

BIDDING DOCUMENTS

(EPC Contract following One Envelope Bidding Process with e-Procurement)

for

Procurement of

Contract

For the work of

**Development & Upgradation of Banar - Bhopalgarh - Kuchera
Highway (SH-63) km 0 to 126.500 under RSHDP-II
(Package No WB/RSHDP II/EPC/01)**

ICB No: RSHDP II/EPC/01

**Employer: Additional Chief Engineer (PPP),
Public Works Department Rajasthan, Jaipur
(Government of Rajasthan)**

Country: India

Issued on: November, 2017

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PART 1-BIDDING PROCEDURES

Section I. Instructions to Bidders

A. General

1. Scope of Bid

- 1.1 In connection with the Invitation for Bids **specified in the Bid Data Sheet (BDS)**, the Employer, **as specified in the BDS**, issues these Bidding Documents for the procurement of Works as specified in Section VII, Works Requirements. The name, identification, and number of lots (contracts) of this International Competitive Bidding (ICB) process are **provided in the BDS**.
- 1.2 Throughout these Bidding Documents:
 - (a) the term “in writing” means communicated in written form and delivered against receipt;
 - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - (c) “day” means calendar day.

2. Source of Funds

- 2.1 The Borrower or Recipient (hereinafter called “Borrower”) **specified in the BDS** has received or has applied for financing (hereinafter called “funds”) from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called “the Bank”) in an amount **specified in the BDS**, toward the project named **in the BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which these Bidding Documents are issued.
- 2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank, and will be subject, in all respects, to the terms and conditions of the Loan (or other financing) Agreement. The Loan (or financing) Agreement prohibits a withdrawal from the Loan (or other financing) account for the purpose of any payment to persons or entities, or for any import of goods, if such payment or import, to the knowledge of the Bank, is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan

(or other financing).

3. Corrupt and Fraudulent Practices

- 3.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section VI.
- 3.2 In further pursuance of this policy, Bidders shall permit and shall cause their agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit the Bank to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.

4. Eligible Bidders

- 4.1 A Bidder may be a firm that is a private entity, or a government-owned entity—subject to ITB 4.5—or any combination of such entities in the form of a joint venture (JV), under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution. The joint venture agreement should be registered in the place **specified in BDS** so as to be legally valid and binding on partners. **Unless specified in the BDS**, there is no limit on the number of members in a JV.
- 4.2 A Bidder shall not have a conflict of interest. Any Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder:
 - (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
 - (b) receives or has received any direct or indirect subsidy from another Bidder; or
 - (c) has the same legal representative as another Bidder; or
 - (d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding

process; or

- (e) participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which such Bidder is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or
- (f) or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the bid; or
- (g) or any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the Contract implementation;
- (h) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the **BDS ITB 2.1** that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; or
- (i) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding documents or specifications of the contract, and/or the bid evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the procurement process and execution of the contract.

4.3 A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.7. A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.

- 4.4 A Bidder that has been sanctioned by the Bank in accordance with the above ITB 3.1, including in accordance with the Bank's Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants ("Anti-Corruption Guidelines"), shall be ineligible to be prequalified for, bid for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address **specified in the BDS**.
- 4.5 Bidders that are Government-owned enterprises or institutions in the Employer's Country may participate only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not dependent agencies of the Employer. To be eligible, a government-owned enterprise or institution shall establish to the Bank's satisfaction, through all relevant documents, including its Charter and other information the Bank may request, that it: (i) is a legal entity separate from the government (ii) does not currently receive substantial subsidies or budget support; (iii) operates like any commercial enterprise, and, inter alia, is not obliged to pass on its surplus to the government, can acquire rights and liabilities, borrow funds and be liable for repayment of its debts, and can be declared bankrupt; and (iv) is not bidding for a contract to be awarded by the department or agency of the government which under their applicable laws or regulations is the reporting or supervisory authority of the enterprise or has the ability to exercise influence or control over the enterprise or institution.
- 4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the operation of a Bid-Securing Declaration.
- 4.7 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of

goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.

4.8 This bidding is open only to prequalified Bidders unless **specified in the BDS.**

4.9 A Bidder shall provide such evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.

**5. Eligible Materials,
Equipment, and
Services**

5.1 The materials, equipment and services to be supplied under the Contract and financed by the Bank may have their origin in any country subject to the restrictions specified in Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

B. Contents of Bidding Documents

**6. Sections of Bidding
Documents**

6.1 The Bidding Documents consist of Parts 1, 2, and 3, which include all the Sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB 8.

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
- Section V. Eligible Countries
- Section VI. Bank Policy-Corrupt and Fraudulent Practices

PART 2 Works Requirements

- Section VII. Works Requirements

PART 3 Conditions of Contract and Contract Forms

Section VIII. General Conditions (GC)

Section IX. Particular Conditions (PC)

Section X. Annex to the Particular Conditions - Contract

Forms

- 6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Documents.
- 6.3 The Bid Document shall be available online. In case fee is charged, the mode and process of payment of fee shall be **specified in BDS**.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its bid all information and documentation as is required by the Bidding Documents.

7. Clarification of Bidding Documents, Site Visit, Pre-Bid Meeting

- 7.1 A Bidder requiring any clarification of the Bidding Documents shall notify the Employer through the e-procurement portal **specified in the BDS** or raise its enquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. Clarifications requested through any other mode shall not be considered by the Employer. The Employer's response to the clarification, including a description of the inquiry but without identifying its source will be made available through the e-procurement portal provided that such request is uploaded no later than fourteen (14) days prior to the deadline for submission of bids. Should the clarification result in changes to the essential elements of the Bidding Documents, the Employer shall amend the Bidding Documents in the e-procurement portal following the procedure under ITB 8 and ITB 22.2.
- 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

- 7.4 If so specified in the **BDS**, the Bidder's designated representative is invited to attend a pre-bid meeting and/or a Site of Works visit. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested to submit any questions through e-procurement portal, not later than one week before the meeting. Clarifications requested through any other mode shall not be considered by the Employer.
- 7.6 Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by Bidders, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be posted in the e-procurement portal. Any modification to the Bidding Documents 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 in the e-procurement portal pursuant to ITB 8 and not through the minutes of the pre-bid meeting. It is the bidder's responsibility to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding Documents

- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Documents by issuing addenda. The addendum will appear on the e-procurement portal under "Latest Corrigendum" and email notification is also automatically sent to those bidders who have started working on the tender, or as **otherwise specified in BDS**.
- 8.2 Any addendum issued shall be part of the Bidding Documents, and shall be deemed to have been communicated to all the bidders.
- 8.3 To give Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may extend the deadline for the submission of bids, pursuant to ITB 22.2 by issuing a notification in the e-procurement portal.

C. Preparation of Bids

9. Cost of Bidding

- 9.1 The Bidder shall bear all costs associated with the

preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language **specified in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language **specified in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.

**11. Documents
Comprising the
Bid**

11.1 The Bid shall comprise the following:

- (a) Letter of Bid and Appendix to Bid;
- (b) Deleted
- (c) Scanned copy of Bid Security or Bid-Securing Declaration, in accordance with ITB 19.1;
- (d) alternative bids, if permissible, in accordance with ITB 13;
- (e) Scanned written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;
- (f) documentary evidence in accordance with ITB 17 establishing the Bidder's continued qualified status or, if post-qualification applies, as specified in accordance with ITB 4.8, the Bidder's qualifications to perform the contract if its Bid is accepted;
- (g) Technical Proposal in accordance with ITB 16; and
- (h) any other document **required in the BDS**.

11.2 In addition to the requirements under ITB 11.1, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.

11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.

12. Letter of Bid and Schedules

12.1 The Letter of Bid and Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.2. All blank spaces shall be filled in with the information requested.

13. Alternative Bids

13.1 Unless otherwise specified in the BDS, alternative bids shall not be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect **will be included in the BDS,** as will the method of evaluating different times for completion.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Documents must first price the Employer's design as described in the Bidding Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.

13.4 When specified in the BDS, Bidders are permitted to submit alternative technical solutions for specified parts of the Works, and such parts **will be identified in the BDS,** as will the method for their evaluating, and described in Section VII, Works Requirements.

14. Bid Prices and Discounts

14.1 The prices and discounts (including any price reduction) quoted by the Bidder in the Letter of Bid shall conform to the requirements specified below.

14.2 Deleted

14.3 The price to be quoted in the Letter of Bid, in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered.

14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid, in accordance

with ITB 12.1.

14.5 Unless otherwise specified in the BDS and the Contract, the prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. In such a case, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Employer may require the Bidder to justify its proposed indices and weightings.

14.6 If so specified in ITB 1.1, bids are being invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer discounts for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4, provided the bids for all lots (contracts) are opened at the same time.

14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the prices and the total Bid Price submitted by the Bidder.

15. Currencies of Bid and Payment

15.1 The currency(ies) of the bid and the currency(ies) of payments shall be **as specified in the BDS**.

15.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the prices and shown in the Schedule of Adjustment Data in the Appendix to Bid are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.

**16. Documents
Comprising the
Technical Proposal**

16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, in sufficient detail to demonstrate the adequacy of the Bidder's proposal to meet the work requirements and the completion time.

**17. Documents
Establishing the
Qualifications of
the Bidder**

17.1 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.

17.2 If a margin of preference applies as specified in accordance with ITB 33.1, domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 33.1.

**18. Period of Validity
of Bids**

18.1 Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Employer in accordance with ITB 22.1. A bid valid for a shorter period shall be rejected by the Employer as non responsive.

18.2 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 in a manner **specified in the BDS**. If a bid security is requested in accordance with ITB 19, it shall also be extended for forty-five (45) 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, except as provided in ITB 18.3.

18.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity, the Contract price shall be determined as follows:

(a) In the case of fixed price contracts, the Contract price shall be the bid price adjusted by the factor **specified in the BDS**.

(b) In the case of adjustable price contracts, no adjustment shall be made.

(c) In any case, bid evaluation shall be based on the bid price without taking into consideration the applicable correction from those indicated above.

19. Bid Security

19.1 The Bidder shall furnish as part of its bid, either a Bid-Securing Declaration or a scanned copy of the bid security in the amount and currency **specified in the BDS**. The original of the Bid Security shall be submitted in accordance with the procedures **specified in the ITB 20.1 below**.

19.2 Deleted.

19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder's option:

(a) an unconditional guarantee issued by a bank or financial institution (such as an insurance, bonding or surety company);

(b) an irrevocable letter of credit;

(c) a cashier's or certified check; or

(d) another security **specified in the BDS**,

from a reputable source from an eligible country. If the unconditional guarantee is issued by a financial institution located outside the Employer's Country, the issuing financial institution shall have a correspondent financial institution located in the Employer's Country to make it enforceable. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Employer prior to bid submission. The bid security shall be valid for forty-five (45) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.4 If a bid security is specified pursuant to ITB 19.1, any bid not accompanied by a substantially responsive bid security or Bid-Securing Declaration shall be rejected by the Employer as non responsive.

19.5 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the performance security pursuant to ITB 42.

- 19.6 The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.
- 19.7 The bid security may be forfeited or the Bid-Securing Declaration executed:
- (d) if a Bidder withdraws/ modified/ substitutes its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or any extension thereto provided by the Bidder; or
 - (e) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 41; or
 - (ii) furnish a performance security in accordance with ITB 42.
- 19.8 The bid security or the Bid-Securing Declaration of a JV shall be in the name of the JV that submits the bid. If the JV has not been legally constituted into a legally enforceable JV at the time of bidding, the bid security or the Bid-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITB 4.1 and ITB 11.2.
- 19.9 If a bid security is **not required in the BDS pursuant to ITB 19.1**, and
- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or
 - (b) if the successful Bidder fails to sign the Contract in accordance with ITB 41; or furnish a performance security in accordance with ITB 42;
- the Borrower may, **if provided for in the BDS**, declare the Bidder ineligible to be awarded a contract by the Employer for a period of time **as stated in the BDS**.

20. Format and Signing of Bid

- 20.1 The Bidder shall prepare the documents comprising the bid as described in ITB 11 and upload them in the e-procurement portal as specified in BDS. Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE." In addition, the Bidder shall produce originals of the Bid Security and the Power of Attorney, in the manner **specified in the BDS**. In the

event of any discrepancy between the original and the uploaded documents, the original shall prevail.

- 20.2 The bid 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 uploaded along with the bid. The name and position held by each person signing the authorization must be typed or printed below the signature.
- 20.3 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives. A scanned copy of the power of attorney shall be uploaded along with the bid.
- 20.4 The Bidder shall furnish information as described in the Letter of Bid on commissions or gratuities, if any, paid or to be paid to agents relating to this Bid, and to contract execution if the Bidder is awarded the contract.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

- 21.1 The Bidder shall submit the bids electronically, including alternative bids, if permitted in accordance with ITB 13, through the e-procurement portal. Any document submitted through any other means will not be considered as part of the Bid except for the Originals specified in ITB 20.1.

22. Deadline for Submission of Bids

- 22.1 Bids must be submitted in the e-procurement system no later than the date and time **specified in the BDS**.
- 22.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Bids

- 23.1 The e-Procurement system would not allow any late submission of bids after due date & time as per server system. After electronic online proposal submission, the system generates a unique identification number which is time stamped. This shall be treated as acknowledgement of the proposal submission. Any other system

functionality shall be specified in the **BDS**.

24. Withdrawal, Substitution, and Modification of Bids

24.1 A Bidder may withdraw, substitute, or modify its bid on the e-portal, in accordance with the process defined in the **BDS**, no later than the date and time **specified in the BDS**.

24.2 Deleted

24.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof. Modification/ Withdrawal of the Bid sent through any other means shall not be considered by the Employer.

25. Bid Opening

25.1 The Employer shall publicly open the bids as per electronic bid opening procedures and read out in accordance with ITB 25.3 all bids received by the deadline, at the date, time and place **specified in the BDS**, in the presence of Bidders` designated representatives and anyone who choose to attend. Specific electronic bid opening procedures shall be **as specified in the BDS**. **Bidders can also view the bid opening by logging on to the e-procurement system.** In all cases, original documents submitted as specified in ITB 20 shall be first scrutinized, and Bids that do not comply with these provisions will be declared non-responsive and will not be opened.

25.2 The withdrawn bid will not be available in the system therefore will not be read. Only the last modified bid shall be available in the system which shall be opened and read along with other bids. Only bids that are opened and read out at bid opening shall be considered further.

25.3 All other bids shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; and any other details as the Employer may consider appropriate. Only discounts and alternative bids read out at bid opening shall be considered for evaluation. The Employer shall neither discuss the merits of any bid nor reject any bid.

25.4 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or

modification; the Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; and the presence or absence of a bid security, if one was required. The Bidders' representatives who are present in the office of the Employer to witness the bid opening 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. A copy of the record shall be made available on the e-procurement system. .

E. Evaluation and Comparison of Bids

26. Confidentiality	26.1 Information relating to the evaluation of bids and recommendation of contract award shall not be disclosed to Bidders or any other persons not officially concerned with the bidding process until information on Contract award is communicated to all Bidders in accordance with ITB 40. 26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid. 26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if a Bidder wishes to contact the Employer on any matter related to the bidding process, it shall do so in writing.
27. Clarification of Bids	27.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid, given a reasonable time for a response. 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, including any voluntary increase or decrease, in the prices or substance of the bid shall be sought, offered, or permitted. 27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.
28. Deviations, Reservations, and Omissions	28.1 During the evaluation of bids, the following definitions apply: (a) "Deviation" is a departure from the requirements

specified in the Bidding Documents;

- (b) “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Documents; and
- (c) “Omission” is the failure to submit part or all of the information or documentation required in the Bidding Documents.

29. Determination of Responsiveness

29.1 The Employer’s determination of a bid’s responsiveness is to be based on the contents of the bid itself, as defined in ITB11.

29.2 A substantially responsive bid is one that meets the requirements of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

(a) if accepted, would

(i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or

(ii) limit in any substantial way, inconsistent with the Bidding Documents, the Employer’s rights or the Bidder’s obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

29.3 The Employer shall examine the technical aspects of the bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section VII, Works Requirements have been met without any material deviation, reservation or omission.

29.4 If a bid is not substantially responsive to the requirements of the Bidding Documents, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

30. Nonmaterial Nonconformities

30.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformities in the Bid.

- 30.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
- 30.3 Deleted.
- 31. Correction of Arithmetical Errors**
- 31.1 Deleted.
- 31.2 Deleted.
- 32. Conversion to Single Currency**
- 32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency **as specified in the BDS.**
- 33. Margin of Preference**
- 33.1 **Unless otherwise specified in the BDS,** a margin of preference for domestic bidders shall not apply.
- 34. Subcontractors**
- 34.1 **Unless otherwise stated in the BDS,** the Employer does not intend to execute any specific elements of the Works by sub-contractors selected in advance by the Employer.
- 34.2 The Employer may permit subcontracting for certain specialized works as indicated in Section III 4.2. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section III describes the qualification criteria for sub-contractors.
- 34.3 Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as **specified in the BDS.**
- 35. Evaluation of Bids**
- 35.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
- 35.2 To evaluate a bid, the Employer shall consider the following:
- (a) the bid price;

- (b) deleted;
- (c) price adjustment due to discounts offered in accordance with ITB 14.3;
- (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;
- (e) deleted;
- (f) the additional evaluation factors are specified in Section III, Evaluation and Qualification Criteria;

35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

35.4 If these Bidding Documents allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated price of the lot (contract) combinations, including any discounts offered in the Letter of Bid Form, is specified in Section III, Evaluation and Qualification Criteria.

35.5 Deleted.

36. Comparison of Bids

36.1 The Employer shall compare the evaluated prices of all substantially responsive bids established in accordance with ITB 35.2 to determine the lowest evaluated bid.

37. Qualification of the Bidder

37.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.

37.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1.

37.3 An affirmative determination of qualification shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Employer shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.

38. Employer's Right to Accept Any Bid, and to Reject Any or All Bids

38.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

F. Award of Contract

39. Award Criteria

39.1 Subject to ITB 38.1, the Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

40. Notification of Award

40.1 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"). At the same time, the Employer shall also notify all other Bidders of the results of the bidding on the Employer's website, on the National website (<http://tenders.gov.in>) and on e-procurement system and shall publish in *UNDB online* the results identifying the bid and lot (contract) numbers and the following information:

- (i) name of each Bidder who submitted a Bid;
- (ii) bid prices as read out at Bid Opening;
- (iii) name and evaluated prices of each Bid that was evaluated;
- (iv) name of bidders whose bids were rejected and the reasons for their rejection; and
- (v) name of the successful Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded.

40.2 Until a formal contract is prepared and executed, the

notification of award shall constitute a binding Contract.

40.3 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.1, requests in writing the grounds on which its bid was not selected.

**41. Signing of
Contract**

41.1 Promptly upon notification, the Employer shall send the successful Bidder the Contract Agreement.

41.2 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

**42. Performance
Security**

42.1 Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the Contract, subject to ITB 35.5, using for that purpose the Performance Security and ESHS Performance Security Forms included in Schedule-G, or another form acceptable to the Employer. A foreign institution providing a guarantee shall have a correspondent financial institution located in the Employer's Country. The performance security of a Joint Venture shall be in the name of the Joint Venture specifying the names of all partners.

42.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

Section II. Bid Data sheet

A.Introduction	
ITB 1.1	The number of the Invitation for Bids is: RSHDP II/2017-18/EPC/01
ITB 1.1	The Employer is: Additional Chief Engineer (PPP) PWD Rajasthan, Jaipur (for & on Behalf of Governor of the State of Rajasthan) Nirman Bhawan, Jacob Road Civil Lines, Jaipur -302006, Rajasthan, India Tele Fax : +91 141 5110547 Email : aceppp.pwd@rajasthan.gov.in Website : http://www.pwd.rajasthan.gov.in
ITB 1.1	ICB for “Development & Upgradation of Banar - Bhopalgarh - Kuchera Highway (SH-63) km 0 to 126.500 under RSHDP-II (Package No WB/RSHDP II/EPC/01)” The identification number of the ICB is: RSHDP II/EPC/01 The number and identification of lots comprising this bidding process is: <i>the work is not divided into lots</i>
ITB 2.1	The Borrower is: Government of India
ITB 2.1	Loan or Financing Agreement amount: Loan Agreement yet to be signed
ITB 2.1	The name of the Project is: Rajasthan State Highways Development Program II
ITB 4.1	Maximum number of members in the JV shall be: 2 (Two) Place where the agreement to form JV to be registered is Jaipur, Rajasthan, India
ITB 4.4	The electronic address of firms and individuals debarred by the Bank is: http://www.worldbank.org/debarr
ITB 4.8	This Bidding Process is NOT subject to prequalification and is open for all bidders
ITB 6.1	Modified as: The Bidding Documents consist of Parts 1, 2, and 3, which include all the Sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB 8.

	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 • Section V. Eligible Countries • Section VI. Bank Policy-Corrupt and Fraudulent Practices PART 2 • Section VII. Works Requirements: Conditions of Contract together with Schedules PART 3 Drawings
ITB 6.3	Tender fee is required: Yes The step wise procedure of requesting Bidding documents through e-procurement portal of the Employer is detailed below: Online submission of bids through Government of Rajasthan e-portal http://eproc.rajasthan.gov.in, can be made by the interested bidders after enrolling with the above mentioned web site using the option “Click here to Enroll”. This enrollment is free at this point of time. Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the Company's name is a prerequisite for registration and participating in the bid submission activities through this web site. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site http://eproc.rajasthan.gov.in under the link “Information about DSC”. The web site also has user manuals with detailed guidelines on enrollment and participation in the online bidding process. The user manuals can be downloaded for ready reference.
B. Bidding Documents	
ITB 7.1	The e-procurement portal of the Employer is: http://eproc.rajasthan.gov.in The prospective Bidder can seek clarifications only through the e-procurement portal mentioned above. Clarifications sought through any other mode shall not be entertained. The Employer will upload its response on the e-procurement portal mentioned above and also the Employer’s website i.e. http://www.pwd.rajasthan.gov.in without identifying the source.

ITB 7.4	A Pre-Bid meeting will take place at the following date, time and place: Date: 11.12.2017 Time: 15:00 Hours IST Place: Office of the Additional Chief Engineer (PPP), PWD Rajasthan, Nirman Bhawan, Jacob Road, Civil Lines, Jaipur -302006 A site visit by the Employer shall not be organized.
ITB 7.6	Minutes of pre-bid meeting and Addendum to Bidding Documents will also be hosted on the Employer's website http://www.pwd.rajasthan.gov.in & http://eproc.rajasthan.gov.in
ITB 8.1	The addendum will appear on the e-procurement system under http://www.pwd.rajasthan.gov.in & http://eproc.rajasthan.gov.in and email notification is also automatically sent to those bidders who have started working on this tender.
ITB 8.3	Notification regarding extension of deadline for submission of Bids will also be hosted on the Employer's website http://www.pwd.rajasthan.gov.in & http://eproc.rajasthan.gov.in
C. Preparation of Bids	
ITB 10.1	The language of the bid is: English All correspondence exchange shall be in English language. Language for translation of supporting documents and printed literature is English. Such translation shall be attested by Notary Public/ Apostil/ Embassy.
ITB 11.1(h)	The Bidder shall submit with its bid the following additional documents: Nil
ITB 13.1	Alternative bid shall not be permitted.
ITB 13.2	Alternative time for completion shall not be permitted.
ITB 13.4	Alternative technical solutions shall not be permitted for any part of the Works.
ITB 14.3	Modified as The price to be quoted in the Letter of Bid, in accordance with ITB 12.1, shall be the total price of the Bid, including any discounts offered.
ITB 14.4	Deleted
ITB 14.5	The prices quoted by the bidder shall be subject to adjustment in accordance with the provisions of Conditions of Contract.

ITB 15.1	Price will be quoted in Indian Rupee. A Bidder expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country (referred to as the "foreign currency requirements") and wishing to be paid accordingly, shall indicate up to three foreign currencies of their choice expressed as a percentage of the bid price, together with the exchange rates used in the calculations in the appropriate form(s) included in Section IV. Bidding Forms. All expenditures incurred in India, shall be paid only in India Rupee
ITB 18.1	The bid validity period shall be 150 days .
ITB 18.2	The Employer, if required, may request the Bidders to extend validity of their Bid for a specified period 15 days prior to expiry of validity period of Bid through registered e-mail id of the Bidder. If a Bidder is interested to extend validity period of his Bid he may do so by submitting a written communication to the Employer under the signature of the authorized person who has signed the original Bid. The said communication along with amendment to the bid security for extension of its validity period shall be delivered by the Bidder to the Employer by 11.00 Hours IST of the last date of validity period of the Bids in his address given in BDS against ITB1.1.
ITB 18.3(a)	The bid price shall be adjusted by the following factors: N.A.
ITB 19.1	A Bid Security is required. A Bid-Securing Declaration is not required. The amount and currency of the bid security shall be <u>INR 24 000 000 (Indian Ruppee Twenty four Millions only)</u> or an equivalent amount in a <u>freely convertible currency</u>.
ITB 19.3	19.3 (a) is modified as under: ‘An unconditional guarantee issued by a bank. If the Bank issuing the guarantee is located outside India, it shall have a correspondent bank located in India to make it enforceable.’ 19.3 (d) Other types of acceptable securities are: (i) a banker's check or demand draft from a Nationalized or Scheduled Bank located in India; <i>Wherever "financial institution" appears, read as "financial bank".</i>
ITB 19.9	N.A.

ITB 20.1	The bidder shall upload the bid at: http://eproc.rajasthan.gov.in Detailed guidelines for viewing bids and submission of online bids are given on the website. The Invitation for Bids under this Project is published on this website. Any citizen or prospective bidder can logon to this website and view the Invitation for Bids and can view the details of works for which bids are invited. The prospective bidder can submit bids online; however, the bidder is required to have enrolment/registration in the website and should have valid Digital Signature Certificate (DSC) in the form of smart card/e-token. The DSC can be obtained from any authorised certifying agency authorised by the Government of India (for class of DSC specified in BDS). The bidder should register in the web site http://eproc.rajasthan.gov.in using the relevant option available. Then the Digital Signature registration has to be done with the e-token, after logging into the site. After this, the bidder can login the site through the secured login by entering the password of the e-token & the user id/ password chosen during registration. After getting the bid schedules, the Bidder should go through them carefully and then submit the documents as asked, along with the bid, otherwise, the bid will be rejected. The e-Procurement system will scan the uploaded documents for virus and if a document uploaded by bidder is found to have virus, the system will reject the uploaded file. Bidders shall take due care to ensure that the documents uploaded by them in e-Procurement system are virus free. The e-Procurement system restricts bidders from uploading file attachments larger than 5 MB file size. Hence, the bidders are informed to restrict the size of file attachments uploaded as part of their bid response to less than 5MB per file. <i>The original Bid Security and Power of Attorney (s) along with demand drafts for cost of bid document and tender participation fee (as described in ITB 6.3) shall be delivered by the Bidder to the Employer by the deadline date and time for opening of bids given below in BDS against ITB 25.1 at the Employer's address given in BDS against ITB1.1:</i> In case of non-receipt of these original documents, the bid will be declared non-responsive and will not be opened.
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: <u>Power of Attorney</u>
ITB 20.3	Modified as: In case the Bidder is a JV, the Bid shall be signed by authorized representative of all the JV partners, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives. A scanned copy of the power of attorney shall be uploaded along with the bid.

D. Submission and Opening of Bids	
ITB 22.1	The deadline for bid submission is: Date: 09.01.2018 Time: 11:30 Hours IST Bidders have to submit their bids electronically. The documents comprising the Bid shall be digitally signed by the person duly authorized to sign on behalf of the Bidder. The documents comprising the Bid shall then be uploaded on the e-procurement portal http://eproc.rajasthan.gov.in. After electronic on line bid submission, the system generates a unique bid identification number which is time stamped as per server time. This shall be treated as acknowledgement of bid submission.
ITB 23.1	None
ITB 24.1	Bidders may modify their bids by uploading their request for modification before the deadline for submission of bids on the e-procurement portal given in BDS ITB 7.1. For this the bidder need not make any additional payment towards the cost of tender document. For bid modification and consequential re-submission, the bidder is not required to withdraw his bid submitted earlier. The last modified bid submitted by the bidder within the bid submission time shall be considered as the bid. For this purpose, modification/withdrawal by other means will not be accepted. In on line system of bid submission, the modification and consequential re-submission of bids is allowed any number of times. However, if the bid is withdrawn, the re-submission of the bid is not allowed. Modification (including offering discount)/ withdrawal of Bids by any other means shall not be permitted.
ITB 25.1	The bid opening shall take place at: Office of the Additional Chief Engineer PPP, PWD Rajasthan, Jaipur-302006 Date: 09.01.2018 Time: 12:30 Hours IST The Employer will open the Bids online publically in the presence of authorized representatives of the Bidders who may choose to attend. The online opening will be done by the Employer's officials/ Authorised representatives. The particulars such as name of the Bidders, details of original Bid Security, Bid Prices, discounts, if any, and any other useful information will be read out.
ITB 25.3	Delete "Only discounts and alternative bids read out at bid opening shall be considered for evaluation".

ITB 25.4	The Employer shall open the bids online and this could be viewed by the bidders also online. The electronic summary of the opening will be generated and kept online. The Employer will also prepare minutes of the Bid opening, including the information disclosed and upload the same for viewing online. Any complaint shall be dealt with in accordance with complaint handling protocol of the Employer.
ITB 27.2	Modified as 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 will be evaluated based on the available information and interpretation of the Employer.
E. Evaluation, and Comparison of Bids	
ITB 32.1	The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: Indian Rupee The source of exchange rate shall be: Reserve Bank of India. The date for the exchange rate shall be: 28 days before the deadline date of submission of bids.
ITB 33.1	No margin of preference is applicable.
ITB 34.1	At this time the Employer does not want to execute any part of the Works by sub-contractors selected in advance.
ITB 34.3	a) Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: 40% of the total value of contract and not whole of Works or any particular length / stretch. b) Bidders planning to subcontract more than 10% of total volume of work shall specify, in the Letter of Bid, the activity (ies) or parts of the works to be subcontracted along with complete details of the sub-contractors and their qualification and experience. The qualification and experience of the sub-contractors must meet the minimum criteria for the relevant work to be subcontracted failing which such sub-contractors will not be permitted to participate. c) Sub-contractors' qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of the sub-contractor) should meet the qualification criteria.
ITB 35.2	(c) deleted
ITB 38.1	In case of annulment of Bids, the original Bid Security and Power of Attorney(s) only shall be returned to the Bidders

ITB 42.1 and 42.2	The successful Bidder shall also be required to submit an Environmental, Social, Health and Safety (ESHS) Performance Security. <i>[Note: throughout this bidding document the term 'performance security', unless the context clearly indicates otherwise, means and includes both 'the performance security and the ESHS performance security' to be submitted by the successful bidder in the amounts specified in Section VII Conditions of Contract Article 7, Clause 7.1]</i> Wherever “financial institution” appears, read as “financial bank”
ITB 43 Abnormally Low Bids	Add the new clause ITB 43 as follows: 43.1 An Abnormally Low Bid is one where the Bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the Bidder in regards to the Bidder’s ability to perform the Contract for the offered Bid Price. 43.2 In the event of identification of a potentially Abnormally Low Bid, the Employer shall seek written clarifications from the Bidder, including detailed price analyses of its Bid price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Bidding document. 43.3 After evaluation of the price analyses, in the event that the Employer determines that the Bidder has failed to demonstrate its capability to perform the Contract for the offered Bid Price, the Employer shall reject the Bid.
ITB 44 Most Advantageous Bid	Add the new clause ITB 44 as follows: Having compared the evaluated costs of Bids, the Employer shall determine the Most Advantageous Bid. The Most Advantageous Bid is the Bid of the Bidder that meets the Qualification Criteria and whose Bid has been determined to be: (a) substantially responsive to the Bidding document; and (b) the lowest evaluated cost.
ITB 45 Standstill Period	Add the new clause ITB 45 as follows: The Contract shall be awarded not earlier than the expiry of the Standstill Period. The Standstill Period is 10 Business Days from the date the Employer has transmitted, to all Bidders that submitted Bids, the Notification of its Intention to Award the Contract to the successful Bidder. Where only one Bid is submitted, the Standstill Period shall not apply.

ITB 46 Notice of Intention to Award	Add the new clause ITB 46 as follows: When a Standstill Period applies, it shall commence when the Employer has transmitted to each Bidder the Notification of Intention to Award the Contract to the successful Bidder. The Notification of Intention to Award shall contain, at a minimum, the following information: (a) the name and address of the Bidder submitting the successful Bid; (b) the Contract price of the successful Bid; (c) the names of all Bidders who submitted Bids, and their Bid prices as readout, and as evaluated; (d) a statement of the reason(s) the Bid (of the unsuccessful Bidder to whom the letter is addressed) was unsuccessful, unless the price information in c) above already reveals the reason; (e) the expiry date of the Standstill Period; and (f) instructions on how to request a debriefing and/or submit a complaint during the standstill period;
ITB 47 Debriefing by the Employer	Add the new clause ITB 47 as follows: 47.1 On receipt of the Employer's Notification of Intention to Award referred to in ITB 46, an unsuccessful Bidder has three (3) Business Days to make a written request to the Employer for a debriefing. The Employer shall provide a debriefing to all unsuccessful Bidders whose request is received within this deadline. 47.2 Where a request for debriefing is received within the deadline, the Employer shall provide a debriefing within five (5) Business Days, unless the Employer decides, for justifiable reasons, to provide the debriefing outside this timeframe. In that case, the standstill period shall automatically be extended until five (5) Business Days after such debriefing is provided. If more than one debriefing is so delayed, the standstill period shall not end earlier than five (5) Business Days after the last debriefing takes place. The Employer shall promptly inform, by the quickest means available, all Bidders of the extended standstill period. 47.3 Where a request for debriefing is received by the Employer later than the three (3)-Business Day deadline, the Employer should provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of Public Notice of Award of contract. Requests for debriefing received outside the three (3)-day deadline shall not lead to extension of the standstill period.

	47.4 Debriefings of unsuccessful Bidders may be done in writing or verbally. The Bidder shall bear its own costs of attending such a debriefing meeting.
ITB 48 Procurement Related Complaint	Add the new clause ITB 48 as follows: The procedures for making a Procurement-related Complaint are detailed in the “Procurement Regulations for IPF Borrowers (Annex III).” If a Bidder wishes to make a Procurement-related Complaint, the Bidder should submit its complaint following these procedures, in writing (by the quickest means available, that is either by email or fax), to: For the attention: <i>[insert full name of person receiving complaints]</i> Title/position: <i>[insert title/position]</i> Employer: <i>[insert name of Employer]</i> Email address: <i>[insert email address]</i> Fax number: <i>[insert fax number]</i> <i>delete if not used</i> In summary, a Procurement-related Complaint may challenge any of the following: 1. the terms of the Bidding Documents; and 2. the Employer’s decision to award the contract.

Section III. *Evaluation and Qualification Criteria (Without Prequalification)*

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with ITB 35 and ITB 37, no other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in Section IV, Bidding Forms.

Wherever a Bidder is required to state a monetary amount, Bidders should indicate the USD equivalent using the rate of exchange determined as follows:

- For construction turnover or financial data required for each year - Exchange rate prevailing on the last day of the respective financial year (in which the amounts for that year is to be converted) was originally established. For the avoidance of doubt, financial year shall for the purpose mentioned here under mean the accounting year followed by the bidder in the course of its normal business.

-Value of single contract - Exchange rate prevailing on the date of the respective contract.

Exchange rates shall be taken from the publicly available source identified in the ITB 32.1. Any error in determining the exchange rates in the Bid may be corrected by the Employer.

The enhancement factors given below shall be multiplied by the Average Annual Turnover values (and other cost of work) of the previous years for converting them to current year values:

Year	Factor
Current Year	1.00
Year 1	1.08
Year 2	1.17
Year 3	1.26
Year 4	1.36
Year 5	1.47

1. Evaluation

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

1.1 Assessment of adequacy of Technical Proposal with Requirements

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section VII (Works Requirements).

1.2 Multiple Contracts, if permitted under ITB 35.4, will be evaluated as follows: Not applicable

1.3 Alternative Completion Times, if permitted under ITB 13.2, will be evaluated as follows: Not permitted

1.4 Technical alternatives, if permitted under ITB 13.4, will be evaluated as follows: Not permitted

1.5 Specialised Subcontractors - Deleted

Note: When offering their bid for more than one EPC packages (IFB for which are being released separately but simultaneously), the bidder must provide evidence that it meets or exceeds the sum of all the individual requirements for the packages being applied for in regard to its qualification and bid capacity. Hence, if the bidder quotes for more than one package, the qualification criteria (2.3.2, 2.3.3, 2.5, 2.6 and 2.7) shall be cumulative. In case the bidder fails to fully meet any of these criteria on cumulative basis, it will be qualified only for those packages for which the bidder meets the above requirements and combination of the packages to be awarded to such bidders will be decided based on the lowest cost of the combination to the Employer. The decision of the Employer shall be final and binding on the bidder.

2. Qualification

Factor	2.1 Eligibility					
Sub-Factor	Requirement	Criteria				Documentation Required
		Single Entity	Bidder			
			Joint Venture			
			All partners combined	Each partner	At least one partner	
2.1.1 Nationality	Nationality in accordance with ITB 4.3.	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N / A	Form ELI–1 and 2, with attachments
2.1.2 Conflict of Interest	No- conflicts of interests as described in ITB 4.2.	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N / A	Letter of Bid
2.1.3 Bank Ineligibility	Not having been declared ineligible by the Bank as described in ITB 4.4.	Must meet requirement	Existing JVA must meet requirement	Must meet requirement	N / A	Letter of Bid
2.1.4 Government Owned Entity	Compliance with conditions of ITB 4.5	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Form ELI–1 and 2, with attachments

Factor	2.1 Eligibility					
Sub-Factor	Criteria					Documentation Required
	Requirement	Single Entity	Bidder			
			Joint Venture			
		All partners combined	Each partner	At least one partner		
2.1.5 Ineligibility based on a United Nations resolution or Borrower’s country law	Not having been excluded as a result of the Borrower’s country laws or official regulations, or by an act of compliance with UN Security Council resolution, in accordance with ITB 4.7	Must meet requirement	Existing JVA must meet requirement	Must meet requirement	N / A	Letter of Bid

Factor		2.2 Historical Contract Non-Performance					
Sub-Factor		Criteria				Documentation Required	
		Requirement	Bidder				
			Single Entity	Joint Venture			
				All partners combined	Each partner		At least one partner
2.2.1	History of non-performing contracts	Non-performance of a contract did not occur within the last five (5) years from 1st April 2012 to 31st March 2017 prior to the deadline for bid submission, based on all information on fully settled disputes or litigation. (A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the bidder have been exhausted.)	Must meet requirement by itself or as partner to past or existing JVA	N / A	Must meet requirement by itself or as partner to past or existing JVA	N / A	Form CON - 2

Factor	2.2 Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
2.2.2 Pending Litigation	All pending litigation shall in total not represent more than fifty percent (50%) of the Bidder’s net worth and shall be treated as resolved against the Bidder.	Must meet requirement by itself or as partner to past or existing JVA	N / A	Must meet requirement by itself or as partner to past or existing JVA	N / A	Form CON – 2
2.2.3 Declaration: Environmental, Social, Health, and Safety (ESHS) past performance	Declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social, or health or safety requirements or regulations in the past five years.	Must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration.	N/A	Each must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration.	N/A	Form CON-3 ESHS Performance Declaration

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
2.3.1 Historical Financial Performance	Submission of audited balance sheets or if not required by the law of the bidder’s country, other financial statements acceptable to the Employer, for the last five[5] years from 1st April 2012 to 31st March 2017 to demonstrate the current soundness of the bidders financial position and its prospective long term profitability. as a minimum, a bidders net worth calculated as the difference between total assets and total liabilities should be positive in last five (5) years	Must meet requirement	N / A	Must meet requirement	N / A	Form FIN –1 with attachments

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
2.3.2. Average Annual Turnover	Minimum average annual turnover of INR 240 Crores or US\$ 36.80 million or an equivalent amount in a freely convertible currency, calculated as total certified payments received for contracts in progress or completed, within the last five (5) years from 1st April 2012 to 31st March 2017	Must meet requirement	Must meet requirement	Must meet forty percent (40%) of the requirement	Must meet Sixty percent (60%) of the requirement	Form FIN –2
2.3.3. Financial Resources	The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet: (i) the following cash-flow	Must meet requirement	Must meet requirement	Must meet forty percent (40%) of the requirement	Must meet Sixty percent (60%) of the requirement	Form FIN –3

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
	requirement: INR 60 Crores or US\$ 9.25 million or an equivalent amount in a freely convertible currency for this Contract					Form FIN-4

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
	All partners combined		Each partner	At least one partner		
2.4.1General Experience	Experience under contracts in the role of contractor, subcontractor, or management contractor for at least the last five [5] years from 1st April 2012 to 31st March 2017 prior to the bid submission deadline, and with activity in at least nine (9) months in each year.	Must meet requirement	N / A	Must meet requirement	N / A	Form EXP-1
2.4.2Specific Experience	(a)Participation as contractor, joint venture member, management contractor, or subcontractor, in at least one (1) contracts within the last five_(5) years from 1st April 2012 to 31st March 2017 , each with a value of at least INR 240 Crores or US\$ 36.80 million or an equivalent amount in a freely convertible currency, or two contracts within last five (5) years each with the value of at least INR 192 Crores or US\$	Must meet requirement	Must meet requirements for all characteristics	N / A	Must meet requirement for one characteristic	Form EXP 2(a)

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
	29.44 million or an equivalent amount in a freely convertible currency that have been successfully and substantially completed and that are similar to the proposed Works. The similarity shall be based on the physical size, complexity, methods/technology or other characteristics as described in Part 2, Employer's Requirements. Road Works/ Airport runway works executed under BOQ contracts shall also be considered as similar works.					

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
2.4.2 Specific Experience	b) For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum experience in the following key activities: 1. Bituminous Concrete: 20000 cum per year 2. Dense Bituminous Macadam: 30000 cum per year 3. Wet Mix Macadam: 120000 cum per year 4. Granular Sub-base: 250000 cum per year 5. Minor Bridge: 4 No. per year 6. RCC M30 or higher grade: 3600 cum per year	Must meet requirements	Must meet requirements	N / A	Must meet requirements	Form EXP-2(b)

2.5 Personnel

The Bidder must demonstrate that it has the personnel for the key positions that meet the following requirements:

Sl. No.	Key Position	Nos.	Min. Academic Qualification	Min. Years of Working Experience		In case of JV to be Proposed by
				At Specified Position	Total	
1	Project Manager cum Planning Engineer (Contractor's Authorised Representative at Site)	1	Engg. Degree	15	20	Lead member
2	Highway Engineer	1	Engg. Degree	8	10	Lead member
3	Structural Engineer	1	Engg. Degree	8	10	Lead member
4	Materials Engineer	2	Engg. Diploma	5	10	Any member
5	Quantity Surveyor	2	Engg. Diploma	5	10	Any member
6	Plant/Equipment Manager	2	Engg. Diploma	5	10	Any member
7	Utility Engineer (Electrical)	1	Engg. Diploma	5	8	Any member
8	Utility Engineer (Civil)	1	Engg. Diploma	5	8	Any member
9	Surveyor	3	Engg. Diploma	5	8	Any member
10	Site Supervisor	3	Engg. Diploma	5	8	Any member
11	Laboratory Technician	3	Engg. Diploma	3	5	Any member
12	Environmental/Health/Safety/Social Officer	1	Engg. Diploma	3	5	Any member

The Structural Engineer proposed must have experience of construction of bridges and culverts in at least one project. The Bidder shall provide details of the proposed personnel and their experience records using Form PER-1 and PER-2 included in Section IV, Bidding Forms.

The Bidder must not have in his employment:

- [i] the near relations (defined as first blood relations, and their spouses, of the bidder or the bidder's spouse) of persons of the following Central/ State Government Departments in India.

.....

- [ii] without permission of Central/ State Government in India, any person who retired as gazetted officer in India, within the last two years.

2.6 Equipment

The Bidder must demonstrate that it has the key equipment listed hereafter:

Sl. No.	Type of Equipment	Capacity	Number required
1	Dozer	175 HP	4
2	Excavators	Minimum 1m ³ bucket size	3
3	Front End Loader	Minimum 1m ³ bucket size	4
4	Motor Grader	3.35m Blade, 175HP	4
5	a) Smooth Wheel Roller	8-10 ton	2
	b) Vibratory Roller	8-10ton	4
	c) Tandem Vibratory Roller	6-10ton	2
	d) Tandem Vibratory Roller for compaction of edges	1 ton (self propelling type)	2
	e) Pneumatic Tyred Roller	8-10 ton, 8tyred with self inflation system	2
6a	Paver Finisher with electronic sensors for automatic level control.	Capable of paving 7m width & upto 200mm lift	2
6b	Paver Finisher with electronic sensors for automatic level control.	Capable of paving 10m width & upto 200mm lift	2
7	Bitumen Sprayer	1750 Sqm / Hr	2
8	Water Tanker	6000 Litre	4
9	Dump Truck	8-10 ton	20
11	WMM Mixing Plant	100 ton	2
12	Batch Type Hot Mix Plant	120 TPH	2
13	Concrete Mixer with Integral Weigh Batching Facility	1 m ³	2
14	Concreting Batching and Mixing Plant	Minimum Capacity 15m ³	2
15	Total Station with Accessories	Minimum 1" accuracy	2
16	Auto-Level with Micrometer	-	4

Notes:

- Bidders are requested to verify latest position in respect of “Duties on Contractor’s Equipment” from Department of Revenue, Ministry of Finance, Government of India.

- The equipment listed above should not be older than 7 years of age.
- The Bidder shall furnish the details of proposed equipment using Form EQU included in Section IV.

2.7 Bid Capacity

Eligibility and Qualification Criteria		Compliance Requirements				Documentation
Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
			All Parties Combined	Each Member	Atleast One Member	
5. Bid Capacity						
5.1 Bid capacity	Available Bid Capacity should be More than value of contract/ contracts applied for	Must meet requirement	Must meet requirement	Must meet 40% (Forty percent) of the requirement	Must meet 60% (Sixty percent) of the requirement	Form FIN 2.4 & EXP 1

Bid Capacity= [(A*N*1.5)-B], where

A= Maximum value of works executed in any one year during the last five years (updated to the current price level), in INR

B= Value at current price level of the existing commitments and ongoing works to be completed concurrently with the works specified upto the period of 'N' below

N= 2 (No. of years prescribed for completion of works for which bids are invited)

Section IV. Bidding Forms

Letter of Bid

Date:

ICB No.: RSHDP II/EPC/01

Invitation for Bid No.: RSHDP II/2017-18/EPC/01

To:

**The Additional Chief Engineer (PPP)
Public Works Department Rajasthan
Nirman Bhawan, Jacob Road, Civil Lines, Jaipur
State: Rajasthan, India
Pin Code: 302006**

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB 8);
- (b) We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) We have not been suspended nor declared ineligible by the Employer based on execution of a Bid Securing Declaration in the Employer's country in accordance with ITB 4.6
- (d) We offer to execute in conformity with the Bidding Documents the following Works: **Development & Upgradation of Banar - Bhopalgarh - Kuchera Highway (SH-63) km 0 to 126.500 under RSHDP-II (Package No WB/RSHDP II/EPC/01).**
- (e) The total price of our Bid, including any discounts offered is: *[insert the total price of the Bid in words and figures, indicating the various amounts and the respective currencies]*;
- (f) Our bid shall be valid for a period of **150 days** from the date fixed for the bid submission deadline (**i.e 09.01.2018**) 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;
- (g) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;
- (h) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.2(e), other than alternative bids submitted in accordance with ITB 13;
- (i) We, including any of our subcontractors or suppliers for any part of the contract, have not been declared ineligible by the Bank, under the Employer's country laws or official

regulations or by an act of compliance with a decision of the United Nations Security Council;

- (j) We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB 4.5;
- (k) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate “none.”)

- (l) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (m) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (n) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption

Name of the Bidder*

Name of the person duly authorized to sign the Bid on behalf of the Bidder**

Title of the person signing the Bid

Signature of the person named above

Date signed _____ day of _____,

Appendix to Bid Schedule of Adjustment Data

[In Tables A, B, and C, below, the Bidder shall (a) indicate its amount of local currency payment, (b) indicate its proposed source and base values of indices for the different foreign

currency elements of cost, (c) derive its proposed weightings for local and foreign currency payment, and (d) list the exchange rates used in the currency conversion. In the case of very large and/or complex works contracts, it may be necessary to specify several families of price adjustment formulae corresponding to the different works involved.]

Table A. Local Currency

Index code*	Index description*	Source of index*	Base value and date*	Bidder's related currency amount	Bidder's proposed weighting
A	Labour	Labour Bureau, Ministry of Labour, GOI	Last date of the calendar month which precede the Bid Due Date by at least 28 days.		As shown in GCC Clause 19.10
B	Cement	Ministry of Commerce & Industry			
C	Steel				
D	Bitumen	Official retail price at nearest refinery			
E	Fuel & Lubricants	Official retail price of HSD at nearest IOC outlet			
F	Other Materials	Ministry of Commerce & Industry			
G	Plant, Machinery & Spares				
Total					1.00

Table B. Foreign Currency (FC)

State type: [If the Bidder is allowed to receive payment in foreign currencies this table shall be used. If Bidder wishes to quote in more than one foreign currency (up to three currencies permitted) then this table should be repeated for each foreign currency.]

Index code	Index description	Source of index	Base value and date	Bidder's related source currency in type/amount	Equivalent in FC1	Bidder's proposed weighting
	Non adjustable	—	—	—		A:0.15 B:_ C:_ D:_ E:_ F:_ G:_
Total						1.00

[*Same as Table A. Bidder will be required to modify the value such that the total weighting =1.00]

The Bidder shall in his tender indicate the foreign input (plant, material, Engineer's salary etc.,) and appropriate index, the source of which shall be Government or public organization. The Bidder shall also attach specimens of the publications of the last 12 months for information of the Employer. If the index proposed by the Bidder is not acceptable to the Employer, then the Employer will specify alternative index and the source of publishing of the index.

The currency of foreign exchange payment and index shall belong to the same country

Table C. Summary of Payment Currencies

Table: Alternative A

For..... [insert name of Section of the Works]

[Note: Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. The Employer should insert the names of each section of the Works.]

Name of payment currency	A Amount of currency	B Rate of exchange (local currency per unit of foreign)	C Local currency equivalent $C = A \times B$	D Percentage of Total Bid Price (TBP) $\frac{100 \times C}{TBP}$
Local currency		1.00		
Foreign currency #1				
Foreign currency #2				
Foreign currency #				
Total Bid Price				100.00
TOTAL BID PRICE				

Technical Proposal

-
- **Site Organization**
- **Method Statement**
- **Mobilization Schedule**
- **Construction Schedule**
- **Equipment**
- **Environmental, Social, Health, and Safety Management (ESHS) Strategies and Implementation Plans**
- **ESHS Code of Conduct**
- **Personnel**
- **Others**

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Form EQU: Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key 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	Model and power rating
	Capacity	Year of manufacture
	Registration number or any other unique identification number	
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Bidder.

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

ESHS Management Strategies and Implementation Plans

(ESHS-MSIP)

The Bidder shall submit comprehensive and concise Environmental, Social, Health and Safety Management Strategies and Implementation Plans (ESHS-MSIP) as required by ITB 11.1 (h) of the Bid Data Sheet. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

In developing these strategies and plans, the Bidder shall have regard to the ESHS provisions of the contract including those as may be more fully described in the following:

- 1. the Works Requirements described in Section VII;***
- 2. Environmental Impact Assessment (EIA) and the Environmental Management and Monitoring Plan (EMP) either contained in the EIA or prepared separately;***
- 3. Social Impact Assessment (SIA) including Social Impact Management Plan;***
- 4. Environmental and Social Management Plan (ESMP) or Environmental and Social Management Framework (ESMF);***
- 5. Resettlement Action Plan (RAP);***
- 6. Consent Conditions (regulatory authority conditions attached to any permits or approvals for the project); and***
- 7. specify any other relevant document/s***

Selection of the Bidder and award of the Contract (of which the ESHS-MSIP will be a part) does not absolve the Contractor any obligation under this Contract to comply with the applicable Laws/ Rules/ Regulations for protection of environment, public health and safety, and the applicable parts of the Environment Management Plan of the project should such compliance be not expressly included in the ESHS-MSIP.

Code of Conduct: Environmental, Social, Health and Safety (ESHS)

The Bidder shall submit the Code of Conduct that will apply to the Contractor's employees and subcontractors as required by ITB 11.1 (h) of the Bid Data Sheet. The Code of Conduct shall ensure compliance with the ESHS provisions of the contract, including those as may be more fully described in the following:

- 1. the Works Requirements described in Section VII;*
- 2. Environmental and Social Impact Assessment (ESIA);*
- 3. Environmental and Social Management Plan (ESMP);*
- 4. Consent Conditions (regulatory authority conditions attached to any permits or approvals for the project); and*
- 5. specify any other relevant document/s*

In addition, the Bidder shall submit an outline of how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches.

Personnel

Form PER-1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements stated in Section III. The data on their experience should be supplied using the Form below for each candidate.

1.	Title of position*
	Name
2.	Title of position*
	Name
3.	Title of position*
	Name
4.	Title of position*
	Name

*As listed in Section III.

Form PER-2: Resume of Proposed Personnel

Name of Bidder

Position			
Personnel information	Name		Date of birth
	Professional qualifications		
Present employment	Name of employer		
	Address of employer		
	Telephone		Contact (manager / personnel officer)
	Fax		E-mail
	Job title		Years with present employer

Summarize professional experience over the last 20 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From	To	Company / Project / Position / Relevant technical and management experience

Bidders Qualification without prequalification

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

Form ELI – 1: Bidder’s Information Sheet

Bidder’s Information	
Bidder’s legal name	
In case of JV, legal name of each partner	
Bidder’s country of constitution	
Bidder’s year of constitution	
Bidder’s legal address in country of constitution	
Bidder’s authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents. ☐ 1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. ☐ 2. Authorization to represent the firm or JV named in above, in accordance with ITB 20.2. ☐ 3. In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. ☐ 4. In case of a government-owned entity, any additional documents not covered under 1 above required to comply with ITB 4.5.	

Form ELI – 2: JV Information Sheet

Each member of a JV must fill in this form

JV / Specialist Subcontractor Information	
Bidder's legal name	
JV Partner's or Subcontractor's legal name	
JV Partner's or Subcontractor's country of constitution	
JV Partner's or Subcontractor's year of constitution	
JV Partner's or Subcontractor's legal address in country of constitution	
JV Partner's or Subcontractor's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents. ☐ 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. ☐ 2. Authorization to represent the firm named above, in accordance with ITB 20.2. ☐ 3. In the case of government-owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5.	

Form CON – 2: Historical Contract Non-Performance

[The following table shall be filled in for the Bidder and for each partner of a Joint Venture]

Bidder's Legal Name: _____

Date: _____

Joint Venture Party Legal Name: _____

ICB No. and title: _____

Page _____ of _____ pages

Non-Performing Contracts in accordance with Section III, Qualification Criteria and Requirements			
☐ Contract non-performance did not occur during the <i>last five (5)</i> years specified in Section III, Qualification Criteria and Requirements, Sub-Factor 2.1.			
☐ Contract(s) not performed during the <i>last five (5)</i> years specified in Section III, Qualification Criteria and Requirements, requirement 2.1			
Year	Non performed portion of contract	Contract Identification	Total Contract Amount (current value, US\$ equivalent)
		Contract Identification: Name of Employer: Address of Employer: Reason(s) for non performance:	
Pending Litigation, in accordance with Section III, Qualification Criteria and Requirements			
☐ No pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2.			
☐ Pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2 as indicated below.			
Year	Outcome as Percentage of Total Assets	Contract Identification	Total Contract Amount (current value, US\$ equivalent)
		Contract Identification: Name of Employer:] Address of Employer: Matter in dispute:	

Form CON – 3: Environmental, Social, Health, and Safety Performance Declaration

[The following table shall be filled in for the Bidder, each member of a Joint Venture and each Specialized Subcontractor]

Bidder's Name: _____

Date: _____

Joint Venture Member's or Specialized Subcontractor's Name: _____

ICB No. and title: _____

Page _____ of _____ pages

Environmental, Social, Health, and Safety Performance Declaration in accordance with Section III, Qualification Criteria, and Requirements			
☐ No suspension or termination of contract: An employer has not suspended or terminated a contract and/or called the performance security for a contract for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2.			
☐ Declaration of suspension or termination of contract: The following contract(s) has/have been suspended or terminated and/or Performance Security called by an employer(s) for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2. Details are described below:			
Year	Suspended or terminated portion of contract	Contract Identification	Total Contract Amount (current value, US\$ equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for suspension or termination: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for suspension or termination: <i>[indicate</i>	<i>[insert amount]</i>

		<i>main reason(s)</i>	
...	...	<i>[list all applicable contracts]</i>	...
Performance Security called by an employer(s) for reasons related to ESHS performance			
Year	Contract Identification		Total Contract Amount (current value, US\$ equivalent)
<i>[insert year]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for calling of performance security: <i>[indicate main reason(s)]</i>		<i>[insert amount]</i>

Form FIN – 1: Financial Situation

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

Financial Data for Previous 5Years [US\$ Equivalent]				
Year 1: 2016-17	Year 2: 2015-16	Year 3: 2014-15	Year 4: 2013-14	Year 5: 2012-13

Information from Balance Sheet

Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

Information from Income Statement

Total Revenues			
Profits Before Taxes			
Profits After Taxes			

- ☐ Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last five years, as indicated above, complying with the following conditions.
- All such documents reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.
 - Historic financial statements must be audited by a certified accountant.
 - Historic financial statements must be complete, including all notes to the financial statements.
 - Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Form FIN – 2: Average Annual Construction Turnover

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

Year	Amount (US\$ equivalent)
Year 1: 2016-17	
Year 2: 2015-16	
Year 3: 2014-15	
Year 4: 2013-14	
Year 5: 2012-13	
Average Annual Turn Construction Over	

The information supplied should be the Annual Turnover of the Bidder or each member of a JV in terms of the amounts billed to clients for each year for work in progress or completed, converted to US\$ at the rate of exchange at the end of the period reported.

