute or difference to the Arbitrator to whom the Contract Dispute has been or will be referred.
- (iii) Save as expressly otherwise provided, the Arbitrator shall have full power to open up, review and revise any decision, opinion, instruction, notice, order, direction, withholding of approval or consent, statement of objection, determination, certificate, assessment or valuation by the Engineer or the Contractor, relating to the dispute or difference.
- (iv) This Warranty shall be governed by and construed according to the laws for the time being in force in India and the Designer agrees to submit to the jurisdiction of the courts of Delhi/New Delhi.

IN WITNESS whereof this Warranty has been executed as a deed on the date first before written.

THE COMMON SEAL of
[Designer / Contractor]
was affixed hereto in
the presence of:-

Insurance Requirements
[Sub Clause- 18]

Insurance to be taken by the Contractor

In accordance with the provision of GC Clause 18, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

(A) Insurance of Works and Contractor’s equipments-

In accordance with the provision of sub clause 18.2 contractor shall insure to cover loss or damage to works, plants, materials and contractor’s documents occurring prior to completion of the facility until the date of issue of the performance certificate.

Amount (in currency (ies)	Deductible limits ((in currency (ies)	Parties insured (names)	From	To
As per GCC/ PCC/Appendix to Tender	-	Contractor and Employer	Commencement Date	Issue of Performance certificate

(B) Insurance against Injuries to Person and Damage to property

Covering any loss, damage, death or bodily injuries which may occur to any physical property or to any person covering loss and damage to Employers property and Employer’s personal.

Amount (in currency (ies)	Deductible limits ((in currency (ies)	Parties insured (names)	From	To
As per GCC/ PCC/Appendix to Tender	-	Contractor and Employer	Commencement Date	Issue of Performance certificate

(C) Automobile liability Insurance

Covering use of all vehicle used by the contractors or its sub contractors (whether or not owned by them) in connection with the design, construction testing and commissioning of the facilities under the contract in accordance with statutory requirements.

(D) Workers’ Compensation

In accordance with the statutory requirements applicable in any country where the facilities or any part thereof is executed.

(E) Professional Indemnity Insurance-

To cover professional negligence in the design of the Works.

Amount (in currency (ies))	Deductible limits ((in currency (ies))	Parties insured (names)	From (Place)	To (Place)
As per GCC/PCC/Appendix to Tender	-	Contractor and Employer	Commencement Date	3 Years beyond defect liability period

Insurance to be taken by the Employer - Nil

PART – 4

Reference Documents

1. Site Data

- i. Formation alignment (Plan & Profile),
- ii. Yard plans,
- iii. Location of LCs.

Note: Details of Bridges (Major, Minor, RFO, LCs etc.) are given in the Plan & Profile.

PART – 5

Price Schedules (See Separate Booklet)