Form FIN – 3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section III (Evaluation and Qualification Criteria)

Financial Resources		
No.	Source of financing	Amount (US\$ equivalent)
1		
2		
3		

Form FIN – 4: Current Contract Commitments / Works in Progress

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

Current Contract Commitments

No.	Name of Contract	Employer's Contact Address, Tel, Fax	Total value of contract (US\$ Equivalent)	Value of Outstanding Work [Current US\$ Equivalent]	Estimated Completion Date	Average Monthly Invoicing Over Last Six Months [US\$/month]
1						
2						
3						
4						
5						

Form EXP – 1: General Construction Experience

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

General Construction Experience				
Starting Month Year	Ending Month Year	Years	Contract Identification and Name Name and Address of Employer Brief Description of the Works Executed by the Bidder	Role of Bidder

Form EXP – 2(a): Specific Construction Experience

Fill up one (1) form per contract.

Contract of Similar Size and Nature		
Contract No of	Contract Identification	
Award Date	Completion Date	
Role in Contract	Contractor	Management Contractor Subcontractor
Total Contract Amount	US\$ equivalent	
If partner in a JV or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's Name Address Telephone/Fax Number E-mail		
Description of the similarity in accordance with Criteria 2.4.2(a) of Section III		

Form EXP – 2(b): Specific Construction Experience in Key Activities

Fill up one (1) form per contract

Contract with Similar Key Activities		
Contract No of	Contract Identification	
Award Date	Completion Date	
Role in Contract	☐ Contractor ☐ Management Contractor ☐ Subcontractor	
Total Contract Amount	US\$ equivalent	
If partner in a JV or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's Name Address Telephone Number Fax Number E-mail		
Description of the key activities in accordance with Criteria 2.4.2(b) of Section III		

Form of Bid Security

(Demand Guarantee)

Beneficiary:

**The Additional Chief Engineer (PPP)
Public Works Department Rajasthan
Nirman Bhawan, Jacob Road, Civil Lines, Jaipur
State: Rajasthan, India
Pin Code: 302006**

Invitation for Bids No: RSHDP II/2017-18/EPC/01

Date: _____

BID GUARANTEE No.: _____

Guarantor: _____

We have been informed that _____ (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its bid (hereinafter called "the Bid") for the execution of _____ under Invitation for Bids No. _____ ("the IFB").

Furthermore, we understand that, according to the Beneficiary's conditions, bids must be supported by a bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's complying supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has withdrawn its Bid during the period of bid validity specified by the applicant in the Letter of Bid, or any extension thereto provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the period of bid validity, (i) fails to execute the Contract Agreement or (ii) fails to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security issued to the Beneficiary upon the instruction of the Applicant; or (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the bidding process; or (ii) forty-five days after the Validity Period, i.e. xxxx which date shall be established by presentation to us of copies of the Letter of Bid and any extension(s) thereto, accompanied by the bidding document; or (c) three years after the date of issue of this guarantee.

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

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758 except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

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

Section V. Eligible Countries

Eligibility for the Provision of Goods, Works and Non Consulting Services in Bank-Financed Procurement

1. In reference to ITB 4.7 and 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this bidding process:

Under ITB 4.7(a) and 5.1: None.

Under ITB 4.7(b) and 5.1: None.

Section VI. Bank Policy - Corrupt and Fraudulent Practices

(Section VI shall not be modified)

Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011.

“Fraud and Corruption:

It is the Bank’s policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts. In pursuance of this policy, the Bank:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
 - (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 obligation;
 - (iii) “collusive practice” is an arrangement between two or more parties 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 party or the property of the party to influence improperly the actions of a party;
 - (v) “obstructive practice” is
 - (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
 - (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 1.16(e) below.

- (b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- (c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- (d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank's sanctions procedures, including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated;
- (e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank."

PART 2– WORK REQUIREMENTS

Section VII. Conditions of Contract together with Schedules

Part I Preliminary

ENGINEERING, PROCUREMENT AND CONSTRUCTION AGREEMENT

THIS AGREEMENT is entered into on this the day of, 20.....

BETWEEN

Additional Chief Engineer (PPP), PWD Rajasthan, Jaipur (India) for and on behalf of Governor of the State of Rajasthan (hereinafter referred to as the “**Authority**” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of One Part;

AND

{-----}, means the selected bidder *{single entity or the joint venture which is the selected bidder under the ICB No.....}* having its registered office at and at(in case of JV), (hereinafter referred to as the “**Contractor**” which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) of the Other Part.

WHEREAS:

- (A) Public Works Department, Government of Rajasthan has intended to take up the development, maintenance and management of State Highway No 63.
- (B) The Authority had resolved to take up the work “**Development & Upgradation of Banar-Bhopalgarh-Kuchera Highway (SH-63) km 0 to 126.500**” on Engineering, Procurement, Construction (“**EPC**”) basis in accordance with the terms and conditions to be set forth in an agreement to be entered into.
- (C) The Authority had prescribed the technical and commercial terms and conditions, and invited bids IFB No. **RSHDP II/2017-18/EPC/01** from all bidders having required eligibility and qualification criteria for undertaking the Project.
- (D) After evaluation of the bids received, the Authority had accepted the bid of the selected bidder and issued its Letter of Acceptance No. dated (hereinafter called the “**LOA**”) to the selected bidder for the work “**Development & Upgradation of Banar-Bhopalgarh-Kuchera Highway (SH-63) km 0 to 126.500**” at the contract price specified hereinafter, requiring the selected bidder to inter alia:
 - (i) deliver to the Authority a legal opinion from the legal counsel of the selected bidder with respect to the authority of the selected bidder to enter into this Agreement and the enforceability of the provisions thereof, within **10 (Ten)** days of the date of issue of LOA; and
 - (ii) execute this Agreement within **28 (Twenty Eight)** days of the date of issue of LOA.

(E) The Contractor has fulfilled the requirements specified in Recital (D) above;

NOW THEREFORE in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the sufficiency and adequacy of which is hereby acknowledged, the Authority hereby covenants to pay the Contractor, in consideration of the obligations specified herein, the Contract Price or such other sum as may become payable under the provisions of the Agreement at the times and in the manner specified by the Agreement and intending to be legally bound hereby, the Parties agree as follows:

ARTICLE 1
DEFINITIONS AND INTERPRETATION

1.1 Definitions

The words and expressions beginning with capital letters and defined in this Agreement (including those in Article 28) shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

(a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;

(b) references to laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;

(c) references to a “person” and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;

(d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

(e) the words “include” and “including” are to be construed without limitation and shall be deemed to be followed by “without limitation” or “but not limited to” whether or not they are followed by such phrases;

(f) references to “construction” or “building” include, unless the context otherwise requires, survey and investigation, design, developing, engineering, procurement, supply of plant, materials, equipment, labour, delivery, transportation, installation, processing, fabrication, testing, and commissioning of the Project Highway, including maintenance during the Construction Period, removing of defects, if any, and other activities incidental to the construction and “construct” or “build” shall be construed accordingly;

(g) references to “development” include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, up-gradation and other

activities incidental thereto during the Construction Period, and “develop” shall be construed accordingly;

(h) any reference to any period of time shall mean a reference to that according to Indian standard time;

(i) any reference to day shall mean a reference to a calendar day;

(j) references to a “business day” shall be construed as a reference to a day (other than a Sunday) on which banks in **Jaipur** are generally open for business;

(k) any reference to month shall mean a reference to a calendar month as per the Gregorian calendar;

(l) references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement;

(m) any reference to any period commencing “from” a specified day or date and “till” or “until” a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;

(n) the words importing singular shall include plural and vice versa;

(o) references to any gender shall include the other and the neutral gender;

(p) “lakh” means a hundred thousand (100,000) and “crore” means ten million (10,000,000);

(q) “indebtedness” shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

(r) references to the “winding-up”, “dissolution”, “insolvency”, or “reorganisation” of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;

(s) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, licence or document of any description shall be construed as reference to that agreement, deed, instrument, licence or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this Clause shall not operate so as to increase liabilities or obligations of the Authority hereunder or pursuant hereto in any manner whatsoever;

(t) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party or the Authority’s Engineer shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party or the Authority’s Engineer, as the case may be, in this behalf and not otherwise;

(u) the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

(v) references to Recitals, Articles, Clauses, Sub-clauses or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses and Schedules of or to this Agreement, and references to a Paragraph shall, subject to any contrary indication, be construed as a reference to a Paragraph of this Agreement or of the Schedule in which such reference appears;

(w) the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the “**Damages**”); and

(x) time shall be of the essence in the performance of the Parties’ respective obligations. If any time period specified herein is extended for the reasons specified in the Agreement, such extended time shall also be of the essence.

(y) References to “World Bank” shall mean the International Bank for Reconstruction and Development (The Bank). The Bank is the financing institution which has provided funds toward a part of the cost of the Project. Payments by the World Bank will be made only at the request of the Recipient (Government of **Rajasthan**) of the funds and upon approval by the World Bank in accordance with the terms and conditions of the financing agreement (Loan Agreement) and will be subject in all respects to the terms and conditions of that Loan Agreement. No party other than the Recipient shall derive any rights from the Loan Agreement or have claim to any funds.”

1.2.2 Unless expressly provided otherwise in this Agreement, any Documentation required to be provided or furnished by the Contractor to the Authority shall be provided free of cost and in three copies, and if the Authority is required to return any such Documentation with its comments and/or approval, it shall be entitled to retain two copies thereof.

1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply.

1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act, 1897 shall not apply.

1.3 Measurements and arithmetic conventions

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4 Priority of agreements and errors/discrepancies

1.4.1 This Agreement, and all other agreements and documents forming part of or referred to in this Agreement are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this Agreement, the priority of this Agreement and other documents and agreements forming part hereof or referred to herein shall, in the event of any conflict between them, be in the following order:

- (a) Corrigendum to Conditions of Contract together with Schedules (issued if any)
- (b) this Agreement including Conditions of Contract together with Schedules; and
- (c) all other agreements and documents forming part hereof or referred to herein; i.e. this Agreement at (b) above shall prevail over the agreements and documents at (c).

1.4.2 Subject to the provisions of Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:

- (a) between a Clause of this Agreement and Corrigendum, the provisions of Corrigendum
- (b) between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;
- (c) between the Clauses of this Agreement and the Schedules, the Clauses shall prevail and between Schedules and Annexes, the Schedules shall prevail;
- (d) between any two Schedules, the Schedule relevant to the issue shall prevail;
- (e) between the written description on the Drawings and the Specifications & Standards, the latter shall prevail;
- (f) between the dimension scaled from the Drawing and its specific written dimension, the latter shall prevail; and
- (g) between any value written in numerals and that in words, the latter shall prevail.

1.5 Joint and several liability

1.5.1 If the Contractor has formed a Joint Venture (JV) of **two persons** for implementing the Project:

- (a) these **persons** shall, without prejudice to the provisions of this Agreement, be deemed to be jointly and severally liable to the Authority for the performance of the Agreement; and
- (b) the Contractor shall ensure that no change in the composition of the Joint Venture (JV) is effected without the prior consent of the Authority.

1.5.2 Without prejudice to the joint and several liability of all the members of the Joint Venture (JV), the Lead Member shall represent all the members of the Joint Venture (JV) and shall at all times be liable and responsible for discharging the functions and

obligations of the Contractor. The Contractor shall ensure that each member of the Joint Venture (JV) shall be bound by any decision, communication, notice, action or inaction of the Lead Member on any matter related to this Agreement and the Authority shall be entitled to rely upon any such action, decision or communication of the Lead Member. The Authority shall release the payment only to the Joint Venture (JV)

Part II Scope of Project

ARTICLE 2
SCOPE OF THE PROJECT

2.1 Scope of the Project

Under this Agreement, the scope of the Project (the “Scope **of the Project**”) shall mean and include:

- (a) construction of the Project Highway on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of Project Facilities as specified in Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-D;
- (b) maintenance of the Project Highway in accordance with the provisions of this Agreement and in conformity with the requirements set forth in Schedule-E; and
- (c) performance and fulfillment of all other obligations of the Contractor in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Contractor under this Agreement.

ARTICLE 3
OBLIGATIONS OF THE CONTRACTOR

3.1 Obligations of the Contractor

- 3.1.1 Subject to and on the terms and conditions of this Agreement, the Contractor shall undertake the survey, investigation, design, engineering, procurement, construction, and maintenance of the Project Highway and observe, fulfill, comply with and perform all its obligations set out in this Agreement or arising hereunder.
- 3.1.2 The Contractor shall comply with all Applicable Laws and Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement. The Contractor shall comply with all environmental clearances required during construction and maintenance including implementation of Environmental Management Plan (EMP).
- 3.1.3 Subject to the provisions of Clauses 3.1.1 and 3.1.2, the Contractor shall discharge its obligations in accordance with Good Industry Practice and as a reasonable and prudent person.
- 3.1.4 The Contractor shall remedy any and all loss or damage to the Project Highway from the Appointed Date until the end of the Construction Period at the Contractor's cost, save and except to the extent that any such loss or damage shall have arisen from any default or neglect of the Authority.
- 3.1.5 The Contractor shall remedy any and all loss or damage to the Project Highway during the Defects Liability Period at the Contractor's cost to the extent that such loss or damage shall have arisen out of the reasons specified in Clause 17.3.
- 3.1.6 The Contractor shall remedy any and all loss or damage to the Project Highway during the Maintenance Period at the Contractor's cost, including those stated in Clause 14.1.2, save and except to the extent that any such loss or damage shall have arisen on account of any default or neglect of the Authority or on account of a Force Majeure Event.
- 3.1.7 The Contractor shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:
 - (a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars and details as may be required for obtaining Applicable Permits set forth in Schedule-F and obtain and keep in force and effect such Applicable Permits in conformity with the Applicable Laws;

- (b) procure, as required, the appropriate proprietary rights, licences, agreements and permissions for Materials, methods, processes and systems used or incorporated into the Project Highway;
- (c) make reasonable efforts to maintain harmony and good industrial relations among the personnel employed by it or its Sub-contractors in connection with the performance of its obligations under this Agreement;
- (d) ensure and procure that its Sub-contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Contractor's obligations under this Agreement;
- (e) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;
- (f) support, cooperate with and facilitate the Authority in the implementation and operation of the Project in accordance with the provisions of this Agreement;
- (g) ensure that the Contractor and its Sub-contractors comply with the safety and welfare measures for labour in accordance with the Applicable Laws and Good Industry Practice;
- (h) keep, on the Site, a copy of this Agreement, publications named in this Agreement, the Drawings, Documents relating to the Project, and Change of Scope Orders and other communications given under this Agreement. The Authority's Engineer and its authorised personnel shall have the right of access to all these documents at all reasonable times;
- (i) cooperate with other contractors employed by the Authority and personnel of any public authority; and
- (j) not interfere unnecessarily or improperly with the convenience of the public, or the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Authority or of others.

3.1.8 The Contractor shall undertake all necessary superintendence to plan, arrange, direct, manage, inspect and test the Works.

3.1.9 Inspections and Audit by the World Bank

The Contractor shall permit, and shall cause its Subcontractors and sub-consultants to permit, the World Bank and/or persons appointed by the World Bank to inspect the Site and all accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the World Bank if requested by the World Bank. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Clause 3.9 [Corrupt or Fraudulent Practices] which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under

Clause 11.6.1 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the World Bank's prevailing sanctions procedures).

3.2 Obligations relating to sub-contracts and any other agreements

- 3.2.1 The Contractor shall not sub-contract any Works in more than 40% (forty per cent) of the contract price and shall carry out Works directly under its own supervision and through its own personnel in at least 60% (sixty per cent) of the contract price. Provided, however, that in respect of the Works carried out directly by the Contractor, it may enter into contracts for the supply and installation of Materials, Plant, equipment, road furniture, safety devices and labour, as the case may be, for such Works. The Parties further agree that all obligations and liabilities under this Agreement for the entire Project Highway shall at all times remain with the Contractor. {The Parties also agree that obligation of the Contractor to carry out Works directly in at least 60% (sixty per cent) of the contract price
- 3.2.2. In the event any sub-contract for Works, or the aggregate of such sub-contracts with any Sub-contractor, exceeds 5% (five percent) of the Contract Price, the Contractor shall communicate the name and particulars, including the relevant experience of the sub-contractor, to the Authority prior to entering into any such sub-contract. The Authority shall examine the particulars of the sub-contractor from the national security and public interest perspective and may require the Contractor, no later than **15 (fifteen)** business days from the date of receiving the communication from the Contractor, not to proceed with the sub-contract, and the Contractor shall comply therewith.
- 3.2.3 In the event any sub-contract referred to in Clause 3.2.2 relates to a sub-contractor who has, over the preceding 3 (three) years, not undertaken at least one work of a similar nature with a contract value exceeding 80% (eighty per cent) of the value of the sub-contract to be awarded hereunder and received payments in respect thereof for an amount equal to at least such 80% (eighty per cent), the Authority may, no later than **15 (fifteen)** business days from the date of receiving the communication from the Contractor, require the Contractor not to proceed with such sub-contract, and the Contractor shall comply therewith.
- 3.2.4 It is expressly agreed that the Contractor shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the agreements with its Sub-contractors or any other agreement that may be entered into by the Contractor, and no default under any such agreement shall excuse the Contractor from its obligations or liability hereunder.

3.3 Employment of foreign nationals

The Contractor acknowledges, agrees and undertakes that employment of foreign personnel by the Contractor and/or its Sub-contractors and their sub-contractors shall be subject to grant of requisite regulatory permits and approvals including

employment/residential visas and work permits, if any required, and the obligation to apply for and obtain the same shall and will always be of the Contractor. Notwithstanding anything to the contrary contained in this Agreement, refusal of or inability to obtain any such permits and approvals by the Contractor or any of its Sub-contractors or their sub-contractors 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 this Agreement.

3.4 Contractor's personnel

- 3.4.1 The Contractor shall ensure that the personnel engaged by it or by its Sub-contractors in the performance of its obligations under this Agreement are at all times appropriately qualified, skilled and experienced in their respective functions in conformity with Good Industry Practice. The Contractor shall give preference to the local villagers for unskilled labour requirement and provide a quarterly report to the Authority Engineer on the details of persondays of employment provided to the local villagers (for both men and women separately).
- 3.4.2 The Authority's Engineer may, for reasons to be specified in writing, direct the Contractor to remove any member of the Contractor's or Sub-contractor's personnel. Provided that any such direction issued by the Authority's Engineer shall specify the reasons for the removal of such person.
- 3.4.3 The Contractor shall on receiving such a direction from the Authority's Engineer order for the removal of such person or persons with immediate effect. It shall be the duty of the Contractor to ensure that such persons are evicted from the Site within **10 (ten)** days of any such direction being issued in pursuance of Clause 3.4.2. The Contractor shall further ensure that such persons have no further connection with the Works or Maintenance under this Agreement. The Contractor shall then appoint (or cause to be appointed) a replacement.

3.5 Advertisement on Project Highway

The Project Highway or any part thereof shall not be used in any manner to advertise any commercial product or services.

3.6 Contractor's care of the Works

The Contractor shall bear full risk in and take full responsibility for the care of the Works, and of the Materials, goods and equipment for incorporation therein, from the Appointed Date until the date of Provisional Certificate (with respect to the Works completed prior to the issuance of the Provisional Certificate) and/or Completion Certificate (with respect to the Works referred to in the Punch List), save and except to the extent that any such loss or damage shall have arisen from any default or neglect of the Authority.

3.7 Electricity, water and other services

The Contractor shall be responsible for procuring of all power, water and other services that it may require.

3.8 Unforeseeable difficulties

Except as otherwise stated in the Agreement:

- (a) the Contractor accepts complete responsibility for having foreseen all difficulties and costs of successfully completing the Works;
- (b) the Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs; and
- (c) the Scheduled Completion Date shall not be adjusted to take account of any unforeseen difficulties or costs.

3.9 Corrupt or Fraudulent Practices

The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC

ARTICLE 4
OBLIGATIONS OF THE AUTHORITY

4.1 Obligations of the Authority

- 4.1.1 The Authority shall, at its own cost and expense, undertake, comply with and perform all its obligations set out in this Agreement or arising hereunder.
- 4.1.2 The Authority shall be responsible for the correctness of the Scope of the Project, Project Facilities, Specifications & Standards and the criteria for testing of the completed Works.
- 4.1.3 The Authority shall provide to the Contractor:
- (a) upon receiving the Performance Security under Clause 7.1.1, the Right of Way in accordance with the provisions of Clauses 8.2 and 8.3, as specified in Schedule A;
 - (b) Deleted.
 - (c) Environmental **clearances are not required but proposed Environment Management Plan (EMP) is to be implemented.**
- 4.1.4 Delay in providing the Right of Way or approval of General Arrangement Drawing (GAD) by Railway authorities, as the case may be, in accordance with the provisions of Clause 4.1.3 shall entitle the Contractor to Damages in a sum calculated in accordance with the provisions of Clause 8.3 of this Agreement and Time Extension in accordance with the provisions of Clause 10.5 of this Agreement. For the avoidance of doubt, the Parties agree that the Damages for delay in approval of GAD by the railway authorities for a particular road over-bridge/under-bridge shall be deemed to be equal to the Damages payable under the provisions of Clause 8.3 for delay in providing Right of Way for a length of 2 (two) kilometre for each such road over-bridge/under-bridge.
- 4.1.5 Notwithstanding anything to the contrary contained in this Agreement, the Parties expressly agree that the aggregate Damages payable under Clauses 4.1.4, 8.3 and 9.2 shall not exceed 1% (one per cent) of the Contract Price. For the avoidance of doubt, the Damages payable by the Authority under the aforesaid Clauses shall not be additive if they arise concurrently from more than one cause but relate to the same part of the Project Highway.

Both the parties agree that payment of these Damages shall be full and final settlement of all claims of the Contractor and such compensation shall be the sole remedy against delays of the Authority and both parties further agree this as final cure against delays of the Authority.

4.1.6 The Authority agrees to provide support to the Contractor and undertakes to observe, comply with and perform, subject to and in accordance with the provisions of this Agreement and the Applicable Laws, the following:

- (a) upon written request from the Contractor, and subject to the Contractor complying with Applicable Laws, provide reasonable support to the Contractor in procuring Applicable Permits required from any Government Instrumentality for implementation of the Project;
- (b) upon written request from the Contractor, provide reasonable assistance to the Contractor in obtaining access to all necessary infrastructure facilities and utilities, including water and electricity at rates and on terms no less favourable than those generally available to commercial customers receiving substantially equivalent services;
- (c) procure that no barriers that would have a material adverse effect on the works are erected or placed on or about the Project Highway by any Government Instrumentality or persons claiming through or under it, except for reasons of Emergency, national security, law and order or collection of inter-state taxes;
- (d) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;
- (e) support, cooperate with and facilitate the Contractor in the implementation of the Project in accordance with the provisions of this Agreement; and
- (f) upon written request from the Contractor and subject to the provisions of Clause 3.3, provide reasonable assistance to the Contractor and any expatriate personnel of the Contractor or its Sub-contractors to obtain applicable visas and work permits for the purposes of discharge by the Contractor or its Sub-contractors of their obligations under this Agreement and the agreements with the Sub-contractors.
- (g) upon written request from the Contractor and subject to the provisions of the Contract, shall issue exemption certificate for excise duty/ customs duty for materials used in the work as per the latest notification and based on the work requirements.

4.2 Maintenance obligations prior to the Appointed Date

The Authority shall, prior to the Appointed Date, maintain the Project Highway, at its own cost and expense, so that its traffic worthiness and safety are at no time materially inferior as compared to its condition **10 (ten)** days prior to the last date for submission of the Bid, and in the event of any material deterioration or damage other than normal wear and tear, undertake repair thereof. For the avoidance of doubt, the Authority shall undertake only routine maintenance prior to the Appointed Date, and

it shall undertake special repairs only in the event of excessive deterioration or damage caused due to unforeseen events such as floods or earthquake.

4.3 **Environmental Clearances**

The Authority represents and warrants that the environmental clearances *are not* required for construction of the Project **but the proposed EMP is to be implemented by the Contractor.**

ARTICLE 5
REPRESENTATIONS AND WARRANTIES

5.1 Representations and warranties of the Contractor

The Contractor represents and warrants to the Authority that:

- (a) it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;
- (b) it has taken all necessary corporate and/or other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;
- (c) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof;
- (d) it is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder;
- (e) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date of this Agreement;
- (f) the execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its memorandum and articles of association or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;
- (g) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;
- (h) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on its ability to perform its obligations under this Agreement and no fact or

circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

- (i) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a material adverse effect on its ability to perform its obligations under this Agreement;
- (j) no representation or warranty by it contained herein or in any other document furnished by it to the Authority or to any Government Instrumentality in relation to Applicable Permits contains or will contain any untrue or misleading statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading;
- (k) no sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the contract or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Authority in connection therewith;
- (l) all information provided by the {selected bidder/ members of the JV} in response to the IFB No. **RSHDP II/2017-18/EPC/01** or otherwise, is to the best of its knowledge and belief, true and accurate in all material respects; and
- (m) nothing contained in this Agreement shall create any contractual relationship or obligation between the Authority and any Sub-contractors, designers, consultants or agents of the Contractor.

5.2 Representations and warranties of the Authority

The Authority represents and warrants to the Contractor that:

- (a) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and perform its obligations, under this Agreement;
- (b) it has taken all necessary actions under the Applicable Laws to authorise the execution, delivery and performance of this Agreement;
- (c) it has the financial standing and capacity to perform its obligations under this Agreement;
- (d) this Agreement constitutes a legal, valid and binding obligation enforceable against it in accordance with the terms hereof;
- (e) it has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any

Government Instrumentality which may result in any material adverse effect on the Authority's ability to perform its obligations under this Agreement;

- (f) it has complied with Applicable Laws in all material respects;
- (g) it has good and valid right to the Site and has the power and authority to grant the Right of Way in respect thereof to the Contractor; and
- (h) it has procured Right of Way and environment clearances such that the Contractor can commence construction forthwith on the Project Highway as per Schedule A.

5.3 Disclosure

In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any obligation of either Party under this Agreement.

ARTICLE 6
DISCLAIMER

6.1 Disclaimer

- 6.1.1 The Contractor acknowledges that prior to the execution of this Agreement, the Contractor has, after a complete and careful examination, made an independent evaluation of the Invitation for Bid, Scope of the Project, Specifications and Standards of design, construction and maintenance, Site, local conditions, physical qualities of ground, subsoil and geology, traffic volumes, suitability and availability of access routes to the Site and all information provided by the Authority or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. Save as provided in Clause 4.1.2 and Clause 5.2, the Authority makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/or completeness of any assessment, assumptions, statement or information provided by it and the Contractor confirms that it shall have no claim whatsoever against the Authority in this regard.
- 6.1.2 The Contractor acknowledges and hereby accepts to have satisfied itself as to the correctness and sufficiency of the Contract Price.
- 6.1.3 The Contractor acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 6.1.1 above and hereby acknowledges and agrees that the Authority shall not be liable for the same in any manner whatsoever to the Contractor, or any person claiming through or under any of them, and shall not lead to any adjustment of Contract Price or Scheduled Completion Date.
- 6.1.4 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 6.1.1 above shall not vitiate this Agreement, or render it voidable.
- 6.1.5 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 6.1.1 above, that Party shall immediately notify the other Party, specifying the mistake or error.
- 6.1.6 Except as otherwise provided in this Agreement, all risks relating to the Project shall be borne by the Contractor; and the Authority shall not be liable in any manner for such risks or the consequences thereof.

Part III

Construction and Maintenance

ARTICLE 7
PERFORMANCE SECURITY

7.1 Performance Security

- 7.1.1 The Contractor shall, for the performance of its obligations hereunder during the Construction Period, provide to the Authority, within **10 (ten)** days of the date of this Agreement, Performance Security and an Environmental, Social, Safety and Health (ESHS) Performance Security. The standard forms of Performance Security and ESHS Security shall be irrevocable and unconditional guarantees from Scheduled / Nationalized Banks in the forms set forth in Schedule-G (the “Performance Security” and “ESHS Performance Security”). The Performance Security amount is equal to **9% (nine percent)** of the Contract Price and Environmental, Social, Safety and Health (ESHS) Performance Security amount is **1% (one percent)** of Contract Price. The Contractor has the option of submitting two guarantees of equal amount towards Performance Security totaling to **10% (ten percent)** of the Contract Price. The Performance Security and ESHS Performance Security shall be valid until 60 (sixty) days after the Defects Liability Period. Until such time the Performance Security and ESHS Performance Security are provided by the Contractor pursuant hereto and the same come into effect, the Bid Security shall remain in force and effect, and upon such provision of the Performance Security and ESHS Performance Security, the Authority shall release the Bid Security to the Contractor.
- 7.1.2 Notwithstanding anything to the contrary contained in this Agreement, the Parties agree that in the event of failure of the Contractor to provide the Performance Security and ESHS Performance Security in accordance with the provisions of Clause 7.1.1 and within the time specified therein or such extended period as may be provided by the Authority, in accordance with the provisions of Clause 7.1.3, the Authority may encash the Bid Security and appropriate the proceeds thereof as Damages, and thereupon all rights, privileges, claims and entitlements of the Contractor under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Contractor, and this Agreement shall be deemed to have been terminated by mutual agreement of the Parties.
- 7.1.3 In the event the Contractor fails to provide the Performance Security and ESHS Performance Security within **10 (ten)** days of this Agreement, it may seek extension of time for a period not exceeding **20 (twenty)** days on payment of Damages for such extended period in a sum calculated at the rate of **0.05% (zero point zero five per cent)** of the Contract Price for each day until the Performance Security is provided.

7.2 Extension of Performance Security - Deleted

7.3 Appropriation of Performance Security

- 7.3.1 Upon occurrence of a Contractor's Default, the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate the relevant amounts from the Performance Security as Damages for such Contractor's Default.
- 7.3.2 Upon such encashment and appropriation from the Performance Security, the Contractor shall, within **30 (thirty)** days thereof, replenish, in case of partial appropriation, to its original level the Performance Security, and in case of appropriation of the entire Performance Security provide a fresh Performance Security, as the case may be, and the Contractor shall, within the time so granted, replenish or furnish fresh Performance Security as aforesaid failing which the Authority shall be entitled to terminate the Agreement in accordance with Article 23. Upon replenishment or furnishing of a fresh Performance Security, as the case may be, as aforesaid, the Contractor shall be entitled to an additional Cure Period of **30 (thirty)** days for remedying the Contractor's Default, and in the event of the Contractor not curing its default within such Cure Period, the Authority shall be entitled to encash and appropriate such Performance Security as Damages, and to terminate this Agreement in accordance with Article 23.

7.4 Release of Performance Security

The Authority shall return the Performance Security to the Contractor within **60 (sixty)** days of the later of the expiry of the Defects Liability Period under this Agreement. Notwithstanding the aforesaid, the Parties agree that the Authority shall not be obliged to release the Performance Security until all Defects identified during the Defects Liability Period have been rectified. In case the Contractor has provided two bank guarantees in accordance with Clause 7.1.1, the Authority shall return one of the guarantees to the Contractor **2 (two)** years after completion of construction

7.5 Retention Money

- 7.5.1 From every payment for Works due to the Contractor in accordance with the provisions of Clause 19.5, the Authority shall deduct **5% (five per cent)** thereof as guarantee money for performance of the obligations of the Contractor during the Construction Period (the "**Retention Money**") subject to the condition that the maximum amount of Retention Money shall not exceed 5% (five per cent) of the Contract Price.
- 7.5.2 Upon occurrence of a Contractor's Default, the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to appropriate the relevant amounts from the Retention Money as Damages for such Contractor's Default.
- 7.5.3 The Contractor may, upon furnishing an irrevocable and unconditional bank guarantee substantially in the form provided at Annex-II of Schedule-G, require the

Authority to refund the Retention Money deducted by the Authority under the provisions of Clause 7.5.1. Provided that the refund hereunder shall be made in tranches of not less than **1% (one per cent)** of the Contract Price.

- 7.5.4 Within **15 (fifteen)** days of the date of issue of the Completion Certificate, the Authority shall discharge the bank guarantees furnished by the Contractor under the provisions of Clause 7.5.3 and refund the balance of Retention Money remaining with the Authority after adjusting the amounts appropriated under the provisions of Clause 7.5.2 and the amounts refunded under the provisions of Clause 7.5.3.
- 7.5.5 The Parties agree that in the event of Termination of this Agreement, the Retention Money and the bank guarantees specified in this Clause 7.5 shall be treated as if they are Performance Security and shall be reckoned as such for the purposes of Termination Payment under Clause 23.6.

ARTICLE 8

RIGHT OF WAY

8.1 The Site

The site of the Project Highway (the “**Site**”) shall comprise the site described in Schedule-A in respect of which the Right of Way shall be provided by the Authority to the Contractor. The Authority shall be responsible for:

- (a) acquiring and providing Right of Way on the Site in accordance with the alignment finalised by the Authority, free from all encroachments and encumbrances, and free access thereto for the execution of this Agreement; and
- (b) obtaining licences and permits for environment clearance for the Project Highway.

8.2 Procurement of the Site

- 8.2.1 The Authority Representative and the Contractor shall, within **15 (fifteen)** days of the date of this Agreement, inspect the Site and prepare a memorandum containing an inventory of the Site including the vacant and unencumbered land, buildings, structures, road works, trees and any other immovable property on or attached to the Site. Subject to the provisions of Clause 8.2.3, such memorandum shall have appended thereto an appendix (the “**Appendix**”) specifying in reasonable detail those parts of the Site to which vacant access and Right of Way has not been given to the Contractor. Signing of the memorandum, in two counterparts (each of which shall constitute an original), by the authorised representatives of the Parties shall be deemed to constitute a valid evidence of giving the Right of Way to the Contractor for discharging its obligations under and in accordance with the provisions of this Agreement and for no other purpose whatsoever.

Whenever the Authority is ready to hand over any part or parts of the Site included in the Appendix, it shall inform the Contractor, by notice, the proposed date and time such of handing over. The Authority Representative and the Contractor shall, on the date so notified, inspect the specified parts of the Site, and prepare a memorandum containing an inventory of the vacant and unencumbered land, buildings, structures, road works, trees and any other immovable property on or attached to the Site so handed over. Signing of the memorandum, in two counterparts (each of which shall constitute an original), by the authorised representatives of the Parties shall be deemed to constitute a valid evidence of giving the relevant Right of Way to the Contractor.

- 8.2.2 The Authority shall provide the Right of Way to the Contractor in respect of all land included in the Appendix by the date specified in Schedule-A for those parts of the Site referred to therein, or no later than **90 (ninety)** days of the Appointed Date for those parts of the Site which have not been specified in Schedule-A, and in the event

of delay for any reason other than Force Majeure or breach of this Agreement by the Contractor, it shall pay to the Contractor, Damages in a sum calculated in accordance with Clause 8.3.

- 8.2.3 Notwithstanding anything to the contrary contained in this Clause 8.2, the Authority shall specify the parts of the Site, if any, for which Right of Way shall be provided to the Contractor on the dates specified in Schedule-A. Such parts shall also be included in the Appendix prepared in pursuance of Clause 8.2.1. For the avoidance of doubt, the Parties expressly agree that the Damages specified hereunder and the Time Extension specified in Clause 10.5 shall be restricted only to failure of the Authority to provide the Right of Way for and in respect of the width of the roadway and its embankment.

8.3 Damages for delay in handing over the Site

- 8.3.1 In the event the Right of Way to any part of the Site is not provided by the Authority on or before the date(s) specified in Clause 8.2 for any reason other than Force Majeure or breach of this Agreement by the Contractor, the Authority shall pay Damages to the Contractor in a sum calculated in accordance with the following formula for and in respect of those parts of the Site to which the Right of Way has not been provided:

Amount of Damages in Rs. per day per metre = **0.05** x C x 1/L x 1/N

Where

C = the Contract Price; L = length of the Project Highway in metres; and

N = Completion period in days (Appointed Date to Scheduled Completion Date)

In the event that any Damages are due and payable to the Contractor under the provisions of this Clause 8.3.1 for delay in providing the Right of Way, the Contractor shall, subject to the provisions of Clause 10.5, be entitled to Time Extension equal to the period for which the Damages have become due and payable under this Clause 8.3.1, save and except that:

- (a) if any delays involve time overlaps, the overlaps shall not be additive; and
- (b) such Time Extension shall be restricted only to the Works which are affected by the delay in providing the Right of Way.

For the avoidance of doubt, the Parties expressly agree that the Damages specified hereunder and the Time Extension specified in Clause 10.5 shall be restricted only to failure of the Authority to provide the Right of Way required for construction work.

- 8.3.2 Notwithstanding anything to the contrary contained in this Agreement, the Contractor expressly agrees that Works on all parts of the Site for which Right of

Way is granted within **90 (ninety)** days of the Appointed Date, or with respect to the parts of the Site provided in Schedule-A, no later than the date(s) specified therein as per Schedule A, as the case may be, shall be completed before the Scheduled Completion Date and shall not qualify for any Time Extension under the provisions of Clause 8.3.1.

- 8.3.3 Notwithstanding anything to the contrary contained in this Agreement, the Authority may at any time withdraw any Works forming part of this Agreement, subject to such Works not exceeding an aggregate value, such value to be determined in accordance with Schedule-H, equal to **10% (ten per cent)** percent of the Contract Price.

Provided that if any Works cannot be undertaken within the municipal limits of a town or within any area falling in a reserved forest or wildlife sanctuary, as the case may be, because the requisite clearances or approvals for commencing construction of Works therein have not been given within **240 (two hundred forty)** days of the Appointed date, the affected Works shall be deemed to be withdrawn under the provisions of this Clause 8.3.3 unless the Parties agree to the contrary, and such Works shall not be computed for the purposes of the aforesaid ceiling of **10% (ten per cent)** hereunder.

- 8.3.4 In the event of withdrawal of Works under Clause 8.3.3, the Contract Price shall be reduced by an amount equal to **90% (ninety)** per cent of the value of the Works withdrawn and the Contractor shall not be entitled to any other compensation or Damages for the withdrawal of Works.

Provided that if any Works are withdrawn after commencement of the Construction of such works, the Authority shall pay to the Contractor **110% (one hundred and ten per cent)** of the fair value of the work done, as assessed by the Authority's Engineer in accordance with Article 13.2.3 (a).

8.4 Site to be free from Encumbrances

Subject to the provisions of Clause 8.2, the Site shall be made available by the Authority to the Contractor pursuant hereto free from all Encumbrances and occupations and without the Contractor being required to make any payment to the Authority on account of any costs, compensation, expenses and charges for the acquisition and use of such Site for the duration of the Project Completion Schedule. For the avoidance of doubt, it is agreed that the existing rights of way, easements, privileges, liberties and appurtenances to the Site shall not be deemed to be Encumbrances. It is further agreed that, unless otherwise specified in this Agreement, the Contractor accepts and undertakes to bear any and all risks arising out of the inadequacy or physical condition of the Site.

8.5 Protection of Site from encroachments

On and after signing the memorandum and/or subsequent memorandum referred to in Clause 8.2.1, and until the issue of the Completion Certificate, the Contractor shall maintain a round-the-clock vigil over the Site and shall ensure and procure that no encroachment thereon takes place. During the Construction Period, the Contractor shall protect the Site from any and all occupations, encroachments or Encumbrances, and shall not place or create nor permit any Sub-contractor or other person claiming through or under the Agreement to place or create any Encumbrance or security threat over all or any part of the Site or the Project Assets, or on any rights of the Contractor therein or under this Agreement, save and except as otherwise expressly set forth in this Agreement. In the event of any encroachment or occupation on any part of the Site, the Contractor shall report such encroachment or occupation forthwith to the Authority and undertake its removal at its own cost and expenses.

8.6 Special/temporary Right of Way

The Contractor shall bear all costs and charges for any special or temporary right of way required by it in connection with access to the Site. The Contractor shall obtain at its cost such facilities on or outside the Site as may be required by it for the purposes of the Project Highway and the performance of its obligations under this Agreement.

8.7 Access to the Authority and the Authority's Engineer

- 8.7.1 The Right of Way given to the Contractor hereunder shall always be subject to the right of access of the Authority and the Authority's Engineer and their employees and agents for inspection, viewing and exercise of their rights and performance of their obligations under this Agreement.
- 8.7.2 The Contractor shall ensure, subject to all relevant safety procedures, that the Authority has un-restricted access to the Site during any emergency situation, as decided by the Authority's Engineer.

8.8 Geological and archaeological finds

It is expressly agreed that mining, geological or archaeological rights do not form part of this Agreement with the Contractor for the Works, and the Contractor hereby acknowledges that it shall not have any mining rights or interest in the underlying minerals, fossils, antiquities, structures or other remnants or things either of particular geological or archaeological interest and that such rights, interest and property on or under the Site shall vest in and belong to the Authority or the concerned Government Instrumentality. The Contractor shall take all reasonable precautions to prevent its workmen or any other person from removing or damaging such interest or property and shall inform the Authority forthwith of the discovery thereof and comply with such instructions as the concerned Government Instrumentality may reasonably give for the removal of such property. For the

avoidance of doubt, it is agreed that any reasonable expenses incurred by the Contractor hereunder shall be reimbursed by the Authority. It is also agreed that the Authority shall procure that the instructions hereunder are issued by the concerned Government Instrumentality within a reasonable period.

ARTICLE 9

UTILITIES AND TREES

9.1 Existing utilities and roads

Notwithstanding anything to the contrary contained herein, the Contractor shall ensure that the respective entities owning the existing roads, right of way, level crossings, structures, or utilities on, under or above the Site are enabled by it to keep them in continuous satisfactory use, if necessary, by providing suitable temporary diversions with the authority of the controlling body of that road, right of way or utility.

9.2 Shifting of obstructing utilities

The Contractor shall, in accordance with Applicable Laws and with assistance of the Authority, shift any utility (including electric lines, water pipes, telephone cables etc.) to an appropriate location or alignment, if such utility or obstruction adversely affects the execution of Works or Maintenance of the Project Highway in accordance with this Agreement. The Contractor shall engage registered contractors of concerned utility Agency for such shifting. The actual cost of such shifting, as approved and communicated by the entity owning the utility, shall be paid by the Contractor and reimbursed by the Authority to the Contractor. In the event of any delay in such shifting by the entity owning the utility beyond a period of 180 (one hundred and eighty) days from the date of notice by the Contractor to the entity owning the utility and to the Authority, the Contractor shall be entitled to Damages in a sum calculated in accordance with the formula specified in Clause 8.3.1 for the period of delay, and to Time Extension in accordance with Clause 10.5 for and in respect of the part(s) of the Works affected by such delay; provided that if the delays involve any time overlaps, the overlaps shall not be additive. However, the Authority will assist in obtaining required permissions for such shifting from the concerned utility Agency including submission of application on **Public Works Department Rajasthan** name. The works shall be carried out in close coordination with utility agency and all precaution / conditions stipulated by the agency shall be diligently followed.

9.3 New utilities

- 9.3.1 The Contractor shall allow, subject to such conditions as the Authority may specify, access to, and use of the Site for laying telephone lines, water pipes, electric cables or other public utilities. Where such access or use causes any financial loss to the Contractor, it may require the user of the Site to pay compensation or damages as per Applicable Laws. For the avoidance of doubt, it is agreed that use of the Site under this Clause 9.3 shall not in any manner relieve the Contractor of its obligation to construct and maintain the Project Highway in accordance with this Agreement and any damage caused by such use shall be restored forthwith at the cost of the Authority.

- 9.3.2 The Authority may, by notice, require the Contractor to connect any adjoining road to the Project Highway, and the connecting portion thereof falling within the Site shall be constructed by the Contractor at the Authority's cost in accordance with Article 10.
- 9.3.3 The Authority may by notice require the Contractor to connect, through a paved road, any adjoining service station, hotel, motel or any other public facility or amenity to the Project Highway, whereupon the connecting portion thereof that falls within the Site shall be constructed by the Contractor on payment of the cost. The cost to be paid by the Authority to the Contractor shall be determined by the Authority's Engineer. For the avoidance of doubt, in the event such road is to be constructed for the benefit of any entity, the Authority may require such entity to make an advance deposit with the Contractor or the Authority, as the case may be, of an amount equal to the estimated cost as determined by the Authority's Engineer and such advance shall be adjusted against the cost of construction as determined by the Authority's Engineer hereunder.
- 9.3.4 In the event the construction of any Works is affected by a new utility or works undertaken in accordance with this Clause 9.3, the Contractor shall be entitled to a reasonable Time Extension as determined by the Authority's Engineer.

9.4 Felling of trees

The Authority shall assist the Contractor in obtaining the Applicable Permits for felling and disposal of trees to be identified by the Contractor for this purpose if and only if such trees cause a Material Adverse Effect on the construction or maintenance of the Project Highway. The cost of such felling and disposal shall be included in the Contract price. The Parties hereto agree that the felled trees shall be deemed to be owned by the Contractor after depositing the required amount to the concerned Department at the rates estimated by the Forest Department, Government of Rajasthan and shall be disposed in such manner and subject to such conditions of the concerned Department. However, the Authority will assist in obtaining applicable permits for felling of trees.

ARTICLE 10

DESIGN AND CONSTRUCTION OF THE PROJECT HIGHWAY

10.1 Obligations prior to commencement of Works

10.1.1 Within **20 (twenty)** days of the Appointed Date, the Contractor shall:

- (a) appoint its representative, duly authorised to deal with the Authority in respect of all matters under or arising out of or relating to this Agreement;
- (b) appoint a design director (the “**Design Director**”) who will head the Contractor’s design unit and shall be responsible for surveys, investigations, collection of data, and preparation of preliminary and detailed designs;
- (c) undertake and perform all such acts, deeds and things as may be necessary or required before commencement of Works under and in accordance with this Agreement, the Applicable Laws and Applicable Permits; and
- (d) make its own arrangements for quarrying of materials needed for the Project Highway under and in accordance with the Applicable Laws and Applicable Permits.
- (e) Prepare construction zone and Camp Site safety checklist.
- (f) Prepare updated Environmental Management Plan (EMP) including the action plan and checklist.

10.1.2 The Authority shall, within **30 (thirty)** days of the date of this Agreement, appoint an engineer (the “**Authority’s Engineer**”) to discharge the functions and duties specified in this Agreement, and shall notify to the Contractor the name, address and the date of appointment of the Authority’s Engineer forthwith.

10.1.3 Within **30 (thirty)** days of the Appointed Date, the Contractor shall submit to the Authority and the Authority’s Engineer a programme (the “**Programme**”) for the Works, developed using networking techniques (like Ms-Project / Primavera) giving the following details:

Part I Contractor’s organisation for the Project, the general methods and arrangements for design and construction, environmental management plan and ESHS-MSIP, Quality Assurance Plan including design quality plan, traffic management and safety plan covering safety of users and workers during construction, Contractor’s key personnel and equipment.

Part II Programme for completion of all stages of construction given in Schedule-H and Project Milestones of the Works as specified in Project Completion Schedule set forth in Schedule-J. The Programme shall include:

- (a) the order in which the Contractor intends to carry out the Works, including the anticipated timing of design and stages of Works;
- (b) the periods for reviews under Clause 10.2;
- (c) the sequence and timing of inspections and tests specified in this Agreement.

The Contractor shall submit a revised programme whenever the previous programme is inconsistent with the actual progress or with the Contractor's obligations. The revised Program shall include EMP and ESHS-MSIP for the Works.

Part III Monthly cash flow forecast.

- 10.1.4 The Contractor shall compute, on the basis of the Drawings prepared in accordance with Clause 10.2.4, and provide to the Authority's Engineer, the length, area and numbers, as the case may be, in respect of the various items of work specified in Schedule-H and comprising the Scope of the Project. The Parties expressly agree that these details shall form the basis for estimating the interim payments for the Works in accordance with the provisions of Clause 19.3. For the avoidance of doubt, the sum of payments to be computed in respect of all the items of work shall not exceed the Contract Price, as may be adjusted in accordance with the provisions of this Agreement.
- 10.1.5 Within **20 (twenty)** days of the appointment date, the Contractor shall appoint a safety consultant (the "**Safety Consultant**") to carry out safety audit at the design stage of the Project Highway in accordance with the Applicable Laws and Good Industry Practice. The Safety Consultant shall be appointed after proposing to the Authority a panel of three names of qualified and experienced firms from whom the Authority may choose one to be the Safety Consultant. Provided, however, that if the panel is not acceptable to the Authority and the reasons for the same are furnished to the Contractor, the Contractor shall propose to the Authority a revised panel of three names for obtaining the consent of the Authority. The Contractor shall also obtain the consent of the Authority for the key personnel of the Safety Consultant who shall have adequate experience and qualifications in safety audit of the highway projects. The Authority shall, within **15 (fifteen)** days of receiving a proposal from the Contractor hereunder, convey its decision, with reasons, to the Contractor, and if no such decision is conveyed within the said period, the Contractor may proceed with engaging of the Safety Consultant.
- 10.1.6 The safety audit pursuant to Clause 10.1.5 shall be carried out by the Safety Consultant in respect of all such design details that have a bearing on safety of Users as well as pedestrians and animals involved in or associated with accidents. The recommendations of the Safety Consultant shall be incorporated in the design of the Project Highway and the Contractor shall forward to the Authority's Engineer a certificate to this effect together with the recommendations of the Safety Consultant. In the event that any works required by the Safety Consultant shall fall beyond the scope of Schedule-B, Schedule-C or Schedule-D, the Contractor shall make a report

thereon and seek the instructions of the Authority for Change in Scope. For the avoidance of doubt, the Safety Consultant to be engaged by the Contractor shall be independent of the design and implementation team of the Contractor.

10.2 Design and Drawings

10.2.1 Design and Drawings shall be developed in conformity with the Specifications & Standards set forth in Schedule-D. In the event, the Contractor requires any relaxation in design standards due to restricted Right of Way in any section, the alternative design criteria for such section shall be provided for review of the Authority's Engineer.

10.2.2 Within **20 (twenty)** days of appointment date, the Contractor shall appoint a proof check consultant (the "**Proof Consultant**") after proposing to the Authority a panel of three names of qualified and experienced firms from whom the Authority may choose one to be the Proof Consultant. Provided, however, that if the panel is not acceptable to the Authority and the reasons for the same are furnished to the Contractor, the Contractor shall propose to the Authority a revised panel of three names for obtaining the consent of the Authority. The Contractor shall also obtain the consent of the Authority for two key personnel of the Proof Consultant who shall have adequate experience and qualifications in highways and bridges respectively. The Authority shall, within **15 (fifteen)** days of receiving a proposal from the Contractor hereunder, convey its decision, with reasons, to the Contractor, and if no such decision is conveyed within the said period, the Contractor may proceed with engaging of the Proof Consultant.

10.2.3 The Proof Consultant shall:

- (a) evolve a systems approach with the Design Director so as to minimise the time required for final designs and construction drawings; and
- (b) proof check the detailed calculations, drawings and designs, which have been approved by the Design Director.

10.2.4 In respect of the Contractor's obligations with respect to the design and Drawings of the Project Highway as set forth in Schedule-I, the following shall apply:

- (a) The Contractor shall prepare and submit, with reasonable promptness and in such sequence as is consistent with the Project Completion Schedule, three copies each of the design and Drawings, duly certified by the Proof Consultant, to the Authority's Engineer for review. Provided, however, that in respect of Major Bridges and Structures, the Authority's Engineer may require additional drawings for its review in accordance with Good Industry Practice.
- (b) by submitting the Drawings for review to the Authority's Engineer, the Contractor shall be deemed to have represented that it has determined and verified that the design and engineering, including field construction criteria

related thereto, are in conformity with the Scope of the Project, the Specifications and Standards and the Applicable Laws;

- (c) within **15 (fifteen)** days of the receipt of the Drawings, the Authority's Engineer shall review the same and convey its observations to the Contractor with particular reference to their conformity or otherwise with the Scope of the Project and the Specifications and Standards. The Contractor shall not be obliged to await the observations of the Authority's Engineer on the Drawings submitted pursuant hereto beyond the said period of **15 (fifteen)** days and may begin or continue Works at its own discretion and risk; Provided, however that in case of a Major Bridge or Structure, the aforesaid period of **15 (fifteen)** days may be extended upto **30 (thirty)** days;
- (d) if the aforesaid observations of the Authority's Engineer indicate that the Drawings are not in conformity with the Scope of the Project or the Specifications & Standards, such Drawings shall be revised by the Contractor in conformity with the provisions of this Agreement and resubmitted to the Authority's Engineer for review. The Authority's Engineer shall give its observations, if any, within **10 (ten)** days of receipt of the revised Drawings. In the event the Contractor fails to revise and resubmit such Drawings to the Authority's Engineer for review as aforesaid, the Authority's Engineer may withhold the payment for the affected works in accordance with the provisions of Clause 19.5.4. If the Contractor disputes any decision, direction or determination of the Authority's Engineer hereunder, the Dispute shall be resolved in accordance with the Dispute Resolution Procedure;
- (e) no review and/or observation of the Authority's Engineer and/or its failure to review and/or convey its observations on any Drawings shall relieve the Contractor of its obligations and liabilities under this Agreement in any manner nor shall the Authority's Engineer or the Authority be liable for the same in any manner; and if errors, omissions, ambiguities, inconsistencies, inadequacies or other Defects are found in the Drawings, they and the construction works shall be corrected at the Contractor's cost, notwithstanding any review under this Article 10;
- (f) the Contractor shall be responsible for delays in submitting the Drawing as set forth in Schedule-I caused by reason of delays in surveys and field investigations, and shall not be entitled to seek any relief in that regard from the Authority; and
- (g) the Contractor warrants that its designers, including any third parties engaged by it, shall have the required experience and capability in accordance with Good Industry Practice and it shall indemnify the Authority against any damage, expense, liability, loss or claim, which the Authority might incur, sustain or be subject to arising from any breach of the Contractor's design responsibility and/or warranty set out in this Clause.

- 10.2.5 Any cost or delay in construction arising from review by the Authority's Engineer shall be borne by the Contractor.
- 10.2.6 Works shall be executed in accordance with the Drawings provided by the Contractor in accordance with the provisions of this Clause 10.2 and the observations of the Authority's Engineer thereon as communicated pursuant to the provisions of Clause 10.2.4 (d). Such Drawings shall not be amended or altered without prior written notice to the Authority's Engineer. If a Party becomes aware of an error or defect of a technical nature in the design or Drawings, that Party shall promptly give notice to the other Party of such error or defect.
- 10.2.7 Within **90 (ninety)** days of the Project Completion Date, the Contractor shall furnish to the Authority and the Authority's Engineer a complete set of as-built Drawings at scales **1:2500** horizontal and **1:200** vertical for road alignment and other appropriate scale for other items of work as approved by the Authority's Engineer in 2 (two) hardcopies in A 2 size sheet on polyester film of quality to be approved by the Authority's Engineer and soft copy in electronic format(CD/DVD-ROM) or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities. As-built drawings shall indicate position of the kilometer stones.

10.3 Construction of the Project Highway

- 10.3.1 The Contractor shall construct the Project Highway as specified in Schedule-B and Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-D. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works. The **730th (Seven hundred thirtieth)** day from the Appointed Date shall be the scheduled completion date (the "**Scheduled Completion Date**") and the Contractor agrees and undertakes that the construction shall be completed on or before the Scheduled Completion Date, including any extension thereof.
- 10.3.2 The Contractor shall construct the Project Highway in accordance with the Project Completion Schedule set forth in Schedule-J. In the event that the Contractor fails to achieve any Project Milestone or the Scheduled Completion Date within a period of **30 (thirty)** days from the date set forth in Schedule-J, unless such failure has occurred due to Force Majeure or for reasons solely attributable to the Authority, it shall pay Damages to the Authority of a sum calculated at the rate of **0.05% (zero point zero five percent)** of the Contract Price for delay of each day reckoned from the date specified in Schedule –J and until such Project Milestone is achieved or the Works are completed; provided that if the period for any or all Project Milestones or the Scheduled Completion Date is extended in accordance with the provisions of this Agreement, the dates set forth in Schedule-J shall be deemed to be modified accordingly and the provisions of this Agreement shall apply as if Schedule-J has

been amended as above; provided further that in the event the Works are completed within or before the Scheduled Completion Date including any Time Extension, applicable for that work or section, the Damages paid under this Clause 10.3.2 shall be refunded by the Authority to the Contractor, but without any interest thereon. For the avoidance of doubt, it is agreed that recovery of Damages under this Clause 10.3.2 shall be without prejudice to the rights of the Authority under this Agreement including the right of Termination thereof. The Parties further agree that Time Extension hereunder shall only be reckoned for and in respect of the affected works as specified in Clause 10.5.2.

- 10.3.3 The Authority shall notify the Contractor of its decision to impose Damages in pursuance with the provisions of this Clause 10.3. Provided that no deduction on account of Damages shall be effected by the Authority without notifying the Contractor of its decision to impose the Damages, and taking into consideration the representation, if any, made by the Contractor within **20 (twenty)** days of such notice. The Parties expressly agree that the total amount of Damages under Clause 10.3.2 shall not exceed 10% (ten percent) of the Contract Price.

10.4 Maintenance during Construction Period

During the Construction Period, the Contractor shall maintain, at its cost, the existing lane(s) of the Project Highway so that the traffic worthiness and safety thereof are at no time materially inferior as compared to their condition **10 (ten)** days prior to the date of this Agreement, and shall undertake the necessary repair and maintenance works for this purpose; provided that the Contractor may, at its cost, interrupt and divert the flow of traffic if such interruption and diversion is necessary for the efficient progress of Works and conforms to Good Industry Practice; provided further that such interruption and diversion shall be undertaken by the Contractor only with the prior written approval of the Authority's Engineer which approval shall not be unreasonably withheld. For the avoidance of doubt, it is agreed that the Contractor shall at all times be responsible for ensuring safe operation of the Project Highway. It is further agreed that in the event the Project includes construction of a bypass or tunnel and realignment of the existing carriageway, the Contractor shall maintain the existing highway in such sections until the new Works are open to traffic.

10.5 Extension of time for completion

- 10.5.1 Without prejudice to any other provision of this Agreement for and in respect of extension of time, the Contractor shall be entitled to extension of time in the Project Completion Schedule (the "**Time Extension**") to the extent that completion of any Project Milestone is or will be delayed by any of the following, namely:

- (a) delay in providing the Right of Way, environmental clearances or approval of railway authorities, specified in Clause 4.1.4;

- (b) Change of Scope (unless an adjustment to the Scheduled Completion Date has been agreed under Article 13);
- (c) occurrence of a Force Majeure Event;
- (d) any delay, impediment or prevention caused by or attributable to the Authority, the Authority's personnel or the Authority's other contractors on the Site; and
- (e) any other cause or delay which entitles the Contractor to Time Extension in accordance with the provisions of this Agreement.

10.5.2 The Contractor shall, no later than **15 (fifteen)** business days from the occurrence of an event or circumstance specified in Clause 10.5.1, inform the Authority's Engineer by notice in writing, with a copy to the Authority, stating in reasonable detail with supporting particulars, the event or circumstances giving rise to the claim for Time Extension in accordance with the provisions of this Agreement. Provided that the period of **15 (fifteen)** business days shall be calculated from the date on which the Contractor became aware, or should have become aware, of the occurrence of such an event or circumstance.

Provided further that notwithstanding anything to the contrary contained in this Agreement, Time Extension shall be due and applicable only for the Works which are affected by the aforesaid events or circumstances and shall not in any manner affect the Project Completion Schedule for and in respect of the Works which are not affected hereunder.

10.5.3 In the event of the failure of the Contractor to issue to the Authority's Engineer a notice in accordance with the provisions of Clause 10.5.2 within the time specified therein, the Contractor shall not be entitled to any Time Extension and shall forfeit its right for any such claims in future. For the avoidance of doubt, in the event of failure of the Contractor to issue notice as specified in this clause 10.5.3, the Authority shall be discharged from all liability in connection with the claim.

10.5.4 The Authority's Engineer shall, on receipt of the claim in accordance with the provisions of Clause 10.5.2, examine the claim expeditiously within the time frame specified herein. In the event the Authority's Engineer requires any clarifications to examine the claim, the Authority's Engineer shall seek the same within **10 (ten)** days from the date of receiving the claim. The Contractor shall, on receipt of the communication of the Authority's Engineer requesting for clarification, furnish the same to the Authority's Engineer within **10 (ten)** days thereof. The Authority's Engineer shall, within a period of **60 (sixty)** days from the date of receipt of such clarifications, forward in writing to the Contractor its determination of Time Extension.

Provided that when determining each extension of time under this Clause 10.5, the Authority's Engineer shall review previous determinations and may increase, but shall not decrease, the total Time Extension.

10.5.5 If the event or circumstance giving rise to the notice has a continuing effect:

- (a) a fully detailed claim shall be considered as interim;
- (b) the Contractor shall, no later than **10 (ten)** days after the close of each month, send further interim claims specifying the accumulated delay, the extension of time claimed, and such further particulars as the Authority's Engineer may reasonably require; and
- (c) the Contractor shall send a final claim within **30 (thirty)** days after the effect of the event or the circumstance ceases.

Upon receipt of the claim hereunder, the Authority's Engineer shall examine the same in accordance with the provisions of Clause 10.5.4 within a period of **60 (sixty)** days of the receipt thereof.

10.6 Incomplete Works

In the event the Contractor fails to complete the Works in accordance with the Project Completion Schedule, including any Time Extension granted under this Agreement, the Contractor shall endeavour to complete the balance work expeditiously and shall pay Damages to the Authority in accordance with the provisions of Clause 10.3.2 for delay of each day until the Works are completed in accordance with the provisions of this Agreement. Recovery of Damages under this Clause shall be without prejudice to the rights of the Authority under this Agreement including the right to termination under Clause 23.1.

10.7 Maintenance Manual

No later than **60 (sixty)** days prior to the Project Completion Date, the Contractor shall, in consultation with the Authority's Engineer, evolve a maintenance manual (the "Maintenance Manual") for the regular and preventive maintenance of the Project Highway in conformity with the Specifications and Standards, safety requirements and Good Industry Practice, and shall provide 5 (five) copies thereof to the Authority's Engineer. The Authority's Engineer shall review the Maintenance Manual within **15 (fifteen)** days of its receipt and communicate its comments to the Contractor for necessary modifications, if any.

ARTICLE 11

QUALITY ASSURANCE, MONITORING AND SUPERVISION

11.1 Quality of Materials and workmanship

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

11.2 Quality control system

11.2.1 The Contractor shall establish a quality control mechanism to ensure compliance with the provisions of this Agreement (the “**Quality Assurance Plan**” or “**QAP**”).

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

- (a) organisation, duties and responsibilities, procedures, inspections and documentation;
- (b) quality control mechanism including sampling and testing of Materials, test frequencies, standards, acceptance criteria, testing facilities, reporting, recording and interpretation of test results, approvals, check list for site activities, and proforma for testing and calibration in accordance with the Specifications for Road and Bridge Works issued by MoRT&H, relevant IRC specifications and Good Industry Practice; and
- (c) internal quality audit system.

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

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

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

11.3. Methodology

The Contractor shall, at least **15 (fifteen)** days prior to the commencement of the construction, submit to the Authority’s Engineer for review the methodology

proposed to be adopted for executing the Works, giving details of equipment to be deployed, traffic management and measures for ensuring safety. The Authority's Engineer shall complete the review and convey its comments to the Contractor within a period of **10 (ten)** days from the date of receipt of the proposed methodology from the Contractor.

11.4. Inspection and technical audit by the Authority

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

11.5 External technical audit

At any time during construction, the Authority may appoint an external technical auditor to conduct an audit of the quality of the Works. The findings of the audit, to the extent accepted by the Authority, shall be notified to the Contractor and the Authority's Engineer for taking remedial action in accordance with this Agreement. The Contractor shall provide all assistance as may be required by the auditor in the conduct of its audit hereunder. Notwithstanding anything contained in this Clause 11.5, the external technical audit shall not affect any obligations of the Contractor or the Authority's Engineer under this Agreement.

11.6 Inspection of construction records

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

11.6.1 Inspection and Audit by the World Bank

The World Bank and/or persons appointed by the World Bank shall have the right to inspect the Site and all accounts and records of the Contractor, its sub-contractors and sub-consultants relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the World Bank if requested by the World Bank. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Clause 3.9 [Corrupt or Fraudulent Practices] which provides, inter alia, that acts intended to materially impede the exercise of the World Bank's inspection and audit rights provided under this Clause 11.6.1 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the World Bank's prevailing sanctions procedures).

11.7 Monthly progress reports

During the Construction Period, the Contractor shall, no later than **10 (ten)** days after the close of each month, furnish to the Authority and the Authority's Engineer a monthly report on progress of the Works and shall promptly give such other relevant information as may be required by the Authority's Engineer. This report will also include progress on the ESHS Management Strategies and Implementation Plans (ESHS-MSIP), and compliance to the applicable Laws/ Rules/ Regulations for protection of environment, public health and safety, and the applicable parts of the Environment Management Plan of the project.

11.8 Inspection

11.8.1 The Authority's Engineer and its authorised representative 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 for use in the Works; and
- (b) during production, manufacture and construction at the Site and at the place of production, be entitled to examine, inspect, measure and test the Materials and workmanship, and to check the progress of manufacture of Materials.

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

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

11.9 Samples

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

- (a) manufacturer's test reports and standard samples of manufactured Materials; and
- (b) samples of such other Materials as the Authority's Engineer may require.

11.10 Tests

11.10.1 For determining that the Works conform to the Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out or cause to be carried out tests, at such time and frequency and in such manner as specified in this Agreement, and in accordance with Good Industry Practice for quality assurance.

The checks by the Authority's Engineer shall comprise of 100% (hundred percent) of all the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

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

11.11 Examination of work before covering up

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

11.12 Rejection

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

If the Authority's Engineer requires the Plant, Materials, design or workmanship to be retested, the tests shall be repeated under the same terms and conditions, as applicable in each case. If the rejection and retesting cause the Authority to incur any additional costs, such cost shall be recoverable by the Authority from the Contractor;

and may be deducted by the Authority from any monies due to be paid to the Contractor.

11.13 Remedial work

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

- (a) remove from the Site and replace any Plant or Materials which are not in accordance with the provisions of this Agreement;
- (b) remove and re-execute any work which is not in accordance with the provisions of this Agreement and the Specification and Standards; and
- (c) execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.

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

11.14 Delays during construction

Without prejudice to the provisions of Clause 10.3.2, in the event the Contractor does not achieve any of the Project Milestones or the Authority's Engineer shall have reasonably determined that the rate of progress of Works is such that Completion of the Project Highway is not likely to be achieved by the end of the Scheduled Completion Date, it shall notify the same to the Contractor, and the Contractor shall, within **15 (fifteen)** days of such notice, by a communication inform the Authority's Engineer in reasonable detail about the steps it proposes to take to expedite progress and the period within which it shall achieve the Project Completion Date.

11.15 Quality control records and Documents

The Contractor shall hand over to the Authority's Engineer a copy of all its quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.

11.16 Video recording

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

11.17 Suspension of unsafe Construction Works

- 11.17.1 Upon recommendation of the Authority's Engineer to this effect, the Authority may by notice require the Contractor to suspend forthwith the whole or any part of the Works if, in the reasonable opinion of the Authority's Engineer, such work threatens the safety of the Users and pedestrians.
- 11.17.2 The Contractor shall, pursuant to the notice under Clause 11.17.1, suspend the Works or any part thereof for such time and in such manner as may be specified by the Authority and thereupon carry out remedial measures to secure the safety of suspended works, the Users and pedestrians. The Contractor may by notice require the Authority's Engineer to inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked. Upon receiving the recommendations of the Authority's Engineer, the Authority shall either revoke such suspension or instruct the Contractor to carry out such other and further remedial measures as may be necessary in the reasonable opinion of the Authority, and the procedure set forth in this Clause 11.17 shall be repeated until the suspension hereunder is revoked.
- 11.17.3 Subject to the provisions of Clause 21.6, all reasonable costs incurred for maintaining and protecting the Works or part thereof during the period of suspension (the "**Preservation Costs**"), shall be borne by the Contractor; provided that if the suspension has occurred as a result of any breach of this Agreement by the Authority, the Preservation Costs shall be borne by the Authority.
- 11.17.4 If suspension of Works is for reasons not attributable to the Contractor, the Authority's Engineer shall determine any Time Extension to which the Contractor is reasonably entitled.

11.18 Protection of Environment

The Contractor shall ensure that during continuance of the contract, the Contractor and his Subcontractor(s) shall abide at all times by all existing enactments on environmental protection and rules made thereunder, regulations, latest notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority. Salient features of some of the major laws that are applicable are given below:

1. The Environment (Protection) Act, 1986 and as amended: This provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, plants and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between

water, air and land, and human beings, other living creatures, plants, micro-organism and property.

2. The Forest Conservation Act, 1980, as amended, and Forest (Conservation) Rules, 1981 as amended: These provides for protection of forests by restricting conversion of forested areas into non- forested areas and prevention of deforestation, and stipulates the procedures for cutting any trees that might be required by the applicable rules. Permissions under the Act also stipulates the norms and compliance requirements of the employer and any contractor on behalf of the employer.
3. State Tree Preservation Acts as may be in force: These provide for protection of trees of important species. Contractors will be required to obtain prior permission for full or partial cutting, uprooting, or pruning of any such trees.
4. The Wildlife (Protection) Act, 1972, and as amended: This provides for protection of wildlife through notifying National Parks and Sanctuaries and buffer areas around these zones; and to protect individuals of nationally important species listed in the Annex of the Act.
5. The Biological Diversity Act, 2002: This provides for conservation of biological diversity, sustainable use of components of biological diversity, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.
6. The Public Liability Insurance Act, 1991 as amended and The Public Liability Insurance Rules, 1991 as amended: These provide for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.
7. The Ancient Monuments and Archaeological Sites and Remains Act, 1958 and the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, the Ancient Monuments and Archaeological Sites and Remains Rules, 1959 amended 2011, the National Monuments Authority Rules, 2011 and the similar State Acts: These provide for conservation of cultural and historical remains found in India. Accordingly, area within the radii of 100m and 300m from the “protected property” are designated as “protected area” and “controlled area” respectively. No development activity (including building, mining, excavating, blasting) is permitted in the “protected area” and development activities likely to damage the protected property is not permitted in the “controlled area” without prior permission of the Archaeological Survey of India (ASI) or the State Departments of Art and Culture or Archaeology as applicable.
8. The Environmental Impact Assessment Notification, 2006 and as amended: This provides for prior environmental clearance for new, modernization and expansion projects listed in

Schedule 1 of the Notification. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any environmental management plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.

9. The Water (Prevention and Control of Pollution) Act, 1974 as amended, and the Water (Prevention and Control of Pollution) Rules, 1975 as amended: These provide for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates waste water, and observe the required standards of establishment and operation of these items of work or installations; as well as install and operate all required waste water treatment facilities.
10. The Water (Prevention and Control of Pollution) Cess Act, 1977 and The Water (Prevention and Control of Pollution) Cess Rules, 1978: These provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution under the Water (Prevention and Control of Pollution) Act, 1974.
11. The Air (Prevention and Control of Pollution) Act, 1981 as amended, and the Air (Prevention and Control of Pollution) Rules, 1982: These provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates air pollution such as batching plants, hot mix plants, power generators, backup power generation, material handling processes, and observe the required standards of establishment and operation of these items of work or installations.
12. Noise Pollution (Control and Regulation) Rules, 2000, and as amended: This provides for standards for noise for day and night for various land uses and specifies special standards in and around sensitive receptors of noise such as schools and hospitals. Contractors will need to ensure compliance to the applicable standards, and install and operate all required noise control devices as may be required for all plants and work processes.
13. Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996: This provides for Requirement of preparation of on-site and off-site Disaster Management Plans

for accident-prone areas.

14. The Explosives Act 1884 and the Explosives Rules, 2008: These provide for safe manufacture, possession, sale, use, transportation and import of explosive materials such as diesel, Oil and lubricants etc.; and also for regulating the use of any explosives used in blasting and/or demolition. All applicable provisions will need compliance by the contractors.
15. The Petroleum Rules, 2002: This provides for safe use and storage of petroleum products, and will need to be complied by the contractors.
16. The Gas Cylinder Rules 2004 and amendments: This provides for regulations related to storage of gas, and possession of gas cylinder more than the exempted quantity. Contractors should comply with all the requirements of this Rule.
17. Manufacture, Storage and Import of Hazardous Chemical Rules of 1989 and as amended: These provide for use and storage of hazardous material such as highly inflammable liquids like HSD/LPG. Contractors will need to ensure compliance to the Rules; and in the event where the storage quantity exceeds the regulated threshold limit, the contractors will be responsible for regular safety audits and other reporting requirements as prescribed in the Rules.
18. Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016: These provide for protection of general public from improper handling storage and disposal of hazardous waste. The rules prescribe the management requirement of hazardous wastes from its generation to final disposal. Contractors will need to obtain permission from the State Pollution Control Boards and other designated authorities for storage and handling of any hazardous material; and will to ensure full compliance to these rules and any conditions imposed in the permit.
19. The Bio Medical Waste Management Rules, 2016: This provides for control, storage, transportation and disposal of bio-medical wastes. As and where the contractor has any first aid facility and dispensaries, established in either temporary or permanent manner, compliance to these Rules are mandatory.
20. Construction and Demolition Waste Management Rules, 2016: This provides for management of construction and demolition waste (such as building materials possible to be reused, rubble and debris or the like); and applies to all those waste resulting from construction, re-modelling, repair or demolition of any civil structure. Contractor will need to prepare a waste disposal plan and obtain required approval from local authorities, if waste generation is more than 20 tons in any day or 300 tons in any month during the contract period; and ensure full compliance to these rules and any conditions imposed in the regulatory approval.
21. The E-Waste (Management) Rules, 2016: This provides for management of E-wastes (but not covering lead acid batteries and radio-active wastes) aiming to enable the recovery

and/or reuse of useful material from e-waste, thereby reducing the hazardous wastes destined for disposal and to ensure the environmentally sound management of all types of waste of electrical and electronic equipment. This Rule applies to every manufacturer, producer, consumer, bulk consumer, collection centers, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational.

22. Plastic waste Management Rules, 2016: This provides for control and management of the plastic waste generated from any activity. Contractors will ensure compliance to this Rule.
23. The Batteries (Management and Handling) Rules 2001: This provides for ensuring safe disposal and recycling of discarded lead acid batteries likely to be used in any equipment during construction and operation stage. Rules require proper control and record keeping on the sale or import of lead acid batteries and recollection of the used batteries by registered recyclers to ensure environmentally sound recycling of used batteries. Contractors will ensure compliance to this Rule.
24. The Ozone Depleting Substances (Regulation and Control) Rules, 2000 and as amended: This provides for regulation of production and consumption of ozone depleting substances in the country, and specifically prohibits export to or import from countries not specified in the Rules, and prohibits unless specifically permitted, any use of ozone depleting substance.
25. The Coastal Regulation Zone Notifications, 1991 and as amended: This provides for regulation of development activities within the 500m of high tide line in coastal zone and 100m of stretches of rivers and estuaries influenced by tides. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.
26. The Motor Vehicle Act 1988 as amended (and State Motor Vehicle Acts as may be in force) and the Motor Vehicle Rules, 1989, and as amended (and State Motor Vehicle Rules as may be in force): To minimize the road accidents, penalizing the guilty, provision of compensation to victim and family and check vehicular air and noise pollution. Contractors will be required to ensure full compliance to these rules.
27. Easement Act, 1882: This provides for the rights of landowners on groundwater. Contractors will need to ensure that other landowners' rights under the Act is not affected by any groundwater abstraction by the contractors.
28. State Groundwater Acts and Rules as may be in force and the Guidelines for Groundwater Abstraction for drinking and domestic purposes in Notified Areas and Industry/Infrastructure project proposals in Non-Notified areas, 2012: These provide for regulating extraction of ground water for construction/industrial and drinking and domestic purposes. Contractors will need to obtain permission from Central/State Groundwater

Boards prior to groundwater abstraction through digging any bore well or through any other means; and will to ensure full compliance to these rules and any conditions imposed in the permit.

29. The Mines Act, 1952 as amended; the Minor Mineral and concession Rules as amended; and the State Mineral (Rights and Taxation) Acts as may be in force: These provide for for safe and sound mining activity. The contractors will procure aggregates and other building materials from quarries and borrow areas approved under such Acts. In the event the contractors open any new quarry and/or borrow areas, appropriate prior permission from the State Departments of Minerals and Geology will need to be obtained. Contractors will also need to ensure full compliance to these rules and any conditions imposed in the permit.
30. The Insecticides Act, 1968 and Insecticides Rules, 1971 and as amended: These provide for regulates the manufacture, sale, transport, distribution, export, import and use of pesticides to prevent risk to human beings or animals, and for matters connected therewith. No one should import or manufacture; sell, stock or exhibit foe sale; distribute, transport, use: (i) any misbranded insecticides, (ii) any insecticide the sale, distribution or use of which is for the time being prohibited under the Act; and (iii) any insecticide except in accordance with the condition on which it was registered under the Act.
31. National Building Codes of India, 2005 and as amended: This provides guidelines for regulating the building construction activities in India. The code mainly contains administrative regulations, development control rules and general building requirements; stipulations regarding materials, structural design and construction; and building and plumbing services. Contractors will be required to comply with all Bureau of Indian Standards Codes dealing with: (i) use and disposal of asbestos containing materials in construction; (ii) paints containing lead; (iii) permanent and temporary ventilations in workplace; (iv) safety, and hygiene at the workplace; (v) prevention of fire; (vi) prevention of accidents from faulty electrical gadgets, equipment and accessories; and all other such codes incidental to the Contract.

The reference to above mentioned Acts is only illustrative and not exhaustive. Bidders and Contractors are responsible for checking the correctness and completeness of the list. The law as current on the date of bid opening will apply.

The Contractor shall follow and implement the Environmental Management Plan given at Specification and also the updates if any.

The contractor shall develop Environmental Management Systems that covers all its operations and shall be certified to ISO 14001 within one year from the award of the contract.

The contractor shall develop Occupational Health & Safety Management Systems that cover all its activities / operations and shall be certified to OHSAS 18001 within one year from the award for contract.

The Contractor shall implement all mitigation measures for which responsibility is assigned to him as stipulated in the Environmental Management *Plan*, and the conditions stipulated in Section VII-Work Requirements of this Bidding Document, even if not explicitly covered under the ESHS-MSIP submitted by the bidder and made part of the Contract Document.

11.19 Labour Laws

The Contractor and its Subcontractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of Government and Government Instrumentality and any other labour law (including rules), regulations, byelaws that may be passed or notification that may be issued under any labour law in future either by the Government and Government Instrumentality.

The Contractor shall keep the Authority indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Authority is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications / bye-laws / acts / rules / regulations including amendments, if any, on the part of the Contractor, the Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Authority.

The Contractor is expected to be acquainted with all the latest applicable Laws, including those concerning safety at work. Salient features of some of the major laws that are applicable are given below. The list is illustrative and not exhaustive. Bidders and Contractors are responsible for checking the correctness and completeness of the list. The law as current on the date of bid opening will apply.

- (a) Employees Compensation Act 1923: The Act provides for compensation in case of injury, disease or death arising out of and during the course of employment.
- (b) Payment of Gratuity Act 1972: gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- (c) Employees P.F. and Miscellaneous Provision Act 1952 (since amended): The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:
 - (i) Pension or family pension on retirement or death, as the case may be.
 - (ii) Deposit linked insurance on the death in harness of the worker.

- (iii) Payment of P.F. accumulation on retirement/death etc.
- (d) Maternity Benefit Act 1961: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
 - (e) Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013: This Act defines sexual harassment in the workplace, provides for an enquiry procedure in case of complaints and mandates the setting up of an Internal Complaints Committee or a Local Complaints Committee
 - (f) Contract Labour (Regulation & Abolition) Act 1970: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.
 - (g) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.
 - (h) Payment of Wages Act 1936: It lays down the mode, manner and by what date the wages are to be paid, what deductions can be made from the wages of the workers.
 - (i) Equal Remuneration Act 1976: The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
 - (j) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. Some of the State Governments have reduced this requirement from 20 to 10. The Act provides for payments of annual bonus subject to a minimum of 8.33% of the wages drawn in the relevant year. It applies to skilled or unskilled manual, supervisory, managerial, administrative, technical or clerical work for hire or reward to employees who draw a salary of Rs. 10,000/- per month or less. To be eligible for bonus, the employee should have worked in the establishment for not less than 30 working days in the relevant year. The Act does not apply to certain establishments.
 - (k) Industrial Disputes Act 1947: the Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations, a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

- (l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- (m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in the Building and Construction Industry.
- (n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home upto the establishment and back, etc.
- (o) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Building and Other Construction Workers Welfare Cess Act, 1996 (BOCWW Cess Act): All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under these Acts. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be notified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as Canteens, First – Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.
- (p) Factories Act 1948: the Act lays down the procedure for approval of plans before setting up a factory engaged in manufacturing processes, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power.
- (q) Weekly Holidays Act -1942
- (r) Bonded Labour System (Abolition) Act, 1976: The Act provides for the abolition of bonded labour system with a view to preventing the economic and physical exploitation of weaker sections of society. Bonded labour covers all forms of forced labour, including that arising out of a loan, debt or advance.

- (s) Employer's Liability Act, 1938: This Act protects workmen who bring suits for damages against employers in case of injuries endured in the course of employment. Such injuries could be on account of negligence on the part of the employer or persons employed by them in maintenance of all machinery, equipment etc. in healthy and sound condition.
- (t) Employees State Insurance Act 1948: The Act provides for certain benefits to insured employees and their families in case of sickness, maternity and disablement arising out of an employment injury. The Act applies to all employees in factories (as defined) or establishments which may be so notified by the appropriate Government. The Act provides for the setting up of an Employees' State Insurance Fund, which is to be administered by the Employees State Insurance Corporation. Contributions to the Fund are paid by the employer and the employee at rates as prescribed by the Central Government. The Act also provides for benefits to dependents of insured persons in case of death as a result of an employment injury.
- (u) The Personal Injuries (Compensation Insurance) Act, 1963: This Act provides for the employer's liability and responsibility to pay compensation to employees where workmen sustain personal injuries in the course of employment.
- (v) Industrial Employment (Standing Order) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

ARTICLE 12
COMPLETION CERTIFICATE

12.1 Tests on completion

- 12.1.1 At least **30 (thirty)** days prior to the likely completion of the Project Highway, or a Section thereof, the Contractor shall notify the Authority's Engineer of its intent to subject the Project Highway or a Section thereof, to Tests. The date and time of each of the Tests shall be determined by the Authority's Engineer in consultation with the Contractor, and notified to the Authority who may designate its representative to witness the Tests. The Contractor shall either conduct the Tests as directed by the Authority's Engineer or provide such assistance as the Authority's Engineer may reasonably require for conducting the Tests. In the event of the Contractor and the Authority's Engineer failing to mutually agree on the dates for conducting the Tests, the Contractor shall fix the dates by giving not less than **10 (ten)** days' notice to the Authority's Engineer.
- 12.1.2 All Tests shall be conducted in accordance with Schedule-K. The Authority's Engineer shall either conduct or observe, monitor and review the Tests conducted by the Contractor, as the case may be, and review the results of the Tests to determine compliance of the Project Highway or a Section thereof, with Specifications and Standards and if it is reasonably anticipated or determined by the Authority's Engineer during the course of any Test that the performance of the Project Highway or Section or any part thereof, does not meet the Specifications and Standards, it shall have the right to suspend or delay such Test and require the Contractor to remedy and rectify the Defect or deficiencies. Upon completion of each Test, the Authority's Engineer shall provide to the Contractor and the Authority copies of all Test data including detailed Test results. For the avoidance of doubt, it is expressly agreed that the Authority's Engineer may require the Contractor to carry out or cause to be carried out additional Tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway or Section thereof with the Specifications and Standards.

12.2 Provisional Certificate

- 12.2.1 Subject to the provisions of Clause 12.2.5, upon completion of all Works forming part of the Project Highway, save and except the Works for which Time Extension has been granted under Clause 10.5, the Authority's Engineer shall, at the request of the Contractor, issue a provisional certificate of completion substantially in the form set forth in Schedule-L (the "**Provisional Certificate**") if the Tests for and in respect of the completed Works are successful. The Provisional Certificate shall have appended thereto a list of outstanding items of work (the "**Punch List**") that need to be completed in accordance with the provisions of this Agreement. The Contractor undertakes to complete the minor outstanding items of works in respect of those Sections of the Project Highway for which the Provisional Certificate has

been issued, within a period of **30 (thirty)** days of the date of Provisional Certificate, and those parts of the Works in respect of which Time Extension has been granted, within the extended period thereof. For the avoidance of doubt, the Parties agree that the Punch List shall include all Works for which Time Extension has been granted and shall also include any minor outstanding items of work forming part of the completed Sections if such works do not materially affect the use of the completed Sections for their intended purpose. The Parties further agree that Provisional Certificate shall not be issued if the completed Works can not be safely and reliably placed in service of the Users thereof.

- 12.2.2 Upon issue of Provisional Certificate, the provisions of Articles 14 and 17 shall apply to the completed parts of the Project Highway and the property and ownership of all such completed Works shall vest in the Authority.
- 12.2.3 If the Authority's Engineer determines that the Project Highway or any completed part thereof does not conform to the provisions of this Agreement and cannot be safely and reliably placed in operation, it shall forthwith make a report in this behalf and send copies thereof to the Authority and the Contractor and withhold issuance of the Provisional Certificate until the Defects or deficiencies are rectified by the Contractor and Tests are successful in accordance with this Article 12.
- 12.2.4 Notwithstanding anything to the contrary contained in Clause 12.2.3, the Authority may, at any time after receiving a report from the Authority's Engineer under that Clause, direct the Authority's Engineer to issue a Provisional Certificate under Clause 12.2.1 and such direction shall be complied forthwith.
- 12.2.5 No Provisional Certificate shall be issued under the provisions of this Clause 12.2 until the Contractor has submitted valid claims for payment of at least 80% (eighty per cent) of the amount arrived at after reducing the lump sum price specified in Clause 19.1.1 by the amount attributable to works which have been withdrawn under the provisions of Clause 8.3.3. For the avoidance of doubt and by way of illustration, the Parties agree that if the Contract Price specified in Clause 19.1.1 is Rs. 105 cr. (Rs. one hundred and five crore) and the works withdrawn under Clause 8.3.3 have a value of Rs. 5 cr. (Rs. five crore), a Provisional Certificate shall not be issued until valid claims for payment of an amount of Rs. 80 cr. (Rs. eighty crore) have been submitted by the Contractor in accordance with the provisions of this Agreement. It is further agreed that all price adjustments made in pursuance of Clause 19.10 shall not be reckoned for computation of the claims for payments referred to in this Clause 12.2.5.

12.3 Completion of remaining Works

All items in the Punch List shall be completed by the Contractor in accordance with the provisions of this Agreement. For any delay in their completion other than for the reasons solely attributable to the Authority or due to Force Majeure, the Authority shall be entitled to recover Damages from the Contractor in accordance with the provisions of Clause 10.3.2 of this Agreement.

12.4 Completion Certificate

- 12.4.1 Upon completion of all Works, including the items specified in the Punch List, and the Authority's Engineer determining the Tests to be successful, it shall forthwith issue to the Contractor and the Authority a certificate substantially in the form set forth in Schedule-L (the "**Completion Certificate**").
- 12.4.2 Upon receiving the Completion Certificate, the Contractor shall remove its equipment, materials, debris and temporary works from the Site within a period of **30 (thirty)** days thereof, failing which the Authority may remove or cause to be removed, such equipment, materials, debris and temporary works and recover from the Contractor an amount equal to **120% (one hundred and twenty per cent)** of the actual cost of removal incurred by the Authority.
- 12.4.3 Without prejudice to the obligations of the Contractor specified in Articles 14 and 17, the property and ownership of all the completed Works forming part of the Project Highway shall vest in the Authority.

12.5 Rescheduling of Tests

If the Authority's Engineer certifies to the Authority and the Contractor that it is unable to issue the Completion Certificate or Provisional Certificate, as the case may be, because of events or circumstances on account of which the Tests could not be held or had to be suspended, the Contractor shall be entitled to re-schedule the Tests and hold the same as soon as reasonably practicable.

ARTICLE 13
CHANGE OF SCOPE

13.1 Change of Scope

13.1.1 The Authority may, notwithstanding anything to the contrary contained in this Agreement, require the Contractor to make modifications/alterations to the Works (“**Change of Scope**”) before the issue of the Completion Certificate either by giving an instruction or by requesting the Contractor to submit a proposal for Change of Scope involving additional cost or reduction in cost. Any such Change of Scope shall be made and valued in accordance with the provisions of this Article 13.

13.1.2 Change of Scope shall mean:

- (a) change in specifications of any item of Works;
- (b) omission of any work from the Scope of the Project except under Clause 8.3.3; provided that, subject to Clause 13.5, the Authority shall not omit any work under this Clause in order to get it executed by any other authority; and / or
- (c) any additional work, Plant, Materials or services which are not included in the Scope of the Project, including any associated Tests on completion of construction.

13.1.3 If the Contractor determines at any time that a Change of Scope will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Authority of executing, maintaining or operating the Project Highway, (iii) improve the efficiency or value to the Authority of the completed Project Highway, or (iv) otherwise be of benefit to the Authority, it shall prepare a proposal with relevant details at its own cost. The Contractor shall submit such proposal, supported with the relevant details and the amount of reduction in the Contract Price to the Authority through the Authority’s Engineer to consider such Change of Scope. The Authority shall, within **15(fifteen)** days of receipt of such proposal, either accept such Change of Scope with modifications, if any, and initiate proceedings therefore in accordance with this Article 13 or reject the proposal and inform the Contractor of its decision. For the avoidance of doubt, the Parties agree that the Contractor shall not undertake any Change of Scope without the express consent of the Authority, save and except any Works necessary for meeting any Emergency.

13.2 Procedure for Change of Scope

13.2.1 In the event of the Authority determining that a Change of Scope is necessary, it may direct the Authority’s Engineer to issue to the Contractor a notice specifying in reasonable detail the works and services contemplated thereunder (the “**Change of Scope Notice**”).

13.2.2 Upon receipt of a Change of Scope Notice, the Contractor shall, with due diligence, provide to the Authority and the Authority's Engineer such information as is necessary, together with preliminary documentation in support of:

- (a) the impact, if any, which the Change of Scope is likely to have on the Project Completion Schedule if the works or services are required to be carried out during the Construction Period; and
- (b) the options for implementing the proposed Change of Scope and the effect, if any, each such option would have on the costs and time thereof, including the following details:
 - (i) break down of the quantities, unit rates and cost for different items of work;
 - (ii) proposed design for the Change of Scope; and
 - (iii) proposed modifications, if any, to the Project Completion Schedule of the Project Highway.

For the avoidance of doubt, the Parties expressly agree that, subject to the provisions of Clause 13.4.2, the Contract Price shall be increased or decreased, as the case may be, on account of Change of Scope.

13.2.3 The Contractor's quotation of costs for the Change of Scope shall be determined on the following principles:

- (a) the cost of work shall be derived on the basis of MoRT&H Standard Data Book and the applicable schedule of rates for the relevant circle, as published by the respective State Government, i.e. PWD / HD and such rates shall be indexed with reference to the WPI once every year if current rates are not available, with the base being the month and year of the publication of the said schedule of rates; provided, however, that for any item not included in the schedule of rates, the prevailing market rates as determined by the Authority's Engineer shall apply, and for any item in respect of which MoRT&H Standard Data Book does not provide the requisite details, the Authority's Engineer shall determine the rate in accordance with Good Industry Practice.

13.2.4 Upon reaching an agreement, the Authority shall issue an order (the "**Change of Scope Order**") requiring the Contractor to proceed with the performance thereof. In the event that the Parties are unable to agree, the Authority may:

- (a) issue a Change of Scope Order requiring the Contractor to proceed with the performance thereof at the rates and conditions approved by the Authority till the matter is resolved in accordance with Article 26; or
- (b) proceed in accordance with Clause 13.5.

13.2.5 The provisions of this Agreement, insofar as they relate to Works and Tests, shall apply *mutatis mutandis* to the works undertaken by the Contractor under this Article 13.

13.3 Payment for Change of Scope

Payment for Change of Scope shall be made in accordance with the payment schedule specified in the Change of Scope Order.

13.4 Restrictions on Change of Scope

13.4.1 No Change of Scope shall be executed unless the Authority has issued the Change of Scope Order save and except any Works necessary for meeting any Emergency.

13.4.2 Unless the Parties mutually agree to the contrary, the total value of all Change of Scope Orders shall not exceed 10 (ten) per cent of the Contract Price.

13.4.3 Notwithstanding anything to the contrary in this Article 13, no change made necessary because of any default of the Contractor in the performance of its obligations under this Agreement shall be deemed to be Change of Scope, and shall not result in any adjustment of the Contract Price or the Project Completion Schedule.

13.5 Power of the Authority to undertake works

13.5.1 In the event the Parties are unable to agree to the proposed Change of Scope Orders in accordance with Clause 13.2, the Authority may, after giving notice to the Contractor and considering its reply thereto, award such works or services to any person on the basis of open competitive bidding from amongst bidders who are pre-qualified for undertaking the additional work; provided that the Contractor shall have the option of matching the first ranked bid in terms of the selection criteria, subject to payment of 2% (two per cent) of the bid amount to the Authority^{\$}, and thereupon securing the award of such works or services. For the avoidance of doubt, it is agreed that the Contractor shall be entitled to exercise such option only if it has participated in the bidding process and its bid does not exceed the first ranked bid by more than 10% (ten percent) thereof. It is also agreed that the Contractor shall provide assistance and cooperation to the person who undertakes the works or services hereunder, but shall not be responsible for rectification of any Defects and/or maintenance of works carried out by other agencies.

13.5.2 The works undertaken in accordance with this Clause 13.5 shall conform to the Specifications and Standards and shall be carried out in a manner that minimises the disruption in operation of the Project Highway. The provisions of this Agreement, insofar as they relate to Works and Tests, shall apply *mutatis mutandis* to the works carried out under this Clause 13.5.

^{\$} The Authority shall transfer 75% (seventy five percent) of the amount so received to the first ranked bidder whose bid shall have been matched by the Contractor.

ARTICLE 14

MAINTENANCE

14.1 Maintenance obligations of the Contractor

14.1.1 The Contractor shall maintain the Project Highway for a period of 5(five) years commencing from the date of the Provisional Certificate (the “Maintenance Period”). For the performance of its Maintenance obligation, the Contractor shall be paid a total amount equal to 0.5% (half per cent) of the Contract Price for the first year of maintenance, 1% (one per cent) of the Contract Price for the second year of maintenance, 1.5% (one and half per cent) of the Contract Price for the third year of maintenance, 2% (two per cent) of the Contract Price for the fourth year of maintenance, and 2% (two per cent) of the Contract Price for the fifth year of maintenance, inclusive of all taxes. The amount payable for maintenance shall be adjusted to reflect any increase or decrease arising out of variation in WPI to be determined in accordance with the provisions of Clause 19.12. For the avoidance of doubt, it is agreed that in the event no Provisional Certificate is issued, the Maintenance Period shall commence from the date of the Completion Certificate. It is further agreed that the Contract Price hereunder shall be reckoned with reference to the amount specified in Clause 19.1.1, which shall be adjusted to the extent of Change of Scope and the works withdrawn under the provisions of Clause 8.3.3, but shall not include any price adjustments in pursuance of Clause 19.10.

14.1.2 During the Maintenance Period, the Authority shall provide to the Contractor access to the Site for Maintenance in accordance with this Agreement. The obligations of the Contractor hereunder shall include:

- (a) permitting safe, smooth and uninterrupted flow of traffic on the Project Highway;
- (b) undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices;
- (c) undertaking repairs to structures;
- (d) informing the Authority of any unauthorised use of the Project Highway;
- (e) informing the Authority of any encroachments on the Project Highway; and

- (f) operation and maintenance of all communication, patrolling, and administrative systems necessary for the efficient maintenance of the Project Highway in accordance with the provisions of this Agreement.

14.1.3 In respect of any Defect or deficiency not specified in Schedule-E, the Contractor shall, at its own cost, undertake repair or rectification in accordance with Good Industry Practice, save and except to the extent that such Defect or deficiency shall have arisen on account of any default or neglect of the Authority or a Force Majeure Event.

14.1.4 The Contractor shall remove promptly from the Project Highway any waste materials (including hazardous materials and waste water), rubbish and other debris (including, without limitation, accident debris) and keep the Project Highway in a clean, tidy and orderly condition, and in conformity with the Applicable Laws, Applicable Permits and Good Industry Practice.

14.2 Maintenance Requirements

The Contractor shall ensure and procure that at all times during the Maintenance Period, the Project Highway conforms to the maintenance requirements set forth in Schedule-E (the “**Maintenance Requirements**”).

14.3 Maintenance Programme

14.3.1 The Contractor shall prepare a monthly maintenance programme (the “**Maintenance Programme**”) in consultation with the Authority’s Engineer and submit the same to the Authority’s Engineer not later than **10 (ten)** days prior to the commencement of the month in which the Maintenance is to be carried out. For this purpose a joint monthly inspection by the Contractor and the Authority’s Engineer shall be undertaken. The Maintenance Programme shall contain the following:

- (a) The condition of the road in the format prescribed by the Authority’s Engineer;
- (b) the proposed maintenance works; and
- (c) deployment of resources for maintenance works.

14.4 Safety, vehicle breakdowns and accidents

14.4.1 The Contractor shall ensure safe conditions for the Users, and in the event of unsafe conditions, lane closures, diversions, vehicle breakdowns and accidents, it shall follow the relevant operating procedures for removal of obstruction and debris without delay. Such procedures shall conform to the provisions of this Agreement, Applicable Laws, Applicable Permits and Good Industry Practice.

14.4.2 The Contractor shall maintain and operate a round-the-clock vehicle rescue post with one mobile crane at each toll plaza having the capacity to lift a truck with a Gross

Vehicle Weight of 30,000 (thirty thousand) kilograms; and such post shall be located at every toll plaza. The Contractor shall promptly remove any damaged vehicles and debris from the Project Highway to enable safe movement of traffic and shall report all accidents to the police forthwith.

14.5 Lane closure

14.5.1 The Contractor shall not close any lane of the Project Highway for undertaking maintenance works except with the prior written approval of the Authority's Engineer. Such approval shall be sought by the Contractor through a written request to be made at least **10 (ten)** days before the proposed closure of lane and shall be accompanied by particulars thereof. Within **5 (five)** business days of receiving such request, the Authority's Engineer shall grant permission with such modifications as it may deem necessary and a copy of such permission shall be sent to the Authority.

14.5.2 Upon receiving the permission pursuant to Clause 14.5.1, the Contractor shall be entitled to close the designated lane for the period specified therein, and in the event of any delay in re-opening such lane, the Contractor shall, for every stretch of 250 (two hundred and fifty) metres, or part thereof, pay Damages to the Authority calculated at the rate of **0.1% (zero point one per cent)** of the monthly maintenance payment for each day of delay until the lane has been re-opened for traffic.

14.6 Reduction of payment for non-performance of Maintenance obligations

14.6.1 In the event that the Contractor fails to repair or rectify any Defect or deficiency set forth in Schedule-E within the period specified therein, it shall be deemed as failure of performance of Maintenance obligations by the Contractor and the Authority shall be entitled to effect reduction in monthly lump sum payment for maintenance in accordance with Clause 19.7 and Schedule-M, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

14.6.2 If the nature and extent of any Defect justifies more time for its repair or rectification than the time specified in Schedule-E, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

14.7 Authority's right to take remedial measures

In the event the Contractor does not maintain and/or repair the Project Highway or any part thereof in conformity with the Maintenance Requirements, the Maintenance Manual or the Maintenance Programme, as the case may be, and fails to commence remedial works within **15 (fifteen)** days of receipt of the Maintenance Inspection Report under Clause 15.2 or a notice in this behalf from the Authority or the Authority's Engineer, as the case may be, the Authority shall, without prejudice to its rights under this Agreement including Termination thereof, be entitled to undertake such remedial measures at the cost of the Contractor, and to recover its

cost from the Contractor. In addition to recovery of the aforesaid cost, a sum equal to 20% (twenty per cent) of such cost shall be paid by the Contractor to the Authority as Damages.

14.8 Restoration of loss or damage to Project Highway

Save and except as otherwise expressly provided in this Agreement, in the event that the Project Highway or any part thereof suffers any loss or damage during the Maintenance from any cause attributable to the Contractor, the Contractor shall, at its cost and expense, rectify and remedy such loss or damage forthwith so that the Project Highway conforms to the provisions of this Agreement.

14.9 Overriding powers of the Authority

14.9.1 If in the reasonable opinion of the Authority, the Contractor is in material breach of its obligations under this Agreement and, in particular, the Maintenance Requirements, and such breach is causing or likely to cause material hardship or danger to the Users and pedestrians, the Authority may, without prejudice to any of its rights under this Agreement including Termination thereof, by notice require the Contractor to take reasonable measures immediately for rectifying or removing such hardship or danger, as the case may be.

14.9.2 In the event that the Contractor, upon notice under Clause 14.9.1, fails to rectify or remove any hardship or danger within a reasonable period, the Authority may exercise overriding powers under this Clause 14.9.2 and take over the performance of any or all the obligations of the Contractor to the extent deemed necessary by it for rectifying or removing such hardship or danger; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required hereunder; provided further that any costs and expenses incurred by the Authority in discharge of its obligations hereunder shall be recovered by the Authority from the Contractor, and the Authority shall be entitled to deduct any such costs and expenses incurred from the payments due to the Contractor under Clause 19.7 for the performance of its Maintenance obligations.

14.9.3 In the event of a national emergency, civil commotion or any other circumstances specified in Clause 21.3, the Authority may take over the performance of any or all the obligations of the Contractor to the extent deemed necessary by it, and exercise such control over the Project Highway or give such directions to the Contractor as may be deemed necessary; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required in the circumstances which caused the exercise of such overriding power by the Authority. For the avoidance of doubt, it is agreed that the consequences of such action shall be dealt in accordance with the provisions of Article 21. It is also agreed that the Contractor shall comply with such instructions as the Authority may issue in pursuance of the provisions of this Clause 14.9.3, and

shall provide assistance and cooperation to the Authority, on a best effort basis, for performance of its obligations hereunder.

14.10 Authorities Taking Over

The Maintenance Requirements set forth in Schedule-E having been duly carried out, Maintenance Period as set forth in Clause 14.1.1 having been expired and Authority's Engineer determining the Test on Completion of Maintenance to be successful in accordance with Schedule-Q, the Authority will issue Taking Over Certificate to the Contractor substantially in the format set forth in Schedule-R..

ARTICLE 15

SUPERVISION AND MONITORING DURING MAINTENANCE

15.1 Inspection by the Contractor

- 15.1.1 The Authority's Engineer shall undertake regular inspections to evaluate continuously the compliance with the Maintenance Requirements.
- 15.1.2 The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required shall be conveyed to the Authority's Engineer forthwith. The Contractor shall complete the proposed maintenance works before the onset of the monsoon and send a compliance report to the Authority's Engineer. Post monsoon inspection shall be undertaken by the Contractor and the inspection report together with details of any damages observed and proposed action to remedy the same shall be conveyed to the Authority's Engineer forthwith.

15.2 Inspection and payments

- 15.2.1 The Authority's Engineer may inspect the Project Highway at any time, but at least once every month, to ensure compliance with the Maintenance Requirements. It shall make a report of such inspection ("**Maintenance Inspection Report**") stating in reasonable detail the Defects or deficiencies, if any, with particular reference to the Maintenance Requirements, the Maintenance Manual, and the Maintenance Programme, and send a copy thereof to the Authority and the Contractor within **10 (ten)** days of such inspection.
- 15.2.2 After the Contractor submits to the Authority's Engineer the Monthly Maintenance Statement for the Project Highway pursuant to Clause 19.6, the Authority's Engineer shall carry out an inspection within **10 (ten)** days to certify the amount payable to the Contractor. The Authority's Engineer shall inform the Contractor of its intention to carry out the inspection at least **3 (three)** business days in advance of such inspection. The Contractor shall assist the Authority's Engineer in verifying compliance with the Maintenance Requirements.
- 15.2.3 For each case of non-compliance of Maintenance Requirements as specified in the inspection report of the Authority's Engineer, the Authority's Engineer shall calculate the amount of reduction in payment in accordance with the formula specified in Schedule-M.
- 15.2.4 Any deduction made on account of non-compliance will not be paid subsequently even after establishing the compliance thereof. Such deductions will continue to be made every month until the compliance is procured.

15.3 Tests

For determining that the Project Highway conforms to the Maintenance Requirements, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests specified by it in accordance with Good Industry Practice. The Contractor shall, with due diligence, carry out or cause to be carried out all such tests in accordance with the instructions of the Authority's Engineer and furnish the results of such tests forthwith to the Authority's Engineer.

15.4 Reports of unusual occurrence

The Contractor shall, during the Maintenance Period, prior to the close of each day, send to the Authority and the Authority's Engineer, by facsimile or e-mail, a report stating accidents and unusual occurrences on the Project Highway relating to the safety and security of the Users and Project Highway. A monthly summary of such reports shall also be sent within **3 (three)** business days of the closing of month. For the purposes of this Clause 15.4, accidents and unusual occurrences on the Project Highway shall include:

- (a) accident, death or severe injury to any person;
- (b) damaged or dislodged fixed equipment;
- (c) flooding of Project Highway; and
- (d) any other unusual occurrence.

ARTICLE 16
TRAFFIC REGULATION

16.1 Traffic regulation by the Contractor

- 16.1.1 The Contractor shall take all the required measures and make arrangements for the safety of Users during the construction and maintenance of the Project Highway or a Section thereof in accordance with the provisions of MoRT&H Specifications. It shall provide, erect and maintain all such barricades, signs, markings, flags, and lights as may be required by Good Industry Practice for the safety of the traffic passing through the Section under construction or maintenance.
- 16.1.2 All works shall be carried out in a manner creating least interference to traffic passing through the Project Highway or a Section thereof. In stretches where construction or maintenance works on the carriageway are taken up, the Contractor shall ensure that proper passage is provided for the traffic. Where it is not possible or safe to allow traffic on part width of the carriageway, a temporary diversion of proper specifications shall be constructed by the Contractor at its own cost. The Contractor shall take prior approval of the Authority's Engineer for any proposed arrangement for traffic regulation during Construction and Maintenance, which approval shall not be unreasonably withheld.

ARTICLE 17
DEFECTS LIABILITY

17.1 Defects Liability Period

- 17.1.1 The Contractor shall be responsible for all the Defects and deficiencies, except usual wear and tear in the Project Highway or any Section thereof, till the expiry of a period of 5 (five) years commencing from the date of Provisional Certificate (the “**Defects Liability Period**”). Provided that the Defects Liability Period shall in no case be less than 54 (fifty four) months from the date of Completion Certificate for and in respect of works for which Time Extension was granted. Provided further that in the event no Provisional Certificate is issued, the Defects Liability Period shall commence from the date of the Completion Certificate. For the avoidance of doubt, any repairs or restoration on account of usual wear or tear in the Project Highway or any Section thereof shall form a part of the Maintenance obligations of the Contractor as specified in Article 14.

17.1.2 Deleted

17.2 Remedying Defects

Save and except as provided in Clause 14.1.2, the Contractor shall repair or rectify all Defects and deficiencies observed by the Authority’s Engineer during the Defects Liability Period within a period of **15 (fifteen)** days from the date of notice issued by the Authority’s Engineer in this behalf, or within such reasonable period as may be determined by the Authority’s Engineer at the request of the Contractor, in accordance with Good Industry Practice.

17.3 Cost of remedying Defects

For the avoidance of doubt, any repair or rectification undertaken in accordance with the provisions of Clause 17.2, including any additional testing, shall be carried out by the Contractor at its own risk and cost, to the extent that such rectification or repair is attributable to:

- (a) the design of the Project;
- (b) Plant, Materials or workmanship not being in accordance with this Agreement and the Specifications and Standards;
- (c) improper maintenance during construction of the Project Highway by the Contractor; and/ or
- (d) failure by the Contractor to comply with any other obligation under this Agreement.

17.4 Contractor's failure to rectify Defects

In the event that the Contractor fails to repair or rectify such Defect or deficiency within the period specified in Clause 17.2, the Authority shall be entitled to get the same repaired, rectified or remedied at the Contractor's cost so as to make the Project Highway conform to the Specifications and Standards and the provisions of this Agreement. All costs consequent thereon shall, after due consultation with the Authority and the Contractor, be determined by the Authority's Engineer. The cost so determined and an amount equal to twenty percent of the cost as Damages shall be recoverable by the Authority from the Contractor and may be deducted by the Authority from any monies due to the Contractor.

17.5 Contractor to search cause

17.5.1 The Authority's Engineer may instruct the Contractor to examine the cause of any Defect in the Works or part thereof before the expiry of the Defects Liability Period.

17.5.2 In the event any Defect identified under Clause 17.5.1 is attributable to the Contractor, the Contractor shall rectify such Defect within the period specified by the Authority's Engineer, and shall bear the cost of the examination and rectification of such Defect.

17.5.3 In the event such Defect is not attributable to the Contractor, the Authority's Engineer shall, after due consultation with the Authority and the Contractor, determine the costs incurred by the Contractor on such examination and notify the same to the Contractor, with a copy to the Authority, and the Contractor shall be entitled to payment of such costs by the Authority.

17.6. Extension of Defects Liability Period

The Defects Liability Period shall be deemed to be extended till the identified Defects under Clause 17.2 have been remedied.

17.7 Performance Certificate

17.7.1 Performance of the Contractor's obligations shall not be considered to have been completed until the Authority's Engineer has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed its obligations with regard to any remedial or other work required as a result of any defect in the Works, as identified under Clause 17.1, to the satisfaction of the Authority's Engineer.

17.7.2 The Authority's Engineer shall issue the Performance Certificate substantially in the format set forth in Schedule-S within **28 days** after the latest of the expiry dates of the Defects Liability Period, or as soon thereafter as the Contractor has supplied all the Contractor's documents, completed and tested all the Works, including remedying any defects.

ARTICLE 18
AUTHORITY’S ENGINEER

18.1 Appointment of the Authority’s Engineer

- 18.1.1 The Authority shall appoint a consulting engineering firm substantially in accordance with the selection criteria set forth in Schedule-N, to be the engineer under this Agreement (the “**Authority’s Engineer**”).
- 18.1.2 The appointment of the Authority’s Engineer shall be made no later than **30 (thirty)** days from the date of this Agreement. The Authority shall notify the appointment or replacement of the Authority’s Engineer to the Contractor. In the event of any replacement or termination of Authority’s Engineer, the Authority shall appoint its representative to act as Authority’s Engineer till such replacement.
- 18.1.3 The staff of the Authority’s Engineer shall include suitably qualified engineers and other professionals who are competent to assist the Authority’s Engineer to carry out its duties.

18.2 Duties and authority of the Authority’s Engineer

- 18.2.1 The Authority’s Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, and substantially in accordance with the terms of reference (“**Terms of Reference**” or “**TOR**”) set forth in Annex 1 of Schedule N, but subject to obtaining prior written approval of the Authority before determining:
- (a) any Time Extension;
 - (b) any additional cost to be paid by the Authority to the Contractor;
 - (c) the Termination Payment; or
 - (d) Any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding 0.2% of Contract price.
- 18.2.2 No decision or communication of the Authority’s Engineer shall be effective or valid unless it is accompanied by an attested true copy of the approval of the Authority for and in respect of any matter specified in Clause 18.2.1.
- 18.2.3 The Authority’s Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority’s Engineer within **10 (ten)** days of the beginning of every month. For the avoidance of doubt, the Authority’s Engineer shall include in its report, compliance of the recommendations of the Safety Consultant.

18.3 Delegation by the Authority's Engineer

- 18.3.1 The Authority's Engineer may, by order in writing, delegate any of his duties and responsibilities to suitably qualified and experienced personnel who are accountable to Authority's Engineer, or may revoke any such delegation, under intimation to the Authority and the Contractor. Provided, however, that the Authority's Engineer shall be responsible and liable for all actions and omissions of such personnel.
- 18.3.2 Any failure of the Authority's Engineer to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Authority to reject the work, Plant or Materials, which is not in accordance with the provisions of this Agreement and the Specifications and Standards.
- 18.3.3 Notwithstanding anything stated in Clause 18.3.1 above, the Authority's Engineer shall not delegate the authority to refer any matter for the Authority's prior approval wherever required in accordance with the provisions of Clause 18.2.

18.4 Instructions of the Authority's Engineer

- 18.4.1 The Authority's Engineer may issue to the Contractor instructions for remedying any Defect. The Contractor shall take such instructions from the Authority's Engineer, or from an assistant to whom appropriate authority has been delegated under Clause 18.3.
- 18.4.2 The instructions issued by the Authority's Engineer shall be in writing. However, if the Authority's Engineer issues any oral instructions to the Contractor, it shall confirm in writing the oral instructions within 2 (two) working days of issuing them.
- 18.4.3 In case the Contractor does not receive the confirmation of the oral instruction within the time specified in Clause 18.4.2, the Contractor shall seek the written confirmation of the oral instructions from the Authority's Engineer. The Contractor shall obtain acknowledgement from the Authority's Engineer of the communication seeking written confirmation. In case of failure of the Authority's Engineer or its delegated assistant to reply to the Contractor within 2 (two) days of the receipt of the communication from the Contractor, the Contractor may not carry out the instruction.
- 18.4.4 In case of any dispute on any of the instructions issued by the delegated assistant, the Contractor may refer the dispute to the Authority's Engineer, who shall then confirm, reverse or vary the instructions within 7 (seven) business days of the dispute being referred.

18.5 Determination by the Authority's Engineer

- 18.5.1 The Authority's Engineer shall consult with each Party in an endeavour to reach agreement wherever this Agreement provides for the determination of any matter by the Authority's Engineer. If such agreement is not achieved, the Authority's

Engineer shall make a fair determination in accordance with this Agreement having due regard to all relevant circumstances. The Authority's Engineer shall give notice to both the Parties of each agreement or determination, with supporting particulars.

- 18.5.2 Each Party shall give effect to each agreement or determination made by the Authority's Engineer in accordance with the provisions of this Agreement. Provided, however, that if any Party disputes any instruction, decision, direction or determination of the Authority's Engineer, the Dispute shall be resolved in accordance with the Dispute Resolution Procedure.

18.6 Remuneration of the Authority's Engineer

The remuneration, cost and expenses of the Authority's Engineer shall be paid by the Authority.

18.7 Termination of the Authority's Engineer

The Authority may, in its discretion, replace the Authority's Engineer at any time, but only after appointment of another Authority's Engineer in accordance with Clause 18.1.

18.8 Resolution of issues between Authority's Engineer and Contractor

If the Contractor has reasons to believe that the Authority's Engineer is not discharging its duties and functions in accordance with the provisions of this Agreement, it may make a written representation to the Authority. Upon receipt of such representation, the Authority shall hold a tripartite meeting with the Contractor and Authority's Engineer and make best efforts for an amicable resolution of the representation. If the issue is not resolved at this stage, then the Authority shall take up this matter to the top management of the Authority's Engineer and the Contractor for resolution. If still remains unresolved, then the decision of the Authority in this regard is final and binding.

Part IV

Financial Covenants

ARTICLE 19

PAYMENTS

19.1 Contract Price

- 19.1.1 The Authority shall make payments to the Contractor for the Works on the basis of the lump sum price accepted by the Authority in consideration of the obligations specified in this Agreement for an amount of Rs. (Rs.) (the “**Contract Price**”), which shall be subject to adjustments in accordance with the provisions of this Agreement. For the avoidance of doubt, the Parties expressly agree that the Contract Price shall not include the cost of Maintenance which shall be paid separately in accordance with the provisions of Clause 19.7. The Parties further agree that save and except as provided in this Agreement, the Contract Price shall be valid and effective until issue of Completion Certificate.
- 19.1.2 The Contract Price includes all duties, taxes, royalty, 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 this Agreement and on the services performed under this Agreement. Nothing in this Agreement 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 this Agreement.
- 19.1.3 The Contract Price shall not be adjusted for any change in costs stated in Clause 19.1.2 above, except as stated in Clauses 19.10 and 19.17.
- 19.1.4 The Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs, unless otherwise provided for in this Agreement.
- 19.1.5 Unless otherwise stated in this Agreement, the Contract Price covers all the Contractor's obligations for the Works under this Agreement and all things necessary for the Construction and the remedying of any Defects in the Project Highway.
- 19.1.6 The Contract Price shall be paid in the currency or currencies named in the Schedule-T of this Agreement. The proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in Schedule-T. Payments for Change of Scope, Damages by the Authority and any other requirements as per this Agreement shall be paid in Indian Rupees. All deductions under this Agreement, payment of Damages by the Contractor and repayment of Advance by the Contractor shall be made in Indian Rupees.

19.2 Advance Payment

- 19.2.1 The Authority shall make an interest-bearing (at an interest rate of equal to Bank Rate as declared by Reserve Bank of India (RBI)) advance payment (the “**Advance**”

Payment”), equal in amount to 10 (ten) percent of the Contract Price, for mobilisation expenses and for acquisition of equipment. The Advance Payment shall be made in three installments. The first installment shall be an amount equal to 2% (two percent) of the Contract Price, the second installment shall be equal to 3% (three percent) of the Contract Price, and the third installment shall be equal to 5% (five percent) of the Contract Price.

19.2.2 The Contractor may apply to the Authority for the first installment of the Advance Payment at any time after the Appointed Date, along with an irrevocable and unconditional guarantee from a Bank for an amount equivalent to 110% (one hundred and ten per cent) of such installment, substantially in the form provided at Annex-III of Schedule-G, to remain effective till the complete and full repayment thereof.

19.2.3 At any time after **60 (sixty)** days from the Appointed Date, the Contractor may apply for the second installment of the Advance Payment along with an irrevocable and unconditional guarantee from a Bank for an amount equivalent to **110% (one hundred and ten per cent)** of such installment, substantially in the form provided at Annex-III of Schedule-G, to remain effective till the complete and full repayment thereof. The application shall also include the details of utilization of earlier advances. 19.2.4

19.2.4 At any time, after **120 (one hundred and twenty)** days from the Appointed Date, the Contractor may apply to the Authority for the third installment of the Advance Payment along with an irrevocable and unconditional guarantee from a Bank for an amount equivalent to **110% (one hundred and ten per cent)** of such installment, substantially in the form provided at Annex-III of Schedule-G, to remain effective till the complete and full repayment thereof. The application shall also include the details of utilization of earlier advances.

19.2.5 The first, second and the third installments shall be paid by the Authority to the Contractor within **15 (fifteen)** days of the receipt of its respective requests in accordance with the provisions of this Clause 19.2.

19.2.6 Each installment of Advance Payment shall be repaid by the Contractor to the Authority no later than **365 (three hundred and sixty five)** days from the respective date of Advance Payment.

19.2.7 The Contractor shall repay each installment of the Advance Payment on or before the due date of repayment. In the event of the Contractor’s failure to make the repayment on time, the Authority shall be entitled to encash the Bank guarantee for Advance Payment. The Parties expressly agree that for any delay in repayment of the Advance Payment, the Contractor shall pay interest to the Authority for each day of delay, such interest to be calculated at the rate of 18% (eighteen per cent) per annum.

19.2.8 If the Advance Payment has not been fully repaid prior to Termination under Clause 21.7 or Article 23, as the case may be, the whole of the balance then outstanding

shall immediately become due and payable by the Contractor to the Authority. Without prejudice to the provisions of Clause 19.2.7, in the event of Termination for Contractor Default, the Advance Payment shall be deemed to carry interest at the rate of **10% (ten percent)** per annum from the date of Advance Payment to the date of recovery by encashment of the Bank Guarantee for the Advance Payment. For the avoidance of doubt, the aforesaid interest shall be payable on each installment of the Advance Payment, regardless of whether the installment or any part thereof has been repaid to the Authority prior to Termination.

19.3 Procedure for estimating the payment for the Works

- 19.3.1 The Authority shall make interim payments to the Contractor as certified by the Authority's Engineer on completion of a stage, in a length, number or area as specified, and valued in accordance with the proportion of the Contract Price assigned to each item and its stage in Schedule-H.
- 19.3.2 The Contractor shall base its claim for interim payment for the stages completed till the end of the month for which the payment is claimed, valued in accordance with Clause 19.3.1, supported with necessary particulars and documents in accordance with this Agreement.
- 19.3.3 Any reduction in the Contract Price arising out of Change of Scope or the works withdrawn under Clause 8.3 shall not affect the amounts payable for the items or stage payments thereof which are not affected by such Change of Scope or withdrawal. For avoidance of doubt and by way of illustration, the Parties agree that if the amount assigned to Major Bridges is reduced from Rs. 100 crore to Rs. 80 crore owing to Change of Scope or withdrawal of work, the reduction in payment shall be restricted to relevant payments for Major Bridges only and the payment due in respect of all other stage payments under the item Major Bridges shall not be affected in any manner. The Parties further agree that the adjustments arising out of the aforesaid modifications shall be carried out in a manner that the impact of such modifications is restricted to the said Change of Scope or withdrawal, as the case may be, and does not alter the payments due for and in respect of items or stage payments which do not form part of such Change of Scope or withdrawal.

19.4 Stage Payment Statement for Works

The Contractor shall submit a statement (the “**Stage Payment Statement**”), in 3 copies, by the 7th (seventh) day of the month to the Authority's Engineer in the form set forth in Schedule-O, showing the amount calculated in accordance with Clause 19.3 to which the Contractor considers himself entitled for completed stage(s) of the Works. The Stage Payment Statement shall be accompanied with the progress reports and any other supporting documents. The Contractor shall not submit any claim for payment of incomplete stages of work.

19.5 Stage Payment for Works

- 19.5.1 Within **10 (ten)** days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, the Authority's Engineer shall broadly determine the amount due to the Contractor and recommend the release of 75 (seventy five) percent of the amount so determined as part payment against the Stage Payment Statement, pending issue of the Interim Payment Certificate by the Authority's Engineer. Within **10 (ten)** days of the receipt of recommendation of the Authority's Engineer, the Authority shall make electronic payment directly to the Contractor's bank account.
- 19.5.2 Within **15 (fifteen)** days of the receipt of the Stage Payment Statement referred to in Clause 19.4, the Authority's Engineer shall determine and shall deliver to the Authority and the Contractor an IPC certifying the amount due and payable to the Contractor, after adjusting the payments already released to the Contractor against the said statement. For the avoidance of doubt, the Parties agree that the IPC shall specify all the amounts that have been deducted from the Stage Payment Statement and the reasons therefor.
- 19.5.3 In cases where there is a difference of opinion as to the value of any stage, the Authority's Engineer's view shall prevail and interim payments shall be made to the Contractor on this basis; provided that the foregoing shall be without prejudice to the Contractor's right to raise a Dispute.
- 19.5.4 The Authority's Engineer may, for reasons to be recorded, withhold from payment:
- (a) the estimated value of work or obligation that the Contractor has failed to perform in accordance with this Agreement and the Authority's Engineer had notified the Contractor; and
 - (b) the estimated cost of rectification of work done being not in accordance with this Agreement.
- 19.5.5 Payment by the Authority shall not be deemed to indicate the Authority's acceptance, approval, consent or satisfaction with the work done.

19.6 Monthly Maintenance Statement of the Project Highway

- 19.6.1 The Contractor shall submit to the Authority's Engineer a monthly maintenance statement ("**Monthly Maintenance Statement**") in 3 (three) copies by the 7th (seventh) day of each month in the format set forth in Schedule-O for the Maintenance of the Project Highway during the previous month.
- 19.6.2 The monthly lump sum amount payable for Maintenance shall be 1/12th (one-twelfth) of the annual cost of Maintenance as specified in Clause 14.1.1.

19.7 Payment for Maintenance of the Project Highway

19.7.1 Within **15 (fifteen)** days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, the Authority's Engineer shall verify the Contractor's monthly maintenance statement and certify the amount to be paid to the Contractor taking into account:

- (a) Compliance with the Maintenance Requirements; and
- (b) reduction for non-compliance with the Maintenance Requirement in accordance with Clause 19.7.2.

The Authority's Engineer shall deliver to the Authority an IPC approving or amending the monthly maintenance statement to reflect the amount due to the Contractor in accordance with this Agreement.

19.7.2 Maintenance shall be measured in units of one kilometer each; provided, however, that payment thereof shall be made in fixed monthly amounts in accordance with this Agreement. If the Maintenance Requirements set forth in Schedule-E are not met, reduction in payments shall be made in accordance with the provisions of Schedule-M. The reductions for non-compliance with the Maintenance Requirements shall be applied on the basis of monthly inspections by the Authority's Engineer.

19.7.3 The deduction made on account of non-compliance with the Maintenance Requirements shall not be subsequently considered for payment after the compliance is achieved by repair or rectification.

19.7.4 The Authority shall pay to the Contractor every quarter any amount due under any IPC under this Clause 19.7. The payment shall be made no later than **30 (thirty)** days from the date of submission of the last IPC for the relevant quarter.

19.8 Payment of Damages

19.8.1 The Contractor may claim Damages due and payable to it in accordance with the provisions of this Agreement.

19.8.2 The Authority's Engineer shall issue the IPC within **15 (fifteen)** days of the receipt of the claim under Clause 19.8.1, after making adjustments in accordance with the provisions of this Agreement. The Authority shall pay to the Contractor the amount due under any IPC within a period of **30 (thirty)** days from the date of the submission of the claim under this Clause 19.8. In the event of the failure of the Authority to make payment to the Contractor within the specified time, the Authority shall be liable to pay to the Contractor interest thereon and the provisions of Clause 19.9 shall apply *mutatis mutandis* thereto.

19.9 Time of payment and interest

19.9.1 The Authority shall pay to the Contractor any amount due under any payment certificate issued by the Authority's Engineer in accordance with the provisions of this Article 19, or in accordance with any other clause of this Agreement as follows:

- (a) payment shall be made no later than **30 (thirty)** days from the date of submission of the Stage Payment Statement by the Contractor to the Authority's Engineer for certification in accordance with the provisions of Clause 19.4 for an IPC; provided that, in the event the IPC is not issued by the Authority's Engineer within the aforesaid period of **30 (thirty)** days, the Authority shall pay the amount shown in the Contractor's Stage Payment Statement and any discrepancy therein shall be added to, or deducted from, the next payment certificate issued to the Contractor; and
- (b) payment shall be made no later than **45 (forty five)** days from the date of submission of the Final Payment Certificate for Works along with the discharge submitted to the Authority's Engineer in accordance with the provisions of Clause 19.15 for certification.

19.9.2 In the event of the failure of the Authority to make payment to the Contractor within the time period stated in this Clause 19.9, the Authority shall be liable to pay to the Contractor interest at the Base Rate plus 2% (two percent), calculated at quarterly rests, on all sums remaining unpaid from the date on which the same should have been paid, calculated in accordance with the provisions of Clause 19.9.1(a) and (b) and till the date of actual payment.

19.10. Price adjustment for the Works

19.10.1 The amounts payable to the Contractor for Works shall be adjusted in accordance with the provisions of this Clause 19.10.

19.10.2 Subject to the provisions of Clause 19.10.3, the amounts payable to the Contractor for Works, shall be adjusted in the IPC issued by the Authority's Engineer for the increase or decrease in the index cost of inputs for the Works, by the addition or subtraction of the amounts determined by the formulae prescribed in Clause 19.10.4.

19.10.3 To the extent that full compensation for any increase or decrease in costs to the Contractor is not covered by the provisions of this or other Clauses in this Agreement, the costs and prices payable under this Agreement shall be deemed to include the amounts required to cover the contingency of such other increase or decrease of costs and prices.

19.10.4 The Contract Price shall be adjusted for increase or decrease in rates and price of labour, cement, steel, Plant, machinery and spares, bitumen, fuel and lubricants, and other material inputs in accordance with the principles, procedures and formulae specified below:

- (a) Price adjustment shall be applied on completion of the specified stage of the respective item of work in accordance with Schedule-H;
- (b) Adjustment for each item of work/stage shall be made separately.
- (c) The following expressions and meanings are assigned to the value of the work done:

RW= Value of work done for the completion of a stage under the following items of Schedule-H:

- (i) Road works; and
- (ii) Other works

BR = Value of work done for the completion of a stage under the items Major Bridges and Structures (Schedule-H)

- (d) Price adjustment for changes in cost shall be paid in accordance with the following formulae:
 - (i)
$$VRW = 0.85 RW \times PL \times (LI - LO)/LO + PA \times (AI - AO)/AO + PF \times (FI - FO)/FO + PB \times (BI - BO)/BO + PM \times (MI - MO)/MO + PC \times (CI - CO)/CO + PS \times (SI - SO)/SO$$
 - (ii)
$$VBR = 0.85 BR \times PL \times (LI - LO)/LO + PA \times (AI - AO)/AO + PF \times (FI - FO)/FO + PM \times (MI - MO)/MO + PC \times (CI - CO)/CO + PS \times (SI - SO)/SO$$

Where

VRW = Increase or decrease in the cost of road works/other works during the period under consideration due to changes in the rates for relevant components as stated in sub-paragraph (e)

VBR = Increase or decrease in the cost of Major Bridges and Structures during the period under consideration due to changes in the rates for relevant components as stated in sub-paragraph (e)

PB, PC, PL, PM, and PS are the percentages of bitumen, cement, labour, other materials, and steel/components (including strands and cables) respectively for the relevant item as stated in sub-paragraph (e)

PA is the percentage of Plant, machinery and spares component for the relevant item as stated in sub-paragraph (e).

PF is the percentage of fuel and lubricants for the relevant items as stated in sub-paragraph (e).

AO = The wholesale price index (2011-12 series) as published by the Ministry of Commerce & Industry, Government of India (hereinafter called “WPI”) for construction machinery for the month of the Base Date.

AI = The WPI (2011-12 series) for construction machinery for the month three months prior to the month to which the IPC relates.

BO = The official retail price of bitumen at the nearest IOC refinery at **Mathura**

BI = The official retail price of bitumen at nearest IOC refinery at **Mathura**, on the first day of the month three months prior to the month to which the IPC relates.

CO = The WPI (2011-12 series) for grey cement for the month of the Base Date.

CI = The WPI (2011-12 series) for grey cement for the month three months prior to the month to which the IPC relates.

FO = The official retail price of high speed diesel (HSD) oil at the existing consumer pumps of Indian Oil Corporation (“IOC”) in **Bhopalgarh** on the Base Date.

FI = The official retail price of HSD at the existing consumer pumps of IOC in **Bhopalgarh** on the first day of the month three months prior to the month to which the IPC relates

LO = The consumer price index for industrial workers for **Ajmer** in the State of **Rajasthan**, published by Labour Bureau, Ministry of Labour, Government of India, (hereinafter called “CPI”) for the month of the Base Date.

LI = The CPI for the month three months prior to the month to which the IPC relates.

MO = The WPI (2011-12 series) for all commodities for the month of the Base Date.

MI = The WPI (2011-12 series) for all commodities for the month three months prior to the month to which the IPC relates.

SO = The WPI (2011-12 series) for steel (rebars) for the month of the Base Date.

SI = The WPI (2011-12 series) for steel (rebars) for the month three months prior to the month to which the IPC relates.

- (e) The following percentages shall govern the price adjustment of the Contract Price:

Component	Item		
	Road Works		
	Earthwork, Granular work, and Other works	Bituminous work	Culverts, minor bridges and other structures
Labour (PL)	4%	2%	7%
Cement (PC)	2%	Nil	28%
Steel(PS)	Nil	Nil	24%
Bitumen (PB)	Nil	60%	Nil
Fuel and lubricants (PF)	14%	8%	5%
Other Materials (PM)	70%	20%	26%
Plant, machinery and spares. (PA)	10%	10%	10%
Total	100%	100%	100%

- (f) In case an IPC relates to a month which is within 3 (three) months from the Base Date, no price adjustment shall be applicable.

19.11 Restrictions on price adjustment

Price adjustment shall be due and payable only in respect of the stages of Works for which the Stage Payment Statement has been submitted by the Contractor no later than 30 (thirty) days from the date of the applicable Project Milestone or the Scheduled Completion Date, as the case may be, including any Time Extension granted therefor in accordance with the provisions of this Agreement. For the avoidance of doubt, in the event of submission of any Stage Payment Statement after the period specified herein, price adjustment shall be applicable until the date of the respective Project Milestone or the Scheduled Completion Date, as the case may be.

19.12. Price adjustment for Maintenance of Project Highway

Lump sum payment for Maintenance shall be adjusted every quarter for changes in rates and prices of various inputs in accordance with the formula given below:

$$V = P \times (W^1 - W^0) / W^0$$

V = Increase or decrease in the quarterly lump sum payment

P = Quarterly lump sum payment due to the Contractor after adjusting any reduction in payment for non-compliance of the Maintenance Requirements

W^O = The wholesale price index (all commodities) for the month of the Base Date.

W^I = The wholesale price index (all commodities) for the first day of the quarter under consideration for determining the price adjustment.

19.13 Final Payment Statement

19.13.1 Within **60 (sixty)** days after receiving the Completion Certificate under Clause 12.4, the Contractor shall submit to the Authority's Engineer for consideration six copies of a Final Payment Statement (the "**Final Payment Statement**") for Works, with supporting documents showing in detail, in the form prescribed by the Authority's Engineer:

- (a) the summary of Contractor's Stage Payment claims for Works as submitted in accordance with Clause 19.4;
- (b) the amounts received from the Authority against each claim; and
- (c) any further sums which the Contractor considers due to it from the Authority.

If the Authority's Engineer disagrees with or cannot verify any part of the Final Payment Statement, the Contractor shall submit such further information as the Authority's Engineer may reasonably require. The Authority's Engineer shall deliver to the Authority:

- (i) an IPC for those parts of the Final Payment Statement which are not in dispute, along with a list of disputed items which shall then be settled in accordance with the provisions of Article 26; or
- (ii) a Final Payment Certificate in accordance with Clause 19.15 if there are no disputed items.

19.13.2 If the Authority's Engineer does not prescribe the form referred to in Clause 19.13.1 within 15 (fifteen) of the date of issue of the Completion Certificate, the Contractor shall submit the statement in such form as it deems fit.

19.14 Discharge

Upon submission of the Final Payment Statement for Works under Clause 19.13, the Contractor shall give to the Authority, with a copy to the Authority's Engineer, a written discharge confirming that the total of the Final Payment Statement represents full and final settlement of all monies due to the Contractor in respect of this Agreement for all the Works arising out of this Agreement, except for any monies due to either Party on account of any Defect. Provided that such discharge shall

become effective only after the payment due has been made in accordance with the Final Payment Certificate issued pursuant to Clause 19.15.

19.15 Final Payment Certificate

19.15.1 Within **30 (thirty)** days after receipt of the Final Payment Statement for Works under Clause 19.13, and the written discharge under Clause 19.14, and there being no disputed items of claim, the Authority's Engineer shall deliver to the Authority, with a copy to the Contractor, a final payment certificate (the "**Final Payment Certificate**") stating the amount which, in the opinion of the Authority's Engineer, is finally due under this Agreement or otherwise. For the avoidance of doubt, before issuing the Final Payment Certificate, the Authority's Engineer shall ascertain from the Authority all amounts previously paid by the Authority and for all sums to which the Authority is entitled, the balance, if any, due from the Authority to the Contractor or from the Contractor to the Authority, as the case may be.

19.15.2 The Authority shall, in accordance with the provisions of Clause 19.9, pay to the Contractor the amount which is stated as being finally due in the Final Payment Certificate.

19.16 Final payment statement for Maintenance

19.16.1 Within **30 (thirty)** days after completion of the Maintenance Period, the Contractor shall submit to the Authority's Engineer six copies of the final payment statement for Maintenance of the Project Highway, with supporting documents showing the details set forth below in the form prescribed by the Authority's Engineer :

- (a) the total amount claimed in accordance with the monthly statement for Maintenance of Project Highway;
- (b) the amount paid in accordance with the Interim Payment Certificates; and
- (c) any sums which the Contractor considers to be due to it, with supporting documents.

19.16.2 The Authority's Engineer shall certify final payment within **30 (thirty)** days of the receipt of the final payment statement of Maintenance under Clause 19.16.1, segregating the items of amount payable from the items of amount disallowed. The Authority shall make payment on the basis of the final payment authorised by the Authority's Engineer within a period of **30 (thirty)** days of the receipt of the Final Payment Statement from the Authority's Engineer.

19.16.3 If the Authority's Engineer does not prescribe the form within **15 (fifteen)** days of the date of issue of the Completion Certificate, the Contractor shall submit the statement in such form as it deems fit.

19.17 Change in law

19.17.1 If as a result of Change in Law, the Contractor suffers any additional costs in the execution of the Works or in relation to the performance of its other obligations under this Agreement, the Contractor shall, within **15 (fifteen)** days from the date it becomes reasonably aware of such addition in cost, notify the Authority with a copy to the Authority's Engineer of such additional cost due to Change in Law.

19.17.2 If as a result of Change in Law, the Contractor benefits from any reduction in costs for the execution of this Agreement or in accordance with the provisions of this Agreement, either Party shall, within **15 (fifteen)** from the date it becomes reasonably aware of such reduction in cost, notify the other Party with a copy to the Authority's Engineer of such reduction in cost due to Change in Law.

19.17.3 The Authority's Engineer shall, within **15 (fifteen)** days from the date of receipt of the notice from the Contractor or the Authority, determine any addition or reduction to the Contract Price, as the case may be, due to the Change in Law.

19.18 Correction of Interim Payment Certificates

The Authority's Engineer may by an Interim Payment Certificate make any correction or modification in any previous Interim Payment Certificate issued by the Authority's Engineer.

19.19 Authority's claims

If the Authority considers itself to be entitled to any payment from the Contractor under any Clause of this Agreement, it shall give notice and particulars to the Contractor **20 (twenty)** days before making the recovery from any amount due to the Contractor, and shall take into consideration the representation, if any, made by the Contractor in this behalf, before making such recovery.

19.20 Bonus for early completion

In the event that the Project Completion Date occurs prior to the Scheduled Completion Date, the Contractor shall be entitled to receive a payment of bonus equivalent to **0.03% (zero point zero three per cent)** of the Contract Price for each day by which the Project Completion Date precedes the Scheduled Completion Date, but subject to a maximum of **3% (three per cent)** of the Contract Price. Provided, however, that the payment of bonus, if any, shall be made only after the issue of the Completion Certificate. For the avoidance of the doubt, the Parties agree that for the purpose of determining the bonus payable hereunder, the Contract Price shall always be deemed to be the amount specified in Clause 19.1.1, and shall exclude any revision thereof for any reason. The Parties also agree that bonus shall be payable only if each work for which Extension of Time has been granted is completed within respective Extended Time

ARTICLE 20
INSURANCE

20.1 Insurance for Works and Maintenance

20.1.1 The Contractor shall effect and maintain at its own cost the insurances specified in Schedule-P and as per the requirements under the Applicable Laws.

20.1.2 Subject to the provisions of Clause 21.6, the Authority and the Contractor shall, in accordance with its obligations as provided for in this Agreement, be liable to bear the cost of any loss or damage that does not fall within the scope of this Article 20 or cannot be recovered from the insurers.

20.1.3 Subject to the exceptions specified in Clause 20.1.4 below, the Contractor shall, save and except as provided for in this Agreement, fully indemnify, hold harmless and defend the Authority from and against any and all losses, damages, costs, charges and/or claims with respect to:

- (a) the death of or injury to any person; or
- (b) the loss of or damage to any property (other than the Works);

that may arise out of or in consequence of any breach by the Contractor of this Agreement during the execution of the Works or the remedying of any Defects therein.

20.1.4 Notwithstanding anything stated above in Clause 20.1.3, the Authority shall fully indemnify the Contractor from and against any and all losses, damages, costs, charges, proceedings and/or claims arising out of or with respect to

- (a) the use or occupation of land or any part thereof by the Authority;
- (b) the right of the Authority to execute the Works, or any part thereof, on, over, under, in or through any land;
- (c) the damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any Defects therein, in accordance with this Agreement; and
- (d) the death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Authority, its agents, servants or other contractors, not being employed by the Contractor.

Provided that, in the event of any injury or damage as a result of the contributory negligence of the Contractor, the Authority shall be liable to indemnify the

Contractor from and against any and all losses, damages, costs, charges, proceedings and/or claims to the extent as may be proportionately determined to be the liability of the Authority, its servants or agents or other contractors not associated with the Contractor in such injury or damage.

20.1.5 Without prejudice to the obligations of the Parties as specified under Clauses 20.1.3 and 20.1.4, the Contractor shall maintain or effect such third party insurances as may be required under the Applicable Laws.

20.1.6 The Contractor shall provide to the Authority, within 30 days of the Appointed Date, evidence of professional liability insurance maintained by its Design Director and/or consultants to cover the risk of professional negligence in the design of Works. The professional liability coverage shall be for a sum of not less than 3% (three per cent) of the Contract Price and shall be maintained until the end of the Defects Liability Period.

20.2 Notice to the Authority

No later than 15 (fifteen) days after the date of this Agreement, the Contractor shall by notice furnish to the Authority, in reasonable detail, information in respect of the insurances that it proposes to effect and maintain in accordance with this Article 20. Within 15 (fifteen) days of receipt of such notice, the Authority may require the Contractor to effect and maintain such other insurances as may be necessary pursuant hereto, and in the event of any difference or disagreement relating to any such insurance, the Dispute Resolution Procedure shall apply.

20.3 Evidence of Insurance Cover

20.3.1 All insurances obtained by the Contractor in accordance with this Article 20 shall be maintained with insurers on terms consistent with Good Industry Practice. Within **10 (ten)** days from the Appointed Date, the Contractor shall furnish to the Authority notarised true copies of the certificate(s) of insurance, copies of insurance policies and premia payment receipts in respect of such insurance, and no such insurance shall be cancelled, modified, or allowed to expire or lapse until the expiration of at least 45 (forty-five) days after notice of such proposed cancellation, modification or non-renewal has been delivered by the Contractor to the Authority. The Contractor shall act in accordance with the directions of the Authority. Provided that the Contractor shall produce to the Authority the insurance policies in force and the receipts for payment of the current premia.

20.3.2 The Contractor shall ensure the adequacy of the insurances at all times in accordance with the provisions of this Agreement.

20.4 Remedy for failure to insure

If the Contractor shall fail to effect and keep in force all insurances for which it is responsible pursuant hereto, the Authority shall have the option to either keep in

force any such insurances, and pay such premia and recover the costs thereof from the Contractor, or in the event of computation of a Termination Payment, treat an amount equal to the Insurance Cover as deemed to have been received by the Contractor.

20.5 Waiver of subrogation

All insurance policies in respect of the insurance obtained by the Contractor pursuant to this Article 20 shall include a waiver of any and all rights of subrogation or recovery of the insurers thereunder against, inter alia, the Authority, and its assigns, successors, undertakings and their subsidiaries, Affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

20.6 Contractor's waiver

The Contractor hereby further releases, assigns and waives any and all rights of subrogation or recovery against, inter alia, the Authority and its assigns, undertakings and their subsidiaries, Affiliates, employees, successors, insurers and underwriters, which the Contractor may otherwise have or acquire in or from or in any way connected with any loss, liability or obligation covered by policies of insurance maintained or required to be maintained by the Contractor pursuant to this Agreement (other than third party liability insurance policies) or because of deductible clauses in or inadequacy of limits of any such policies of insurance.

20.7 Cross liabilities

Any such insurance maintained or effected in pursuance of this Article 20 shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Authority as separately insured.

20.8 Accident or injury to workmen

Notwithstanding anything stated in this Agreement, it is hereby expressly agreed between the Parties that the Authority 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 Sub-contractor, save and except as for death or injury resulting from any act, omission or default of the Authority, its agents or servants. The Contractor shall indemnify and keep indemnified the Authority from and against all such claims, proceedings, damages, costs, charges, and expenses whatsoever in respect of the above save and except for those acts, omissions or defaults for which the Authority shall be liable.

20.9 Insurance against accident to workmen

The Contractor shall effect and maintain during the Agreement such insurances as may be required to insure the Contractor's personnel and any other persons employed by it on the Project Highway from and against any liability incurred in pursuance of this Article 20. Provided that for the purposes of this Clause 20.9, the Contractor's personnel/any person employed by the Contractor shall include the Sub-contractor and its personnel. It is further provided that, in respect of any persons employed by any Sub-contractor, the Contractor's obligations to insure as aforesaid under this Clause 20.9 shall be discharged if the Sub-contractor shall have insured against any liability in respect of such persons in such manner that the Authority is indemnified under the policy. The Contractor shall require such Sub-contractor to produce before the Authority, when required, such policy of insurance and the receipt for payment of the current premium within **10 (ten)** days of such demand being made by the Authority.

20.10 Application of insurance proceeds

The proceeds from all insurance claims, except for life and injury, shall be applied for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project Highway and the provisions of this Agreement in respect of construction of works shall apply mutatis mutandis to the works undertaken out of the proceeds of insurance.

20.11 Compliance with policy conditions

Each Party hereby expressly agrees to fully indemnify the other Party from and against all losses and claims arising from its failure to comply with conditions imposed by the insurance policies effected in accordance with this Agreement.

Part V

Force Majeure and Termination

ARTICLE21
FORCE MAJEURE

21.1 Force Majeure

As used in this Agreement, the expression “Force Majeure” or “Force Majeure Event” shall mean occurrence in India of any or all of Non-Political Event, Indirect Political Event and Political Event, as defined in Clauses 21.2, 21.3 and 21.4 respectively, if it affects the performance by the Party claiming the benefit of Force Majeure (the “Affected Party”) of its obligations under this Agreement and which act or event (i) is beyond the reasonable control of the Affected Party, and (ii) the Affected Party could not have prevented or overcome by exercise of due diligence and following Good Industry Practice, and (iii) has Material Adverse Effect on the Affected Party.

21.2 Non-Political Event

A Non-Political Event shall mean one or more of the following acts or events:

- (a) act of God, epidemic, extremely adverse weather conditions, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionising radiation, fire or explosion (to the extent of contamination or radiation or fire or explosion originating from a source external to the Site);
- (b) strikes or boycotts (other than those involving the Contractor, Sub-contractors or their respective employees/representatives, or attributable to any act or omission of any of them) interrupting supplies and services to the Project Highway for a continuous period of 24 (twenty-four) hours and an aggregate period exceeding **10 (ten)** days in an Accounting Year, and not being an Indirect Political Event set forth in Clause 21.3;
- (c) any failure or delay of a Sub-contractor but only to the extent caused by another Non-Political Event;
- (d) any judgement or order of any court of competent jurisdiction or statutory authority made against the Contractor in any proceedings for reasons other than (i) failure of the Contractor to comply with any Applicable Law or Applicable Permit, or (ii) on account of breach of any Applicable Law or Applicable Permit or of any contract, or (iii) enforcement of this Agreement, or (iv) exercise of any of its rights under this Agreement by the Authority;
- (e) the discovery of geological conditions, toxic contamination or archaeological remains on the Site that could not reasonably have been expected to be discovered through a site inspection; or
- (f) any event or circumstances of a nature analogous to any of the foregoing.

21.3 Indirect Political Event

An Indirect Political Event shall mean one or more of the following acts or events:

- (a) an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage;
- (b) industry-wide or State-wide strikes or industrial action for a continuous period of 24 (twenty-four) hours and exceeding an aggregate period of **10 (ten)** days in an Accounting Year;
- (c) any civil commotion, boycott or political agitation which prevents construction of the Project Highway by the Contractor for an aggregate period exceeding **10 (ten)** days in an Accounting Year;
- (d) any failure or delay of a Sub-contractor to the extent caused by any Indirect Political Event;
- (e) any Indirect Political Event that causes a Non-Political Event; or
- (f) any event or circumstances of a nature analogous to any of the foregoing.

21.4 Political Event

A Political Event shall mean one or more of the following acts or events by or on account of any Government Instrumentality:

- (a) Change in Law, only if consequences thereof cannot be dealt with under and in accordance with the provisions of Clause 19.17;
- (b) compulsory acquisition in national interest or expropriation of any Project Assets or rights of the Contractor or of the Sub-Contractors;
- (c) unlawful or unauthorised or without jurisdiction revocation of, or refusal to renew or grant without valid cause, any clearance, licence, permit, authorisation, no objection certificate, consent, approval or exemption required by the Contractor or any of the Sub-contractors to perform their respective obligations under this Agreement; provided that such delay, modification, denial, refusal or revocation did not result from the Contractor's or any Sub-contractor's inability or failure to comply with any condition relating to grant, maintenance or renewal of such clearance, licence, authorisation, no objection certificate, exemption, consent, approval or permit;
- (d) any failure or delay of a Sub-contractor but only to the extent caused by another Political Event; or
- (e) any event or circumstances of a nature analogous to any of the foregoing.

21.5 Duty to report Force Majeure Event

21.5.1 Upon occurrence of a Force Majeure Event, the Affected Party shall by notice report such occurrence to the other Party forthwith. Any notice pursuant hereto shall include full particulars of:

- (a) the nature and extent of each Force Majeure Event which is the subject of any claim for relief under this Article 21 with evidence in support thereof;
- (b) the estimated duration and the effect or probable effect which such Force Majeure Event is having or will have on the Affected Party's performance of its obligations under this Agreement;
- (c) the measures which the Affected Party is taking or proposes to take for alleviating the impact of such Force Majeure Event; and
- (d) any other information relevant to the Affected Party's claim.

21.5.2 The Affected Party shall not be entitled to any relief for or in respect of a Force Majeure Event unless it shall have notified the other Party of the occurrence of the Force Majeure Event as soon as reasonably practicable, and in any event no later than 10 (ten) days after the Affected Party knew, or ought reasonably to have known, of its occurrence, and shall have given particulars of the probable material effect that the Force Majeure Event is likely to have on the performance of its obligations under this Agreement.

21.5.3 For so long as the Affected Party continues to claim to be materially affected by such Force Majeure Event, it shall provide the other Party with regular (and not less than weekly) reports containing information as required by Clause 21.5.1, and such other information as the other Party may reasonably request the Affected Party to provide.

21.6 Effect of Force Majeure Event on the Agreement

21.6.1 Upon the occurrence of any Force Majeure after the Appointed Date, the costs incurred and attributable to such event and directly relating to this Agreement (the "Force Majeure costs") shall be allocated and paid as follows:

- (a) upon occurrence of a Non-Political Event, the Parties shall bear their respective Force Majeure costs and neither Party shall be required to pay to the other Party any costs thereof;
- (b) upon occurrence of an Indirect Political Event, all Force Majeure costs attributable to such Indirect Political Event, and not exceeding the Insurance Cover for such Indirect Political Event, shall be borne by the Contractor, and to the extent Force Majeure costs exceed such Insurance Cover, one half of such

excess amount shall be reimbursed by the Authority to the Contractor for the Force Majeure events; and

- (c) upon occurrence of a Political Event, all Force Majeure costs attributable to such Political Event shall be reimbursed by the Authority to the Contractor.

For the avoidance of doubt, Force Majeure costs may include costs directly attributable to the Force Majeure Event, but shall not include debt repayment obligations, if any, of the Contractor.

- 21.6.2 Save and except as expressly provided in this Article 21, neither Party shall be liable in any manner whatsoever to the other Party in respect of any loss, damage, cost, expense, claims, demands and proceedings relating to or arising out of occurrence or existence of any Force Majeure Event or exercise of any right pursuant hereto.
- 21.6.3 Upon the occurrence of any Force Majeure Event during the Construction Period, the Project Completion Schedule for and in respect of the affected Works shall be extended on a day for day basis for such period as performance of the Contractor's obligations is affected on account of the Force Majeure Event or its subsisting effects.

21.7 Termination Notice for Force Majeure Event

- 21.7.1 If a Force Majeure Event subsists for a period of 60 (sixty) days or more within a continuous period of 120 (one hundred and twenty) days, either Party may in its discretion terminate this Agreement by issuing a Termination Notice to the other Party without being liable in any manner whatsoever, save as provided in this Article 21, and upon issue of such Termination Notice, this Agreement shall, notwithstanding anything to the contrary contained herein, stand terminated forthwith; provided that before issuing such Termination Notice, the Party intending to issue the Termination Notice shall inform the other Party of such intention and grant 15 (fifteen) days' time to make a representation, and may after the expiry of such 15 (fifteen) days period, whether or not it is in receipt of such representation, in its sole discretion issue the Termination Notice.

21.8 Termination Payment for Force Majeure Event

- 21.8.1 In the event of this Agreement being terminated on account of a Non-Political Event, the Termination Payment shall be an amount equal to the sum payable under Clause 23.5.

Provided that in the event Termination occurs during the Maintenance Period, the Authority's Engineer shall only determine the value of Works associated with Maintenance.

- 21.8.2 If Termination is on account of an Indirect Political Event, the Termination Payment shall include:

- (a) any sums due and payable under Clause 23.5; and
- (b) the reasonable cost, as determined by the Authority's Engineer, of the Plant and Materials procured by the Contractor and transferred to the Authority for use in Construction or Maintenance, only if such Plant and Materials are in conformity with the Specifications and Standards;

Provided that in the event Termination occurs during the Maintenance Period, the Authority's Engineer shall only determine the value of Works associated with Maintenance.

21.8.3 If Termination is on account of a Political Event, the Authority shall make a Termination Payment to the Contractor in an amount that would be payable under Clause 23.6.2 as if it were an Authority Default.

21.9 Dispute resolution

In the event that the Parties are unable to agree in good faith about the occurrence or existence of a Force Majeure Event, such Dispute shall be finally settled in accordance with the Dispute Resolution Procedure; provided that the burden of proof as to the occurrence or existence of such Force Majeure Event shall be upon the Party claiming relief and/or excuse on account of such Force Majeure Event.

21.10 Excuse from performance of obligations

If the Affected Party is rendered wholly or partially unable to perform its obligations under this Agreement because of a Force Majeure Event, it shall be excused from performance of such of its obligations to the extent it is unable to perform on account of such Force Majeure Event; provided that:

- (a) the suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure Event;
- (b) the Affected Party shall make all reasonable efforts to mitigate or limit damage to the other Party arising out of or as a result of the existence or occurrence of such Force Majeure Event and to cure the same with due diligence; and
- (c) when the Affected Party is able to resume performance of its obligations under this Agreement, it shall give to the other Party notice to that effect and shall promptly resume performance of its obligations hereunder.

ARTICLE 22
SUSPENSION OF CONTRACTOR'S RIGHTS

22.1 Suspension upon Contractor Default

Upon occurrence of a Contractor Default, the Authority shall be entitled, without prejudice to its other rights and remedies under this Agreement including its rights of Termination hereunder, to (i) suspend carrying out of the Works or Maintenance or any part thereof, and (ii) carry out such Works or Maintenance itself or authorise any other person to exercise or perform the same on its behalf during such suspension (the "Suspension"). Suspension hereunder shall be effective forthwith upon issue of notice by the Authority to the Contractor and may extend up to a period not exceeding **90 (ninety)** days from the date of issue of such notice.

22.2 Authority to act on behalf of Contractor

During the period of Suspension hereunder, all rights and liabilities vested in the Contractor in accordance with the provisions of this Agreement shall continue to vest therein and all things done or actions taken, including expenditure incurred by the Authority for discharging the obligations of the Contractor under and in accordance with this Agreement shall be deemed to have been done or taken for and on behalf of the Contractor and the Contractor undertakes to indemnify the Authority for all costs incurred during such period. The Contractor hereby licences and sub-licences respectively, the Authority or any other person authorised by it under Clause 22.1 to use during Suspension, all Intellectual Property belonging to or licenced to the Contractor with respect to the Project Highway and its design, engineering, construction and maintenance, and which is used or created by the Contractor in performing its obligations under the Agreement.

22.3 Revocation of Suspension

22.3.1 In the event that the Authority shall have rectified or removed the cause of Suspension within a period not exceeding **60 (sixty)** days from the date of Suspension, it shall revoke the Suspension forthwith and restore all rights of the Contractor under this Agreement. For the avoidance of doubt, the Parties expressly agree that the Authority may, in its discretion, revoke the Suspension at any time, whether or not the cause of Suspension has been rectified or removed hereunder.

22.3.2 Upon the Contractor having cured the Contractor Default within a period not exceeding **60 (sixty)** days from the date of Suspension, the Authority shall revoke the Suspension forthwith and restore all rights of the Contractor under this Agreement.

22.4 Termination

22.4.1 At any time during the period of Suspension under this Article 22, the Contractor may by notice require the Authority to revoke the Suspension and issue a Termination Notice. The Authority shall, within **15 (fifteen)** days of receipt of such notice, terminate this Agreement under and in accordance with Article 23.

22.4.2 Notwithstanding anything to the contrary contained in this Agreement, in the event that Suspension is not revoked within **90 (ninety)** days from the date of Suspension hereunder, the Agreement shall, upon expiry of the aforesaid period, be deemed to have been terminated by mutual agreement of the Parties and all the provisions of this Agreement shall apply, mutatis mutandis, to such Termination as if a Termination Notice had been issued by the Authority upon occurrence of a Contractor Default.

ARTICLE 23
TERMINATION

23.1 Termination for Contractor Default

23.1.1 Save as otherwise provided in this Agreement, in the event that any of the defaults specified below shall have occurred, and the Contractor fails to cure the default within the Cure Period set forth below, or where no Cure Period is specified, then within a Cure Period of **60 (sixty)** days, the Contractor shall be deemed to be in default of this Agreement (the “**Contractor Default**”), unless the default has occurred solely as a result of any breach of this Agreement by the Authority or due to Force Majeure. The defaults referred to herein shall include:

- (a) the Contractor fails to provide, extend or replenish, as the case may be, the Performance Security in accordance with this Agreement;
- (b) subsequent to the replenishment or furnishing of fresh Performance Security in accordance with Clause 7.3, the Contractor fails to cure, within a Cure Period of **30 (thirty)** days, the Contractor Default for which the whole or part of the Performance Security was appropriated;
- (c) the Contractor does not achieve the latest outstanding Project Milestone due in accordance with the provisions of Schedule-J, subject to any Time Extension, and continues to be in default for **45 (forty five)** days;
- (d) the Contractor abandons or manifests intention to abandon the construction or Maintenance of the Project Highway without the prior written consent of the Authority;
- (e) the Contractor fails to proceed with the Works in accordance with the provisions of Clause 10.1 or stops Works and/or the Maintenance for **30 (thirty)** days without reflecting the same in the current programme and such stoppage has not been authorised by the Authority’s Engineer;
- (f) the Project Completion Date does not occur within the period specified in Schedule-J for the Scheduled Completion Date, or any extension thereof;
- (g) failure to complete the Punch List items within the periods stipulated therefor in Clause 12.2.1;
- (h) the Contractor fails to rectify any Defect, the non-rectification of which shall have a Material Adverse Effect on the Project, within the time specified in this Agreement or as directed by the Authority’s Engineer;

- (i) the Contractor subcontracts the Works or any part thereof in violation of this Agreement or assigns any part of the Works or the Maintenance without the prior approval of the Authority;
- (j) the Contractor creates any Encumbrance in breach of this Agreement;
- (k) an execution levied on any of the assets of the Contractor has caused a Material Adverse Effect;
- (l) the Contractor is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for the Contractor or for the whole or material part of its assets that has a material bearing on the Project;
- (m) the Contractor has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the Authority, a Material Adverse Effect;
- (n) a resolution for winding up of the Contractor is passed, or any petition for winding up of the Contractor is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within **90 (ninety)** days of the date thereof or the Contractor is ordered to be wound up by court except for the purpose of amalgamation or reconstruction; provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of the Contractor are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of the Contractor under this Agreement; and provided that:
 - (i) the amalgamated or reconstructed entity has the capability and experience necessary for the performance of its obligations under this Agreement; and
 - (ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under this Agreement and has a credit worthiness at least as good as that of the Contractor as at the Appointed Date;
- (o) any representation or warranty of the Contractor herein contained which is, as of the date hereof, found to be materially false or the Contractor is at any time hereafter found to be in breach thereof;
- (p) the Contractor submits to the Authority any statement, notice or other document, in written or electronic form, which has a material effect on the Authority's rights, obligations or interests and which is false in material particulars;

- (q) the Contractor has failed to fulfill any obligation, for which failure Termination has been specified in this Agreement; or
- (r) the Contractor commits a default in complying with any other provision of this Agreement if such a default causes a Material Adverse Effect on the Project or on the Authority.
- (s) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:
 - (i) for doing or forbearing to do any action in relation to the Contract, or
 - (ii) for showing or forbearing to show favour or disfavour to any person in relation to the Contract,
 or

if any of the Contractor's personnel, agents or subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (s). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination

23.1.2 Without prejudice to any other rights or remedies which the Authority may have under this Agreement, upon occurrence of a Contractor Default, the Authority shall be entitled to terminate this Agreement by issuing a Termination Notice to the Contractor; provided that before issuing the Termination Notice, the Authority shall by a notice informing the Contractor of its intention to issue such Termination Notice and grant **15 (fifteen)** days to the Contractor to make a representation, and may after the expiry of such **15 (fifteen)** days, whether or not it is in receipt of such representation, issue the Termination Notice.

23.1.3 After termination of this Agreement for Contractor Default, the Authority may complete the Works and/or arrange for any other entities to do so. The Authority and these entities may then use any Materials, Plant and equipment, Contractor's documents and other design documents made by or on behalf of the Contractor.

23.2 Termination for Authority Default

23.2.1 In the event that any of the defaults specified below shall have occurred, and the Authority fails to cure such default within a Cure Period of 90 (ninety) days or such longer period as has been expressly provided in this Agreement, the Authority shall be deemed to be in default of this Agreement (the "Authority Default") unless the default has occurred as a result of any breach of this Agreement by the Contractor or due to Force Majeure. The defaults referred to herein shall include:

- (a) the Authority commits a material default in complying with any of the provisions of this Agreement and such default has a Material Adverse Effect on the Contractor;
- (b) the Authority has failed to make payment of any amount due and payable to the Contractor within the period specified in this Agreement;
- (c) the Authority has failed to provide, within a period of **180 (one hundred and eighty)** days from the Appointed Date, the environmental clearances required for construction of the Project Highway;
- (d) the Authority repudiates this Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by this Agreement; or
- (e) the Authority's Engineer fails to issue the relevant Interim Payment Certificate within **60 (sixty)** days after receiving a statement and supporting documents.

23.2.2. If the Authority determines, based on reasonable evidence, that the Contractor has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Authority may, after giving 14 days' notice to the Contractor, terminate the Contract and expel him from the Site, and the provisions of Article 23 shall apply as if such termination had been made under Clause 23.1

Should any employee of the Contractor be determined, based on reasonable evidence, to have engaged in corrupt, fraudulent or coercive practice during the execution of the work then that employee shall be removed from the site or works. If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

23.2.3 Without prejudice to any other right or remedy which the Contractor may have under this Agreement, upon occurrence of an Authority Default, the Contractor shall be entitled to terminate this Agreement by issuing a Termination Notice to the Authority; provided that before issuing the Termination Notice, the Contractor shall by a notice inform the Authority of its intention to issue the Termination Notice and grant **15 (fifteen)** days to the Authority to make a representation, and may after the expiry of such **15 (fifteen)** days, whether or not it is in receipt of such representation, issue the Termination Notice.

If on the consideration of the Authority's representation or otherwise, the contractor does not issue the Termination Notice on such 15th day and prefers to continue with the project, it is deemed that the cause of action of the Termination Notice has been condoned by the Contractor. Hence he forfeits his right to any other remedy on that count.

23.3 Termination for Authority's convenience

Notwithstanding anything stated hereinabove, the Authority may terminate this Agreement for convenience. The termination shall take effect **30 (thirty)** days from the date of notice hereunder.

23.4 Requirements after Termination

Upon Termination of this Agreement in accordance with the terms of this Article 23, the Contractor shall comply with and conform to the following:

- (a) deliver to the Authority all Plant and Materials which shall have become the property of the Authority under this Article 23;
- (b) deliver all relevant records, reports, Intellectual Property and other licences pertaining to the Works, Maintenance, other design documents and in case of Termination occurring after the Provisional Certificate has been issued, the "as built" Drawings for the Works;
- (c) transfer and/or deliver all Applicable Permits to the extent permissible under Applicable Laws; and
- (d) vacate the Site within **15 (fifteen)** days.

23.5 Valuation of Unpaid Works

23.5.1 Within a period of **45 (forty five)** days after Termination under Clause 23.1, 23.2 or 23.3, as the case may be, has taken effect, the Authority's Engineer shall proceed in accordance with Clause 18.5 to determine as follows the valuation of unpaid Works (the "**Valuation of Unpaid Works**"):

- (a) value of the completed stage of the Works, less payments already made;
- (b) reasonable value of the partially completed stages of works as on the date of Termination, only if such works conform with the Specifications and Standards; and
- (c) value of Maintenance, if any, for completed months, less payments already made,

and shall adjust from the sum thereof (i) any other amounts payable or recoverable, as the case may be, in accordance with the provisions of this Agreement; and (ii) all taxes due to be deducted at source.

23.5.2 The Valuation of Unpaid Works shall be communicated to the Authority, with a copy to the Contractor, within a period of **30 (thirty)** days from the date of Termination.

23.6 Termination Payment

23.6.1 Upon Termination on account of Contractor's Default under Clause 23.1, the Authority shall:

- (a) encash and appropriate the Performance Security and Retention Money, or in the event the Contractor has failed to replenish or extend the Performance Security, claim the amount stipulated in Clause 7.1.1, as agreed pre-determined compensation to the Authority for any losses, delays and cost of completing the Works and Maintenance, if any;
- (b) encash and appropriate the bank guarantee, if any, for and in respect of the outstanding Advance Payment and interest thereon; and
- (c) pay to the Contractor, by way of Termination Payment, an amount equivalent to the Valuation of Unpaid Works after adjusting any other sums payable or recoverable, as the case may be, in accordance with the provisions of this Agreement.

23.6.2 Upon Termination on account of an Authority Default under Clause 23.2 or for Authority's convenience under Clause 23.3, the Authority shall:

- (a) return the Performance Security and Retention Money forthwith;
- (b) encash and appropriate the bank guarantee, if any, for and in respect of the outstanding Advance Payment; and
- (c) pay to the Contractor, by way of Termination Payment, an amount equal to:
 - (i) Valuation of Unpaid Works;
 - (ii) the reasonable cost, as determined by the Authority's Engineer, of the Plant and Materials procured by the Contractor and transferred to the Authority for its use, only if such Plant and Materials are in conformity with the Specifications and Standards;
 - (iii) the reasonable cost of temporary works, as determined by the Authority's Engineer; and
 - (iv) 10% (ten per cent) of the cost of the Works and Maintenance that are not commenced or not completed,

and shall adjust from the sum thereof (i) any other amounts payable or recoverable, as the case may be, in accordance with the provisions of this Agreement, and (ii) all taxes due to be deducted at source.

23.6.3 Termination Payment shall become due and payable to the Contractor within **30 (thirty)** days of a demand being made by the Contractor to the Authority with the necessary particulars, and in the event of any delay, the Authority shall pay interest at the Base Rate plus 2% (two percent), calculated at quarterly rests, on the amount of Termination Payment remaining unpaid; provided that such delay shall not exceed **90 (ninety)** days. For the avoidance of doubt, it is expressly agreed that Termination Payment shall constitute full discharge by the Authority of its payment obligations in respect thereof hereunder.

23.6.4 The Contractor expressly agrees that Termination Payment under this Article 23 shall constitute a full and final settlement of all claims of the Contractor on account of Termination of this Agreement and that it shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

23.7 Other rights and obligations of the Parties

Upon Termination for any reason whatsoever

- (a) property and ownership in all Materials, Plant and Works and the Project Highway shall, as between the Contractor and the Authority, vest in the Authority in whole; provided that the foregoing shall be without prejudice to Clause 23.6
- (b) risk of loss or damage to any Materials, Plant or Works and the care and custody thereof shall pass from the Contractor to the Authority; and
- (c) the Authority shall be entitled to restrain the Contractor and any person claiming through or under the Agreement from entering upon the Site or any part of the Project except for taking possession of materials, stores, implements, construction plants and equipment of the Contractor, which have not been vested in the Authority in accordance with the provisions of this Agreement.

23.8 Survival of rights

Notwithstanding anything to the contrary contained in this Agreement any Termination pursuant to the provisions of this Agreement shall be without prejudice to the accrued rights of either Party including its right to claim and recover money damages, insurance proceeds, security deposits, and other rights and remedies, which it may have in law or Agreement. All rights and obligations of either Party under this Agreement, including Termination Payments, shall survive the Termination to the extent such survival is necessary for giving effect to such rights and obligations.

Part VI

Other Provisions

ARTICLE 24
ASSIGNMENT AND CHARGES

24.1 Restrictions on assignment and charges

This Agreement shall not be assigned by the Contractor to any person, save and except with the prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

24.2 Hypothecation of Materials or Plant

Notwithstanding the provisions of Clause 24.1, the Contractor may pledge or hypothecate to its lenders, any Materials or Plant prior to their incorporation in the Works. Further, the Contractor may, by written notice to the Authority, assign its right to receive payments under this Agreement either absolutely or by way of charge, to any person providing financing to the Contractor in connection with the performance of the Contractor's obligations under this Agreement. The Contractor acknowledges that any such assignment by the Contractor shall not relieve the Contractor from any obligations, duty or responsibility under this Agreement.

ARTICLE 25
LIABILITY AND INDEMNITY

25.1 General indemnity

25.1.1 The Contractor will indemnify, defend, save and hold harmless the Authority and its officers, servants, agents, Government Instrumentalities and Government owned and/or controlled entities/enterprises, (the “**Authority Indemnified Persons**”) against any and all suits, proceedings, actions, demands and third party claims for any loss, damage, cost and expense of whatever kind and nature, whether arising out of any breach by the Contractor of any of its obligations under this Agreement or from any negligence under the Agreement, including any errors or deficiencies in the design documents, or tort or on any other ground whatsoever, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of this Agreement on the part of the Authority Indemnified Persons.

25.2 Indemnity by the Contractor

25.2.1 Without limiting the generality of Clause 25.1, the Contractor shall fully indemnify, hold harmless and defend the Authority and the Authority Indemnified Persons from and against any and all loss and/or damages arising out of or with respect to:

- (a) failure of the Contractor to comply with Applicable Laws and Applicable Permits;
- (b) payment of taxes required to be made by the Contractor in respect of the income or other taxes of the Sub-contractors, suppliers and representatives; or
- (c) non-payment of amounts due as a result of Materials or services furnished to the Contractor or any of its Sub-contractors which are payable by the Contractor or any of its Sub-contractors.

25.2.2 Without limiting the generality of the provisions of this Article 25, the Contractor shall fully indemnify, hold harmless and defend the Authority Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which the Authority Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Contractor or by the Sub-contractors in performing the Contractor’s obligations or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the Contractor shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation

or suspension of the injunction or restraint order. If, in any such suit, action, claim or proceedings, the Project Highway, or any part thereof or comprised therein, is held to constitute an infringement and its use is permanently enjoined, the Contractor shall promptly make every reasonable effort to secure for the Authority a licence, at no cost to the Authority, authorising continued use of the infringing work. If the Contractor is unable to secure such licence within a reasonable time, the Contractor shall, at its own expense, and without impairing the Specifications and Standards, either replace the affected work, or part, or process thereof with non-infringing work or part or process, or modify the same so that it becomes non-infringing.

25.3 Notice and contest of claims

In the event that either Party receives a claim or demand from a third party in respect of which it is entitled to the benefit of an indemnity under this Article 25 (the “**Indemnified Party**”) it shall notify the other Party (the “**Indemnifying Party**”) within **15 (fifteen)** days of receipt of the claim or demand and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim or demand, it may conduct the proceedings in the name of the Indemnified Party, subject to the Indemnified Party being secured against any costs involved, to its reasonable satisfaction.

25.4 Defence of claims

25.4.1 The Indemnified Party shall have the right, but not the obligation, to contest, defend and litigate any claim, action, suit or proceeding by any third party alleged or asserted against such Party in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified hereunder, and reasonable costs and expenses thereof shall be indemnified by the Indemnifying Party. If the Indemnifying Party acknowledges in writing its obligation to indemnify the Indemnified Party in respect of loss to the full extent provided by this Article 25, the Indemnifying Party shall be entitled, at its option, to assume and control the defence of such claim, action, suit or proceeding, liabilities, payments and obligations at its expense and through the counsel of its choice; provided it gives prompt notice of its intention to do so to the Indemnified Party and reimburses the Indemnified Party for the reasonable cost and expenses incurred by the Indemnified Party prior to the assumption by the Indemnifying Party of such defence. The Indemnifying Party shall not be entitled to settle or compromise any claim, demand, action, suit or proceeding without the prior written consent of the Indemnified Party, unless the Indemnifying Party provides such security to the Indemnified Party as shall be reasonably required by the Indemnified Party to secure the loss to be indemnified hereunder to the extent so compromised or settled.

25.4.2 If the Indemnifying Party has exercised its rights under Clause 25.3, the Indemnified Party shall not be entitled to settle or compromise any claim, action, suit or proceeding without the prior written consent of the Indemnifying Party (which consent shall not be unreasonably withheld or delayed).

25.4.3 If the Indemnifying Party exercises its rights under Clause 25.3, the Indemnified Party shall nevertheless have the right to employ its own counsel, and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Indemnified Party, when and as incurred, unless:

- (a) the employment of counsel by such party has been authorised in writing by the Indemnifying Party; or
- (b) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the conduct of the defence of such action; or

- (c) the Indemnifying Party shall not, in fact, have employed independent counsel reasonably satisfactory to the Indemnified Party, to assume the defence of such action and shall have been so notified by the Indemnified Party; or
- (d) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:
 - (i) that there may be specific defences available to it which are different from or additional to those available to the Indemnifying Party; or
 - (ii) that such claim, action, suit or proceeding involves or could have a material adverse effect upon it beyond the scope of this Agreement:

Provided that if Sub-clauses (b), (c) or (d) of this Clause 25.4.3 shall be applicable, the counsel for the Indemnified Party shall have the right to direct the defence of such claim, demand, action, suit or proceeding on behalf of the Indemnified Party, and the reasonable fees and disbursements of such counsel shall constitute legal or other expenses hereunder.

25.5 No consequential claims Notwithstanding anything to the contrary contained in this Article 25, the indemnities herein provided shall not include any claim or recovery in respect of any cost, expense, loss or damage of an indirect, incidental or consequential nature, including loss of profit, except as expressly provided in this Agreement.

25.6 Survival on Termination

The provisions of this Article 25 shall survive Termination.

ARTICLE 26

26.1 Dispute Resolution

26.1.1 Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the “Dispute”) shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure set forth in Clause 26.2.

26.1.2 The Parties agree to use their best efforts for resolving all Disputes arising under or in respect of this Agreement promptly, equitably and in good faith, and further agree to provide each other with reasonable access during normal business hours to all non-privileged records, information and data pertaining to any Dispute.

26.2 Conciliation

26.2.1 Contractor’s claims

If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of this Agreement, the Contractor shall give notice to the Authority’s Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance. If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Authority shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Clause shall apply. The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance. The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Authority’s Engineer. Without admitting the Authority’s liability, the Authority’s Engineer may, after receiving any notice under this Clause, monitor the record-keeping and/or Instruct the Contractor to keep further contemporary records. The Contractor shall permit the Authority’s Engineer to inspect all these records, and shall (if instructed) submit copies to the Authority’s Engineer. Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Authority’s Engineer, the Contractor shall send to the Authority’s Engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;

- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Authority's Engineer may reasonably require; and
- (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Authority's Engineer. Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Authority's Engineer and approved by the Contractor, the Authority's Engineer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within the above defined time period. Within the above defined period of 42 days, the Authority's Engineer shall to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry), and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract. Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate. If the Authority's Engineer does not respond within the timeframe defined in this Clause, either Party may consider that the claim is rejected by the Authority's Engineer and any of the Parties may refer to the Dispute Board in accordance with Clause 26.2.2. The requirements of this Clause are in addition to those of any other Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded for reasons under this Clause.

26.2.2 Appointment of the Dispute Resolution Board

Disputes shall be referred to a DB for decision in accordance with this Clause. The Parties shall appoint a DB within 3 months of signing of Agreement. The DB shall comprise of three suitably qualified persons (—the members), each of whom shall be a professional experienced in the type of construction involved in the Works and with the interpretation of contractual documents. The DB is to comprise of three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman. The terms of the remuneration of each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties. Each Party shall be responsible for paying one-half of this remuneration. If at any time the Parties so agree, they may jointly refer a matter to the DB for it to give its opinion. Neither Party shall consult the DB on any matter without the agreement of the other Party. If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this

Clause. The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Authority or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DB (including each member) shall expire when the Performance Certificate is issued by the Authority.

26.2.3 Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Authority's Engineer, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the Authority's Engineer. Such reference shall state that it is given under this Clause. The DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB. Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s). Within 84 days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue to proceed with the Works in accordance with the Contract. If either Party is dissatisfied with the DB's decision, then either Party may, within 28 days after receiving the decision, give a Notice of Dissatisfaction to the other Party indicating its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of 84 days (or as otherwise approved) after receiving such reference, then either Party may, within 28 days after this period has expired, give a Notice of Dissatisfaction to the other Party. In either event, this Notice of Dissatisfaction shall state that it is given under this Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Neither Party shall be entitled to commence arbitration of a dispute unless a Notice of Dissatisfaction has been given in accordance with this Clause. If the DB has given its decision as to a matter in dispute to both Parties, and no Notice of Dissatisfaction has been given by either Party within 28 days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

26.3 Arbitration

26.3.1 Any Dispute which is not resolved amicably by conciliation, as provided in Clause 26.2, shall be finally decided by reference to arbitration by a Board of Arbitrators appointed in accordance with Clause 26.3.2. Such arbitration shall be held in accordance with the Arbitration & Conciliation Act, 1996 of India. Provided, however, arbitration shall be held in accordance with UNCITRAL Rules in case Contractor is registered outside India. The venue of such arbitration shall be **Jaipur**. The language of arbitration proceedings shall be English.

26.3.2. Disputes shall be settled by arbitration in accordance with the following provisions:

1. Selection of Arbitrators. Each dispute submitted by a Party to arbitration shall be heard by an arbitration tribunal composed of three (3) arbitrators, in accordance with the following provisions:
 - (a) the Authority and the Contractor shall each appoint one (1) arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration tribunal. If the arbitrators named by the Parties do not succeed in appointing a third arbitrator within thirty (30) days after the latter of the two (2) arbitrators named by the Parties has been appointed, the third arbitrator shall, at the request of either Party, in the event of disagreement between the two arbitrators, the appointment shall be made in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the “**Rules**”), or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration Act.
 - (b) If, in a dispute subject to paragraph (a) above, one Party fails to appoint its arbitrator within thirty (30) days after the other Party has appointed its arbitrator, the Party which has named an arbitrator may apply to the Secretary, the Indian Council of Arbitration, New Delhi to appoint a arbitrator for the matter in dispute, and the arbitrator appointed pursuant to such application shall be the arbitrator of the other party for that dispute.
2. Rules of Procedure. Arbitration proceedings shall be conducted in accordance with procedure of the Arbitration & Conciliation Act 1996, of India.
3. Substitute Arbitrators. If for any reason an arbitrator is unable to perform his/her function, a substitute shall be appointed in the same manner as the original arbitrator.
4. Nationality and Qualifications of Arbitrators. The arbitrators appointed pursuant to paragraphs 1(a) through 1(b) above shall be a legal or technical expert with extensive experience in relation to the matter in dispute.
5. Miscellaneous. In any arbitration proceeding hereunder:
 - (a) proceedings shall be held in **Jaipur**
 - (b) the English language shall be the official language for all purposes; and
 - (c) the decision of the majority of the arbitrators shall be final and binding and shall be enforceable in any court of competent jurisdiction, and the Parties hereby waive any objections to or claims of immunity in respect of such enforcement.
 - (d) The expenses incurred by each party in connection with the dispute preparation, presentation etc. of its proceedings as also the fees and expenses paid to the Arbitrator appointed by such party or on its behalf shall be borne by each party itself. Fees and expenses for the Presiding Arbitrator including the cost of proceedings shall be shared equally by both the parties.
 - (e) Court Jurisdiction: **Jaipur**

ARTICLE 27
MISCELLANEOUS

27.1 Governing law and jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts at [Jaipur] shall have exclusive jurisdiction over matters arising out of or relating to this Agreement.

27.2 Waiver of immunity

Each Party unconditionally and irrevocably:

- (a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;
- (b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Party with respect to its assets;
- (c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and
- (d) consents generally in respect of the enforcement of any judgement or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgement that may be made or given in connection therewith).

27.3 Delayed payments

The Parties hereto agree that payments due from one Party to the other Party under the provisions of this Agreement shall be made within the period set forth therein, and if no such period is specified, within **30 (thirty)** days of receiving a demand along with the necessary particulars. In the event of delay beyond such period, the defaulting Party shall pay interest for the period of delay calculated at a rate equal to Base Rate plus 2 (two) percent, calculated at quarterly rests, and recovery thereof shall be without prejudice to the rights of the Parties under this Agreement including Termination thereof.

27.4 Waiver

27.4.1 Waiver, including partial or conditional waiver, by either Party of any default by the other Party in the observance and performance of any provision of or obligations under this Agreement:-

- (a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;
- (b) shall not be effective unless it is in writing and executed by a duly authorised representative of the Party; and
- (c) shall not affect the validity or enforceability of this Agreement in any manner.

27.4.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by a Party to the other Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

27.5 Liability for review of Documents and Drawings

Except to the extent expressly provided in this Agreement:

- (a) no review, comment or approval by the Authority or the Authority's Engineer of any Document or Drawing submitted by the Contractor nor any observation or inspection of the construction, or maintenance of the Project Highway nor the failure to review, approve, comment, observe or inspect hereunder shall relieve or absolve the Contractor from its obligations, duties and liabilities under this Agreement, the Applicable Laws and Applicable Permits; and
- (b) the Authority shall not be liable to the Contractor by reason of any review, comment, approval, observation or inspection referred to in Sub-clause (a) above.

27.6 Exclusion of implied warranties etc.

This Agreement expressly excludes any warranty, condition or other undertaking implied at law or by custom or otherwise arising out of any other agreement between the Parties or any representation by either Party not contained in a binding legal agreement executed by both Parties.

27.7 Survival

27.7.1 Termination shall:

- (a) not relieve the Contractor or the Authority, as the case may be, of any obligations hereunder which expressly or by implication survive Termination hereof; and
- (b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination.

27.7.2 All obligations surviving Termination shall only survive for a period of 3 (three) years following the date of such Termination.

27.8 Entire Agreement

This Agreement and the Schedules together constitute a complete and exclusive statement of the terms of the agreement between the Parties on the subject hereof, and no amendment or modification hereto shall be valid and effective unless such modification or amendment is agreed to in writing by the Parties and duly executed by persons especially empowered in this behalf by the respective Parties. All prior written or oral understandings, offers or other communications of every kind pertaining to this Agreement are abrogated and withdrawn. For the avoidance of doubt, the Parties hereto agree that any obligations of the Contractor arising from the IFB as the case may be, shall be deemed to form part of this Agreement and treated as such.

27.9 Severability

If for any reason whatever, any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to the Dispute Resolution Procedure set forth under this Agreement or otherwise.

27.10 No partnership

This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

27.11 Third parties

This Agreement is intended solely for the benefit of the Parties, and their respective successors and permitted assigns, and nothing in this Agreement shall be construed to create any duty to, standard of care with reference to, or any liability to, any person not a Party to this Agreement.

27.12 Successors and assigns

This Agreement shall be binding upon, and inure to the benefit of the Parties and their respective successors and permitted assigns.

27.13 Notices

Any notice or other communication to be given by any Party to the other Party under or in connection with the matters contemplated by this Agreement shall be in writing and shall:

- (a) in the case of the Contractor, be given by facsimile or e-mail and by letter delivered by hand to the address given and marked for attention of the person set out below or to such other person as the Contractor may from time to time designate by notice to the Authority; provided that notices or other communications to be given to an address outside [Jaipur] may, if they are subsequently confirmed by sending a copy thereof by registered acknowledgement due, air mail or by courier, be sent by facsimile or e-mail to the person as the Contractor may from time to time designate by notice to the Authority;

[***]

- (b) in the case of the Authority, be given by facsimile or e-mail and by letter delivered by hand and be addressed to the Authority with a copy delivered to the Authority Representative or such other person as the Authority may from time to time designate by notice to the Contractor; provided that if the Contractor does not have an office in [Jaipur] it may send such notice by facsimile or e-mail and by registered acknowledgement due, air mail or by courier; and
- (c) any notice or communication by a Party to the other Party, given in accordance herewith, shall be deemed to have been delivered when in the normal course of post it ought to have been delivered and in all other cases, it shall be deemed to have been delivered on the actual date and time of delivery; provided that in the case of facsimile or e-mail, it shall be deemed to have been delivered on the working day following the date of its delivery.

27.14 Language

All notices required to be given by one Party to the other Party and all other communications, Documentation and proceedings which are in any way relevant to this Agreement shall be in writing and in English language.

27.15 Counterparts

This Agreement may be executed in two counterparts, each of which, when executed and delivered, shall constitute an original of this Agreement.

27.16 Confidentiality

The Parties shall treat the details of this Agreement as private and confidential, except to the extent necessary to carry out obligations under it or to comply with Applicable Laws. The Contractor shall not publish, permit to be published, or disclose any particulars of the Works in any trade or technical paper or elsewhere without the previous agreement of the Authority.

27.17 Copyright and Intellectual Property rights

27.17.1 As between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor. The Contractor shall be deemed (by signing this Agreement) to give to the Authority a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:

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

27.17.2 The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Authority for purposes other than those permitted under this Clause 27.17.

27.17.3 As between the Parties, the Authority shall retain the copyright and other intellectual property rights in this Agreement and other documents made by (or on behalf of) the Authority. The Contractor may, at its cost, copy, use, and obtain communication of these documents for the purposes of this Agreement. They shall not, without the Authority's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the contract.

27.18 Limitation of Liability

27.18.1 Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with this Agreement, save and except as provided under Articles 23 and 25.

27.18.2 The total liability of one Party to the other Party under and in accordance with the provisions of this Agreement, save and except as provided in Articles 23 and 25, shall not exceed the Contract Price. For the avoidance of doubt, this Clause shall not limit the liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

ARTICLE 28 DEFINITIONS

28.1 Definitions

In this Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them:

“Accounting Year” means the financial year commencing from the first day of April of any calendar year and ending on the thirty-first day of March of the next calendar year;

“Advance Payment” shall have the meaning set forth in Clause 19.2;

“Affected Party” shall have the meaning set forth in Clause 21.1;

“Affiliate” means, in relation to either Party {and/or Members}, a person who controls, is controlled by, or is under the common control with such Party {or Member} (as used in this definition, the expression “control” means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person, whether by operation of law or by contract or otherwise);

“Agreement” means this Agreement, its Recitals, the Schedules hereto and any amendments thereto made in accordance with the provisions contained in this Agreement;

“Applicable Laws” means all laws, brought into force and effect by GOI or the State Government including rules, regulations and notifications made thereunder, and judgments, decrees, injunctions, writs and orders of any court of record, applicable to this Agreement and the exercise, performance and discharge of the respective rights and obligations of the Parties hereunder, as may be in force and effect during the subsistence of this Agreement;

“Applicable Permits” means all clearances, licences, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction, operation and maintenance of the Project Highway during the subsistence of this Agreement;

“Appointed Date” means that date which is later of the 15th day of the date of this Agreement, the date on which the Contractor has delivered the Performance Security in accordance with the provisions of Article 7 and the date on which the Authority has provided in stretches the Right of Way on first Section as per Schedule A;

“Arbitration Act” means the Arbitration and Conciliation Act, 1996 and shall include modifications to or any re-enactment thereof, as in force from time to time;

“Authority” shall have the meaning attributed thereto in the array of Parties hereinabove as set forth in the Recitals;

“Authority Default” shall have the meaning set forth in Clause 23.2;

“Authority’s Engineer” shall have the meaning set forth in Clause 18.1;

“Authority Representative” means such person or persons as may be authorised in writing by the Authority to act on its behalf under this Agreement and shall include any person or persons having authority to exercise any rights or perform and fulfill any obligations of the Authority under this Agreement;

“Bank” means a bank incorporated in India and having a minimum net worth of Rs. 1,000 crore (Rupees one thousand crore) or any other bank acceptable to the Authority;

“Base Rate” means the floor rate of interest announced by the State Bank of India for all its lending operations;

“Base Date” means the last date of that calendar month, which date precedes the Bid Due Date by at least 28 (twenty eight) days;

“Bid” means the documents in their entirety comprised in the bid submitted by the [selected bidder/Consortium] in response to the Request for Proposals in accordance with the provisions thereof;

“Bid Security” means the bid security provided by the Contractor to the Authority in accordance with the Request for Proposal, and which is to remain in force until substituted by the Performance Security;

Change in Law” means the occurrence of any of the following after the Base Date:

- (a) the enactment of any new Indian law;
- (b) the repeal, modification or re-enactment of any existing Indian law;
- (c) the commencement of any Indian law which has not entered into effect until the Base Date;
- (d) a change in the interpretation or application of any Indian law by a judgement of a court of record which has become final, conclusive and binding, as compared to such interpretation or application by a court of record prior to the Base Date.

“Change of Scope” shall have the meaning set forth in Article 13;

“Change of Scope Notice” shall have the meaning set forth in Clause 13.2.1;

“Change of Scope Order” shall have the meaning set forth in Clause 13.2.4;

“Completion Certificate” shall have the meaning set forth in Clause 12.4;

{**“Consortium”** means the consortium of entities which have formed a joint venture for implementation of this Project;}^{\$}

“Construction” shall have the meaning set forth in Clause 1.2.1 (f);

“Construction Period” means the period commencing from the Appointed Date and ending on the date of the Completion Certificate;

“Contract Price” means the amount specified in Clause 19.1.1;

“Contractor” shall have the meaning attributed thereto in the array of Parties hereinabove as set forth in the Recitals;

“Contractor Default” shall have the meaning set forth in Clause 23.1;

“Cure Period” means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Party responsible for such breach or default and shall:

- (a) commence from the date on which a notice is delivered by one Party to the other Party asking the latter to cure the breach or default specified in such notice;
- (b) not relieve any Party from liability to pay Damages or compensation under the provisions of this Agreement; and
- (c) not in any way be extended by any period of Suspension under this Agreement; provided that if the cure of any breach by the Contractor requires any reasonable action by the Contractor that must be approved by the Authority or the Authority’s Engineer hereunder, the applicable Cure Period shall be extended by the period taken by the Authority or the Authority’s Engineer to accord their approval;

^{\$}This definition may be omitted if the Contractor is not a Consortium.

“Damages” shall have the meaning set forth in paragraph (w) of Clause 1.2.1;

“Defect” means any defect or deficiency in Construction of the Works or any part thereof, which does not conform with the Specifications and Standards, and in the case of Maintenance, means any defect or deficiency which is specified in Schedule-E;

“Defects Liability Period” shall have the meaning set forth in Clause 17.1; **“Dispute”** shall have the meaning set forth in Clause 26.1.1;

“Dispute Resolution Procedure” means the procedure for resolution of Disputes set forth in Article 26;

“Drawings” means all of the drawings, calculations and documents pertaining to the Project Highway as set forth in Schedule-I, and shall include ‘as built’ drawings of the Project Highway;

“Document” or “Documentation” means documentation in printed or written form, or in tapes, discs, drawings, computer programmes, writings, reports, photographs, films, cassettes, or expressed in any other written, electronic, audio or visual form;

“Emergency” means a condition or situation that is likely to endanger the safety or security of the individuals on or about the Project Highway, including Users thereof, or which poses an immediate threat of material damage to any of the Project Assets;

“Encumbrances” means, in relation to the Project Highway, any encumbrances such as mortgage, charge, pledge, lien, hypothecation, security interest, assignment, privilege or priority of any kind having the effect of security or other such obligations, and shall include any designation of loss payees or beneficiaries or any similar arrangement under any insurance policy pertaining to the Project Highway, where applicable herein but excluding utilities referred to in Clause 9.1;

“EPC” means engineering, procurement and construction;

“Final Payment Certificate” shall have the meaning set forth in Clause 19.15.1;

“Final Payment Statement” shall have the meaning set forth in Clause 19.13.1;

“Force Majeure” or “Force Majeure Event” shall have the meaning ascribed to it in Clause 21.1;

“GAD” or “General Arrangement Drawings” shall have the meaning set forth in Clause 4.1.3 (b);

“GOI/GOR” or “Government” means the Government of India / Government of Rajasthan as the case may be;

“Good Industry Practice” means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced contractor engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Contractor in accordance with this Agreement, Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner;

“Government Instrumentality” means any department, division or sub-division of the Government or the State Government and includes any commission, board, authority, agency or municipal and other local authority or statutory body including panchayat under the control of the Government or the State Government, as the case may be, and having jurisdiction over all or any part of the Project Highway or the performance of all or any of the services or obligations of the Contractor under or pursuant to this Agreement;

“IRC” means the Indian Roads Congress;

“Indemnified Party” means the Party entitled to the benefit of an indemnity pursuant to Article 25;

“Indemnifying Party” means the Party obligated to indemnify the other Party pursuant to Article 25;

“Indirect Political Event” shall have the meaning set forth in Clause 21.3;

“Insurance Cover” means the aggregate of the maximum sums insured under the insurances taken out by the Contractor pursuant to Article 20, and includes all insurances required to be taken out by the Contractor under Clauses 20.1 and 20.9 but not actually taken, and when used in the context of any act or event, it shall mean the aggregate of the maximum sums insured and payable or deemed to be insured and payable in relation to such act or event;

“Intellectual Property” means all patents, trademarks, service marks, logos, get-up, trade names, internet domain names, rights in designs, blue prints, programmes and manuals, drawings, copyright (including rights in computer software), database rights, semi-conductor, topography rights, utility models, rights in know-how and other intellectual property rights, in each case whether registered or unregistered and including applications for registration, and all rights or forms of protection having equivalent or similar effect anywhere in the world;

“Interim Payment Certificate” or **“IPC”** means the interim payment certificate issued by the Authority’s Engineer for payment to the Contractor in respect of Contractor’s claims for payment raised in accordance with the provisions of this Agreement;

{“Lead Member” shall, in the case of a consortium, mean the member of such consortium who shall have the authority to bind the contractor and each member of the Consortium; and shall be deemed to be the Contractor for the purposes of this Agreement;}^{\$}

“LOA” or “Letter of Acceptance” means the letter of acceptance referred to in Recital (E);

“Maintenance” means the maintenance of the Project Highway as set forth in Article 14 for the period specified therein;

“Maintenance Inspection Report” shall have the meaning set forth in Clause 15.2.1;

^{\$}This definition may be omitted if the Contractor is not a Consortium.

“Maintenance Manual” shall have the meaning ascribed to it in Clause 10.7;

“Maintenance Programme” shall have the meaning set forth in Clause 14.3;

“Maintenance Period” shall have the meaning set forth in Clause 14.1.1;

“Maintenance Requirements” shall have the meaning set forth in Clause 14.2;

“Major Bridge” means a bridge having a total length of more than 60 (sixty) metres between the inner faces of the dirt walls as specified in IRC:5-1998;

“Manual” shall mean the Manual of Standards and Specifications for Two Laning of Highways (IRC:SP:73-2007) and Specifications for Four Laning of Highways (IRC:SP:84-2009) as the case may be;

“Material Adverse Effect” means a material adverse effect of any act or event on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement and which act or event causes a material financial burden or loss to either Party;

“Materials” are all the supplies used by the Contractor for incorporation in the Works or for the maintenance of the Project Highway;

“Monthly Maintenance Statement” shall have the meaning set forth in Clause 19.6.1;

“MoRT&H” means the Ministry of Road Transport and Highways or any substitute thereof dealing with Highways;

“Non-Political Event” shall have the meaning set forth in Clause 21.2;

“Parties” means the parties to this Agreement collectively and **“Party”** shall mean any of the parties to this Agreement individually;

“Performance Security” shall have the meaning set forth in Clause 7.1;

“Plant” means the apparatus and machinery intended to form or forming part of the Works;

“Political Event” shall have the meaning set forth in Clause 21.4;

“Programme” shall have the meaning set forth in Clause 10.1.3;

“Project” means the construction and maintenance of the Project Highway in accordance with the provisions of this Agreement, and includes all works, services and equipment relating to or in respect of the Scope of the Project;

“Project Assets” means all physical and other assets relating to (a) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road over-bridges, drainage works, traffic signals, sign boards, kilometre-stones, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; and (b) Project Facilities situated on the Site;

“Project Completion Date” means the date on which the Provisional Certificate is issued and in the event no Provisional Certificate is issued, the date on which the Completion Certificate is issued;

“Project Completion Schedule” means the progressive Project Milestones set forth in Schedule-J for completion of the Project Highway on or before the Scheduled Completion Date;

“Project Facilities” means all the amenities and facilities situated on the Site, as described in Schedule-C;

“Project Highway” means the Site comprising the existing road, forming part of State Highway **Banar-Bhopalgarh-Kuchera (SH-63) commencing from km 0 to km 126.500** and all Project Assets, and its subsequent development and augmentation in accordance with this Agreement;

“Project Milestone” means the project milestone set forth in Schedule-J;

“Proof Consultant” shall have the meaning set forth in Clause 10.2.2;

“Provisional Certificate” shall have the meaning set forth in Clause 12.2;

“Punch List” shall have the meaning set forth in Clause 12.2.1;

“Quality Assurance Plan” or “QAP” shall have the meaning set forth in Clause 11.2;

“Re.”, “Rs.” or “Rupees” or “Indian Rupees” means the lawful currency of the Republic of India;

“Request for Proposals” or “RFP” shall have the meaning set forth in Recital ‘D’;

“Request for Qualification” or “RFQ” shall have the meaning set forth in Recital ‘C’;

“Retention Money” shall have the meaning set forth in Clause 7.5.1;

“Right of Way” means the constructive possession of the Site free from encroachments and encumbrances, together with all way leaves, easements, unrestricted access and other rights of way, howsoever described, necessary for construction and maintenance of the Project Highway in accordance with this Agreement;

“Safety Consultant” shall have the meaning set forth in Clause 10.1.5;

“Scheduled Completion Date” shall be the date set forth in Clause 10.3.1;

“Scope of the Project” shall have the meaning set forth in Clause 2.1;

“Section” means a part of the Project Highway;

“Site” shall have the meaning set forth in Clause 8.1;

“Specifications and Standards” means the specifications and standards relating to the quality, quantity, capacity and other requirements for the Project Highway, as set forth in Schedule-D, and any modifications thereof, or additions thereto, as included in the design and engineering for the Project Highway submitted by the Contractor to, and expressly approved by, the Authority;

“Stage Payment Statement” shall have the meaning set forth in Clause 19.4;

“Structures” means an elevated road or a flyover, as the case may be;

“Sub-contractor” means any person or persons to whom a part of the Works or the Maintenance has been subcontracted by the Contractor and the permitted legal successors in title to such person, but not an assignee to such person;

“Suspension” shall have the meaning set forth in Article 22;

“Taxes” means any Indian taxes including excise duties, customs duties, value added tax, sales tax, local taxes, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, Materials, equipment and services incorporated in and forming part of the Project Highway charged, levied or imposed by any Government Instrumentality, but excluding any interest, penalties and other sums in relation thereto imposed on any account whatsoever. For the avoidance of doubt, Taxes shall not include taxes on corporate income;

“Termination” means the expiry or termination of this Agreement;

“Termination Notice” means the communication issued in accordance with this Agreement by one Party to the other Party terminating this Agreement;

“Termination Payment” means the amount payable by either Party to the other upon Termination in accordance with Article 23;

“Terms of Reference” or “TOR” shall have the meaning set forth in Clause 18.2.1;

“Tests” means the tests set forth in Schedule-K to determine the completion of Works in accordance with the provisions of this Agreement;

“Time Extension” shall have the meaning set forth in Clause 10.5.1;

“User” means a person who travels or intends to travel on the Project Highway or any part thereof in/on any vehicle;

“Valuation of Unpaid works” shall have the meaning set forth in Clause 23.5.1;

“Works” means all works including survey and investigation, design, engineering, procurement, construction, Plant, Materials, maintenance, temporary works and other things necessary to complete the Project Highway in accordance with this Agreement; and

“WPI” means the wholesale price index for various commodities as published by the Ministry of Commerce and Industry, GOI and shall include any index which substitutes the WPI, and any reference to WPI shall, unless the context otherwise requires, be construed as a reference to the WPI published for the period ending with the preceding month.

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DAY, MONTH AND YEAR FIRST ABOVE WRITTEN.

SIGNED, SEALED AND

SIGNED, SEALED AND

DELIVERED

DELIVERED

For and on behalf of

For and on behalf of

Governor of State of Rajasthan by:

THE CONTRACTOR by:

Additional Chief Enigneer PPP

PWD Rajasthan, Jaipur-302006

(Signature)

(Signature)

(Name)

(Name)

(Designation)

(Designation)

In the presence of: 1.

APPENDIX TO CONDITIONS OF CONTRACT

Bank's Policy- Corrupt and Fraudulent Practices

(text in this Appendix shall not be modified)

Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011:

“Fraud and Corruption:

1.16 It is the Bank's policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts. In pursuance of this policy, the Bank:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;;
 - (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 obligation;
 - (iii) “collusive practice” is an arrangement between two or more parties 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 party or the property of the party to influence improperly the actions of a party;
 - (v) “obstructive practice” is
 - (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

- (bb) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 1.16(e) below.
- (b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- (c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- (d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank's sanctions procedures, including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated;
- (e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank."

Schedules

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

- 1 The Site
 - 1.1 Site of the “**Development & Upgradation Banar-Bhopalgarh-Kuchera (SH-63) km 0 to km 126.500**” Project Highway shall include the land, buildings, structures and road works as described in **Annex-I** of this **Schedule-A**.
 - 1.2 The dates of handing over the Right of Way to the Contractor are specified in **Annex-II** of this **Schedule-A**.
 - 1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.
 - 1.4 The alignment plans of the Project Highway are specified in **Annex-III**.
 - 1.5 The status of the environment clearances obtained or awaited is given in **Annex IV**.

Annex - I (Schedule-A)

1. Site

The Site of the Project Highway comprises the section of **Banar-Bhopalgarh-Kuchera State Highway 63 commencing from km 0 to km 126.500**. This highway commences from km 0+00 at Junction with NH-25(Old NH 112) to km 126+500 at Junction with NH-58 (Old NH-89) near Kuchera town in the State of Rajasthan. The entire Project Highway is located in the Jodhpur & Nagaur districts in the West-Central part of Rajasthan. A key map of the Project Highway is shown below.

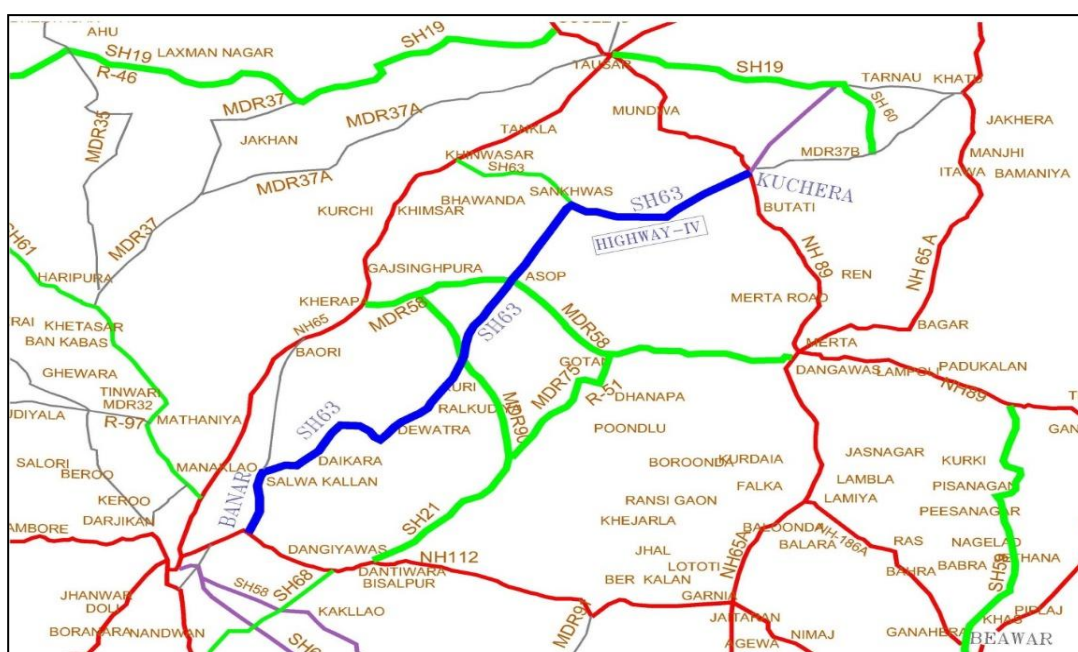


Fig 1: Key Map of Project Highway

The land, carriageway and structures comprising the Site are described below.

2. Land

- 2.1 The Site of the Project Highway comprises the land described below in Table 2.1A showing existing ROW and Table 2.1B showing additional land to be acquired.

Table 2.1 A: Existing ROW

Sl. No.	Existing Chainage (Km)	Existing ROW (m)		
		Left Side	Right Side	Total
1	0.000	22.60	67.40	90

Sl. No.	Existing Chainage (Km)	Existing ROW (m)		
		Left Side	Right Side	Total
2	1.000	22.26	7.74	30
3	2.000	21.00	9.00	30
4	3.000	22.61	7.39	30
5	4.000	23.35	6.65	30
6	5.000	16.65	13.35	30
7	6.000	16.57	13.43	30
8	7.000	16.31	13.69	30
9	8.000	16.07	13.93	30
10	9.000	16.20	13.80	30
11	10.000	14.98	15.02	30
12	11.000	14.59	15.41	30
13	12.000	8.13	21.87	30
14	13.000	15.20	14.80	30
15	14.000	15.34	14.66	30
16	15.000	15.84	14.16	30
17	16.000	14.70	15.30	30
18	17.000	15.18	14.82	30
19	18.000	15.1	14.90	30
20	19.000	15.2	14.80	30
21	20.000	15.81	14.19	30
22	21.000	14.67	15.33	30
23	22.000	15.24	14.76	30
24	23.000	15.20	14.80	30
25	24.000	14.35	15.65	30
26	25.000	16.13	13.87	30
27	26.000	15.58	14.42	30
28	27.000	15.27	14.73	30
29	28.000	15.10	14.90	30
30	29.000	15.19	14.81	30
31	30.000	15.10	14.90	30
32	31.000	15.08	14.92	30
33	32.000	14.84	15.16	30
34	33.000	24.69	5.31	30
35	34.000	15.07	14.93	30
36	35.000	14.63	15.37	30
37	36.000	14.97	15.03	30
38	37.000	18.99	11.01	30
39	38.000	15.03	14.97	30

Sl. No.	Existing Chainage (Km)	Existing ROW (m)		
		Left Side	Right Side	Total
40	39.000	14.29	15.71	30
41	40.000	12.50	17.50	30
42	41.000	15.13	14.87	30
43	42.000	14.95	15.05	30
44	43.000	15.01	14.99	30
45	44.000	15.57	14.43	30
46	45.000	13.96	16.04	30
47	46.000	14.97	15.03	30
48	47.000	14.27	15.73	30
49	48.000	14.91	15.09	30
50	49.000	14.62	15.38	30
51	50.000	15.83	14.17	30
52	51.000	15.20	14.80	30
53	52.000	15.12	14.88	30
54	53.000	18.23	11.77	30
55	54.000	13.56	16.44	30
56	55.000	19.73	10.27	30
57	56.000	14.91	15.09	30
58	57.000	14.18	15.82	30
59	58.000	23.80	6.20	30
60	59.000	17.27	12.73	30
61	60.000	14.81	15.19	30
62	61.000	11.24	18.76	30
63	62.000	15.08	14.92	30
64	63.000	15.33	14.67	30
65	64.000	14.72	15.28	30
66	65.000	14.56	15.44	30
67	66.000	15.05	14.95	30
68	67.000	15.06	14.94	30
69	68.000	14.97	15.03	30
70	69.000	14.45	15.55	30
71	70.000	14.18	15.82	30
72	71.000	11.70	18.30	30
73	72.000	15.07	14.93	30
74	73.000	15.65	14.35	30
75	74.000	14.89	15.11	30
76	75.000	14.77	15.23	30
77	76.000	14.82	15.18	30

Sl. No.	Existing Chainage (Km)	Existing ROW (m)		
		Left Side	Right Side	Total
78	77.000	14.47	15.53	30
79	78.000	14.24	15.76	30
80	79.000	17.20	12.80	30
81	80.000	12.67	17.33	30
82	81.000	14.84	15.16	30
83	82.000	14.94	15.06	30
84	83.000	14.96	15.04	30
85	84.000	14.75	15.25	30
86	85.000	18.35	11.65	30
87	86.000	14.73	15.27	30
88	87.000	17.21	12.79	30
89	88.000	16.20	13.80	30
90	89.000	15.74	14.26	30
91	90.000	14.71	15.29	30
92	91.000	15.36	14.64	30
93	92.000	15.11	14.89	30
94	93.000	14.95	15.05	30
95	94.000	14.86	15.14	30
96	95.000	14.7	15.30	30
97	96.000	14.5	15.50	30
98	97.000	13.8	16.20	30
99	98.000	12.31	17.69	30
100	99.000	14.74	15.26	30
101	100.000	15.62	14.38	30
102	101.000	15.37	14.63	30
103	102.000	15.59	14.41	30
104	103.000	--	30.00	30
105	104.000	--	30.00	30
106	105.000	14.94	15.06	30
107	106.000	14.74	15.26	30
108	107.000	15.24	14.76	30
109	108.000	15.38	14.62	30
110	109.000	15.00	15.00	30
111	110.000	14.49	15.51	30
112	111.000	7.88	22.12	30
113	112.000	15.37	14.63	30
114	113.000	15.44	14.56	30
115	114.000	14.71	15.29	30

Sl. No.	Existing Chainage (Km)	Existing ROW (m)		
		Left Side	Right Side	Total
116	115.000	14.84	15.16	30
117	116.000	15.30	14.70	30
118	117.000	15.08	14.92	30
119	118.000	14.39	15.61	30
120	119.000	14.35	15.65	30
121	120.000	15.01	14.99	30
122	121.000	15.20	14.80	30
123	122.000	15.56	14.44	30
124	123.000	15.09	14.91	30
125	124.000	14.86	15.14	30
126	125.000	15.66	14.34	30
127	126.000	14.52	15.48	30
128	127.000	14.99	15.01	30
129	128.000	14.97	15.03	30
130	128.400	14.89	15.11	30

Table 2.1B: Additional Land Required

Sl. No.	Existing Chainage (km)	Additional Width of Land to be Acquired (m)	
		Left Side	Right Side
1	1+760	8.0	8.0
2	7+550	15.0	15.0
3	11+990	8.0	8.0
4	17+750	15.0	15.0
5	48+930	15.0	15.0
6	86+800	15.0	15.0
7	94+180	15.0	15.0
8	101+470	15.0	15.0
9	104+690	15.0	15.0

Notes: 1) Existing Chainage (X+Y) indicates the nearest existing Kilometer Stone (X) from which the distance (Y) of the reference point is measured in metre towards higher chainage. 2) Since the Existing and Proposed RoWs are not uniform, the plan and profile drawings (Plan drawn 1:2000 scale) given as Annex III of Schedule A may be used for further details.

3. Carriageway

The existing carriageway of the Project Highway is Single Lane/Two Lane/. The type of the existing pavement is flexible. The width of bituminous paved surface (carriageway with/without pave shoulder) is given below.

Sl. No.	Existing Chainage (km)		Width of Carriageway with/without Paved Shoulder Width (m)
	From	To	
1	0+000	0+100	7.0
2	0+100	12+000	7.0
3	12+000	13+000	5.0
4	13+000	44+000	7.0
5	44+000	48+000	6.9
6	48+000	58+000	7.0
7	58+000	59+000	7.00
8	59+000	60+000	8.50
9	60+000	61+000	10.20
10	61+000	72+000	7.00
11	72+000	78+000	3.70
12	78+000	79+000	5.00
13	79+000	80+000	5.00
14	80+000	80+400	3.80
15	80+400	80+600	10.00
16	80+600	92+600	3.05
17	92+600	93+400	7.50
18	93+400	95+000	3.50
19	95+000	97+000	7.00
20	97+000	98+000	7.00
21	98+000	99+000	7.00
22	99+000	105+000	3.50
23	105+000	107+000	3.70
24	107+000	114+000	3.50
25	114+000	115+000	7.00

Sl. No.	Existing Chainage (km)		Width of Carriageway with/without Paved Shoulder Width (m)
	From	To	
26	115+000	128+000	3.50
27	128+000	129+400	5.00

4. Major Bridges – Nil

5. Road Over-Bridges (ROB)/ Road Under-Bridges (RUB) - Nil

6. Grade Separators - Nil

7. Minor Bridges

The Site includes the following minor bridges located along the Project Highway:

Sl. No.	Existing Chainage (km)	Type of Structure			No. of spans with span length (m)	Width (m)
		Foundation	Sub-structure	Superstructure		
1	47+071	Open	Wall Type	RCC Slab	4 x 8.0	8.10
2	49+482	Open	Wall Type	RCC Slab	5 x 2.6	8.10
3	50+961	Open	Wall Type	RCC Slab	1 x 6.9	7.20

8. Railway Level Crossings -

Sl. No.	Existing Chainage (in km)	L.C Number + Railway Km	Width of Railway Land
1	0+900	C-160: 609+500 – 609+600	30.0 M
2	117+400	C-92 (Merta Road-Bikaner Section)	30.0 M

9. Underpasses (Vehicular and Non-vehicular) - Nil

10. Culverts

The Site has the following culverts along the Project Highway:

Sl. No.	Existing Chainage (km)	Type of Culvert	Span Arrangement No x Span / Dia. (m)	Width (m)
1	12+667	Pipe	3x 0.60	8.80
2	18+760	Pipe	1x1.20	11.20

Sl. No.	Existing Chainage (km)	Type of Culvert	Span Arrangement No x Span / Dia. (m)	Width (m)
3	33+383	Slab	1x4.60	8.20
4	45+959	Slab	1x3.60	8.20
5	45+971	Slab	1x2.40	8.30
6	47+730	Slab	1x2.50	8.10
7	48+543	Slab	1x1.70	8.20
8	49+022	Slab	1x1.60	8.10
9	50+371	Slab	1x1.80	8.10
10	53+698	Slab	1x1.60	8.00
11	53+815	slab	1x1.60	8.00
12	60+751	Pipe	2x0.60	12.50
13	77+589	Slab	1x1.60	8.00
14	78+846	Slab	1x2.70	8.00
15	91+428	Slab	1x0.90	8.40
16	95+996	Pipe	2x0.60	6.60
17	128+241	Slab	1x1.00	11.90

11 Bus Bays - Nil

12 Truck Lay byes - Nil

13 Road Side Drains

The Site has the following roadside lined drains:

Sl. No.	Existing Chainage (km)		Length (m)	Side	Drain Type	Width (m)
	From	To				
1	58+924	58+987	63	RHS	Masonry/cc (Pucca)	0.36
2	59+064	59+269	205	RHS	Masonry/cc (Pucca)	0.36
3	59+114	59+221	107	RHS	Masonry/cc (Pucca)	0.36
4	59+331	59+385	54	RHS	Masonry/cc (Pucca)	0.36
5	59+423	59+584	161	RHS	Masonry/cc (Pucca)	0.45
6	78+365	78+427	62	RHS	Masonry/cc	0.54

Sl. No.	Existing Chainage (km)		Length (m)	Side	Drain Type	Width (m)
	From	To				
					(Pucca)	
7	96+559	96+637	78	LHS	Masonry/cc (Pucca)	0.21
8	103+865	103+900	35	RHS	Masonry/cc (Pucca)	0.61
9	114+083	114+139	56	RHS	Masonry/cc (Pucca)	0.39
10	114+139	114+216	77	LHS	Masonry/cc (Pucca)	0.39
11	114+282	114+353	71	LHS	Masonry/cc (Pucca)	0.42
12	128+800	129+239	439	LHS	Masonry/cc (Pucca)	0.62

14 Major Junctions

The details of major junctions are as follows:

S. No.	Existing Chainage (km)	Type of Junction (+,T)	Category of Cross Road	Cross Road leads to
1	0+000	Y	NH-112	Banar
2	12+580	Y	SH-58	Thabukra
3	18+600	T	SH-58	Daikra
4	59+650	+	MDR-90	Bhopalgarh
5	77+550	T	MDR-58	Asop
6	78+200	T	MDR-58	Asop
7	96+100	+	MDR-37B	Sankhwas
8	114+360	+	SH-39	Khajwana
9	125+600	+	NH-58	Kuchera Bypass
10	129+450	Y	NH-89	Kuchera

(NH: National Highway, SH: State Highway, VR: Village Road)

15 Minor Junctions

The details of the minor junctions are as follows:

Sl.No.	Existing Chainage (km)	Type of Junction (+,T,Y)	Type of Cross Road Surface & Width (m)	Cross Road Leads to
1	0+082	T	VR, BT, 5.0	Banar railway station
2	0+780	T	VR, BT, 3.75	Village Road
3	1+200	T	VR, BT, 3.75	Jajiwal village
4	1+474	T	VR, BT, 3.75	Village Road
5	4+300	T	VR, BT, 3.75	Village Road
6	4+371	Y	VR, BT, 3.75	R(Salvakua
7	5+072	T	VR, BT, 3.75	Aagpawa
8	9+059	T	VR, BT, 3.75	Batewas
9	10+171	T	VR, BT, 3.75	Sursagar
10	16+170	Y	VR, BT, 3.75	Salwa
11	20+875	T	VR, BT, 3.75	Salwakalan
12	23+560	T	VR, BT, 3.75	Lunawas
13	29+230	T	VR, BT, 3.75	Castee
14	29+943	T	VR, BT, 3.75	Ram Chowki
15	29+980	Y	VR, BT, 3.75	Bandra
16	34+230	T	VR, BT, 3.75	Nandiya Prabhawa
17	36+971	T	VR, BT, 3.75	Salwa kalan
18	39+534	T	VR, BT, 3.75	Godaro
19	44+610	T	VR, BT, 3.75	Artiya Kalan
20	44+650	T	VR, BT, 3.75	Artiya Kalan
21	47+040	T	VR, BT, 3.75	Sopada
22	50+473	X	VR, BT, 3.75	Chopda - Kurdi
23	52+220	T	VR, BT, 3.75	Joru
24	55+850	Y	VR, BT, 3.75	Bagoriya
25	56+200	T	VR, BT, 3.75	Cholawata
26	57+417	T	VR, CC, 3.75	PCC Road
27	60+268	X	VR, BT, 3.75	Medata
28	60+740	T	SH, BT, 3.75	Bhopalgarh
29	77+860	T	VR, BT, 3.75	Warandi
30	78+170	T	SH, BT, 3.75	Gotan
31	78+238	T	SH, BT, 3.75	Gotan
32	80+500	Y	VR, BT, 3.75	Asop
33	86+630	T	VR, BT, 3.75	Khimshar
34	96+441	T	VR, BT, 3.75	Village Road
35	96+600	T	VR, BT, 3.75	Village Road
36	97+000	T	VR, BT, 3.75	Village Road
37	96+900	T	VR, BT, 3.75	Village Road
38	103+470	T	VR, BT, 3.75	Village Road

Sl.No.	Existing Chainage (km)	Type of Junction (+,T,Y)	Type of Cross Road Surface & Width (m)	Cross Road Leads to
39	103+800	Y	VR, BT, 3.75	Village Road
40	104+600	Y	VR, BT, 3.75	L(Mandua)
41	107+450	T	VR, BT, 3.75	Village Road
42	108+870	T	VR, BT, 3.75	Village Road
43	109+530	T	VR, BT, 3.75	Village Road
44	110+740	T	VR, BT, 3.75	Village Road
45	113+420	T	VR, BT, 3.75	Village Road
46	113+442	T	VR, BT, 3.75	Village Road
47	113+590	T	VR, BT, 3.75	Village Road
48	113+725	T	VR, BT, 3.75	Village Road
49	113+750	T	VR, BT, 3.75	Village Road
50	113+800	T	VR, BT, 3.75	Village Road
51	114+030	T	VR, BT, 3.75	Village Road
52	114+054	T	VR, BT, 3.75	Village Road
53	114+124	T	VR, BT, 3.75	Village Road
54	114+231	T	VR, BT, 3.75	Village Road
55	114+370	X	VR, BT, 3.75	Village Road
56	118+670	X	VR, BT, 3.75	Paldijhadha - Chlara
57	120+238	T	VR, BT, 3.75	L(Gaju village
58	121+400	Y	VR, BT, 3.75	Dhadhriya
59	122+460	T	VR, BT, 3.75	Village Road
60	128+626	T	VR, BT, 3.75	Village Road

16 Bypasses – Nil

17 Detail of any other structures-Nil

18 Chainage Referencing between Existing and Proposed Centre line of the alignment

Existing Chainage (km)	Proposed Chainage (km)
0+000	0+000
1+000	1+000
2+000	1+984
3+000	2+984
4+000	3+984
5+000	4+984
6+000	5+984
7+000	6+984
8+000	7+984
9+000	8+984
10+000	9+984
11+000	10+984
12+000	11+986
13+000	12+967
14+000	13+968
15+000	14+968
16+000	15+968
17+000	16+968
18+000	Daikra Realignment
19+000	
20+000	19+271
21+000	20+266
22+000	21+267
23+000	22+267
24+000	23+267
25+000	24+267
26+000	25+267
27+000	26+267
28+000	27+267
29+000	28+267
30+000	29+258
31+000	30+258
32+000	31+255
33+000	32+255
34+000	33+240
35+000	34+234

Existing Chainage (km)	Proposed Chainage (km)
36+000	35+236
37+000	36+234
38+000	37+229
39+000	38+229
40+000	39+226
41+000	40+226
42+000	41+222
43+000	42+222
44+000	43+222
45+000	44+219
46+000	45+220
47+000	46+219
48+000	47+219
49+000	48+217
50+000	49+217
51+000	50+217
52+000	51+219
53+000	52+216
54+000	53+214
55+000	54+214
56+000	55+212
57+000	56+212
58+000	57+212
59+000	58+200
60+000	59+190
61+000	60+160
62+000	61+154
63+000	62+154
64+000	63+153
65+000	64+153
66+000	65+153
67+000	66+153
68+000	67+153
69+000	68+151
70+000	69+154
71+000	70+138
72+000	71+144
73+000	72+143
74+000	73+143

Existing Chainage (km)	Proposed Chainage (km)
75+000	74+141
76+000	75+143
77+000	76+143
78+000	77+124
79+000	78+110
80+000	79+112
81+000	80+112
82+000	81+111
83+000	82+110
84+000	83+111
85+000	84+107
86+000	85+106
87+000	86+105
88+000	Kankrai Bypass
89+000	88+227
90+000	89+226
91+000	90+225
92+000	91+224
93+000	92+224
94+000	93+224
95+000	Sankhwas Bypass
96+000	
97+000	
98+000	96+716
99+000	97+715
100+000	98+716
101+000	99+715
102+000	100+713
103+000	Gawaloo Realignment
104+000	
105+000	103+575
106+000	104+573
107+000	105+577
108+000	106+575
109+000	107+575
110+000	108+573
111+000	109+574
112+000	110+573
113+000	111+577

Existing Chainage (km)	Proposed Chainage (km)
114+000	112+574
115+000	113+564
116+000	114+564
117+000	115+565
118+000	116+565
119+000	117+565
120+000	118+563
121+000	119+566
122+000	120+564
123+000	121+564
124+000	122+564
125+000	123+564
126+000	124+564
127+000	125+564
128+000	126+562

Annex - II
(Schedule-A)

Dates for providing Right of Way

The dates on which the Authority shall provide Right of Way to the Contractor on different stretches of the Site are stated below:

Sl. No	From km to km existing chainage	Length (km)	Width (m)	Date of providing ROW
1	2	3	4	5
(i) Section 1 Full Right of Way (full width) (except bus bays)	All sections except stretches in Section 2	118.00	30	On Appointed Date
(ii) Section 2 Balance Right of Way (width) and Bus bays under Section (i)	1.760 1.950 7.565 7.865 12.010 12.140 17.785 19.980 49.730 50.030 87.660 88.940 94.920 97.780 102.720 104.290 106.070 106.370	0.190 0.300 0.130 2.195 0.300 1.280 2.860 1.570 0.300	16 30 13 30 30 30 30 30 30	Within 180days of Appointed Date

Annex - III
(Schedule-A)
Alignment Plans

The final alignment Plan & Profile of the Project Highway are given in **Part III: Drawings** of the bidding document.

Annex - IV
(Schedule-A)

Environment Clearances

The project does not attract EIA Notification, 2006, therefore, no environmental clearance is required. However, permission for cutting of trees from the district administration shall be obtained during execution. Further the EMP has to be implemented by the Contractor.

SCHEDULE - B

(See Clause 2.1)

DEVELOPMENT OF THE PROJECT HIGHWAY

1 Development of the Project Highway

Development of the Project Highway shall include design and construction of the Project Highway as described in this Schedule-B and in Schedule-C.

2 Work

Upgrading shall include widening to 4-lane in the stretch from km 0 to km 10.200 and 2-lane with Granular Shoulders in the remaining stretch, rehabilitation/reconstruction of existing pavement, footpath and covered drain in the built-up areas, new construction/reconstruction/widening/rehabilitation of bridges and culverts, installation of traffic control and safety devices, etc. as described in Annex-I of this Schedule-B and in Schedule-C.

3 Specifications & Standards

The Project Highway shall be designed and constructed in conformity with the Specifications & Standards specified in Annex-I of Schedule-D.

Annex - I

(Schedule-B)

Description of the Project: The project includes Development & Upgradation of Banar-Bhopalgarh-Kuchera Road (SH-63) km 0 to 126.500 to 2lane / 4lane standards as described in Schedule B & Schedule C & as per Specifications described in Schedule D.

1 Widening of the Existing Highway

- 1.1 The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in Annex III of Schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for [plain/rolling] terrain to the extent land is available.

1.2 Width of the carriageway

The project highway shall be widened to 2-lane with Granular Shoulders / 4-lane / 2-Lane with Paved Shoulders in the following stretches as shown in the Typical Cross-sections enclosed at Appendix B-1 to Schedule B.. The width of each lane shall be 3.5 m and paved shoulder shall be of width 1.5m. A kerb shyness of 250 mm shall be provided at all kerb locations.

Sl.	Design Chainage (km)		Length (km)	Lane Configuration
	From	To		
1	0	10.200	10.200	4-Lane Divided Carriageway
2	10.200	126.500	116.300	2 Lane with Granular Shoulders

2 GEOMETRIC DESIGN AND GENERAL FEATURES

2.1 General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual subject to limitations and express provisions in this Schedule B and Schedule C.

2.2. Design Speed

Plan and profile has been designed keeping in view the considerations such as design speed appropriate for the terrain and Site constraints. The FRL given in the profile shall be followed as a minimum. However, the Contractor shall improve upon the plan and profile to the extent possible within the Site (Proposed ROW) with prior approval of Authority's Engineer.

2.3 Improvement of the Existing Road Geometrics

The following table describes major horizontal curve improvements along the project road.

Sl. No	Design Chainage (km)		Existing Curve Radius (m)	Improved Curve Radius (m)
	From	To		
1	1+800	1+900	127	350
2	9+800	10+000	270	500
3	11+050	11+150	217	450
4	12+000	12+100	130	350
5	17+800	17+950	368	2000
6	28+500	28+650	96	250
7	29+950	30+100	125	400
8	30+350	30+450	295	500
9	32+250	32+350	180	350
10	33+050	33+150	100	300
11	33+300	33+450	85	250
12	33+700	33+800	100	250
13	35+500	35+600	255	500
14	36+100	36+250	205	240

Sl. No	Design Chainage (km)		Existing Curve Radius (m)	Improved Curve Radius (m)
	From	To		
15	38+900	39+050	232	500
16	40+400	40+550	206	250
17	43+900	44+000	65	170
18	50+300	50+450	300	350
19	51+400	51+500	122	250
20	52+150	53+325	240	350
21	54+100	54+300	195	400
22	58+800	58+900	42	80
23	59+050	59+200	47	70
24	69+700	69+900	146	250
25	70+050	70+300	182	250
26	72+270	72+500	305	400
27	76+600	76+850	135	230
28	77+300	77+400	60	70
29	78+100	78+300	100	170
30	78+550	78+800	180	230
31	83+800	84+00	180	350
32	84+100	84+250	215	350
33	85+000	85+150	332	500
34	86+800	88+250	103	350
35	101+500	102+900	Realignment	Realignment
36	112+700	112+900	119	230

2.4 Right of Way

Proposed ROW is a minimum of 16 m in the Urban areas and 24 m in Rural areas, complete details are shown in Plan & profile drawings at Appendix A to Schedule A.

2.5 Provision of Footpaths

Footpath is proposed on both sides at built-up areas as mentioned below.

S. No.	Design Chainage (km)		Length (m)	Location of Builtup area
	From	To		
1	0.000	1.200	1200	Banar
2	4.250	4.430	180	Jhajhirwal Kalan
3	8.250	8.750	500	Jhajhiwal Ghelotan
4	12.150	12.570	420	Thabukda Village
5	36.150	37.050	900	Budkiya
6	38.770	39.050	280	Dewatra
7	40.200	40.600	400	Godawas
8	43.150	44.100	950	Artiya Kalan
9	56.340	56.650	310	Bhadua Ki Dhani
10	57.850	59.500	1650	Bhopalgarh
11	76.804	78.584	1780	Asop
12	111.084	113.484	2400	Khajwana Village

2.6 Provision of Shoulders

- a) In open country, granular shoulders of 2.5 m width shall be provided shall be covered with 150 mm thick compacted granular layer as per typical cross section.

Sr. No.	Builtup Township	Location		Remarks
		From	To	
1	Banar	0.000	0.100	Fully Paved Shoulder/ Footpath
2	Banar	0.100	1.200	Fully Paved Shoulder/ Footpath
3		1.200	4.250	Fully Paved Shoulder
4	JhajhirwalKalan	4.250	4.430	Fully Paved Shoulder/ Footpath
5		4.430	5.430	Fully Paved Shoulder
6		5.430	7.050	Fully Paved Shoulder/ Footpath

Sr. No.	Builtup Township	Location		Remarks
		From	To	
7		7.050	8.250	Fully Paved Shoulder
8	JhajhiwalGhelotan	8.250	8.750	Fully Paved Shoulder/ Footpath
9		8.750	12.150	Fully Paved Shoulder
10	Thabukda Village	12.150	12.570	Fully Paved Shoulder/ Footpath
11	Budkiya	35.660	37.050	Fully Paved Shoulder/ Footpath
12	Dewatra	38.720	39.050	Fully Paved Shoulder/ Footpath
13	Godawas	40.200	40.600	Fully Paved Shoulder/ Footpath
14	ArtiyaKalan	43.150	44.100	Fully Paved Shoulder/ Footpath
15	Bhadua Ki Dhani	56.340	56.650	Fully Paved Shoulder/ Footpath
16	Bhopalgarh	57.720	59.500	Fully Paved Shoulder/ Footpath
17	Asop	76.804	78.584	Fully Paved Shoulder/ Footpath
18	Khajwana Village	111.084	113.484	Fully Paved Shoulder/ Footpath

Design and specification of paved shoulder and granular material shall confirm to the requirements specified in paragraph 5.9.9 and 5.9.10 of the Manual.

2.7 Access Road for Canal Crossing Structure

Access Roads to cross the canal through the existing bridges shall be provided as per the details in shown Typical Cross section at Appendix B-1. The location of the access roads is given below. The length mentioned is excluding tapers and the tapers shall be provided as per the Manual.

Sl.	Design Chainage (km)		Length (m)	Width of Access road (m)	Side
	From	To			
Nil					

2.8 Lateral and Vertical Clearances

(a) Lateral and Vertical Clearances at Underpasses -

Not Applicable

(b) Lateral and Vertical Clearances at Overpasses

Not Applicable

2.9 Grade Separated Structures

Nil

2.10 Cattle and Pedestrian Underpass /Overpass

Nil

2.11 Typical Cross-sections of the Project Highway

Typical cross section drawings showing configuration along with a schedule of applicability are enclosed in Appendix B-1 to this Schedule B.

3. INTERSECTIONS

Properly designed intersections shall be provided at the locations and of the types and features given in the table below. However, the Contractor may improve upon the layout plan within the Site with prior approval of Authority's Engineer.

3.1 Major Junctions

Sr. No.	Location (DESIGN)	Type	Cross Road	Remarks
1	0+000	Y	NH-112	Banar
2	10+150	Y	Bypass for NH-65	Thabukra
3	17+900	Y	Cross Road	Daikra
4	58+940	X	MDR-90	Bhopalgarh
5	77+364	T	MDR-58	Asop
6	86+979	Y	Start of kankrai bypass	Kankrai
7	88+017	Y	End of Kankrai Bypass	Kankrai
8	94+344	Y	Start of Sankhwas Bypass	Sankhwas
9	96+289	Y	End of Sankhwas bypass	Sankhwas
10	112+974	X	SH-39	Khajwana
11	126+033	X	Kuchera Bypass	Kuchera

3.2 Minor Junctions

Sl. No.	Existing Chainage (km)	Design Chainage (km)	Type of Junction	Cross Road Leads to

Sl. No.	Existing Chainage (km)	Design Chainage (km)	Type of Junction	Cross Road Leads to
1	0+082	0+082	T	Banar railway station
2	0+780	0+780	T	Village Road
3	1+200	1+200	T	Jajiwal village
4	1+474	1+474	T	Village Road
5	4+300	4+300	T	Village Road
6	4+371	4+371	Y	Salvakua
7	5+072	5+072	T	Aagpawa
8	9+059	9+640	T	Batewas
9	10+171	10+150	T	Sursagar
10	16+170	16+145	Y	Salwa
11	20+875	20+150	T	Salwakalan
12	20+860	21+350	T	Village Road
13	29+230	29+160	T	Castee
14	29+943	29+200	T	Ram Chowki
15	29+980	29+230	Y	Bandra
16	34+230	34+475	T	nandiya Prabhawa
17	36+971	36+210	T	Salwa kalan
18	39+534	38+775	T	Godaro
19	44+610	43+820	T	Artiya Kalan
20	44+650	43+895	T	Artiya Kalan
21	47+040	46+202	T	Sopada
22	50+473	49+696	X	Chopda - Kurdi
23	52+220	53+358	T	Joru
24	55+850	55+060	Y	Bagoriya
25	56+200	55+405	T	Cholawata
26	57+417	56+627	T	PCC Road
27	60+268	59+455	X	Medata
28	60+740	59+980	T	Bhopalgarh

Sl. No.	Existing Chainage (km)	Design Chainage (km)	Type of Junction	Cross Road Leads to
29	77+860	77+005	T	Warandi
30	78+170	77+310	T	R (Gotan)
31	78+238	77+390	T	Gotan
32	80+500	79+640	Y	LAsop
33	86+630	65+760	T	Khishar
34	96+441	Bypass	T	Village Road
35	96+600		T	Village Road
36	97+000		T	Village Road
37	96+900		T	Village Road
38	103+470		T	Village Road
39	103+800		Y	Village Road
40	104+600	103+205	Y	Mandua
41	104+800	103+400	T	Village Road
42	108+870	107+490	T	Village Road
43	109+530	108+120	T	Village Road
44	110+740	109+350	T	Village Road
45	113+420	112+025	T	Village Road
46	113+442	112+047	T	Village Road
47	113+590	112+185	T	Village Road
48	113+725	112+320	T	Village Road
49	113+750	112+345	T	Village Road
50	113+800	112+395	T	Village Road
51	114+030	112+602	T	Village Road
52	114+054	112+626	T	Village Road
53	114+124	112+720	T	Village Road
54	114+231	112+727	T	Village Road
55	114+370	112+940	X	Village Road
56	118+670	117+265	X	Paldijhadha - Chlara
57	120+238	118+830	X	Gaju village

Sl. No.	Existing Chainage (km)	Design Chainage (km)	Type of Junction	Cross Road Leads to
58	121+400	119+000	T	Dhadhriya
59	122+460	121+060	T	Village Road

4. ROAD EMBANKMENT AND CUT SECTION

4.1 Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in section 4 of the Manual and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

4.2 Developement of the existing road

The existing road shall be raised / reconstructed/Widened / Strengthened at the required locations as proposed in Appendix-B-1 & to the road levels as shown in Plan and Profile Drawings. The pavement type shall be as indicated in respective TCS in Appendix-B-1.

5 PAVEMENT DESIGN

5.1 Pavement design shall be carried out in accordance with Section 5 of the Manual.

5.2 Type of pavement

Flexible Pavement will be designed in accordance with the IRC: 37-2012. The rigid pavement shall be provided at Toll Plaza Location and existing rigid pavement locations.

5.3 Design Requirements

Payment design shall be as per paragraph 5.4, 5.9 and 5.10.of the manual subject to minimum of the following Crust. The minimum proposed pavement for the widening/ New Construction / Strengthening shall be as shown below. However, the Contractor needs to independently vrfiy in accordance to the design requirements and the same shall be provided without any additional financial effect on the part of the Employer.

a) At widening portion

S. No	Pavement Layer	Section-I (Km 0.000 to Km 10.200)	Section-II (Km 10.200 to Km 126.500)
a)	BC	40 mm	40 mm
b)	DBM	95 mm	50 mm
c)	WMM	250 mm	250 mm
d)	GSB	200 mm	200 mm

b) For Strengthening of Existing Portion i.e. for all sections.

Sr. No	Pavement Layer	Section-I (Km 0.000 to km 10.200)	Section-II (Km 10.200 to km 126.500)
a)	BC	40 mm	40 mm
b)	DBM	95 mm	-

c) For Reconstruction of Existing Portion as well as at new alignment

S. No	Pavement Layer	Section-I (Km 0.000 to Km 10.200)	Section-II (Km 10.200 to Km 126.500)
a)	BC	40 mm	40 mm
b)	DBM	95 mm	50 mm
c)	WMM	250 mm	250 mm
d)	GSB	200 mm	200 mm

d) At rigid pavement

Sr. No	Pavement Layer	Section (Km 0.000 to km 126.500)
a)	PQC	300 mm
b)	DLC	150 mm
c)	GSB	150 mm
d)	Sub-grade	500mm

5.4 Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of **15 years**. Stage construction shall not be permitted.

5.5 Design Traffic

Not with standing anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic as given below.

S. No.	Chainage (Design)		Design MSA
	From	To	
1	0+000	10+200	50
2	10+200	126+500	10

5.6 Traffic Management during Construction

5.6.1 Traffic management during reconstruction:

- The stretches where the existing road is proposed to be re-graded up-to 1m depth by cutting the existing road, the existing road shall be used partly for traffic during construction with required improvement and safety measures as per the Manual.
- All other stretches, where the re-grading of existing profile involves more than 1m cutting, diversion shall be provided as per the Manual.

6 ROADSIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual. However, drains shall be provided in the stretches based on typical cross sections as a minimum having the minimum sizes specified therein.

7 DESIGN OF STRUCTURES

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of the manual and shall conform to the cross-sectional features and other details specified therein.

7.1.2 Width of the carriageway of new structures of more than 60m length shall be as follows, if the carriageway width is different from 7.5m in the table below.

S. No	Bridge at (Km)	Width of Carriageway (m) and cross sectional features
Nil		

7.1.3 The following structures shall be provided with footpaths:

S. No.	Location	Remarks
NIL		

7.1.4 The following structures shall be designed to carry utility services specified in table below.

Sl. No.	Bridge at km	Utility service to be carried	Remarks
NIL			

7.1.5 Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections for the Project Highway.

7.2 Culverts

7.2.1 The Culverts overall width shall be equal to the roadway width of the approaches.

7.2.2 Reconstruction of existing culverts:

The existing culverts at the following locations shall be re-constructed as new culverts.

Sr. No.	Design Chainage (Km)	Existing		Proposed		
		Existing Structure Type	Existing Span	Proposed Structure Type	Proposed Span	Proposed Width (m)
1	12+636	Pipe Culvert	3x0.6	HP	2x1.2 dia HP	Roadway
2	59+946	Pipe Culvert	2x0.6	HP	1x1.2	Roadway

7.2.3 Widening of Existing Culverts

All existing culverts, which are not to be reconstructed, shall be widened up to the roadway width of the Project Highway & as per the typical cross section given in the Manual. Repairs and strengthening of existing structures where required shall be carried out. Please refer to section 7.3.1 for a detailed report on the widening of slab culverts.

Sr. No.	Design Chainage (Km)	Proposed			Repairs to be carried out
		Proposed Structure Type	Proposed Span	Proposed Width (m)	
1	32+640	Box	1x 4.60	Roadway	Widening
2	45+180	Box	1x 3.60	Roadway	Widening
3	45+496	Box	1x2.50	Roadway	Widening
4	46+953	Box	1x2.50	Roadway	Widening
5	47+765	Box	1x 1.70	Roadway	Widening
6	48+243	Box	1x1.70	Roadway	Widening
7	49+592	Box	1x1.80	Roadway	Widening
8	52+915	Box	1x1.70	Roadway	Widening
9	53+033	Box	1x1.70	Roadway	Widening
10	76+755	Box	1x1.60	Roadway	Widening
11	77+996	Box	1x2.70	Roadway	Widening
12	90+691	Box	1x0.95	Roadway	Widening

7.2.4 **Additional new culverts** (given in table below) shall be constructed for width equal to the roadway width of the Project Highway & as per typical cross-section given in the manual:

Sr. No.	Design Chainage (Km)	Proposed		
		Proposed Structure Type	Proposed Span / Dia (m)	Proposed Width (m)
1	0+650	HP	1.2 dia HP	Roadway
2	1+450	HP	1.2 dia HP	Roadway

Sr. No.	Design Chainage (Km)	Proposed		
		Proposed Structure Type	Proposed Span / Dia (m)	Proposed Width (m)
3	2+190	HP	1.2 dia HP	Roadway
4	3+045	HP	1.2 dia HP	Roadway
5	4+143	HP	1.2 dia HP	Roadway
6	5+360	HP	1.2 dia HP	Roadway
7	6+745	HP	1.2 dia HP	Roadway
8	8+480	HP	1.2 dia HP	Roadway
9	9+240	HP	1.2 dia HP	Roadway
10	10+330	HP	1.2 dia HP	Roadway
11	12+170	HP	1.2 dia HP	Roadway
12	13+220	HP	1.2 dia HP	Roadway
13	14+410	HP	1.2 dia HP	Roadway
14	15+710	HP	1.2 dia HP	Roadway
15	16+715	HP	1.2 dia HP	Roadway
16	17+463	HP	1.2 dia HP	Roadway
17	17+998	HP	1.2 dia HP	Roadway
18	18+253	HP	1.2 dia HP	Roadway
19	19+195	HP	1.2 dia HP	Roadway
20	20+896	HP	1.2 dia HP	Roadway
21	21+758	HP	1.2 dia HP	Roadway
22	22+899	HP	1.2 dia HP	Roadway
23	23+838	HP	1.2 dia HP	Roadway
24	24+607	HP	1.2 dia HP	Roadway
25	25+122	HP	1.2 dia HP	Roadway
26	25+745	HP	1.2 dia HP	Roadway
27	26+845	HP	1.2 dia HP	Roadway
28	27+499	HP	1.2 dia HP	Roadway
29	28+888	HP	1.2 dia HP	Roadway
30	29+846	HP	1.2 dia HP	Roadway
31	30+289	HP	1.2 dia HP	Roadway
32	31+276	HP	1.2 dia HP	Roadway
33	32+780	HP	1.2 dia HP	Roadway
34	33+560	HP	1.2 dia HP	Roadway
35	34+546	HP	1.2 dia HP	Roadway
36	35+542	HP	1.2 dia HP	Roadway
37	36+038	HP	1.2 dia HP	Roadway
38	36+805	HP	1.2 dia HP	Roadway
39	37+290	HP	1.2 dia HP	Roadway

Sr. No.	Design Chainage (Km)	Proposed		
		Proposed Structure Type	Proposed Span / Dia (m)	Proposed Width (m)
40	38+345	HP	1.2 dia HP	Roadway
41	39+386	HP	1.2 dia HP	Roadway
42	40+551	HP	1.2 dia HP	Roadway
43	40+815	HP	1.2 dia HP	Roadway
44	41+270	HP	1.2 dia HP	Roadway
45	42+210	HP	1.2 dia HP	Roadway
46	43+300	HP	1.2 dia HP	Roadway
47	43+318	HP	1.2 dia HP	Roadway
48	44+648	HP	1.2 dia HP	Roadway
49	50+346	HP	1.2 dia HP	Roadway
50	51+167	HP	1.2 dia HP	Roadway
51	53+230	HP	1.2 dia HP	Roadway
52	55+649	HP	1.2 dia HP	Roadway
53	56+773	HP	1.2 dia HP	Roadway
54	58+040	HP	1.2 dia HP	Roadway
55	58+493	HP	1.2 dia HP	Roadway
56	59+130	HP	1.2 dia HP	Roadway
57	60+420	HP	1.2 dia HP	Roadway
58	62+464	HP	1.2 dia HP	Roadway
59	63+144	HP	1.2 dia HP	Roadway
60	64+544	HP	1.2 dia HP	Roadway
61	65+494	HP	1.2 dia HP	Roadway
62	66+244	HP	1.2 dia HP	Roadway
63	67+413	HP	1.2 dia HP	Roadway
64	68+484	HP	1.2 dia HP	Roadway
65	69+754	HP	1.2 dia HP	Roadway
66	70+824	HP	1.2 dia HP	Roadway
67	71+494	HP	1.2 dia HP	Roadway
68	72+464	HP	1.2 dia HP	Roadway
69	73+464	HP	1.2 dia HP	Roadway
70	74+374	HP	1.2 dia HP	Roadway
71	75+354	HP	1.2 dia HP	Roadway
72	76+314	HP	1.2 dia HP	Roadway
73	77+424	HP	1.2 dia HP	Roadway
74	78+754	HP	1.2 dia HP	Roadway
75	79+454	HP	1.2 dia HP	Roadway
76	80+074	HP	1.2 dia HP	Roadway

Sr. No.	Design Chainage (Km)	Proposed		
		Proposed Structure Type	Proposed Span / Dia (m)	Proposed Width (m)
77	81+174	HP	1.2 dia HP	Roadway
78	82+029	HP	1.2 dia HP	Roadway
79	83+314	HP	1.2 dia HP	Roadway
80	84+264	HP	1.2 dia HP	Roadway
81	85+169	HP	1.2 dia HP	Roadway
82	86+354	HP	1.2 dia HP	Roadway
83	87+674	Box	1x 2.0x 2.0 Box	Roadway
84	88+229	HP	1.2 dia HP	Roadway
85	89+359	HP	1.2 dia HP	Roadway
86	91+799	HP	1.2 dia HP	Roadway
87	92+724	HP	1.2 dia HP	Roadway
88	93+324	HP	1.2 dia HP	Roadway
89	94+234	HP	1.2 dia HP	Roadway
90	94+961	HP	1.2 dia HP	Roadway
91	95+174	HP	1.2 dia HP	Roadway
92	96+254	HP	1.2 dia HP	Roadway
93	97+624	HP	1.2 dia HP	Roadway
94	98+774	HP	1.2 dia HP	Roadway
95	99+264	HP	1.2 dia HP	Roadway
96	100+264	HP	1.2 dia HP	Roadway
97	101+214	HP	1.2 dia HP	Roadway
98	101+869	HP	1.2 dia HP	Roadway
99	102+799	HP	1.2 dia HP	Roadway
100	103+374	HP	1.2 dia HP	Roadway
101	104+564	HP	1.2 dia HP	Roadway
102	105+274	HP	1.2 dia HP	Roadway
103	106+664	HP	1.2 dia HP	Roadway
104	106+864	HP	1.2 dia HP	Roadway
105	107+994	HP	1.2 dia HP	Roadway
106	109+634	HP	1.2 dia HP	Roadway
107	111+104	HP	1.2 dia HP	Roadway
108	112+344	HP	1.2 dia HP	Roadway
109	112+909	HP	1.2 dia HP	Roadway
110	114+624	HP	1.2 dia HP	Roadway
111	115+574	HP	1.2 dia HP	Roadway
112	116+064	HP	1.2 dia HP	Roadway
113	117+074	HP	1.2 dia HP	Roadway

Sr. No.	Design Chainage (Km)	Proposed		
		Proposed Structure Type	Proposed Span / Dia (m)	Proposed Width (m)
114	118+474	HP	1.2 dia HP	Roadway
115	119+574	HP	1.2 dia HP	Roadway
116	120+564	HP	1.2 dia HP	Roadway
117	121+404	HP	1.2 dia HP	Roadway
118	122+284	HP	1.2 dia HP	Roadway
119	123+994	HP	1.2 dia HP	Roadway
120	125+569	HP	1.2 dia HP	Roadway

7.2.5 Repairs/replacements of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

Sr. No.	Existing Chainage (Km)	Design Chainage (Km)	Type of repair required
1	33+383	32+640	Parapet walls and maintenance
2	45+959	45+180	
3	45+971	45+496	
4	47+730	46+953	
5	48+543	47+765	
6	49+022	48+243	
7	50+371	49+592	
8	53+698	52+915	
9	53+815	53+033	
10	77+589	76+755	
11	78+846	77+996	
12	91+428	90+691	

7.2.6 Floor protection works shall be as specified in the relevant IRC Codes and Specifications

7.3 Bridges

7.3.1 Existing bridges to be re-constructed/widened:

(i) The Existing bridges at the following locations shall be reconstructed:

S.No	Bridge	Salient details of the existing bridge	Proposed Span	Total

	Location (Km)	Foundation	Sub Structure	Super Structure		proposed Width
Nil						

(ii) The following narrow bridges shall be widened:

Sr. No.	Design Chainage (Km)	Width	Extent * of Widening to	Span Arrangement	Type of structure			Cross Section at Deck Level for widening@
					Foundation	Sub structure	Super structure	
1	48+709	8.16	3.84	5x2.62	Open	Stone masonry	RCC Slab	Total carriageway of 12.0m as IRC:SP:73- 2007
2	50+185	7.23	4.77	1x6.89	Open	Stone masonry	RCC Slab	

7.3.2 Additional new bridges

New bridges at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder

Sr. No.	Design Chainage (Km)	Proposed Structure Type	Proposed Span (Nos x Span)	Remarks
1	54+372	Minor Bridge	3 x 3.0 x 3.0	New Bridge

7.3.3 The railings of existing bridges shall be replaced by crash barriers at the following locations:

S. No.	Existing (Km)	Proposed structural configuration	Proposed span arrangement (m)	Remarks
NIL				

7.3.4 Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows

Sr. No.	Design	Existing Span	Remarks

	Chainage (Km)		
1	46+315	4x8.0	Repair / replacement of parapet
2	48+709	5x2.62	
3	50+185	1x6.89	

7.4 Rail-road bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in the Manual.
The Width of proposed ROB shall be as specified in Schedule D.

7.5 Road over-bridges

Road over-bridges shall be provided at the following level crossings, as per GAD drawings attached:

S. No.	Proposed Structure	Existing KM/ Design Ch	Design Chainage	Name of Crossing	Proposed structural configuration	Proposed Super Structure	Proposed span arrangement(m)	Total width of Structure
Nil								

7.6 Road under-bridges

Road under-bridges (road under railway line) shall be provided at the following level crossings, as per GAD drawings attached:

S. No	Location of Level crossing	Number and length of span (m)
NIL		

7.7 Grade separated structures

7.7.1 Repairs and strengthening of bridges and structures

The existing bridges and structures to be repaired / strengthened, and the nature and extent of repairs /strengthening required are given below:

A. Bridges

Sl. No.	Location of Bridge (Km)	Nature and extent of repairs /strengthening to be carried out
NIL		

B. ROB / RUB

Sl. No.	Location of ROB/RUB (Km)	Nature and extent of repairs /strengthening to be carried out
Nil		

C. Overpasses/Underpasses and Other Structures

Sl. No.	Location of Overpass/Underpass (Km)	Nature and extent of repairs /strengthening to be carried out
NIL		

7.8 List of Major Structure and Bridges

The following is the list of the Major Bridges and Structures:

Sr. No.	Design Chainage (Km)	Proposed Structure Type
1	46+315	Minor Bridge
2	48+709	Minor Bridge
3	50+185	Minor Bridge
4	54+372	Minor Bridge

Note: -

1. The location and vent size of all the culverts proposed for irrigation purposes shall be decided in consultation with irrigation authority/ independent engineer.
2. Width of culvert shall be reconciled as per cross section at that location;
3. Cross road culvert to be provided at the location of Major Junction/ Minor Junctions or utility purposes etc. shall be decided with independent Engineer shall not be treated as change of scope.

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORK.

8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the IRC: SP: 73-2007.

8.2 Specifications of the reflective sheeting shall be as per the Manual of Specifications (IRC: SP: 73-2007).

9. ROAD SIDE FURNITURE

9.1 Road side furniture shall be provided in accordance with the provisions of Section 11 of the IRC: SP: 73-2007.

- a) Road boundary stones for the entire project highway.
- b) Pedestrian guard rails: At each bus stop location.
- c) Delineators: For the entire project highway at the locations as suggested in schedule D.

9.2 Overhead traffic Signs: Location and Size

- a) Full width overhead signs: 4Nos
- b) Cantilever overhead signs: 8Nos

Overhead Traffic Signs (locations & Size) shall conform to the Manual of Specifications (IRC: SP: 73-2007).

10. COMPULSORY AFFORESTATION

The 7200 number of trees, which are required to be planted by the contractor as compensatory afforestation, shall be as per Forest Conservation Act.

11. HAZARDOUS LOCATIONS

The safety barriers shall also be provided as per the Manual of Specifications (IRC: SP: 73-2007).

12. SPECIAL REQUIREMENTS FOR HILL ROAD

Not Applicable

13. CHANGE OF SCOPE

The length of Structures and bridges specified hereinabove shall be treated as an approximate assessment. The Contractor in accordance with the Specifications and Standards shall determine the actual lengths as required on the basis of detailed investigations. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope,

save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

14. UTILITY DUCTS

150 Nos of utility ducts across the road shall be provided as a minimum. The minimum size of utility duct shall be 450 mm dia and shall be NP4 RCC pipe. The exact location of the duct shall be finalized in consultation with the Authority Engineer.

Typical Cross section Schedule

Design Chainage (km)		Length (m)	Type
From	To		
0.000	0.100	0.100	TCS-6
0.100	1.200	1.100	TCS-4
1.200	4.250	3.050	TCS-10
4.250	4.430	0.180	TCS-8
4.430	5.430	1.000	TCS-10
5.430	7.050	1.620	TCS-8
7.050	8.250	1.200	TCS-10
8.250	8.750	0.500	TCS-8
8.750	10.200	1.450	TCS-10
10.200	17.765	7.565	TCS-3
17.765	19.270	1.505	TCS-5
19.270	21.000	1.730	TCS-3
21.000	28.480	7.480	TCS-1
28.480	28.690	0.210	TCS-5
28.690	30.950	2.260	TCS-1
30.950	32.220	1.270	TCS-3
32.220	32.370	0.150	TCS-5
32.370	32.980	0.610	TCS-3
32.980	33.450	0.470	TCS-5
33.450	33.660	0.210	TCS-1
33.660	33.900	0.240	TCS-5
33.900	35.660	1.760	TCS-1
35.660	37.050	1.390	TCS-7
37.050	38.720	1.670	TCS-1
38.720	39.050	0.330	TCS-7
39.050	40.200	1.150	TCS-1

Design Chainage (km)		Length (m)	Type
From	To		
40.200	40.600	0.400	TCS-7
40.600	42.000	1.400	TCS-1
42.000	43.150	1.150	TCS-3
43.150	44.100	0.950	TCS-7
44.100	56.000	11.900	TCS-3
56.000	56.340	0.340	TCS-1
56.340	56.650	0.310	TCS-7
56.650	57.720	1.070	TCS-1
57.720	59.500	1.780	TCS-7
59.500	61.200	1.700	TCS-3
61.200	62.034	0.834	TCS-1
62.034	71.034	9.000	TCS-3
71.034	72.034	1.000	TCS-1
72.034	73.034	1.000	TCS-3
73.034	75.034	2.000	TCS-2
75.034	76.634	1.600	TCS-3
76.634	76.804	0.170	TCS-5
76.804	78.584	1.780	TCS-7
78.584	78.784	0.200	TCS-5
78.784	79.034	0.250	TCS-3
79.034	80.034	1.000	TCS-9
80.034	80.434	0.400	TCS-3
80.434	80.634	0.200	TCS-9
80.634	85.434	4.800	TCS-3
85.434	86.034	0.600	TCS-2
86.034	86.809	0.775	TCS-3
86.809	88.204	1.395	TCS-5
88.204	94.134	5.930	TCS-3
94.134	96.534	2.400	TCS-5

Design Chainage (km)		Length (m)	Type
From	To		
96.534	97.034	0.500	TCS-3
97.034	98.034	1.000	TCS-9
98.034	99.034	1.000	TCS-3
99.034	101.034	2.000	TCS-1
101.034	101.464	0.430	TCS-2
101.464	102.894	1.430	TCS-5
102.894	105.034	2.140	TCS-2
105.034	105.200	0.166	TCS-1
105.200	107.200	2.000	TCS-3
107.200	108.034	0.834	TCS-1
108.034	111.084	3.050	TCS-1
111.084	113.484	2.400	TCS-7
113.484	114.034	0.550	TCS-2
114.034	115.034	1.000	TCS-1
115.034	116.034	1.000	TCS-2
116.034	118.034	2.000	TCS-1
118.034	120.034	2.000	TCS-2
120.034	126.500	6.466	TCS-3

TCS – 1 : Strengthening of Existing 2-Lane Carriageway

TCS – 2 : Concentric Widening To 2 -Lane Carriageway (Flexible)

TCS – 3 : Reconstruction of Existing Road To 2 Lane Carriageway

TCS – 4 : Widening to 4-Lane carriageway (Built-Up Area)

TCS – 5 : 2 Lane Carriageway in Bypass / Realignment

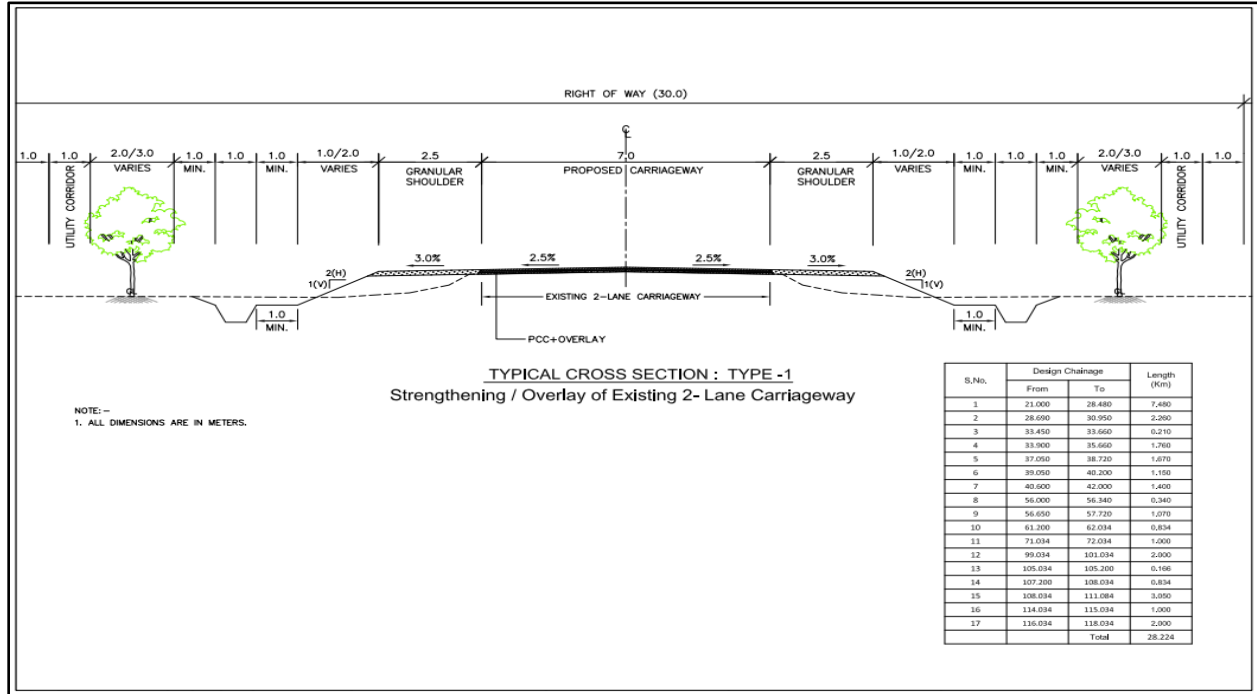
TCS – 6 : Widening To 4 Lane Carriageway in Built-up Area (Rigid Pavement)

TCS – 7 : Widening To 2 Lane Carriageway in Built-up Area (Flexible Pavement)

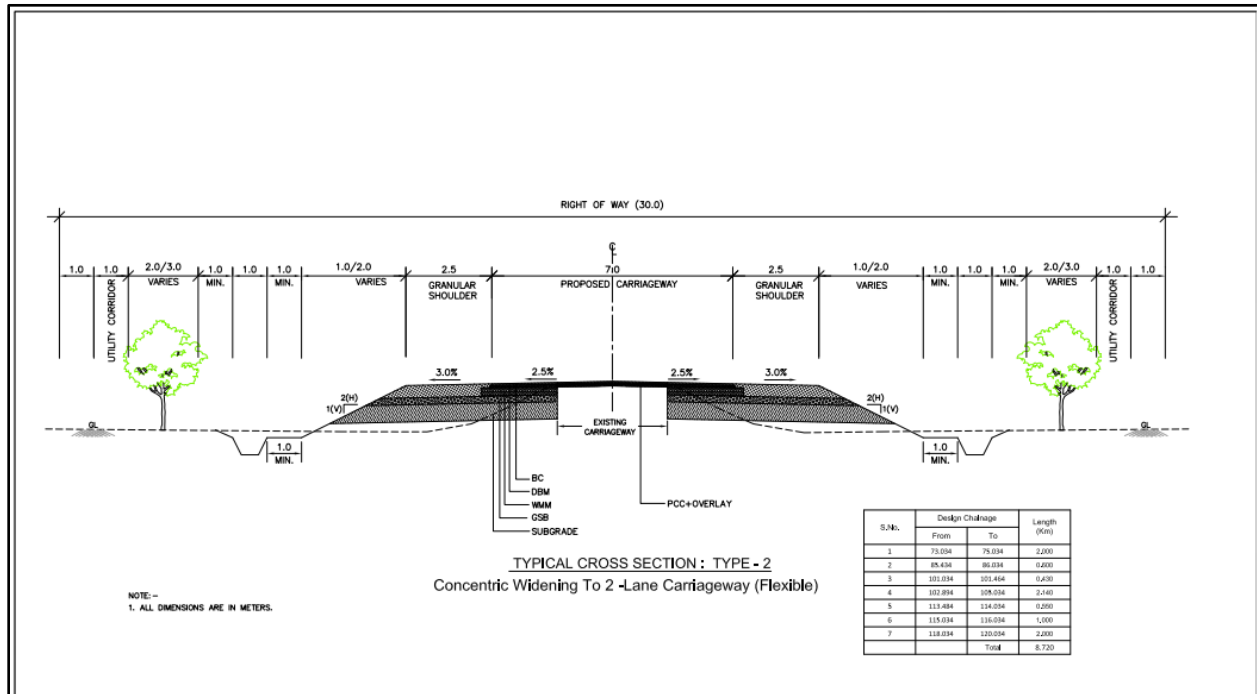
TCS – 8 : Reconstruction of Existing Road to 4 Lane in Built-up Area (Flexible Pavement)

TCS – 9 : Widening To 2 Lane Carriageway (Rigid Pavement)

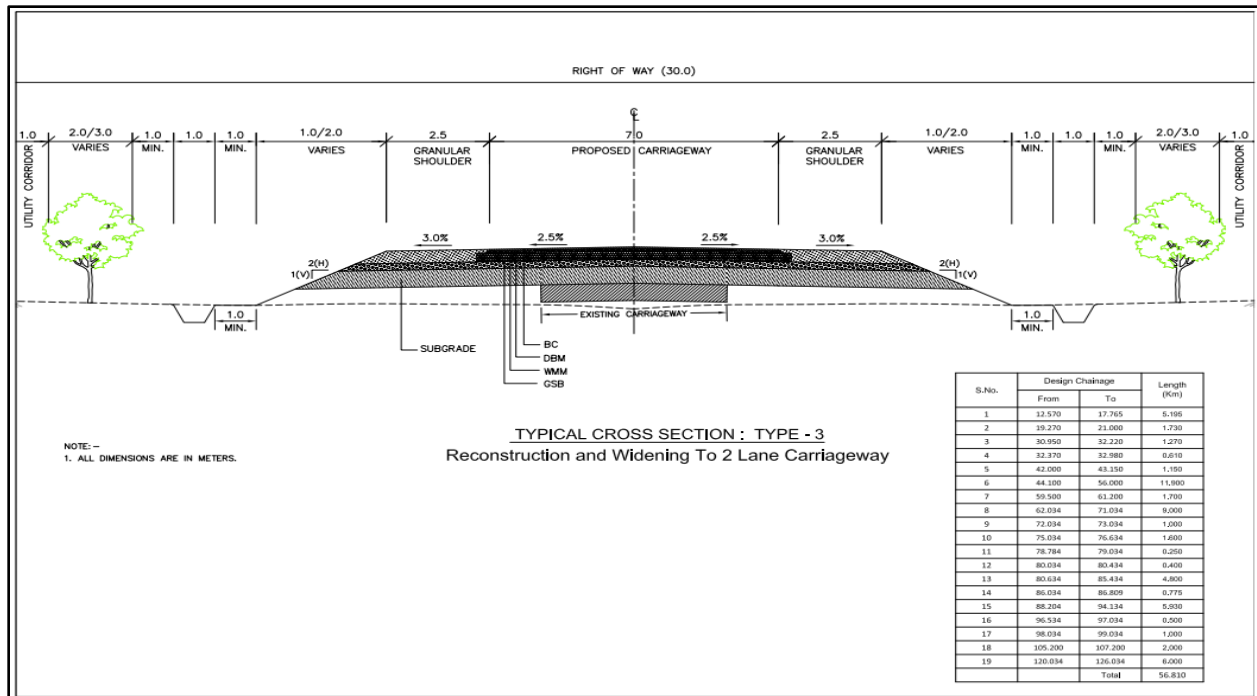
TCS – 10 : Widening to 4 Lane Carriageway in Rural Area (Flexible Pavement)



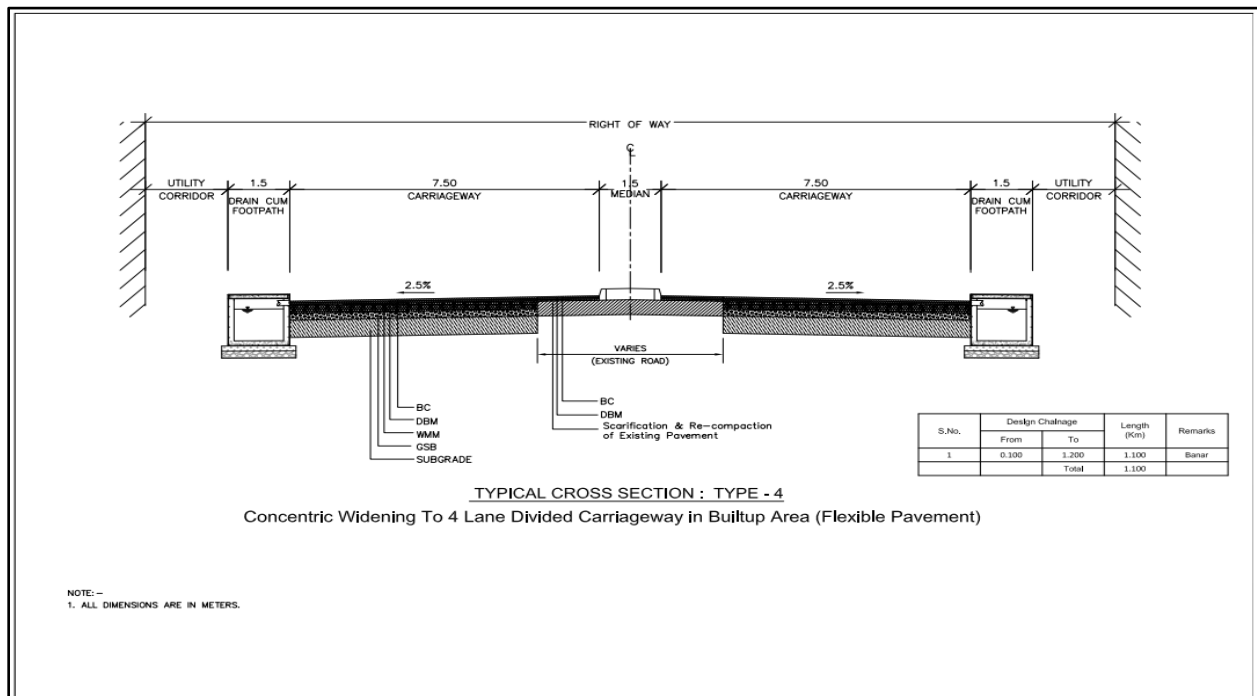
Typical Cross Section (Type-1)



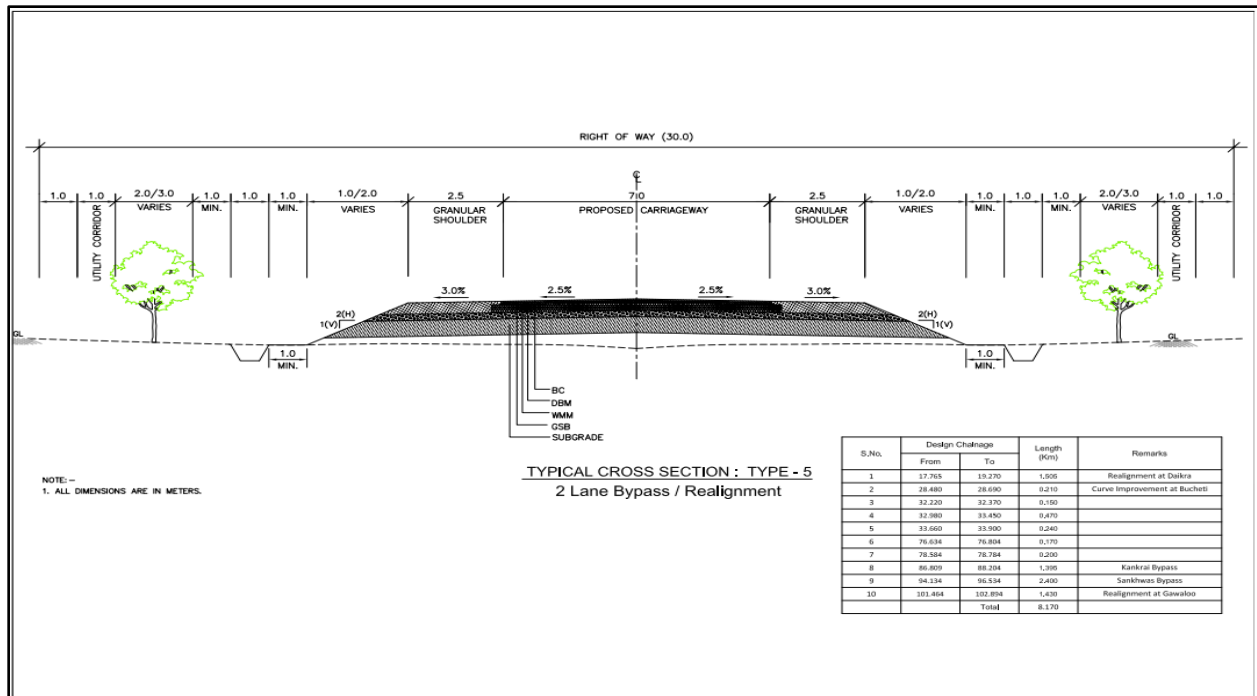
Typical Cross Section (Type-2)



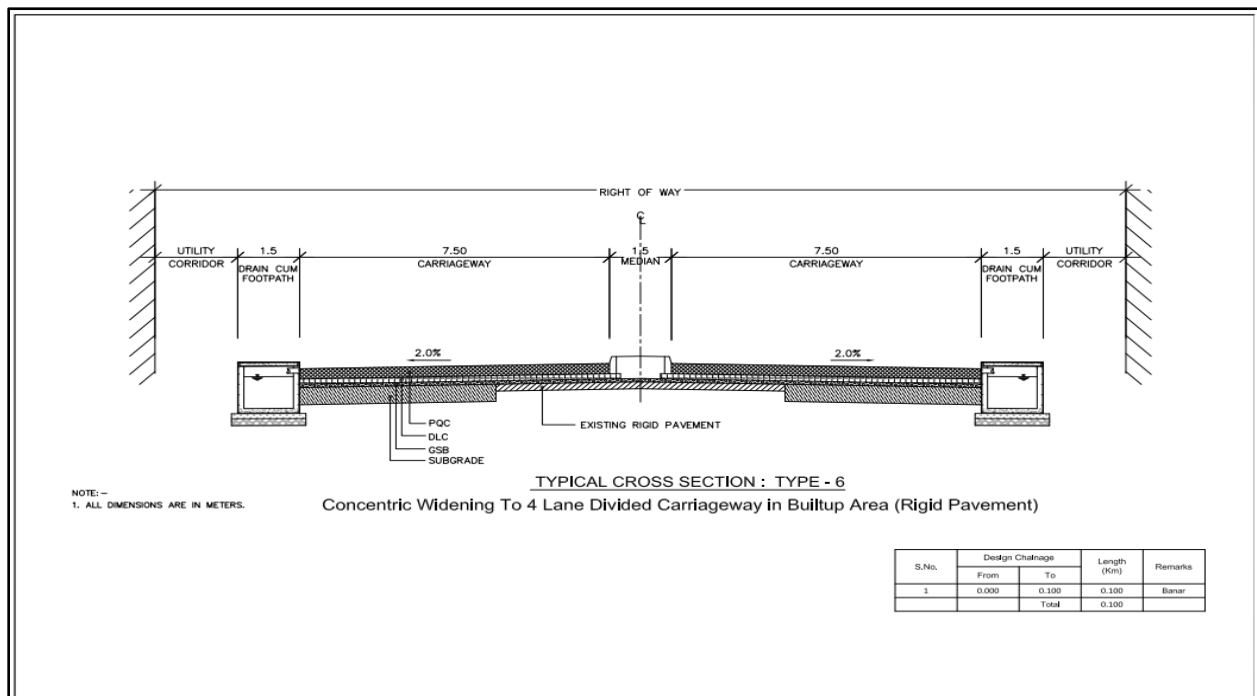
Typical Cross Section (Type-3)



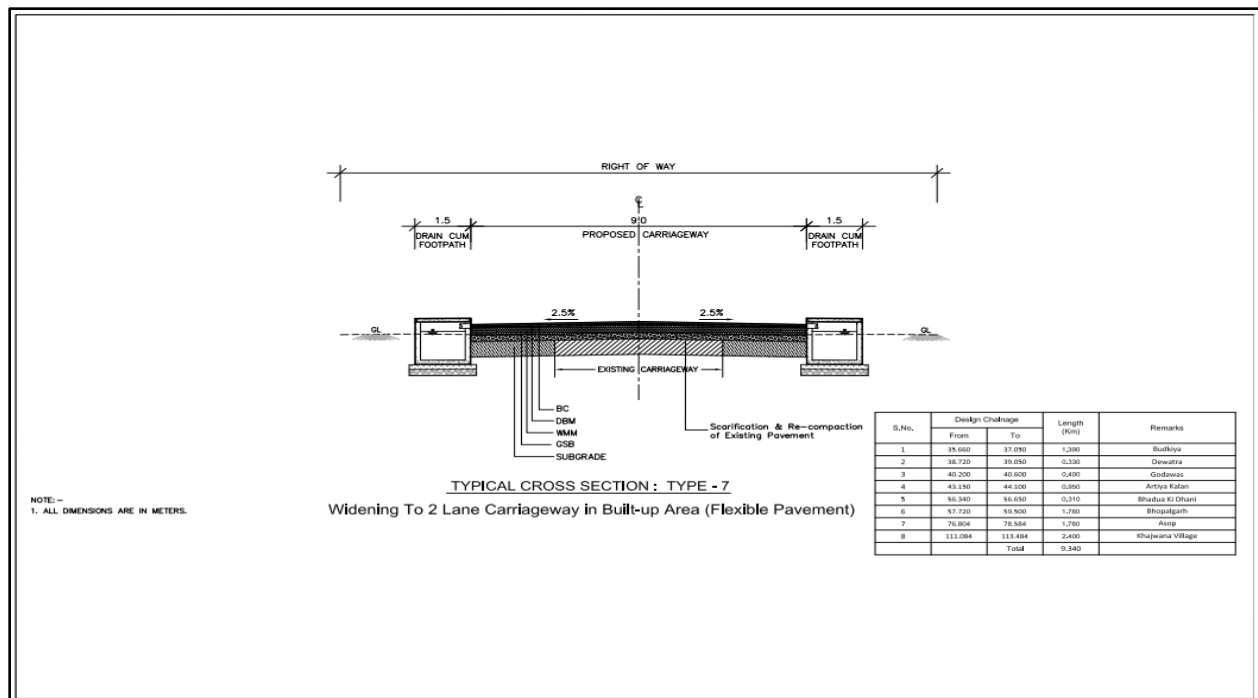
Typical Cross Section (Type-4)



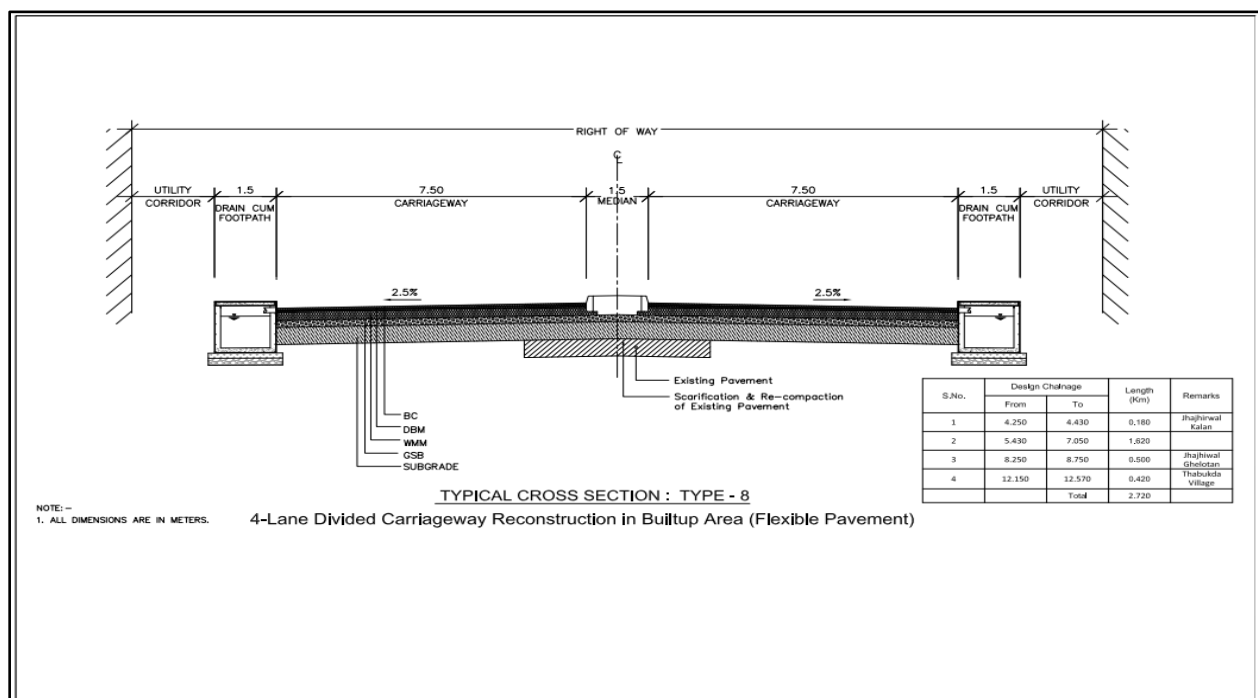
Typical Cross Section (Type-5)



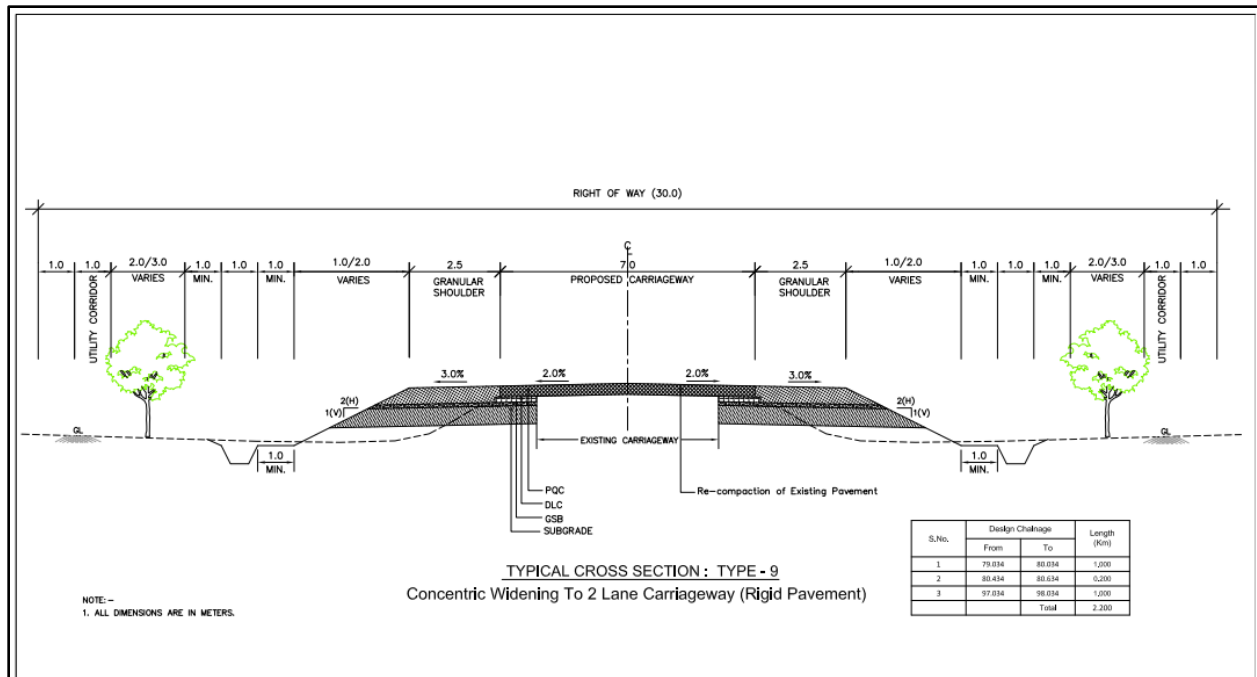
Typical Cross Section (Type-6)



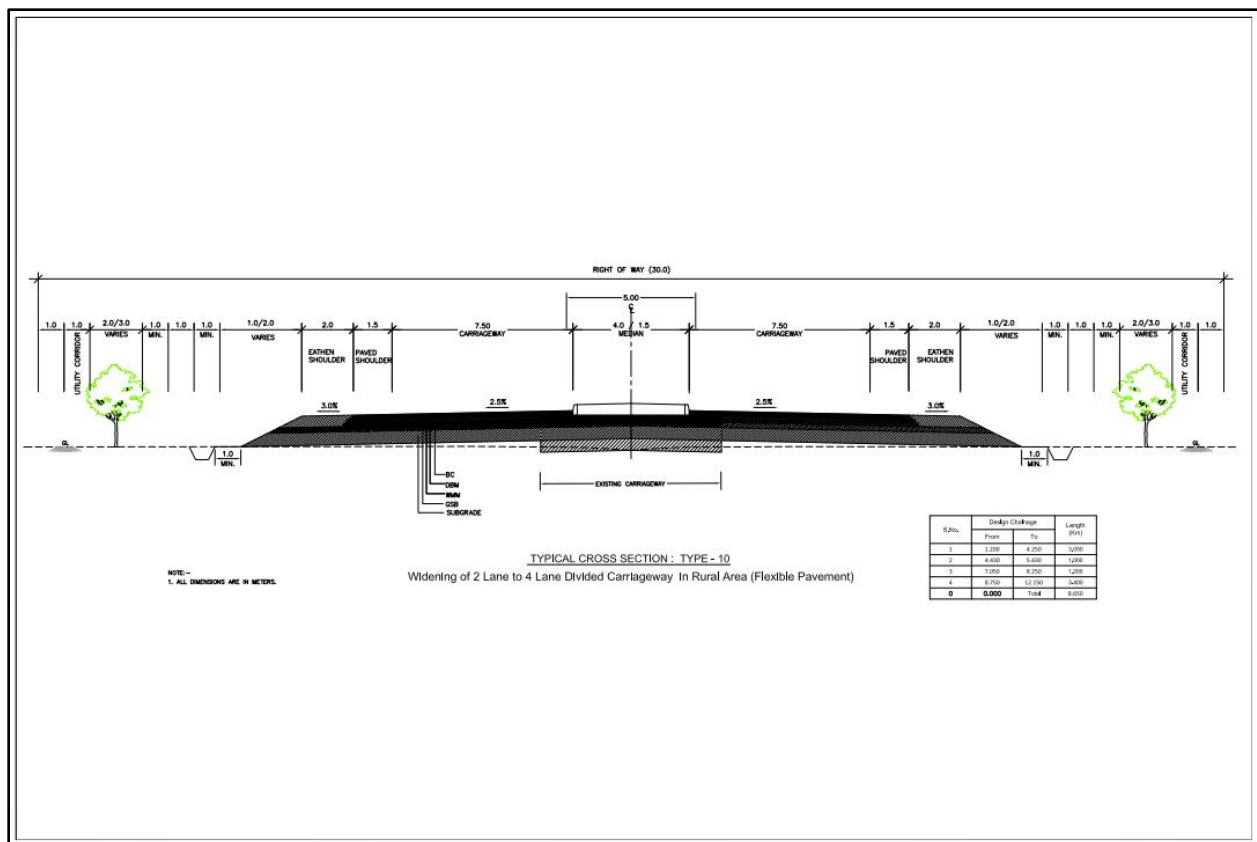
Typical Cross Section (Type-7)



Typical Cross Section (Type-8)



Typical Cross Section (Type-9)



SCHEDULE - C
(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

- 1.1 The Contractor shall construct the Project Facilities in accordance with the provisions of this Agreement. Such Project Facilities shall include:
- a) Toll plaza;
 - b) Roadside Furniture;
 - c) Pedestrian Facilities;
 - d) Tree plantation;
 - e) Truck lay-byes;
 - f) Bus-bays and bus shelters;
 - g) Development of site for wayside amenities;
 - h) Providing & Laying Conduit along Highway for ITS.
- 1.2 Project Facilities to be completed on or before COD have been described in Annex-I of this Schedule-C.

Annexure-I

(Schedule-C)

PROJECT FACILITIES

1. Project Facilities

The Contractor shall construct the Project Facilities in accordance with the provisions of this Agreement. Such Project Facilities shall include:

- a) Toll plaza;
- b) Roadside furniture;
- c) Pedestrian facilities;
- d) Tree plantation;
- e) Truck lay-byes;
- f) Bus shelters;
- g) Development of site for wayside amenities;
- h) Providing & Laying Conduit along Highway for ITS

2. Description of Project Facilities

Each of the Project Facilities is described below:

a) Toll plaza;

As stipulated in section 10 of the Manual of Specifications and Standards for Two-laning of Highways through Public Private Partnership (IRC No. RC: SP: 73-2007)

Sr.No.	Design Chainage (Km)	Remarks
1	7+700	Near Jajiwal Ghelotan
2	49+100	
3	104+834	Near Gawaloo

Each Toll Plaza shall be provided with all lighting arrangements, canopies, booths, signages etc. complete except hardware and software required for collection of fee in consultation with the Authority's Engineer

b) Roadside Furniture;

As stipulated in section 11 of the Manual of Specifications and Standards for Two-laning of Highways through Public Private Partnership (IRC No. RC: SP: 73-2007)

c) Pedestrian Facilities;

As stipulated in section 13.2 of the Manual of Specifications and Standards for Two-laning of Highways through Public Private Partnership (IRC No. RC: SP: 73-2007)

d) Tree Plantation;

As stipulated in section 12 of the Manual of Specifications and Standards for Two-laning of Highways through Public Private Partnership (IRC No. RC: SP: 73-2007)

e) Truck Lay-Bye;

As stipulated in section 13.4 of the Manual of Specifications and Standards for Two-laning of Highways through Public Private Partnership (IRC No. RC: SP: 73-2007)

Sr. No.	Design Chainage (Km)	Carriageway (m)	Remarks
Nil			

f) Bus Shelter;

As stipulated in section 13.5 of the Manual of Specifications and Standards for Two-laning of Highways through Public Private Partnership (IRC No. RC: SP: 73-2007)

Location for Bus Shelter is mentioned below:

Sr. No.	Side of Road	Design Chainage Km/m	Side of Road	Design Chainage Km/m	Village Name
1	LHS	0+310	RHS	0+310	Banar Village
2	LHS	8+100	RHS	8+100	Jajawal Gehlotan village
3	LHS	17+625	RHS	17+625	Daikra village
4	LHS	28+950	RHS	28+950	Bucheti
5	LHS	32+750	RHS	32+750	Nandiya Prabhawa Village
6	LHS	36+550	RHS	36+550	Budikya Village
7	LHS	44+400	RHS	44+400	Artiya Kalan
8	LHS	57+600	RHS	57+600	Bhopalgarh Town
9	LHS	63+250	RHS	63+250	Basani Sandwa

Sr. No.	Side of Road	Design Chainage Km/m	Side of Road	Design Chainage Km/m	Village Name
					Village
10	LHS	69+484	RHS	69+484	Khumara Village
11	LHS	77+154	RHS	77+154	Asop Village
12	LHS	86+634	RHS	86+634	Kanklay village
13	LHS	94+734	RHS	94+734	Sankhwas Village
14	LHS	101+934	RHS	101+934	Gawaloo
15	LHS	111+634	RHS	111+634	Khajwana

g) Wayside Amenities

The Contractor shall, at its cost and in accordance with the type designs prescribed for such Wayside Amenities, construct necessary buildings, parking, provide other facilities and hand it over to the Authority, no later than 30 (thirty) days prior to COD. The Wayside Amenities shall be deemed to be part of the site and shall vest in the Authority.

Sr.No.	Design Chainage (Km)	Remarks
Nil		

h) Providing & Laying Conduit along Highway for ITS

The Contractor shall provide & lay Conduit pipe of appropriate size & specifications along the Highway, suitable for Intelligent Traffic System (ITS). The ITS shall be installed through a separate contract. However, the Contractor shall be responsible for maintenance of Conduit during Maintenance Period.

3. General Items

The following general Items are to be provided as a minimum:

1. Provision, installation and maintenance with supply and installation of all furniture and equipment complete for the site office of the Engineers and the Engineer representative – minimum carpet area of 150 sqm as shown tentatively in the drawing given in Part III: Drawings. The plan of the structure is to be finalized in consultation and with approval of the Authority.

2. Provision, installation and maintenance of Quality Control Laboratory with all necessary supplies, laboratory tools and equipment – minimum carpet area of 100 sqm as shown tentatively in the drawing given in Part III: Drawings. The plan of the structure is to be finalized in consultation and with approval of the Authority.
3. Provision and Maintenance of vehicles for Engineer and Employer: New hard top passenger vehicles (2 Nos.) – 108 vehicle-month (Innova or equivalent category not more than 2 years old)

SCHEDULE - D
(See Clause 2.1)
SPECIFICATIONS AND STANDARDS

1 Construction

The Contractor shall comply with the Specifications and Standards set forth in Annex-I of this Schedule-D for construction of the Project Highway.

2 Design Standards

The Project Highway including Project Facilities shall conform to design requirements set out in the following documents:

For Two lane works: Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73-2007), and for Four lane works: Manual of Specifications and Standards for Four Laning of Highways (IRC: SP: 84-2009), as applicable referred to herein as the Manual.

Annex - I
(Schedule-D)

Specifications and Standards for Construction

1 Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Laning / Four-Laning of Highways (IRC: SP: 73-2007 / IRC:SP:84-2009), as the case may be referred to as the Manual, and MoRT&H Specifications for Road and Bridge Works 5th Revision 2013. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

- 2.1 The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively. Other deviations to the manual are given below.

Sl. No.	Clause No.	Description	Deviation
1	Clause 1.14	Design Service Volume and Carriageway Provision; provision of Paved Shoulders	Paved Shoulders shall be provided as per the Typical cross sections given at Appendix B-1 of Schedule B.
2	Clause 2.1	General: Provision of Four lane divided carriageway through builtup areas	Lane configuration and width of carriageway shall be provided as per the Typical cross sections given at Appendix B-1 of Schedule B.
3	Clause 2.2	Design Speed: Ruling or minimum Design speed shall be followed	Design speed shall be adopted as mentioned in the Plan & Profile drawings given in Appendix A of Schedule A.
4	Clause 2.3	Right of Way: The Desirable Right of Way for Non-Urban & Urban areas should be as prescribed in IRC:73 & IRC:86 respectively	The proposed ROW shall be as mentioned in Plan & Profile drawings in Appendix A of Schedule A.
5	Clause 2.5	Type and width of Shoulders	Type and Width of shoulders shall be as per the Typical cross sections given at Appendix B-1 of Schedule B.
6	Clause	Superelevation Shall be	Superelevation shall be limited to

Sl. No.	Clause No.	Description	Deviation
	2.8.3	limited to 7 Percent	5% (five Percent).
7	Clause 2.13	Service Roads: Minimum width of service road shall be 5.5m	Access road width shall be as per Typical cross sections given at Appendix B-1 of Schedule B
8	Clause 4.2	Road Embankment: Principles for height of embankment	The minimum FRL shall be followed as per the Plan & Profile drawings given in Appendix A of Schedule A
9	Clause 5.1 & 5.1.1	Provision of Flexible or Rigid pavement	The type of Pavement shall be as per Clause 5.2 of Schedule B.
10	Clause 5.4.1(a)	Stage Construction	Stage Construction is not permitted
11	Clause 6.3.4	Median Drainage: In superelevated sections, proper arrangement for drainage of raised carriageway and median shall be made without allowing water to drain on the other carriageway	For four lane road: Median cuts shall be provided at the location of superelevated sections to allow the water to flow from one side carriageway to other side.
12	Clause 13.2.2	Footpath: Footpaths shall be provided in the builtup sections	Footpaths shall be provided as per the typical cross sections at Appendix B-1 of Schedule B
13	Clause 13.5.3	Busbay Layout and Design: Layout given in Fig. 13.2 shall be followed	Busbay layout shall be designed as per IRC 80: 1981 and the layout given in Fig. 2 shall be used.

- 2.2 Notwithstanding anything to the contrary contained in Paragraph 1 above, the MoRT&H Specifications for Road and Bridge Works 5th Revision 2013 shall be amended to the extent given in Appendix D-1 to this Schedule D.
- 2.3 Rate and Measurement for Payment as given MoRT&H Specifications for Road and Bridge Works 5th Revision 2013 including amendments given in Appendix D-1 to this schedule D shall not be applicable and replaced by appropriate clauses of Conditions of Contract together with Schedules.

Appendix D-1 (Particular Technical Specifications)

2.1 Introduction

2.1.1 This Particular Technical Specifications of the Specifications revises certain Causes of MoRT&H Specifications for Road and Bridge Works 5th Revision 2013.

2.1.2 The amendments, if any, issued to the MoRT&H Specifications for Road and Bridge Works Fifth Revision 2013, shall apply to the relevant Clauses, otherwise as specified in this Section.

2.1.3 These revisions comprise substitutions, modifications or additions to clauses of the MoRT&H Specifications referred to in Part 1 - General Technical Specifications and accordingly the said Specifications so amended shall form part of the Contract.

2.1.4 The following list shows the Clauses of the MoRT&H Specifications, which are modified or added by this Particular Technical Specifications:

Section 100:	105, 106, 111, 112, 114 and 120
Section 200:	201 and 202
Section 300:	301, 304, 305, 306 and 309
Section 400:	401, 406, 409 and 410
Section 500:	501, 502, 503, 504, 505, 507, 508, 510 and 516
Section 800:	801, 802, 803, 805, 807, 809, 8.11 and 813
Section 1000:	1002, 1006, 1007, 1008 and 1014
Section 1500:	1501, 1502, 1506 and 1513
Section 1600:	1602, 1603 and 1605
Section 1700:	1705, 1706, 1707 and 1715
Section 1800:	1803
Section 2000:	2005, 2009 and 2011
Section 2100:	2104
Section 2200:	2204 and 2210
Section 2500:	2504 and 2507
Section 2700:	2703, 2706 and 2708
Section 2900:	2906, 2910 and 2911
Section 3000:	3001

2.1.5 Additional Specifications

The Clauses A-1 to A-8 have been added to the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” (Fifth Revision, April 2013).

Clause A-1 DIVERSION AND FILLING OF EXISTING WATER COURSES ALONG THE ROAD ALIGNMENT

Clause A-2 CHUTE DRAIN FOR HIGH EMBANKMENT SECTIONS

Clause A-3 SPECIFICATIONS FOR PAINTING OF STRUCTURES WITH SYNTHETIC ENAMEL PAINT/ WATER PROOFING CEMENT PAINT

Clause A-4 CONTROLLED BLASTING

Clause A-5 INTER LOCKING CONCRETE BLOCKS

Clause A-5A INTER LOCKING PAVER BLOCKS FOR RAISED PEDESTRIAN CROSSING

Clause A-6 UTILITY DUCTS

Clause A-7 POST CONSTRUCTION SERVICES

Clause A-8 ENVIRONMENT MANAGEMENT PLAN

In the absence of any definite provisions on any particular issue in the aforesaid Specifications, reference may be made to the latest codes and specifications of IRC, BIS, BS, ASTM, AASHTO and CAN/CSA in that order. Where even these are silent, the construction and completion of the works shall conform to sound engineering practice as approved by the Engineer.

SECTION 100 GENERAL.

CLAUSE 105 SCOPE OF WORK

Sub Clause105.3

Add **the following to the** Sub Clause 105.3

The QA programme shall also conform to the requirements of EN ISO 9001.

CLAUSE 106 CONSTRUCTION EQUIPMENT

Add the following sub Para (l) after sub Para (k):

- l) All measuring devices and gauges shall be in good working condition. Measuring devices that can affect product quality shall be calibrated prior to use and at prescribed intervals against certified equipment. Calibration procedures shall be established, maintained and documented and corrective actions taken when results are unsatisfactory. Calibration of all measuring devices and gauges etc., which the Contractor intends to use in the contract, shall be calibrated from a competent/reputed authority/agency accredited to NABL and the frequency of the calibration shall be as directed by the Engineer. Accuracy and fitness of measuring devices shall be ensured by proper maintenance.

CLAUSE 111 PRECAUTIONS FOR SAFEGUARDING THE ENVIRONMENT

Replace entire Clause 111 with the following:

Sub Clause111.1 General

The Contractor shall take all precautions for safeguarding the environment during the course of the construction of works. He shall abide by all rules, regulations and laws in force governing pollution and environmental protection that are applicable to the area where the works are situated.

NOISE:

The Contractor shall mitigate against any sustained increase in base line ambient Noise levels at sensitive receptors during construction of work.

All construction operations shall be performed in a manner to minimize noise and vibration. The noise levels to be maintained during construction period at construction camps and at construction sites are detailed below.

- 75 dB (A) for day;
- 70 dB (A) for night;
- 50 dB (A) for day and 40 dB (A) for night for sensitive receptors

If the noise levels are found to be above these standards and it is determined by the Engineer that these levels are due to the equipment or plant being deployed by the Contractor, he shall undertake, at his own cost measures as approved by the Engineer, to bring these levels down to the specified levels. Blasting should be done as per Indian Explosive Act. People living near such blasting sites shall have prior information of operational hazards. Blasting will not be undertaken at night. Workers at blasting sites will be provided with earplugs. Material haulage roads will be properly regulated.

Labour shall be warned against the hunting of wild life, if any. No archaeological site shall be disturbed.

Sub Clause 111.2 Borrow pits for Embankment Construction

Borrow pits shall not be dug within the Right-of-Way of the road. Arable lands will not be used for earth borrowing. The Contractor will ensure that proper excavation techniques are used to improve stability and safety of the borrow area. The excavation shall be carried out in such a way that the area does not inundate during monsoons or generate cesspools of water to become mosquito-breeding sites. The stipulations in Clause – 305.2.2 shall govern. The borrow pits shall not be left in a condition likely to cause damage to human and animal life.

Sub Clause 111.3 Quarry Operations

The Contractor shall obtain material from licensed quarries only after the consent of the concerned department or other concerned authorities. The quarry operation shall be undertaken within the purview of the rules and regulations in force. The Contractor shall ensure scheduling the movement of transport carrying material to and from the site during non-peak hours. The trucks carrying all the dusty material, red earth, moorum and fly ash/ pond, ash shall be covered with a tarpaulin and provided with adequate free board to prevent spillage. End boards shall be provided in loaders to prevent spillage.

Stockpiling of material shall be properly planned so as to ensure that no traffic jam takes place on the highway.

Sub-Clause 111.4 Control of Soil Erosion, Sedimentation and Water Pollution

The Contractor shall carry out the works in such a manner that soil erosion is fully controlled, and sedimentation and pollution of natural water courses, ponds, tanks and reservoirs is avoided. The stipulations of Clause 306 shall govern.

Sub Clause 111.5 Precautions against Dust

The Contractor shall take all reasonable steps to minimize dust nuisance during the construction of the works. All existing highways and roads used by vehicles of the Contractor or any of his sub-Contractors or suppliers of materials or plant, and similarly any new roads which are part of the works and which are being used by traffic shall be kept clean and clear of all dust / mud or other extraneous material dropped by the said vehicles or their tyres. Similarly, all dust / or mud or other extraneous material from the works spreading on these highways shall be immediately cleared by the Contractor. Clearance shall be effected immediately by manual sweeping and removal of debris, or, if so directed by the Engineer, by mechanical sweeping and clearing equipment, and all dust, mud and other debris shall be removed entirely from the road surface. Additionally, the road surface including haul road from Quarries and Plants shall be hosed or watered using suitable equipment to avoid dust pollution. Special care shall be taken to combat dust problem originating from use of fly ash/pond ash.

Sub Clause 111.6 Pollution from Hot Mix Plant, WMM Plant, Batching Plant & Crusher and Other Construction Machinery

The Contractor shall ensure the use of a relatively new, well maintained hot mix plant (batch type) so that any emission conforms to the CPCB and TNPCB norms and be fitted with a dust extraction unit to avoid prolonged engine powered equipment illness. Hot Mix Plant, WMM plant, Batching Plant & Crusher etc., shall be located more than 500 m from any community or residence and 1 km away from the sensitive receptors (schools, hospitals), unless otherwise required by the statutory requirements. The Contractor has to obtain necessary consent/clearance from State Pollution Control Board to operate Hot Mix Plant, WMM plant, Batching Plant, DG Set & Crusher before commencement of works.

All vehicles, equipment and machinery needed for construction will be regularly maintained to ensure that pollution emission levels conform to CPCB and TNPCB norms. All vehicles should be fitted with silencers.

Construction vehicles, machinery & equipment will move or be stationed in designated areas to avoid compaction of soil to ensure the preservation of the top soil for agriculture. The Contractor shall be fully responsible for any claims or damages caused to the owners of the property, field and residences in the vicinity and violation of pollution control norms if any.

Sub Clause 111.7 Road Safety

The Contractor shall provide adequate circuit for traffic flow around construction areas, control speed of construction vehicles through road safety and training of drivers, provide adequate signage, barriers and flag persons for traffic control. If there are traffic jams during construction, measures shall be taken to relieve the congestion with the assistance of local traffic police. Safety of workers undertaking various operations during construction will be ensured by providing helmets, masks, safety goggles, etc. One Qualified Safety Officer and one Safety Supervisor must be available in the Contractor's working team for the entire construction period.

The Contractor shall submit the **construction safety check** list in the format given below filled up to fourth column to the Engineer by 5th of every month. The Engineer shall fill up the remaining column of the check list and forward to the Employer within a week period.

Sl. No.	Safety Issues	Yes	No	Non compliance	Corrective Action	Penalty	Remarks
Safety during Construction Stage							
1	Appointment of qualified Construction safety officers						
2	Approval for Construction Safety Management Plan by the Engineer.						
3	Approval for Traffic Management/control Plan in accordance with IRC: SP: 55-2001						
4	Maintenance of the existing road stretches handed over to the Contractor.						
5	Provision of Temporary Traffic Barriers/Barricades/caution tapes in construction zones						
6	Provision of traffic sign boards						
7	Provision for flags and warning lights						
8	Provision of metal drum/empty bitumen drum delineator, painted in						

Sl. No.	Safety Issues	Yes	No	Non compliance	Corrective Action	Penalty	Remarks
	circumferential strips of alternate black and white 100mm wide 2 coats fitted with reflectors 3 Nos of 7.5cm diameter						
9	Providing plastic crash barrier						
10	Provision of adequate staging, form work and access (ladders with handrail) for works at a height of more than 3.0 m						
11	Provision of adequate shoring / bracing / barricading / lighting for all deep excavations of more than 3.0 m depth.						
12	Demarcations (fencing, guarding and watching) at construction sites						
13	Provision for sufficient lighting especially for night time work						
14	Arrangements for controlled access and entry to Construction zones						
15	Safety arrangements for Road users / Pedestrians						
16	Arrangements for detouring traffic to alternate facilities						
17	Regular Inspection of Work Zone Traffic Control Devices by authorized contractor personnel						
18	Construction Workers safety - Provision of personnel protective equipments						
19	A. Helmets						
	B. Safety Shoe						
	C. Dust masks						
	D. Hand Gloves						
	E. Safety Belts						
	F. Reflective Jackets						

Sl. No.	Safety Issues	Yes	No	Non compliance	Corrective Action	Penalty	Remarks
	G. Earplugs for labour						
20	Workers employed on bituminous works, stone crushers, concrete batching plants etc. provided with protective goggles, gloves, gumboots etc.						
21	Workers engaged in welding work shall be provided with welder protective shields						
22	All vehicles are provided with reverse horns.						
23	All scaffolds, ladders and other safety devices shall be maintained in as safe and sound condition						
24	Regular health checkup for Labour/ Contractor's personnel						
25	Ensuring the sanitary conditions and all waste disposal procedures & methods in the camps.						
26	The Contractor shall provide adequate circuit for traffic flow around construction areas, control speed of construction vehicles through road safety and training of drivers, provide adequate signage, barriers and flag persons for traffic control						
27	Provision for insurance coverage to the contractor's personnel						

Sub Clause 11.8 Sanitation & Waste Disposal in Construction Camp

The Contractor shall ensure that construction camps are located at a distance of minimum 200m from water sources. Special attention shall be paid to the sanitary conditions of the camps. The Contractor shall ensure that sufficient measures are taken i.e. provision of garbage tanks and sanitation facilities.

Waste in septic tanks shall be cleaned periodically. Garbage shall be collected in four empty drums at each construction site and disposed off daily. The Contractor shall provide adequate measures for the health care of workers and arrange their regular medical check-up to ensure that they do not suffer from any communicable disease. At every workplace, good & sufficient water supply will be maintained to avoid waterborne/ water related diseases. If any pits are dug at construction / camp sites which are not filled and then may turn into mosquito breeding sites during monsoons shall be filled up properly so that no water accumulates. The construction camps shall conform to the state and national building regulations as applicable.

Sub Clause 111.9 Substance Hazardous to Health

The Contractor shall not use or generate any material in the works, which is hazardous to the health of persons, animals or vegetation. Where it is necessary to use some such substance which can cause injury to the health of the workers, the Contractor shall provide suitable protective clothing or appliances to his workers, viz. earplugs, helmets or dust masks. Sealed containers of hazardous materials shall be stored in a well-ventilated room, well-guarded and secured.

Sub Clause 111.10 Damage to Existing road/ CD Structures

Any structural damage caused to the existing roads/structures by the Contractor's construction equipment shall be made good without any extra cost.

Sub Clause 111.11 Use of Nuclear Gauges

Nuclear gauges shall be used only where permitted by the Engineer. The Contractor shall provide the Engineer with a copy of the regulations governing the safe use of nuclear gauges he intends to employ and shall abide by such regulations. Without written approval, no such equipment shall be used at any level of the work.

Sub Clause 111.12 Environmental Monitoring

In order to carry out periodic checks, environmental monitoring will be carried out by the Authority's Engineer as per schedule and if any parameter is found above the acceptable standards, mitigation measures / control measures as decided by the Authority's Engineer shall be complied with by the Contractor.

Sub Clause 111.13 Protection of Existing Trees

Some of the existing trees within the right of way are likely to be cut down during the execution of the Work. The Contractor shall take all necessary measures to ensure safety and protection of the remaining trees from any action whatsoever relating to his construction operations in the adjoining areas.

Giant neighbourhood trees recognized locally as important shall be preserved and engineering designs modified to accommodate these wherever possible depending on Authority's Engineer's directions.

Sub Clause 111.14 Disposal of Materials outside Work Site

Notwithstanding other relevant provisions in the contract, the excess material generated by dismantling, excavation, waste material and lubricants, used oil, gasoline and other such substance etc., shall be removed from site outside the right of way at regular intervals and site shall kept clean from all such disposable materials. Grease, cotton and other waste construction materials shall be disposed off in shallow pits and periodically burnt in a incinerator constructed at each construction site. Such intervals shall not exceed one month under any circumstances. The selection of the disposal site shall be the responsibility of the Contractor and he shall ensure that the selected site does not result in any claim for damages to the Employer or violation of any existing laws.

This section of Technical Specifications sets out instructions, recommended standards and technical specifications for the design and implementation of EMP mitigation works associated with construction of roads.

Environmental Management Plan has been prepared for the Project road, which needs to be followed during the implementation of the civil works. The key responsibility of the contractor/sub-contractor will be the successful implementation of the EMP. In addition, he will update the Authority and Authority's Engineer on the progress of environmental protection and / or enhancement works as envisaged in the EMP. Execution of environmental mitigation measures meeting the requirement of Technical Specifications in conformity with applicable legislation will be the responsibility of the contractor. It shall also be accompanied with relevant documents (statements of compliance, certificates of compliance, test reports, etc.), evidencing their conformity with the statutory regulations.

111.14.1 DISPOSAL OF UNSERVICEABLE MATERIALS:

The locations of Disposal sites have to be selected such that:

- Locating the disposal sites is the sole responsibility of the contractor with the approval of Engineer.
- Joint inspection of all disposal sites shall be done by Engineer and Contractor prior to approval.
- No residential area are located downwind side of these locations,
- Disposal sites are located at least 1000 m away from sensitive locations like Settlements, Water body, notified forest areas, Sanctuaries or any other sensitive locations.
- Disposal sites do not contaminate any water sources, rivers etc for this site should be located away from water body and disposal site should be lined properly to prevent infiltration of water.
- Public perception about the location of debris disposal site has to be obtained before finalizing the location.
- Permission from the Village/local community is to be obtained for the Disposal site selected.
- Contractor will resolve all claims arising out of waste disposal at his own cost.
- Contractor shall utilize the suitable borrow areas, abandoned quarries and other waste land for the debris disposal.
- Contractor needs to plan the disposal in the following way:
 - Identify the disposal area.
 - Prepare a Contractors debris disposal plan with design drawings for each identified area and get it approved by the Engineer.
 - Need to photograph the present land use and condition of the area.
 - Construct all required structures (e.g. retaining wall).
 - The dumpsites filled only up to the ground level with compaction of the debris materials in layers after disposal.
 - The 30 cm top layer of disposal pit shall be provided with good earth suitable for development of vegetation/plantation.
 - After levelling, the site could be suitably rehabilitated by planting local species of grass (turfing), shrubs and other plants as decided by the Engineer.

111.14.2 CONSTRUCTION OF WATER RECHARGE PITS:

Storm water recharge pits shall be located such that it should be in the valley of the surface layout nearby cross drainage structures and other water bodies

along the project road. Water recharge pits shall be located at a height of 3 m. above the ground water table of the area as per the Central Ground Water Board norms. Recharge pits are constructed by the side of the guiding drains such that all the storm water shall be directed to the recharge pit. Any proposal for change in number and location recharge pits by the contractor shall be checked and approved by the Engineer.

Pits, trenches, abandoned dug wells, recharge wells or abandoned bore wells shall be connected by the rain water harvesting system with the consent of the respective owner or as approved by the Engineer.

111.14.3 CONSTRUCTION OF SILT TRAPS:

Silt fences shall be planned such that each recharge pit will have one silt fence to prevent silt from entering the nearest water bodies and also prevent choking of recharge pit by the silt coming from runoff water and increase the life of recharge pits. Silt fence are mounted in guiding drains at a distance of 3 to 5 M in the upstream direction depending on the gradient of the guiding drains. However any proposal for change in number and location silt fences by the contractor shall be checked and approved by the Engineer. Sand / silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove sand / silt particles from run-off.

111.14.4 SCARIFIED BITUMEN DISPOSAL PITS:

Scarified bitumen generated out of scarification of existing pavement is used for approach roads by mixing it with fresh bitumen or other granular materials to achieve the required strength followed by profiling and compaction.

The left out portion of the scarified bitumen is disposed safely in a clay lined pit or as directed and approved by the Engineer. A typical clay lined bitumen disposal pit with standard dimensions has been worked out. The dimension of the bitumen disposal pit may change provided the clay lining of required thickness is adhered to.

The selection of sites for disposal of scarified bitumen is made on following lines:

- Locating the bitumen disposal sites is the sole responsibility of the contractor with the approval of Engineer.
- Selection of bitumen disposal site is avoided in the quarry regions. If the disposal site is located in the abandoned quarry, region is suitably treatment seal the fractures and fissures.

- Joint inspection of all disposal sites shall be done by Engineer and Contractor prior to approval.
- Disposal sites shall be located at least 1000 m away from sensitive locations like Settlements, Water body, notified forest areas, Sanctuaries or any other sensitive locations.
- Disposal sites do not contaminate any water sources, rivers etc for this, site should be located away from water body and disposal site should be lined properly to prevent infiltration of water.
- Public perception about the location of bitumen disposal site has to be obtained before finalizing the location.
- Permission from the Village/local community is to be obtained for the Disposal site selected.
- Contractor will resolve all claims arising out of waste disposal at his own cost. Contractor needs to plan the bitumen disposal in the following way:
 - Identify the disposal area.
 - Prepare a Contractors bitumen disposal plan with design drawings for each identified area and get it approved by the Engineer.
 - Need to photograph the present land use and condition of the area.
 - Construct all required structures (e.g. retaining wall) along with clay lining and measures to prevent the seepage of bitumen leachate.
 - The dumpsites filled only up to the ground level with compaction of the materials in layers after disposal.
 - The 30 cm top layer of disposal pit shall be provided with good earth suitable for development of vegetation/plantation.
 - After levelling, the site could be suitably rehabilitated by planting local species of grass (turfing), shrubs and other plants as decided by the Engineer and the supervision consultant.

111.14.5 PROVISION FOR OIL INTERCEPTORS:

Location of Oil Interceptors shall be considered such that each construction camp having refuelling stations, oil and lubricants storage places will have one oil interceptor to stop & separate the floating oils. However the number of interceptors shall be increased as the situation demands or during the accidental spillages with the consent of the Engineer.

111.14.6 ENVIRONMENTAL MONITORING:

Environmental Monitoring of Air, Noise, Water and Soil parameters shall be carried by the contractor as per the consents and latest environmental norms,

guidelines and policies of national and state level environmental authorities. The Contractor shall comply by all obligations and make sure that there are no deviations from them or from the Contract.

Environmental standards for Air, Noise and water are outlined below.

1. Ambient Air Quality Standards (National)

S. No.	Pollutants	Time weighted average	Concentration in ambient air		Method of measurement
			Industrial, Residential, Rural & other Areas	Ecologically Sensitive Area (notified by Central Government)	
1.	Sulphur Dioxide (SO ₂) µg/m ³	Annual*	50	20	- Improved West and Geake - Ultraviolet Fluorescence
		24 hours**	80	80	
2.	Nitrogen Dioxide (NO ₂) µg/m ³	Annual*	40	30	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
		24 hours**	80	80	
3.	Particulate Matter (size less than 10 µm or PM ₁₀) µg/m ³	Annual*	60	60	- Gravimetric - TOEM - Beta attenuation
		24 hours**	100	100	
4.	Particulate Matter (size less than 2.5 µm or PM _{2.5}) µg/m ³	Annual*	40	40	- Gravimetric - TOEM - Beta attenuation
		24 hours**	60	60	
5.	Ozone (O ₃) µg/m ³	8 hours**	100	100	- UV Photometric - Chemiluminescence - Chemical method
		1 hour **	180	180	
6.	Lead (Pb) µg/m ³	Annual*	0.5	0.5	- ASS/ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
		24 hours**	1.0	1.0	
7.	Carbon Monoxide (CO) mg/m ³	8 hour	02	02	- Non Dispersive Infra Red (NDIR) - Spectroscopy
		1 hours**	04	04	
8.	Ammonia (Nh ₃) µg/m ³	Annual*	100	100	- Chemiluminescence - 24 - Indophenol blue method
		24 hours**	400	400	
9.	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	- Gas chromatography based - on continuous analyser

S. No.	Pollutants	Time weighted average	Concentration in ambient air		Method of measurement
			Industrial, Residential, Rural & other Areas	Ecologically Sensitive Area (notified by Central Government)	
					- Adsorption and desorption - followed by GC analysis
10.	Benzol (O) Pyrene (BaP) – Particulate phase only ng/m ³	Annual*	01	01	- Solvent extraction followed - by HPLC/GC analysis
11.	Arsenic (As) ng/m ³	Annual*	06	06	- AAS/ICP method after - sampling on EPM 2000 or - equivalent filter paper
12.	Nickel (Ni) ng/m ³	Annual*	20	20	- AAS/ICP method after - sampling on EPM 2000 or - equivalent filter paper
*	Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.				
**	24 hourly/8 hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed but not on two consecutive days.				

2. Water quality Standards (IS 10500: 1991)

S. No.	Parameter	Requirement desirable Limit	Remarks
1.	Colour	5	May be extended up to 50 if toxic substances are suspected
2.	Turbidity	10	May be relaxed up to 25 in the absence of alternate
3.	pH	to 8.5	May be relaxed up to 9.2 in the absence of alternate
4.	Total Hardness	300	May be extended up to 600
5.	Calcium as Ca	75	May be extended up to 200
6.	Magnesium as Mg	30	May be extended up to 100
7.	Copper as Cu	0.05	May be relaxed up to 1.5
8.	Iron	0.3	May be extended up to 1
9.	Manganese	0.1	May be extended up to 0.5
10.	Chlorides	250	May be extended up to 1000
11.	Sulphates	150	May be extended up to 400
12.	Nitrates	45	No relaxation
13.	Fluoride	to 1.2	If the limit is below 0.6 water should be rejected, Max. Limit is extended to 1.5
14.	Phenols	0.001	May be relaxed up to 0.002
15.	Mercury	0.001	No relaxation
16.	Cadmium	0.01	No relaxation
17.	Selenium	0.01	No relaxation
18.	Arsenic	0.05	No relaxation
19.	Cyanide	0.05	No relaxation
20.	Lead	0.1	No relaxation
21.	Zinc	5.0	May be extended up to 10.0
22.	Anionic detergents (MBAS)	0.2	May be relaxed up to 1
23.	Chromium as Cr+6	0.05	No relaxation
24.	Poly nuclear aromatic Hydrocarbons	--	--
25.	Mineral Oil	0.01	May be relaxed up to 0.03
26.	Residual free Chlorine	0.2	Applicable only when water is chlorinated
27.	Pesticides	Absent	--
28.	Radio active	--	--

3. Ambient Noise Quality Standards in respect of Noise

Area code	Category of Area / Zone	Limits in dB(A) Leq*	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note:-

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
 2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
 3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority
 4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.
- * dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A “decibel” is a unit in which noise is measured.

“A”, in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specified period.

Note: The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended by the Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 vide S.O. 1046(E), dated 22.11.2000 and by the Noise Pollution (Regulation and Control) (Amendment) Rules, 2002 vide S.O. 1088(E), dated 11.10.2002, under the Environment (Protection) Act, 1986.

Sub Clause 111.15

Compliance with the foregoing will not relieve the Contractor of any responsibility for complying with the requirements of any highway authority in respect of the roads used by him.

Sub Clause 111.16 Measurement

For Compliance of all provisions made in this Clause 111, it shall be deemed to be incidental to the work and no separate measurement or payment shall be made. The Contractor shall be deemed to have made allowance for all such compliance with these provisions in the preparations of his Bid and full compensation for such compliance shall be deemed to be covered by the Bid price.

CLAUSE 112 ARRANGEMENT FOR TRAFFIC DURING CONSTRUCTION

Sub Clause 112.1 Add the following at the end of this Sub-Clause:

“The Contractor shall ensure that all the traffic management devices as per Traffic Management Plan approved by the Engineer are in position before opening of sites of work.”

Sub-Clause 112.2 Passage of Traffic along a part of the Existing Carriageway under improvement

Replace 2nd sentence of 1st paragraph of the Sub Clause 112.2 with the following:

The treatment of the shoulder shall consist of providing at least 150mm thick granular (Wet Mix Macadam) base course covered with 20 mm thick Close-Graded Premix Surfacing/Mixed Seal Surfacing (Type B) as per Clause 508 in a width of at least 1.5m such that the total paved width available for traffic including part of the existing road and treated shoulder is not less than 3.75m and the treated shoulder shall be maintained throughout the period during which traffic uses the same to the satisfaction of the Engineer.

Replace the Sub Clause 112.3 of MoRT&H with the following

Sub Clause 112.3 Passage of Traffic along a Temporary Diversion

In stretches where it is not possible to pass the traffic on part width of the carriageway, a temporary diversion shall be constructed with 5.5 m carriageway and 2.5 m earthen shoulders on each side (total width of roadway 10.5 m) with the following provision for road crust in the 5.5 m width:

- (i) Earthwork
- (ii) 200 mm (compacted) granular sub-base;
- (iii) 225 mm (compacted) granular base course (Wet Mix Macadam);
- (iv) Priming and Tack Coat and
- (v) 20 mm thick Close-Graded Premix Surfacing / Mixed Seal Surfacing (Type B).

The use of fly ash in temporary diversions shall not be permitted.

The location of such stretch, alignment and longitudinal section of diversion including junctions and temporary cross drainage provision shall be as approved by the Engineer.

The Contractor shall be responsible for the design of temporary diversions and submit the designs to the Engineer for his approval. If the Contractor finds it necessary to construct part of any diversion outside the Right of Way, the temporary use of additional land shall be arranged for by the Contractor at his own risk and cost. Further as per Conditions of Contract, the Contractor shall indemnify the Employer and the Engineer against any claims or proceedings resulting from the occupancy and use of such areas of additional land. Any roadside trees that have to be removed for the construction of temporary diversions shall be at the responsibility and cost of the Contractor.

Sub Clause 112.4 Traffic safety and Control

Add the following paragraph at the end of the Sub Clause 112.4

The Provisions made in Bill of Quantities shall be the ceiling for the Contract during the Contract Period. The Additional claims due to damage and theft of the same shall be deemed incidental to works. No extra payment shall be made towards additional quantities for these bill items.

Replace the Sub Clause 112.6 with the following

Sub Clause 112.6 Measurements for Payment and Rate

- (i) All arrangements for traffic during construction including provision of temporary cross drainage structures, if required and treated shoulder as described in Clause 112.2 including their maintenance, dismantling and clearing debris, where necessary, shall be considered as incidental to the works and shall be the Contractor's responsibility, **unless provided as a separate payable item in the BOQ.**
- (ii) The construction of temporary diversion including temporary cross drainage structures at the site of bridge reconstruction locations as described in Clause 112.3, shall be **payable** and measured in linear metre and the unit contract rate shall be inclusive of full compensation for construction (including supply of material, labour, tools, etc.), maintenance, final dismantling, and disposal.

CLAUSE 114 SCOPE OF RATES FOR DIFFERENT ITEMS OF WORK

Sub Clause 114.2 Add the following at the end of Item (ii) of Clause 114.2:

“The Contractor shall submit data via electronic media and hard copy to the Engineer in a form readily compatible with the Engineer’s planning system.”

Sub Clause 114.2 Add the following as item (xix) to sub-clause 114.2:

“Monthly progress and Quarterly progress report in a format acceptable to the Engineer” The report shall state the progress which has been achieved compared with the planned progress, illustrate delays in proportion to the progress planned, analyze the consequences and state planned corrective measures. Intermediate progress reports may also be required. This report will also include progress on the ESHS Management Strategies and Implementation Plans (ESHS-MSIP), and compliance to the applicable Laws/ Rules/ Regulations for protection of environment, public health and safety, and the applicable parts of the Environment Management Plan of the project.

The first issue of the detailed programme including the detailed description of the system and the procedures shall be submitted to the Engineer for acceptance not later than xx days after the date of receipt of the letter of acceptance.”

Sub Clause 114.2 Add the following as item (xx) to Sub-Clause 114.2

Cost of carrying out Topographic Surveys and Auto Level Surveys.

CLAUSE 120 FIELD LABORATORY

Sub Clause 120.2

Replace Sub-Clause 120.2 with the following.

120.2 Description

The Contractor shall arrange to provide fully furnished and adequately equipped field laboratory (also referred to as Quality Control Laboratory). The field laboratory shall be located in close proximity to the Works site. It shall be provided with continuous electricity supply, electrical wiring and points, all necessary electrical fittings and fixtures; potable water supply including pipes, pumps, storage tanks, plumbing, all necessary fittings and fixtures; septic tank, sewer lines, drains; surfaced access road; fencing and security lighting; security services etc.

The floor space requirement for the field laboratory shall be as indicated in the drawings. It shall include office space for the Materials Engineers, one from the Contractor's side and another from the Engineer's side, space for the

installation of equipment, and space for other facilities. The field laboratory shall be fitted complete with laboratory equipment, laboratory tables and cupboards, wash basins, toilet facilities, curing tank around 4m x 2m x 1m in size for the curing of samples, a fume chamber, working platform area of about 1m x 10m against the walls, cupboards above and below the working platform, space for storage of accessories such as sample moulds, space for storage of samples etc. At least 4 racks of slotted angles and M.S. sheets shall also be provided. The furnishing in each of two offices of the Materials Engineers shall include working tables and chairs.

Table 100-2: List of Laboratory Equipments

S. No		Item, Specifications	Nos. required
A: General			
1)		Weigh Balances	
	(a)	5 kg to 20 kg capacity Electronic Type –Accuracy 1 gm	3
	(b)	500 gm capacity Electronic Type – Accuracy 0.01 gm	3
	(c)	Chemical balance 100gm capacity - Accuracy 0.0001gm	2
	(d)	Pan balance 5 kg capacity Electronic Type - Accuracy 0.5 gm	3
	(e)	Platform Balance Scale – 300 kg capacity	2
	(f)	Triple Beam balance-25kg capacity Accuracy 1gm	3
2)		Oven – electrically operated, thermostatically controlled (including thermometer), stainless steel interior	
	(a)	From 0°C to 220°C – Sensitivity 1°C	3
3)		Sieves: as per IS: 460-1962	
	(a)	IS Sieves 450 mm internal dia. of sieve sets as per BIS of required sieve sizes complete with lid and pan	3 set
	(b)	IS sieve 200 mm internal dia. (brass frame and steel/ or brass wire cloth mesh) consisting of sieve sets of required sieve sizes complete with lid and pan	3 set
4)		Sieve shaker capable of taking 200 mm and 450 mm dia. Sieves electrically operated with time switch assembly (As per BIS)	3

S. No		Item, Specifications	Nos. required
5)		200 tonnes compression testing machine	3
6)		Stop watches 1/5 sec. Accuracy	3
7)		Glassware comprising of Beakers, Pipettes, dishes, measuring cylinders (100 to 1000 cc capacity) glass rods and funnels, glass thermometers range 0°C to 100°C and metallic thermometers range 300°C	2 Dozen each
8)		Hot plates 200 mm dia (1500 watt)	10
9)		Enamel trays	
	(a)	600 mm x 450 mm x 50 mm	20
	(b)	450 mm x 300 mm x 40 mm	20
	(c)	300 mm x 250 mm x 40 mm	12
	(d)	Circular plates of 250 mm dia.	12
10)		Water Testing Kit	3
11)		First Aid Box	3
12)		Spatula Set of 100 and 200 long	3
13)		Digging Tools (pixels, shovel, fork etc.)	As required
14)		Miscellaneous tools (sledge hammer, lump hammer, wooden pegs etc.)	As required
15)		Maximum and Minimum Thermometer	3 set
16)		Rain Gauge	2 set

S. No		Item, Specifications	Nos. required
17)		Timer 0-60 minutes with alarm & 1/5 sec accuracy.	6 sets
B: For Soils and Aggregates			
1)		Water still, 3 liter/hr with fittings and accessories	3
2)		Liquid limit device with Casagrande and ASTM grooving tools as per IS: 2720	3
3)		Sampling pipettes fitted with pressure and suction inlets, 10 ml. Capacity	3 set
4)		Compaction apparatus (Proctor) as per IS: 2720 (Part 7) complete with collar, base plate and hammer and all other accessories	3 set
5)		Modified AASHTO compaction apparatus as per IS. 2720 (Part 8) 1983 or Heavy Compaction Apparatus as per IS complete with collar, base plate, hammer and all other accessories	3 set
6)		Sand pouring cylinder with conical funnel and tap and complete as per IS 2720 (Part 28) 1974 including modified equipment	8
7)		Ennore Standard Sand	As required
8)		Sampling tins with lids 100 mm dia x 75 mm ht ½ kg capacity and miscellaneous items like moisture tins with lid (50 grams) etc.	24
9)		Lab CBR testing equipment for conducting CBR testing, load frame with 5 Tonne capacity, electrically operated with speed control as per IS: 2720 (Part 16) and consisting of following:	2 set
	(a)	CBR moulds 150-mm dia – 175-mm ht. complete with collar, base plate etc.	36
	(b)	Tripod stands for holding dial gauge holder	36
	(c)	CBR plunger with settlement dial gauge holder	3

S. No	Item, Specifications		Nos. required
	(d)	Surcharge weight 147-mm dia 2.5 kg wt.	60
	(e)	Spacer disc 148-mm dia, 47.7-mm ht. With handle	6
	(f)	Perforated plate (Brass)	36
	(g)	Soaking tank for accommodating 24 CBR moulds	2
	(h)	Proving rings of 1000 kg, 2500 kg and 5000 kg capacity	2 each
	(i)	Dial gauges, 25 mm travel- 0.01 mm/division	20
	(j)	Aluminium Tins	
		50x30mm	48 nos
		55x35mm	48 nos
		70x45mm	48 nos
		70x50mm	48 nos
		80x50mm	48 nos
10)		Standard Penetration test equipment	3
11)		Nuclear moisture Density meter or equivalent	4
12)		Speedy moisture meter complete with chemicals	6
13)		Unconfined compression test apparatus	3
14)		Aggregate Impact Test Apparatus	3
15)		Aggregate Impact Test Apparatus as per IS 2386 (Part 4) 1963	3
16)		Los Angeles abrasion Test Apparatus as per IS 2386 (Part 4) 1963	3

S. No		Item, Specifications	Nos. required
17)		Riffle Box of Slot size of 50mm as per ASTM C-136	3
18)		Dynamic Cone Penetrometer	3
19)		Hydrometer with high speed stirrer and jars	6 set
20)		Post-hole augur (to BS-812)	9
C: For Bitumen and Bituminous Mixes			
1)		Constant temperature bath for accommodating bitumen test specimen, electrically operated and thermostatically controlled (to accommodate minimum six Specimens)	6
2)		Penetrometer automatic type, adjustable weight arrangement and needles as per IS. 1203 – 1978	6
3)		Soxhlet extraction or centrifuge type apparatus complete with extraction thimbles with stocks of solvent and filter paper	3
4)		Bitumen laboratory mixer including required accessories (20 ltrs.)	3
5)		Marshall compaction apparatus automatically operated as per ASTM 1559-62 T complete accessories (with 180 N Marshall Moulds	2 sets
6)		Distant Reading Digital Thermometer for Measuring Temperatures in Asphaltic Mixes	As required
7)		Riffle Box	3
8)		Automatic Asphalt Content Gauge [Nuclear or equivalent]	3
9)		Thin film Oven test apparatus for modified binder either with PMB or CRMB	3
10)		Ring Ball Apparatus as per IS 1205- 1978	3
11)		Asphalt Institute Vacuum Viscometer as per IS 1206 (part II) – 1978	3
12)		BS U- Tube Modified Reverse Flow Viscometer IS 1206 (Part III) – 1978	3

S. No		Item, Specifications	Nos. required
13)		Apparatus for Determination of Ductility Test as per IS 1208 – 1978	3
14)		Pen Sky – Martin closed Tester for testing flash and fire point as per IS 1209 – 1978.	3
15)		Apparatus for Float Test – IS – 1210 – 1978	3
16)		Apparatus for Determination of water content (Dean and Shark Method) IS – 1211 – 1978	3
17)		Apparatus for Determination of Loss on Heating IS – 1212-1978.	3
18)		Apparatus of Determination of specified Gravity IS-1202-1978	3
19)		Core cutting machine suitable for upto 150mm dia. Core	3
20)		Apparatus for Elastic Recovery test for Modified Bitumen	3
21)		Apparatus for Storage Stability test for Modified Bitumen	3
22)		Apparatus for Separation test for Modified Bitumen	3
23)		Sand Equivalent test apparatus	3
24)		Mastic Asphalt Hardness testing equipment	3
25)		Automatic Asphalt content Meter	3
D: For Cement, Cement Concrete and Materials			
1)		Water still	2
2)		Vicat needle apparatus for setting time with plungers, as per IS. 269-1967	2
3)		Moulds	
	(a)	150 mm x 300 mm ht cylinder with capping component along with the capping set and compound as per IS	As required
	(b)	Cube 150mm, and 100mm (each size)	As required
	(c)	150mmx100 mm x600mm beam for flexural strength	As required

S. No		Item, Specifications	Nos. required
4)		Concrete permeability apparatus	2
5)		High frequency mortar cube vibrator for cement testing	2
6)		Concrete mixer power driven, 1 cu ft capacity	2
7)		Variable frequency and amplitude vibrating table size 1 metre x 1 metre as per the relevant British Standard	2
8)		Flakiness & Elongation test apparatus	4 each
9)		Aggregate impact test apparatus as per IS 2386 (Part 4) 1963	3
10)		Los Angeles abrasion apparatus as per IS. 2386 (Part 4) 1963	2
11)		Flow table as per IS 712-1973	2
12)	(a)	Equipment for slump test	6
	(b)	Compaction factor test equipment	2
13)		Equipment for determination of specific gravity for fine and coarse aggregate as per IS 2386 (Part 3) 1963	4
14)		Compression and Flexural strength testing machine of 200T capacity with additional dial for flexural testing	2
15)		Core cutting machine with 100 mm dia. Diamond cutting edge	2
16)		Needle vibrator	2
17)		Vibrating hammer as per BS specification	2
18)		Air entrainment meter ASTM C - 231	2

S. No		Item, Specifications	Nos. required
19)		0.5 Cu. ft, 1 Cu. ft cylinder for checking bulk density of aggregate with tamping rod	2
20)		Soundness testing apparatus for cement	2
21)		Flexural Beam testing machine with accessories	2
22)		Chemicals solutions and consumable	As required
23)		Chloride Testing kit for chemical analysis of chloride content.	2
24)		ION Exchange kit for rapid determination of sulphate content.	2
E: For Control of Profile and Surface Evenness			
1)		Precision automatic level with micrometer attachment	4 set
2)		Distomat or equivalent	4 set
3)		Theodolite – Electronically operated with computerised output attachment	4 set
4)		Total Station with all accessories	4 set
5)		Roughometer (Towed Fifth Wheel Bump Indicator)	2 set
6)		3 metre straight edge and measuring wedge	4 set
7)		Camber templates 2 lane	
	(a)	Crown type cross-section	4 set
	(b)	Straight run cross-section	4 set
8)		String line Arrangement with sensor paver	3
9)		Steel tape	

S. No		Item, Specifications	Nos. required
9)	(a)	5 m long	As required
	(b)	10 m long	As required
	(c)	20 m long	As required
	(d)	30 m long	As required
	(e)	50 m long	As required
		Precision Staff	6 set

Note:

1) The laboratory set-up must be complete including a set of reference standards, adequately staffed and operational to the satisfaction of the Engineer not later than **2 (two)** months from the date of receipt of Notice to commence the works. The Contractor shall be responsible for the provision of adequately experienced and qualified laboratory staff, in sufficient numbers to be able to meet all testing requirements to the approval of the Engineer, and for the supply of all transportation of staff, testing equipment and samples necessary to allow the testing to be performed in a time scale compatible with the needs of the Site. The Employer and the Engineer shall have free access to the laboratory.

2) The laboratory setup may be reduced after issue of Taking Over Certificate with the approval of Engineer.

Sub Clause 120.4 Maintenance

This Clause shall read as under:

”The Contractor shall arrange to maintain the laboratory in satisfactory manner and will carry stocks of spare equipment and laboratory consumables until the issue of Performance Certificate. Maintenance include the day to day upkeep of the laboratory building and the surroundings, attending to repairs to various parts of the building, furniture, fittings, office/laboratory equipments and the concerned services as and when necessary, including the periodic white/colour washing of building as per National Building Code and painting of wood, steel work, replacing the broken window/door/ventilator, glasses, furniture and other hardware and maintaining necessary watch and ward during the day and night.

The Contractor shall arrange to provide uninterrupted supply of electricity and water for the laboratory building. In case of failure of main power/water supply, alternate source shall be available for providing uninterrupted supply.”

SECTION 200 SITE CLEARANCE

CLAUSE 201 CLEARING AND GRUBBING

Sub Clause 201.1 Scope

Add **the following Paragraph at the end of this Sub-Clause.**

“Diversion and filling of existing Water courses along the road alignment shall be as per Additional Technical Specification A-1.”

Sub Clause 201.5 Delete 1st sentence in the 1st Paragraph in Sub-Clause 201.5 and add the following sentence.

Clearing and grubbing for road embankment, drains and cross drainage structures shall be measured on area in plan basis in terms of hectares.

CLAUSE 202 DISMANTLING CULVERTS, BRIDGES AND OTHER STRUCTURES/PAVEMENTS

Sub-Clause 202.6 Measurements for Payment

This Clause shall read as:

The work of dismantling shall be paid for in units indicated below by taking measurements before and after, as applicable:

(i)	Dismantling brick/stone masonry / plain cement concrete / reinforced cement concrete including reinforcement.	Cum
(ii)	Dismantling pavement structures such as Granular Course, Bituminous course, Concrete pavement	Cum
(iii)	Dismantling pipes, guard rails, road kerbs, gutters and fencing	Linear Meter
(iv)	Dismantling Guard Stones/KM stones/Sign post/Hect. Stones/5 th KM stones	Nos
(v)	Dismantling RCC railing	Linear Meter
(vi)	Dismantling angle type expansion joints of bridges	Linear Meter
(vii)	Dismantling of railing kerb	Linear meter
(viii)	Dismantling of Concrete Edge strip without damaging	Linear Meter

existing structure

- (ix) Dismantling of Drainage spout including cleaning entire area, enclosure of metallic bearing Nos.
- (x) Dismantling of Stone pitching/ boulder apron/ brick Cum soling/ stone soling

SECTION 300 EARTHWORK, EROSION CONTROL AND DRAINAGE

CLAUSE 301 EXCAVATION FOR ROADWAY AND DRAINS

Sub-clause 301.3.5 Rock Excavation

The first sentence of first paragraph shall read “Rock, when encountered in road excavation shall be removed up to a level of 150mm below the base of WMM”.

Sub-clause 301.3.7 Excavation of road shoulders/verge/medians for widening of pavement or providing treated shoulders:

The 2nd sentence of this Clause shall read as under:

The Subgrade material within 500mm from the bottom of the pavement for the widened portion and paved shoulder shall be loosened and recompactd as per Clause 305 if it does not meet the compaction requirement of Table 300-2.”

Sub Clause 301.6 Preparation of Cut Formation

Third paragraph shall be read as under:

“In rock formation, the rock shall be cut 150mm below the specified elevation of base of WMM and the surface irregularities shall be corrected. The gap between rock cut and base of WMM shall be filled with 150mm thick granular sub-base as per Grading-V of Table 400-1 of Clause 401. The unsuitable material shall be disposed of in accordance with Clause 301.3.11”.

Sub Clause 301.8 Measurements for Payment

In **first line of first paragraph add** “and drains” after the word “roadway”

CLAUSE 304 EXCAVATION FOR STRUCTURES

Sub Clause 304.3.2 Excavation

At the end of 1st paragraph of Clause 304.3.2 insert the following additional sentences:

“The Contractor shall ensure the stability and structural integrity of adjacent existing foundations and structures and if necessary shall, at his own expense, install temporary or permanent sheet piles, coffer dams, shoring or similar support or protection to the satisfaction of the Engineer.”

CLAUSE 305 EMBANKMENT CONSTRUCTION

Clause 305.2.1.6 The 1st sentence of this Clause shall read as under:

“The material to be used in subgrade shall conform to the design CBR value of not less than 9% at the specified density and moisture content of the test specimen.”

Clause 305.2.2.4 Compaction Requirements

In Clause 305.2.2.4 after the 1st paragraph delete Table 300-2 and substitute the following:

Table 300-2: Compaction Requirements for Embankment and Sub-grade

S. No.	Type of Work/Material	Relative Compaction as %age of maximum laboratory dry density as per IS 2720 (Part 8)
1	Subgrade and earthen shoulders	Not less than 97%
2	Embankment	Not less than 95%
3	High Embankment (Height >6m)	Not less than 97%
4	Expansive clays	Not allowed
5	Design CBR of Subgrade & Shoulder shall be as per Drawing, but not less than 9%	

Sub Clause 305.3.4 Compacting Ground Supporting Embankment/Sub-grade

Add the following paragraph at the end of last Paragraph in Sub Clause 305.3.4

Backfilling layers in pits, trenches and below the original ground are to be compacted to the relative natural ground density. The natural ground density shall be determined by conducting field density tests at three widely spaced locations along the central line of the proposed carriageway at a depth in between 0.5m to 1.0m. Samples of natural ground are collected at each location, and are tested in accordance with IS: 2720 (Part 8). The relative density (i.e. the percentage of the field dry density to the laboratory maximum dry density) is assessed for each sample, and the greatest relative density obtained is selected as the “natural ground density”. If the natural

ground density is less than 85% then these are to be compacted after necessary watering so as to achieve not less than 85% of relative compaction”.

Sub-Clause 305.9.1

Add new sub section as (xv) “slush removal”

Sub Clause 306.4 Replace Sub-clause 306.4 with the following:

“The soil erosion, sedimentation and pollution control works shall be deemed as incidental to the earthwork and other items of work and, as such, no separate payment shall be made for the same

Sub Clause 306.5 Rates

This Clause shall be deleted.

Sub-Clause 309.4 Measurements for Payment

This Clause shall read as:

“Construction of drains shall be measured as finished work in position as below:

a) Unlined ditch drain	.....	As per Clause 301
b) Semi-Circular median drain as shown in the drawing with PCC M20, NP2 pipe, levelling concrete M15 and filter media.	.....	Running metre
c) Drainage Chute	.....	Running metre
d) Lined open/Covered drain		
(i) Levelling concrete M15	.....	Cubic metre
(ii) Coarse rubble masonry	.....	Cubic metre
(iii) Stone pitching grouting with CM 1:3	.....	Cubic metre
(iv) RCC grade M20	.....	Cubic metre
(v) Steel Reinforcement	.....	Tonne
(vi) Precast perforated slab	.....	Nos.
(vii) Catchpits/inspection chambers	.....	Nos.
(viii) RCC pipes	.....	Running metre
f) Sub-surface drains		Running metre

SECTION 400 SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS

General

Sub clause (i) of clause 401.7 stands deleted and remaining sub paras (ii) to (v) are renumbered as (i) to (iv).

Sub clause (i) of clause 405.7 stands deleted and remaining sub paras (ii) to (v) are renumbered as (i) to (iv).

The provision of clause 401.7 (i) to (v) be read as “Clause 401.7 (i) to (iv)” in the sub clauses 402.8, 403.8, 404.7, 407.8 and 408.7.”

CLAUSE 401 GRANULAR SUB-BASE

Sub Clause 401.2 Materials

Sub Clause 401.2.1 The Clause shall read as follows:

“The material to be used for the work shall be crushed stone conforming to the physical requirements stipulated in Sub-Clause 401.2.2. The material shall be free from organic or other deleterious constituents and conform to Grading-V of Table 400-1.”

Sub Clause 401.3 Construction Operations

Sub-Clause 401.3.1: Preparation of Sub grade

Add the following paragraphs at the end of the 1st paragraph of Sub-Clause 401.3.1: Preparation of Sub grade

When granular subbase is to be placed on existing subbase or base for partial reconstruction the existing bituminous layers, if any, shall be scarified/ milled in accordance with Sub Clause 501.8.3.2. Scarification / milling shall be continued to the design foundation elevation within existing base/subbase layer on which the new subbase is to be placed. The Contractor will verify that all bituminous layers have been removed using appropriate methods approved by the Engineer. The bituminous surfacing and base material removed from the existing pavement may be used in other parts of the works as directed by Engineer provided it complies with the relevant specification clauses.

After scarification/ milling and removal to the satisfaction of the Engineer of the existing bituminous surfacing (full) and if required base/subbase (full or

part), the surface shall be lightly sprinkled with water if necessary and rolled with three passes of vibratory rollers. The existing pavement shall then be proof rolled with an 8 tonne single drum vibrating roller in the presence of the Engineer who shall determine of the surface for placing the subbase layer.

CLAUSE 406 WET MIX MACADAM SUB-BASE/BASE

Sub Clause 406.2 Materials

Sub-Clause 406.2.1.1 Physical requirements

Delete 2nd Sentence in 1st Paragraph in the Sub Clause 406.2.1.1 and replace with the following Sentence:

“The constituents of the aggregates shall be produced by an integrated crushing and screening plant of suitable capacity having appropriate primary crusher, secondary cone crusher, vertical shaft impactor and vibratory screen, unless otherwise instructed by the Engineer, crushing shall be carried out in at least two stages. The fraction of material passing through 4.75mm sieve shall also be crusher run screening only.”

Sub-Clause 406.3 Construction Operations

Sub Clause 406.3.4 Spreading of Mix

Replace “may” with “shall” in the 1st sentence of 2nd paragraph of Sub-Clause 406.3.4.

Delete the last paragraph of Sub-Clause 406.3.4.

Sub-Clause 406.3.5 Compaction

Delete second sentence of Paragraph 1 of Clause 406.3.5.

CLAUSE 409 CEMENT CONCRETE KERB AND KERB WITH CHANNEL

Sub Clause 409.5 Construction Operations

Sub Clause 409.5.1 Add at the end of the first sentence “as shown in the drawings”

CLAUSE 410 FOOTPATHS AND SEPARATORS

Replace the entire Clause 410 with the following:

410.1 Scope

The work shall consist of constructing footpaths and/or separators at locations as specified in the drawings or as directed by the Engineer. The lines, levels and dimensions shall be as per the drawings. The scope of the work shall include provision of all drainage arrangements as shown in the drawings or as directed.

410.2. Materials

The footpaths and separators shall be constructed with the following type:

Precast cement concrete block/tiles of Grade M20 as per Sections 1700 of the Specifications. The minimum thickness of the cement concrete block/tile shall be 25 mm and minimum size shall be 300 mm x 300mm.

410.3. Construction Operations

410.3.1 Drainage pipes below the footpath originating from the kerbs shall be first laid in the required slope and connected to the drains/sumps/storm water drain/drainage chutes as per provisions of the drawings, or as specified.

410.3.2 Portion on back side of kerbs shall be filled and compacted with granular sub-base material as per Clause 401 of the Specifications in specified thickness.

410.3.3 The base shall be prepared and finished to the required line, levels and dimensions as indicated in the drawings with the following:-

(a) Minimum 150 mm thick, compacted granular sub-base material as per Clause 401 of the Specifications.

(b) Minimum 25 mm thick cement concrete of Grade M15.

Over the prepared base, precast concrete tiles shall be set/laid as described in Clauses 410.3.4.

410.3.4 Precast cement concrete tiles:

The tiles shall be set on a layer of average 12 mm thick cement-sand mortar (1:3) laid on prepared base in such a way that there is no rocking. The gaps between the tiles shall not be more than 12 mm and shall be filled with cement-sand mortar (1:3).

410.4 Measurements for Payment

Footpaths and separators shall be measured in sq. meter between inside of kerbs.

410.5 Rates

Contract unit rates shall be inclusive of full compensation of all labour, materials, tools, equipments and incidentals to construction of footpaths. Cost of providing pipes and arrangement for their discharge into appropriate drainage channels shall be incidental to the construction of footpaths.

SECTION 500 BASES AND SURFACE COURSES (BITUMINOUS)

General

Sub para (i) of Clauses 501.8.8.2 stands deleted and remaining sub paras (ii) to (x) are renumbered as (i) to (ix).

The provision “Clause 501.8.8.2 (i) to (x) to be read as Clause 501.8.8.2 (i) to (ix)” in the Sub-Clauses 506.9 and 513.9”

CLAUSE 501 GENERAL REQUIREMENTS FOR BITUMINOUS PAVEMENT LAYERS

Sub Clause 501.2 Materials

Sub Clause 501.2.1 Binder

Replace “Tables 500-5 and 500-6” **with** “Tables 500-1” in the last paragraph of **Sub-Clause 501.2.1**

Sub-Clause 501.2.2 Coarse Aggregates

Delete “, crushed gravel or other hard material” from 1st Line of Para 1.”

Para 2 is deleted.

Sub Clause 501.6 Compaction

Replace the sentence “The intermediate rolling 0.56 MPa.” **with** “The intermediate rolling shall be done with a smooth wheeled tandem vibratory roller of 8-10 tonne weight followed by a pneumatic tyre roller of 12-15 tonnes weight having nine wheels, with a tyre pressure of at least 0.56 MPa.” **in 2nd paragraph.**

CLAUSE 502 PRIME COAT OVER GRANULAR BASE

Sub-Clause 502.2 Materials

Sub-Clause 502.2.1 This Clause shall be read as under:

"502.2.1 The primer shall be cationic bitumen emulsion SS1 grade conforming to IS: 8887 and shall be refinery produced.”

Sub Clause 502.8 Rate

This Clause shall be read as under:

“502.8. Rate

The contract unit rate for prime coat shall be payment in full for carrying out the required operations including full compensation for all components listed in Clause 401.7 and as applicable to the work specified in these Specifications.”

CLAUSE 503 TACK COAT

Sub-Clause 503.2 Materials

This Clause shall be read as under:

"503.2 Materials

The binder used for tack coat shall be cationic bitumen emulsion (RS 1) complying with IS: 8887 and shall be refinery produced.”

Sub Clause 503.8 Rate

This Clause shall be read as under:

“503.8. Rate

The contract unit rate for tack coat shall be payment in full for carrying out the required operations including full compensation for all components listed in Clause 401.7 and as applicable to the work specified in these Specifications.”

CLAUSE 504 BITUMINOUS MACADAM

Sub-Clause 504.2.1 Bitumen

This Clause shall be read as under:

“The bitumen shall be paving bitumen of viscosity grade VG-30 complying with Indian Standard Specifications for “Paving Bitumen”, IS: 73.”

Sub-Clause 504.2.2 Coarse Aggregates

Delete the words “, crushed gravel or other hard material’ from the first sentence of Clause 504.2.2.

Delete 4th sentence of Clause 504.2.2.

Sub-Clause 504.2.4 Aggregate Grading and Binder Content

Replace the word “The type and quantity” with “The quantity” in the last sentence of Clause 504.2.4.

Sub-Clause 504.8 Rate

After the words “required operations” in second line of this Clause, add the words “except the items of tack coat and prime coat (if any).”

CLAUSE 505 DENSE BITUMINOUS MACADAM

Sub-Clause 505.2.1 Bitumen

This Clause shall be read as under:

“The bitumen shall be paving bitumen of viscosity grade VG-30 complying with Indian Standard Specifications for “Paving Bitumen”, IS: 73.”

Sub-Clause 505.2.2 Coarse Aggregates

Delete the words, ‘crushed gravel or other hard material’ from the first sentence of Clause 505.2.2.

Delete 2nd paragraph of Clause 505.2.2.

Sub-Clause 505.2.3 Fine Aggregates

Replace the words “or natural occurring mineral material, or a combination of the two” with “material” in the 1st sentence of the Clause 505.2.3.

Delete the 4th sentence of the Clause 505.2.3.

Sub Clause 505.2.4 Filler

“The first sentence of this clause shall read as “Filler shall consist of finely divided hydrated lime or cement as approved by the Engineer”

Sub Clause 505.2.5 aggregate Grading and Binder Content

Add the following at the bottom of **Table 500-10**:

The grading of the aggregate mix as used in work shall be a smooth curve within and approximately parallel to the envelope in Table 500-10.

Sub-Clause 505.9 Rate

Add the words “except for item of prime coat and tack coat” after the words “required operations” in 2nd line.

CLAUSE 507 BITUMINOUS CONCRETE

Sub-Clause 507.2.1 Bitumen

This Clause shall be read as under:

“

“The bitumen shall be paving bitumen of viscosity grade VG-30 complying with Indian Standard Specifications for “Paving Bitumen”, IS: 73.”

”

Sub-Clause 507.2.2 Coarse Aggregates

Delete the words “and where crushed gravel is proposed two fractured faces” from the first sentence of Clause 507.2.2.

Sub Clause 507.2.5 aggregate Grading and Binder Content

Add the following at the bottom of **Table 500-17**:

The grading of the aggregate mix as used in work shall be a smooth curve within and approximately parallel to the envelope in Table 500-17”.

Sub-Clause 507.9 Rate

Replace “504.9” with “505.9” in the Clause 507.9.

CLAUSE 508 CLOSE GRADED PREMIX SURFACING/MIXED SEAL SURFACING

Sub Clause 508.1 Scope

Sub Clause 508.1.2

This Clause shall read as under

508.1.2 Close graded Premix surfacing shall be “Type B”

Sub Clause 508.2 Materials

Sub-Clause 508.2.1 Binder

This Clause shall be read as under:

“The binder shall be paving bitumen of viscosity grade VG-30 complying with Indian Standard Specifications for “Paving Bitumen”, IS: 73.”

Sub-Clause 508.2.2 Coarse Aggregates

Replace “511.1.2.2” with “510.1.2.2” in the **Sub-Clause 508.2.2**.

Sub-Clause 508.2.3 Fine Aggregates

Delete the words “, or natural sand or a mixture of both” with “material” in the 1st sentence of the Clause 508.2.3.

Sub-Clause 508.3 Constructions Operations

Replace “510.1.3.1 through Clause 510.1.3.5” **with** “510.1.3.1 to Clause 510.1.3.5” in the **Sub-Clause 508.3**.

Sub Clause 508.8 Rate

Add the words “except for item of prime coat and tack coat” after the words “required operations” in 2nd line.

CLAUSE 510 OPEN GRADED PREMIX SURFACING

Sub Clause 510.1 Open-Graded Premix Surfacing using Viscosity Grade Paving Bitumen

Sub Clause 510.1.2 Materials

Sub Clause 510.1.2.1 Binder

This Clause shall read as under

“The binder shall be paving bitumen of viscosity grade VG-30 complying with Indian Standard Specifications for “Paving Bitumen”, IS: 73.”

Sub-Clause 510.1.3 Constructions Operations

Sub-Clause 510.1.3.5 Spreading and Rolling

Replace “to Clause 501” with “as per Clause 501” in the 1st line of 1st paragraph of **Sub-Clause 510.1.3.5**.

Sub Clause 510.1.8 Rate

Add the words “except for item of prime coat and tack coat” after the words “required operations” in 2nd line.

CLAUSE 516 MASTIC ASPHALT

Sub-Clause 516.2 Materials

Sub-Clause 516.2.2 Coarse Aggregates

Delete the words “, crushed gravel/shingle or other stones” from the first sentence of Clause 516.2.2.

Fine Aggregates

Delete the words “, natural sand or a mixture of both” in the 1st sentence of the Clause 516.2.2.

Sub-Clause 516.4.5 Spreading

Replace “Table 500-6” with “500-5” in sub-paragraph 2) of 4th paragraph of Sub-Clause 516.4.5.

Sub-Clause 516.4.7 Surface Finish

Replace “retained on the 6.7 mm sieve” **with** “retained on the 9.5 mm sieve” in 4th line of Sub-Clause 516.4.7.

SECTION 800 TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES

Clause 801 Traffic Signs

Sub-Clause 801.2.6 This clause shall read as under:

“The signs shall be 2mm thick with Aluminium sheet.”

Sub-clause 801.4 Installation

Sub-clause 801.4.1 The 1st sentence of Clause shall read as follows:

Traffic Signs shall be mounted on support posts, which shall be of MS pipe 80mm dia. (NB-MW) or as shown in the drawing.

Sub-clause 801.4.2 Add following at the end of this clause:

“The sign back shall be painted with two coats of grey colour epoxy paint. The sign post shall be painted in black & white alternate bands with two coats of epoxy paint.”

Sub-clause 801.5 Measurement for Payment

This clause shall read as under:

“The measurement of cautionary, mandatory, information, route marker, chevron and direction & place identification sign shall be in numbers.”

Clause 802 OVERHEAD SIGNS

Sub-Clause 802.4.2 Replace the words “they shall IS Specifications.” **with** “they shall be thoroughly descaled, cleaned, primed along with all other components of signs, except reflective portion. They shall be painted with two coats of epoxy paint. The sign back side shall be painted with grey colour and post shall be painted in black & white alternate bands. The post below ground shall be painted with three coats of red lead paint.

Sub-Clause 802.4.3 The last sentence of this Clause shall read as under:

“The thickness of aluminium sheet shall be 2 mm.”

CLAUSE 803 ROAD MARKINGS

Sub Clause 803.2 Materials

This clause shall read as under:

“Road markings shall be of hot applied thermoplastic compound and the materials shall meet the requirements as specified in Clause 803.4.

Sub Clause 803.8.11 Measurement for Payment

The 1st sentence of this Clause shall read as under:

“The Audible and Vibratory pavement markings shall be measured in square metre of area including the gaps.”

CLAUSE 805 DISTANCE INDICATOR POST

Sub Clause 805.3 The first sentence of this Clause shall read as under:

“The hectometre/kilometre/5th kilometre distance indicator posts shall be made of concrete of grade as shown in the drawing.”

Sub Clause 805.5 Rate

This Clause shall read as under:

“The Contract unit rate for hectometre/kilometre/5th kilometre distance indicator posts shall be payment in full compensation for furnishing all labour, materials, tools, equipment including cost of excavation, foundation in M15 grade concrete, formwork, backfilling, etc and making the posts, painting and lettering and fixing at site and all other incidental costs necessary to complete the work to these Specifications.”

CLAUSE 807 BOUNDARY STONES

Sub Clause 807.1 Scope

Add at the end of Paragraph 1, “The boundary stones shall be of concrete as shown in drawing.” The words ‘SH-63’ should be engraved on each stone appropriately.

CLAUSE 809 TUBULAR STEEL RAILING

Sub Clause 809.3 Add the following to the end of this Sub-Clause:

“The railing shall be embedded in the concrete foundation of size and the grade of concrete along with the depth of the embedment of post as indicated in the drawing.”

Sub Clause 809.5 Rate

After the words “test and final erection at site” in 3rd line of this Clause, add the words “including cost of excavation, concrete foundation etc.”

CLAUSE 811 CRASH BARRIER

Sub Clause 811.2 Concrete Crash Barrier

Sub Clause 811.2.1 Materials

Sub Clause 811.2.1.2 This Clause shall read as under:

“The grade of concrete shall be M-40.”

Sub Clause 811.2.2 Construction Operations

Sub Clause 811.2.2.2 Replace “Clause 810.2.2.3” **with** “Clause 811.2.2.3” in the 4th line of 1st paragraph of Clause 811.2.2.2.

CLAUSE 811.3 Metal Beam Crash Barrier

Sub Clause 811.3.1.2 Replace 1st paragraph of Sub-Clause 811.3.1.2 **with** the following:

Metal beam is a “W” profiled corrugated beam as specified in drawings made from cold rolled steel strip of 3.0 mm thick using high strength steel of IS:5986 Fe 510 grade and have properties as under:

Ultimate Tensile Strength (Min.): 483 Mpa.

Yield stress (Min.): 345 Mpa.

Elongation (Min.) in 50mm: 12%

The beam after forming shall have formed width of 312 mm and depth of 83 mm and shall have punched holes for fixing as specified in drawings.

The steel post and the blocking out spacer shall both be channel section of 75 mm x 150 mm & size 5 mm thick conforming to IS: 5986 grade Fe.360 as specified in drawings. The rail shall be 71 cm above the ground level and posts shall be spaced 2.0 m centre-to centre. Double “W” beam barrier shall be as indicated in the drawing.

The Guardrail reflector shall be made of material and placed in position as shown in drawings. It shall be hot dip galvanized 0.55 kg per square meter.

Test specimens for mechanical properties and coating shall be prepared and tested as specified in relevant IS codes.

Sub Clause 811.3.1.3 This Clause shall read as under:

“Concrete for bedding and anchor assembly shall conform to Section 1700 of these Specifications. The size of the concrete foundation block for embedding the posts and grade of concrete shall be as shown in the drawing.”

Sub-Clause 811.3.3 Installation of Posts

The sub-clause 811.3.3.1, 811.3.3.2, 811.3.3.3 and 811.3.3.4 are replaced as below:

“The steel posts shall be embedded in the concrete foundation of size and the grade of concrete along with the depth of the embedment of post as indicated in the drawing.”

Sub Clause 811.3.3.5 This Clause shall read as under:

“Posts and end section for metal beam guardrails on bridges shall be bolted to the structure as detailed in the drawings. The anchor bolts shall be set to proper location and elevation with templates and carefully checked.”

Clause 811.3.4.3 Add at the end of this Clause:

“The guard rail reflector shall be bolted replacing splice washer at every 10th posts interval.”

Sub-Clause 811.3.7 Measurements for Payment

Sub-Clause 811.3.7.1 The 2nd sentence "Terminals/anchors of various types shall be paid by numbers" is **deleted**.

Sub-Clause 811.3.7.2 This Clause shall read us under:

“No separate measurement for payment shall be made for Terminals/anchors of various types required for the work. The cost of these elements shall be deemed to be included in the rate quoted by the Contractor. Furnishing and placing anchor bolts and/or devices for guard rail posts on bridges shall be considered incidental to the construction and the costs thereof shall be included in the price for other items of construction.”

Sub-Clause 811.3.7.3 The words “or backfilling” shall be **substituted** as “and concreting”.

Sub Clause 811.3.8 Rate

Add the words “**and drawings**” at the end of the last sentence in Sub-Clause **811.3.8**.

Clause 813 TRAFFIC CONTROL AND SAFETYDEVICES IN CONSTRUCTION ZONE

Sub Clause 813.11: Measurement

This Clause shall read as under:

The Provisions made in Bill of Quantities shall be the ceiling for the Contract during the Contract Period. The Additional claims due to damage and theft of the same shall be deemed incidental to works. No extra payment shall be made towards additional quantities for these bill items.

Sub Clause 813.12: Rate

This Clause shall read as under:

All arrangements for traffic control and safety device in construction zone during construction including their maintenance, dismantling and clearing debris, where

necessary, shall be considered as incidental to the works and shall be the Contractor's responsibility, **unless provided as a separate payable item in the BOQ.**”

SECTION 1000 MATERIALS FOR STRUCTURES.

CLAUSE 1002 SOURCES OF MATERIALS

Add the words “at his own expense” at the end of 3rd paragraph of Clause 1002.

CLAUSE 1006 CEMENT

The 1st paragraph of this Clause shall read as follows:

“Cement to be used in bridge structures shall conform to the following standard:

IS:12269 – Specification for 53 Grade Ordinary Portland cement.

For other works Ordinary Portland cement 43 grade, conforming to IS 8112 shall be used with the prior approval of the Engineer.”

CLAUSE 1007 COARSE AGGREGATES

Delete the following from 3rd and 4th lines of 1st paragraph “Crushed gravel inert material”

CLAUSE 1008 SAND/FINE AGGREGATES

Delete from the 1st line the word “or crushed gravel sand” and from the 2nd line “or gravel” in Paragraph 2.

CLAUSE 1014 STORAGE OF MATERIALS

Sub Clause 1014.3: Add the following to the Sub-clause 1014.3:

“Aggregates shall be stored or stockpiled in their respective size in such a manner that the various sizes will not become intermixed before proportioning. They shall be stored, stockpiled and handled in such a manner that will prevent contamination by foreign materials.”

SECTION 1500 FORMWORK

CLAUSE 1501 DESCRIPTION

Add the following paragraphs at the end of this Clause:

“The Contractor shall prepare a formwork mobilization and utilization plan and submit the plan for Engineer’s approval at least **21 (twenty one)** days before the commencement of construction of structures. The requirement of formwork shall be worked out considering the overall construction program of all the structures to be cast in one or more stages, as specified in the drawings. The plan shall take into account the time required for erection of formwork, retention in position, stripping, and removal and subsequent use in the next and subsequent structures.

Notwithstanding Engineer’s approval of mobilisation plan, if due to any reason, Contractor has to arrange additional formwork, to meet the requirements of the construction program, it shall be done by the Contractor without any extra cost to the Employer.”

CLAUSE 1502 MATERIALS

Delete **the last sentence in 1st paragraph.**

Delete **the word “or timber” in 1st line of 2nd paragraph.**

CLAUSE 1506 PRECAUTIONS

“Add the following as items (vii) and (viii) to this Clause:

- vii) Adequate support against sideways and lateral loads due to construction operations and wind shall be provided.
- viii) In case cantilevers are supported directly from the ground, the supports for cantilevers shall be removed simultaneously with main supports only after approval for the same from the Engineer.”

Clause 1513 Rate

Add the following at the end of the first paragraph:

“The unit rate shall also include all costs for preparation of erection scheme, designs of false work and formwork.”

SECTION 1600 STEEL REINFORCEMENT

CLAUSE 1602 GENERAL

Paragraph 2 of Clause 1602 shall read as follows:

“Reinforcements shall be High Strength Deformed Steel Bars (HSD) of grade Fe 500 conforming to IS: 1786. Only uncoated steel shall be used as reinforcement unless specified.”

CLAUSE 1603 PROTECTION OF REINFORCEMENT

Replace “1010.3.2” **with** “1009.3.2” in 2nd line of 3rd paragraph of Clause 1603.

CLAUSE 1605 PLACING OF REINFORCEMENT

Add the following as sub Para (f) to this Clause:

Tolerances:

1. Tolerance of cover: Deviation shall not exceed + 10 mm No negative tolerance is allowed.
2. Tolerance in position: Tolerance for deviation from the positions shown in the drawings shall not exceed the following:

Structural depth d (mm)	Tolerance (mm)
d < 1000	<10
1000 < d < 2000	< 0.01d
2000 < d	< 20

SECTION 1700 STRUCTURAL CONCRETE

CLAUSE 1705 ADMIXTURES

Sub Clause 1705.1: Chemical Admixtures

Replace “Clause 1007” with “Clause 1012” in the 3rd paragraph of Sub-Clause 1705.1.

CLAUSE 1706 SIZE OF COURSE AGGREGATE

Table 1700-7 shall be modified as given below:

Components	Maximum nominal size of Coarse aggregate (mm)

a. RCC Well Curb.	20
b. RCC / PCC well steining, PCC below foundations and approach slab, annular filling around foundations.	40
c. Well cap or pile cap; solid wall type abutments, piers, median walls, splayed wing walls and their foundations.	40
d. RCC works in T-beam and slab / solid slab / voided slab and box girder superstructure, wearing coat, kerb, crash barrier, approach slab, dirt walls, coping on masonry wing walls, hollow abutments and piers, pier / abutment caps, pedestals, dirt walls, piles, all components of counter fort type abutments, columns, cantilever return walls etc.	20
e. All PSC works	20
f. Any other item	As specified by the Engineer

Clause 1707 EQUIPMENT

“The Para “a (i) & (ii)” shall be replaced with the following:

For production of concrete, batching and mixing of the concrete shall be done in a concrete batching and mixing plant fully automatic of a minimum capacity of 15 cum/hour. The plant shall be approved by the Engineer.”

The third para of para “(a)” shall be replaced with the following:

“The accuracy of measuring devices shall fall within the following limits:

Measurement of Cement $\pm 1\%$ of the quantity of cement in each batch.

Measurement of Water + 1% of the quantity of water in each batch.

Measurement of Aggregate +2% of the quantity of Aggregate in each batch.

Measurement of Admixture $\pm 1\%$ of the quantity of Admixture in each batch.

CLAUSE 1715 HIGH PERFORMANCE CONCRETE

Sub Clause 1715.9: Additional Tests for Concrete

Replace “Clause 1714.3” **with** 1714.4 in 2nd line of Sub-Clause 1715.9.

CLAUSE 1800 PRESTRESSING

CLAUSE 1803 MATERIALS

Sub Clause 1803.2.2

Replace “1804.6” **with** “1805.6” in 3rd line of 3rd paragraph of Clause 1803.2.2.

SECTION 2000 BEARINGS

CLAUSE 2005 ELASTOMERIC BEARINGS

Sub Clause 2005.4: Acceptance Specifications

In Paragraph 5, substitute the words "Engineer or his authorised representative" for the word "Inspector".

Sub-Clause 2005.4.5 Inspection Certificate

Substitute the words "Engineer or his authorised representative" for the word "Inspector".

Sub-Clause 2005.4.6 Quality Control Certificate

Delete the words “/Inspector” in sub-paragraph b) of 1st paragraph.

CLAUSE 2009 MEASUREMENTS FOR PAYMENT

Add the following after Paragraph 2:

"Tar Paper bearings shall be measured in square meters."

CLAUSE 2011 TAR PAPER BEARING

Add the new Clause 2011 at the end of the Section 2000.

“2011 TAR PAPER BEARING

Tar Paper bearing shall be reinforced bitumen laminated Kraft paper conforming to the requirements of IS- 1398.”

CLAUSE 2100 OPEN FOUNDATIONS

CLAUSE 2104 WORKMANSHIP

Sub Clause 2104.1 Preparation of Foundations

Replace “M10” with “M15” in 5th line of 1st paragraph of Clause 2104.1.

Sub Clause 2104.3 Construction

Replace “M10” with “M15” in 1st & 7th line of sub-paragraph ii) of Clause 2104.3.

SECTION 2200 SUB-STRUCTURE

CLAUSE 2204 PIERS AND ABUTMENTS

Add the following paragraph at the end of Clause 2204

“Wherever necessary, suitable cofferdams or other means shall be provided to exclude water from the construction area. The Contractor shall provide necessary pumping equipment for dewatering in working areas.”

CLAUSE 2210 RATE

This Clause shall read as under:

“The contract rate for masonry, concrete reinforcement and weep hole in substructure shall include all works as given in respective sections of these Specifications and cover the cost of all incidental items like providing cofferdams, dewatering, providing special formwork, where necessary, and all other items for furnishing and providing substructure as mentioned in this Specifications and shown on the drawings.

The necessary material (asphaltic/bituminous board or equivalent material) and labour, tools etc. required for maintaining 20 / 40 mm gap between faces of various structures (old / new) wherever required / as shown in drawing shall be incidental to work and shall not be measured / paid separately.”

SECTION 2500 RIVER TRAINING AND PROTECTION WORK

CLAUSE 2504 PITCHING/REVETMENT ON SLOPES

Sub Clause 2504.3 Construction Operations

Replace “Clause 1405.3” **with** “Clause 1405.1.3” in 3rd line of 3rd paragraph of Clause 2504.3.

CLAUSE 2507 CURTAIN WALL AND FLEXIBLE APRON

Sub Clause 2507.1 Curtain Wall

The last sentence of this Clause shall read as:

“The curtain wall shall be in cement concrete grade as shown in the drawing.”

SECTION 2700 WEARING COAT AND APPURTENANCES

Add the following additional clauses:

Sub-Clause 2703.5 Concrete crash barrier for bridges

Sub-Clause 2703.5.1 General

This work shall consist of construction, provision and installation of concrete crash barrier on the bridge deck / approach slab / approaches at locations and of dimensions as shown on the drawings or as directed by the Engineer.

Sub-Clause 2703.5.2 Materials

All materials shall conform to Section 1000-Materials for Structures as applicable, and relevant Clauses in Section 1600 shall govern the steel reinforcement. The concrete barriers shall be constructed either by the “cast-in-place with fixed forms” method or the “extrusion or slip form” method or a combination thereof at the Contractor’s option with the approval of the Engineer. Where “extrusion or slip form” method is adopted, full details of the method and literature shall be furnished.

Grade of concrete for Crash barriers on deck slab, approach slab etc. shall be M40.

An expansion joint with Polysulphide Joint sealants and bituminous fiberboard shall be provided in the crash barriers at the location of expansion joints/ gaps on the bridge, approaches etc.

Sub-Clause 2703.5.3 Construction Operations

The location of crash barrier shall be strictly adhered to as shown on the drawing and as directed by the Engineer. Concrete crash barriers shall present a smooth, uniform appearance in their final position, conforming to the horizontal and vertical lines shown on the plans or as ordered by the Engineer and shall be free of lumps, sags or other irregularities. The top and exposed faces of the barriers shall conform to the specified tolerances, as defined in Clause 2703.5.4, when tested with 3 m straight edge, laid on the surface.

The concrete crash barrier or precast shall be given two coats of cement paint or aqua based paint as directed by the Engineer of approved brand and shade.

Sub-Clause 2703.5.4 Tolerance

The overall horizontal alignment of crash barrier and rails shall not depart from the road alignment by more than + 30 mm, nor deviate in any two successive lengths from straight by more than 6 mm and the faces shall not vary more than 12 mm from the edge of a 3 m straight edge. Barriers shall be at the specified height as shown in the plans above the edge of the nearest adjacent carriageway or shoulder, within a tolerance of + 30 mm.

Sub-Clause 2703.5.5 Measurements for Payment

All barriers will be measured in linear metres of concrete in place, including approach and departure ends. The steel rails on the top of crash barrier shall be measured and paid separately. The sealing of opening in crash barrier at expansion joints with polysulphide rubber joint sealant and bituminous fibre board as per sub-clause 2703.6 shall be incidental to work. The painting shall be measured in square meter.

Sub-Clause 2703.5.6 Rate

The Contract unit rate shall include full compensation for furnishing all labour, materials including steel reinforcement as per drawings, tools, equipment and incidental costs necessary for doing all the work involved in constructing the concrete barrier complete in place in all respects as per these Specifications.

Sub-Clause 2703.6 POLYSULPHIDE RUBBER JOINT SEALANT

Polysulphide Joint sealants with bituminous fiberboard shall be provided in the Expansion Joints/ gaps in Crash Barriers.

Before application it shall be ensured that the top of the bituminous fiberboard and the concrete faces are dry, sound, and free from dirt, grease

and other loose foreign matter. A thin coat of primer shall be applied on concrete faces with a brush to air dry before applying sealant. The components of the sealant i.e. base and hardener shall be mixed in a slow speed mixed sealant till uniform colour is obtained. Placement of the mechanical mixer shall be done with either cartridge or fully enclosed gun barrels within 30 minute of mixing. Manufacturer's recommendation shall be followed.

The sealing compound shall be two packs, low modulus of elasticity Polysulphide elastomer having bituminous ingredients such as Cico T-680 or equivalent with following properties of the cured compound.

Tensile strength	-	0.4 MPa $\pm$ 10%
Modulus of elasticity	-	At 100% elongation: 0.15 MPa
Elongation	-	Elongation at break 550%
Hardness	-	Shore 'A' hardness 22 $\pm$ 3 @ 25°C
Operating temperature	-	-20°C to + 80°C
Shrinkage	-	Less than 1%
Permanent dynamic	-	$\pm$ 25%

Movement capability

Polysulphide material shall be approved by the Engineer prior to procurement.

Measurements for Payments:

Cost for providing Polysulphide Joint sealants and bituminous fiberboard in the Expansion Joints in Crash Barriers shall be deemed to be included in the unit rate of Crash Barrier and shall not be measured separately.

CLAUSE 2706 WEEP HOLES

This Clause shall read as under:

“Weep holes shall be provided in solid plain concrete / reinforced concrete/ brick or stone masonry abutments, wing walls, return walls as shown in the drawing or as directed by the Engineer to drive moisture from the back filling. Weep holes shall be provided with 100mm dia PVC (6 Kg/cm²) pipe

and shall extend through the full width of concrete/masonry with slope of about 1 vertical: 20 horizontal towards the draining face.

The spacing of weep holes shall generally be 1 m in either direction or as shown in the drawing with the lowest at about 150 mm above the low water level or ground level whichever is higher or as directed by the Engineer.”

CLAUSE 2708 MEASUREMENT FOR PAYMENT

Sub-paragraph i) of this Clause shall read under:

“i) Cement wearing coat shall be measured in cubic metres. Bituminous wearing coat be measured in square metres. Steel reinforcements in concrete wearing coat shall be measured in tonnes.”

Sub-paragraph iii) of this Clause shall read under:

“iii) Concrete crash barriers shall be measured in linear metres of concrete in place, including approach and departure ends. The steel rails on the top of crash barrier shall be measured and paid separately. The sealing of opening in crash barrier at expansion joints with polysulphide rubber joint sealant and bituminous fibre board as per sub-clause 2703.6 shall be incidental to work. The painting shall be measured in square meter. .”

SECTION 2900 PIPE CULVERTS

Clause 2906 JOINTING

The first and second sentences of Paragraph 1 shall read as under:

“The pipes shall be jointed by collar. The collars shall be of RCC 150 to 200 mm wide and having the same strength as the pipes to be jointed.”

CLAUSE 2910 MEASUREMENT FOR PAYMENT

This Clause shall read as under:

“RCC pipe culverts including selected granular material and cement concrete for pipe bedding shall be measured along their centre between the inlet and the outlet ends in linear metres.

Ancillary works like headwalls, Aprons etc., shall be measured as provided for under the respective Sections.”

CLAUSE 2911 RATE

This Clause shall read as under:

“The Contract unit rate for the pipes shall include the cost of pipes including loading, unloading, hauling, handling, storing, laying in position, jointing and backfilling complete and all incidental costs to complete the work as per these Specifications. Cost of selected granular material and cement concrete for pipe bedding shall be included in the Contract unit rate for pipes.

Ancillary works such as excavations including, concrete and masonry shall be paid for separately, as provided under the respective Clauses.”

SECTION 3000 MAINTENANCE OF ROAD

CLAUSE 3001: GENERAL

Add the following at the end of Clause 3001:

“The maintenance work carried out during the period from the Commencement Date to the issue of Taking Over Certificate shall be incidental to the works. The same shall not be measured and paid.”

ADDITIONAL TECHNICAL SPECIFICATIONS

CLAUSE A-1 DIVERSION AND FILLING OF EXISTING WATER COURSES ALONG THE ROAD ALIGNMENT

Where watercourses have to be diverted from the sites of embankments, the original channels shall be cleared of all vegetation and soft deposits as directed by the Engineer and carefully filled in with suitable materials and compacted as specified. The new channel/ side drain shall be formed as shown in the drawings or as directed by the Engineer.

1. Measurement for Payment

The work involved in filling existing watercourses shall be measured as follows:

- (i) The work involved in filling existing watercourses shall be measured under clearing and grubbing item on area basis.
- (ii) Excavation and removal of soft deposits shall be measured in cubic metre.
- (iii) Filling with suitable material shall be measured in cubic metre.
- (iv) The works involved in forming the new channel/side drain shall be measured under the relevant items of work.

CLAUSE A-2 CHUTE DRAIN FOR HIGH EMBANKMENT SECTIONS

Clause A-2.1 Scope

This work shall consist of construction of chute drain on the slope of the road embankment including erosion protection works at the locations and to dimensions shown on the Drawings or as directed by Engineer. Schedule of works shall be so arranged that the drains are completed in proper sequence with roadway to ensure that no damage is caused due to lack of drainage.

Clause A-2.2 Materials

The drains shall be rectangular 300mm wide and 200 mm depth in cement concrete M-20 grade with foundation in M-15 grade concrete as shown in the drawings. The RCC work shall conform to the relevant clauses of these specifications.

Energy dissipation structures in M-20 grade shall be provided at the foot of the chute as shown in the drawings.

Dumped riprap for erosion protection at ground level shall be hard, unweathered and durable rubble stone of size 150 to 250mm.

Clause A-2.3 Construction Operations

Excavation for fixing drain sections: At the locations where the chute drains are to be installed, a rectangular cut on the side slope of the embankment along the line of the chute drain shall be made in such a way that the RCC drain sections could be fixed snugly with their edges flush with the adjoining embankment slope. The sloping bed of the drain shall be to a regular line and suitably compacted to provide a firm bed.

Fixing RCC Drains sections: The ends of the RCC drain sections shall be specially shaped to form a self-cantering joint. Fixing of the drain sections shall start from top of toe wall at the lower end and proceed towards the upper. The jointing space shall be filled with cement mortar (1 cement to 2 sand) mixed sufficiently dry to remain in position when fixed with a trowel or wooden rammer. Care shall be taken to fill all voids, and excess mortar shall be removed. All joints shall be made with care with interior surface of RCC sections. After finishing, the joints shall be kept covered and damp for at least 4 days.

Dumped Rip Rap: Dumped rip rap for erosion protection shall be placed above ground level at the lower end of the chute drain in such a way that the rip rap stones are not easily moved by water flowing down the chute drain.

Clause A-2.4 Measurements for Payment

Chute drain shall be measured as length of drain sections placed in position in linear metre. Excavation and preparation of bed for the drain shall not be measured separately

Energy dissipation structures shall be measured in cum. Dumped riprap shall be measured as volume of the material placed in position in cu.m.

Clause A-2.5 Rate

Rate for the different items of work shall be payment in full for completing the respective work including all materials, labour, equipment and incidentals.

CLAUSE A-3 SPECIFICATIONS FOR PAINTING OF STRUCTURES WITH SYNTHETIC ENAMEL PAINT/ WATER PROOFING CEMENT PAINT

Clause A-3.1 Materials

Synthetic enamel paint confirming to IS: 2932 of approved brand and manufacture and of the required colour shall be used for the top coat and an undercoat of ordinary paint of shade to match the top coat as recommended by the same manufacturer as far as top coat shall be used.

Clause A-3.2 Painting on New Surface**Clause A-3.2.1 Preparation of surface**

The surface shall be thoroughly cleaned and dusted off. All dirt, mortar droppings and grease shall be thoroughly removed before painting is started. The prepared surface shall have received the approval of the Engineer after inspection, before painting is commenced.

Clause A-3.2.2 Application

The number of coats including the undercoat shall be as stipulated in the item.

- (a) **Under coat:** One coat of the specified ordinary paint of shade suited to the shade of the top coat shall be applied and allowed to dry overnight. It shall be rubbed next day with the finest grade of wet abrasive paper to ensure a smooth and even surface, free from brush marks and all loose particles dusted off.
- (b) **Top Coat:** Two top coats of synthetic enamel paint of desired shade shall be applied after the undercoat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure properly uniform glossy surface.

Clause A-3.3 Lettering and Numbering on New Surface

The letters and numbers for bridges/culverts span and number shall be as per IRC-71971. The size of area for painting shall be varied depend upon the numbers and letters. The background area and letters/numbers shall be painted with one prime coat (under coat) and two coats (top coat) of synthetic enamel paint.

Clause A-3.4 Measurement for payment

The painting of culverts /Bridges numbering and span arrangement shall be measured in number of each side facing traffic.

The Painting of edge stones, breast walls, parapet walls and road side trees at curves shall be measured in Square metres.

Clause A-3.5 Rate

Rate for the painting of culverts /Bridges numbering and span arrangement shall include the cost of materials, labour and other operation described above to complete set of letters and numbers required in each side facing traffic.

Rate for Painting of edge stones, breast walls, parapet walls and road side trees at curves shall include the cost of materials, labour, including all other incidental costs to complete the work.

CLAUSE A-4 CONTROLLED BLASTING

Clause A-4.1 GENERAL

The specifications for excavation in rock are covered by MoRT&H “Specifications for Road & Bridge Works” (5th revision April, 2013), vide Section 300. The following specifications are additional and supplementary to the same.

Clause A-4.2 CONTROLLED BLASTING

Whenever required by the Engineer, the rock blasting shall be controlled so that vibration generated during the blasting does not cause damage to the building and installation around built up areas. Similarly, the rock pieces should not fly off the pits and thus damage the buildings and installation and life and limb of people around. Apart from the general precautions mentioned in the MoRT&H Specifications, following protective measures and limits for use of explosives are suggested as guidelines.

Clause A-4.3 PROTECTIVE MEASURES

- a) Short delay blasting with light charges shall be used.
- b) The blast hole shall be covered with 0.6 to 1.0 sq.m. Mild steel plate of minimum 6 mm thickness.
- c) Reinforcement rod mesh not less than 20 mm dia. at 150 mm centres in both directions shall be placed over the steel plates.
- d) Steel plate and reinforcements shall be inspected after every blasting operation and all twists shall be removed before reuse to the satisfaction of the Engineer.
- e) The thickness of the covering plate and the kind of dead weight is to be duly approved by the Engineer.

When blasting is necessary adjacent in partially or completely built structures the contractor shall take all precautions necessary to prevent flying rock from causing damage to the structures.

Clause A-4.4 BLASTING WITHIN CERTAIN LIMITS

No blasting shall be allowed for any of the excavation until freshly placed concrete of nearby structures has reached a minimum strength of 7 MPa.

Normally, blasting shall be resorted to only after 7 days of concreting work in case of OPC (10 days in case of PPC) in adjacent structures.

In no case shall blasting be allowed closer than 15m to any structure after concrete placing has started.

When minor blasting is necessary after concrete placing has started in any structure, the maximum size of charge for distance from 100m and above shall be limited to the following:

Distance in m	Safe particle velocity 10 mm/sec. Charge in kgs per delay	Safe particle velocity 3 mm/sec. Charge in kgs per delay.
100	10.7	2.6
150	24.2	5.8
200	43.0	10.3
250	67.3	16.7
300	96.9	23.2
350	131.9	31.6
400	172.3	41.2
450	218.2	52.2
500	269.3	64.5

Any deviation in the above-recommended limits will be adopted only after the specific approval of the Engineer. The contractor shall submit the scheme with charges and delays he proposed to use for blasting, for approval of the Engineer.

It is generally recommended that where the blasting is to be done, within 20 m of the nearest point of permanent building, the area shall be line drilled on periphery before blasting.

The Contractor shall be responsible for all damage caused by blasting whether to permanent or temporary structures and shall replace or repair the structures at his own cost.

Clause A-4.5 PRECAUTIONS AFTER BLASTING

After the blast, the supervisor must carefully inspect the work and satisfy himself that all the charges have exploded. After the blast takes place in

underground works, the workmen shall not be allowed to go to the face till toxic gases have disappeared from the face.

If it is suspected that part of the blast has failed to fire or is delayed, sufficient time shall be allowed to elapse before entering the danger zone. When fuse and blasting caps are used, a safe time should be allowed and then the supervisor alone shall leave the shelter to inspect the blasting zone.

None of the drillers are to work near the misfired hole until one of the two following operations has been carried out by the Supervisor:

Either (i) the Supervisor should very carefully (when the tamping is of damp clay) extract the tamping with a wooden scraper or jet of water or compressed air (using a pipe of soft material) and withdraw the fuse with the primer and a fresh detonator with fuse should be placed in these holes and fired out, or (ii) the hole may be cleared of 30 cm of tamping and its direction then be ascertained by placing a stick in the hole. Another hole may then be drilled at least 60 centimetres away and parallel to it and about 30 cm less in depth, this hole shall then be charged and fired. The balance of the cartridges and detonators found in the muck shall be removed.

Before leaving his work, the Supervisor of the concluding shift shall inform the Supervisor of the relieving shift of any case of misfires and should point out the position with a red cross denoting the same and also stating what action, if any, he has taken in the matter.

The Supervisor should also at once report at the office of the Contractor and the Engineer all cases of misfire, the cause of the same and what steps were taken in connection with these.

The names of the day and night shift Supervisors must be noted daily in the Contractor's office.

If a misfire has been found to be due to a defective detonator of dynamite the whole quantity or box from which the defective article was taken, must be thoroughly inspected by the Contractor.

Drilling in holes not completely exploded by blasting shall not be permitted.

Clause A-4.6 PERSONNEL

Excavation by blasting will be permitted only under the personal supervision of competent and licensed blasters and trained workmen.

All supervisors and workmen in-charge of preparation, handling, storage and blasting work shall be adequately insured by the Contractor.

Storage shall be in charge of a very reliable person approved by the Engineer, who may, if necessary conduct police enquiries as to his reliability, antecedents etc. The contractor shall have to produce a security for the person in-charge of the explosives, if and when required by the Engineer, of the civil authorities of the district.

The Contractor shall make sure that his supervisors and workmen are fully conversant with all the rules to be observed in storing, handling and use of the explosives. It shall be ensured that the supervisors in charge are thoroughly acquainted with the details of the handling of explosives and blasting operations.

CLAUSE A-5 INTER LOCKING CONCRETE BLOCKS

Clause A-5.1 Scope

The scope of work involves laying of Precast M-30 grade interlocking concrete blocks of 75mm thick laid on 25 mm thick prepared sand bed conforming to IRC: SP: 63 and as directed by Engineer. The shape of blocks, the source of supply, the methodology for laying of blocks shall be got approved from Engineer.

Clause A-5.2 Unit of measurement

The unit of measurement shall be the area of the finished item of work of interlocking blocks measured in plan in sq m.

Clause A-5.3 Rate

The unit cost includes full compensation for laying the sand bed and laying the interlocking tiles including the cost of sand and tiles.

CLAUSE A-5A INTER LOCKING CONCRETE BLOCKS FOR RAISED PEDESTRIAN CROSSING

Clause A-5A.1 Scope

The scope of work involves laying of interlocking Paver blocks of 75mm thick conforming to IRC: SP: 63 laid on 50 mm thick prepared sand bed. M-30 grade Precast Concrete blocks of size (400x100X150) mm for lateral support and Bituminous Concrete ramp as per drawing on either side and as directed by the Engineer. The shape of paver blocks, the source of supply, the methodology for laying of blocks shall be got approved from Engineer.

Clause A-5A.2 Unit of measurement

The unit of measurement shall be the area of the finished item of work of interlocking Paver blocks including M-30 grade Precast Concrete blocks and Bituminous Concrete ramp on either side measured in plan in sq m.

Clause A-5A.3 Rate

The unit cost includes full compensation for laying the sand bed, laying the interlocking Paver blocks, M-30 grade Precast Concrete blocks and Bituminous Concrete ramp including the cost of sand, interlocking Paver blocks, M-30 grade Precast Concrete blocks and forming Bituminous Concrete ramp on either side complete.

CLAUSE A-6 UTILITY DUCTS

Clause A-6.1 Scope

The work shall consist of laying and jointing of R.C.C. Utility Ducts in accordance with the requirements of these specifications.

Clause A-6.2 Materials

Reinforced concrete pipes shall be of NP 4 type conforming to IS: 458 as shown in the drawings.

Clause A-6.3 Laying of Pipes

Laying of Pipes shall be carried out in accordance with clause 2905; the Pipes shall be fitted and matched so that when laid in work they shall have a smooth uniform invert.

Clause A-6.4 Jointing

The Pipes shall be jointed either by collar joint or flush joint. Caulking shall be carried out as directed by the Engineer. The provisions of clause 2906 of the specifications shall be followed to the extent applicable. The Engineer's decision shall be final and binding.

Clause A-6.5 Back Filling

Where directed by the Engineer shall be carried out in accordance with clause 2907 of the specifications.

Clause A-6.6 Closing of Ends

The ends of Pipes shall be closed with plastic covers to prevent ingress of foreign materials

Clause A-6.7 Measurement of Payments

The utility ducts shall be measured from end to end in linear meter.

Clause A-6.8 Rate

The contract rate for ducts shall include the cost of pipes including collars and covers, handling and storing of Pipes, laying in positions and jointing, construction of head wall and inspection chamber, complete and all incidental works necessary for completion. Excavation including back filling where necessary shall not be measured and paid separately and the same shall be included in the rate for Utility Ducts.

CLAUSE A-8 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The Contractor has to implement the EMP given separately as a part of the bidding document.

ENVIRONMENT MANAGEMENT PLAN

7.1 Introduction

Environmental Management Plan is the key to ensure that the environmental quality of the zone under impact does not deteriorate beyond the expected level due to the construction and operation of the project. The EMP comprises a set of measures to be taken in different stages like the design, construction and operation to eliminate, offset or reduce adverse environmental impacts to acceptable levels. Elimination/prevention is possible only by reducing the impacts. This can also be achieved by reducing the scale of action. Remediation is repairing or restoration of particular features of the environment adversely affected by the activity.

The Environmental Management Plan (EMP) needs to be implemented right from the conception and should continue till the end. The plan can be divided into three phases: (i) design phase (ii) construction phase and (iii) Operational phases.

7.2 Component of Environment Management Plan

7.2.1 Design Phase

Design phase considerations relate to both environmental and social parameters. Environmental parameters include water resources, vegetation, drainage, soil erosion, air/noise quality whereas social parameters relate to human displacement and land acquisition. Various impacts during designing phase and their mitigation for same are provided in **Table 71**.

Table 1: Design Phase Measures General

Impacts	Mitigation Measures
land has to be acquired for bypasses, Realignment and widening	Proposed RoW has been kept minimum as 30 m along the existing road.
Removal of trees	Alignment design consideration reducing 781 number of trees to be impacted through adoption of appropriate widening options.
Impact on cultural sites	Widening along the existing alignment has been finalized considering minimum damage to religious structures of different communities
Borrow pits	Locations selected considering minimum loss of productive land and feasibility of restoration to productive

Impacts	Mitigation Measures
	use.
Air and noise quality	Sensitive receptors will be provided with noise barriers in the form of green belt or walls
Drainage	4 minor bridges and 136 nos culverts are proposed to prevent water logging and flooding.

7.2.2 Construction Phase

A. land Environment

The impact of road construction starts with land environment. General mitigation measures are suggested below in **Table 72**.

Table 2: Mitigation measures for land Environment

Impacts	Mitigation Measures
Soil erosion	Proper planning for slop stabilization (along bridges and high embankment), topsoil storage, plantation and turfing on slopes.
Loss of productive soil	Arable lands will be avoided for earth borrowing. If needed, topsoil will be separated and stockpiled after excavation for reuse in restoration of borrows pits.
Borrowing of fill materials	Soil and aggregates will be excavated from government approved quarries and borrow areas. After excavation, the borrow pits will be dressed to match with surround. In specific cases borrow pits can be excavated in construction with local people to use those pits as water harvesting points or surface storage as pond.
Disposal of construction waste	Controlled and organized dumping of construction waste. Only pre-selected locations conforming to local environmental regulation will be used.
Disposal of human waste by construction workers	Specific landfill sites will be identified to manage solid waste generated from habitation of construction workers

A. Air and Noise Environment

Construction activities at different phases can generate significant air quality and noise problems. So air quality and noise will be one of the major environmental issues. Mitigation measures would be taken to reduce the impact as presented below in **Table 73**.

Table 3: **General measures for air & noise pollution control**

Impacts	Measures
Generation of dust	Water will be sprayed during construction phase, in earth handling sites, asphalt mixing sites and other excavation areas for suppression of dust. Dust emission from piles of excavated material should also be controlled by spraying water on the piles. Dust emission is a high-risk problem in the stone crushing activities. Workers are exposed to high level of dust pollution. It will be responsibility of the project proponent to ensure air pollution control and safety of workers.
Gaseous pollution	Vehicles and machineries will be regularly maintained to confirm to the emission standards stipulated under Environment (Protection), Rules 1986. Asphalt mixing sites should be located at least 500 m away from residential areas.
Noise	Noise levels of machineries used shall confirm to relevant standards prescribed in Environment (Protection) Rules, 1986. Workers shall not be exposed to noise level more than permitted for industrial premises, i.e. 90 dB (A) for 8-hours. Noise attenuation measures e.g. planting of trees, noise attenuation structures to be erected as required.

A. Water Environment

During the construction surface water bodies likes Luni River and check dams may be impacted from material storage and construction work. Mitigation measures will be taken to reduce the impact as presented below in **Table 74**.

Table 4: **General measures of protection of water resources**

Impacts	Mitigation Measures
Siltation into water bodies during construction phase.	• Steep and erodible slopes will be provided with vegetation to prevent erosion that causes Siltation. • Most of Earth work will be taken place in non-monsoon season near surface water bodies. • No solid waste will be dumped near the water bodies or rivers.
Flooding due to siltation of drainage channel	Excavated earth and other construction materials should be stored at safe distance to prevent washing out of such materials.
Water use for construction	Approx 7,05,000 KL water will be required during construction phase. Most of the water quantity will be taken from those place which not be affect local ground water supply, after taking permission form ground water dept. and irrigation dept.
Contaminants from wastes	Vehicle maintenance will be carried out in a confined area, away from water sources, and it will be ensured that used oil or lubricants are not disposed to watercourses.
Sanitation and water use in construction camps	Construction camps will be organized in a planned manner. Workers shall be provided proper sanitation facilities including toilets. Camps will have water supply facilities like tube wells or from other sources so that local water sources are not affected.

A. Biological Environment

Flora

Nearly 781 numbers of trees will be affected due to widening. The tree species comprises of *Dendrocalamus calostachyus* (Bamboos), *Terminalia belarica* (Behara), *Azadirachta indica* (Neem), *Acacianilotica* (Babul), *Prosopis cineraria*, (Khejri), *Cordia dichotoma* (Lehswa), *Capparis deciduas* (Kair), *Ficus rumphii* (Pakori) etc. Most of the trees are immature and thin with lesser girth size. Major mitigation measures to be taken up are given in **Table 75**.

Table 5: **Mitigation measures for tree loss**

Impacts	Mitigation measures
Loss of 781 trees	• Avenue plantation will be taken for compensatory forestation. • Trees will be removed only in phases depending on the requirement of the construction. Compensatory plantation will be carried out as per the State Government Norms. Plantation will be raised in the form of strip and blocks plantations depending on the availability of lands within the project corridor. The compensatory plantation plan shall be drawn up in consultation with the State Forest Department. Species of such plantation will be decided in consultation with the communities.

Fauna

The local terrestrial and aquatic fauna are likely to be impacted due to construction activities. Mitigation measures for birds will be planting of more fruit and flowering trees, which will improve the roadside habitat. The primary productivity may be impacted locally during the construction stage. Such impacts will be short term and reversible. **Table 76** shows the mitigation measures to be adopted during construction.

Table 6: **Mitigation measures for fauna**

Impacts	Mitigation measures
Loss of habitat	Compensatory plantation (approx 2343 new plants) will be taken up. Species will provide for flowering and fruit trees. Sediment flow will be kept at minimum level through a mix of management measures during construction near water bodies or construction of bridges in water environment.

A. Safety

Safety at different stages of construction is an important issue both for local people as well as for the construction workers in presented **Table 77**.

Table 7: **Safety Measures**

Impacts	Mitigation measures
Information to Public	Signs will be posted on road before commencement of construction informing public and travelers about the work program and safety provision.
Restriction to access	Safe and convenient passage for vehicles, pedestrians and livestock to and from the side road and property across the road will be arranged during construction work through a proper traffic management plan for section where work will be in progress.
Occupational safety for construction workers	Contractor will arrange all safety measures for workers as per Factory Legislation Act.
Explosive use, if any	The contractor shall at all times organize dissemination of information in advance and obtain such permission as is required from all Government Authorities, public bodies as necessary under the regulatory framework in force.

B. Worker's Camp

In accordance with Environment (Protection) Act, for any environmental pollution from the workers camp, the responsibility would lie with the project authority and they may be prosecuted against for imposition of penalty. Following mitigation measures are suggested in **Table 78**.

Table 8: Mitigation measures for workers camp

Issues	Measures
Location	Workers' camp will be located away from water bodies, schools, and residential areas
Construction	Camp will be constructed with proper accommodation facilities, should look aesthetically good as this will be roadside features during construction period.
Water	Contractor will arrange portable water supply for the workers so that local water sources are not disturbed.
Sanitation	Workers' camp will be provided with proper sanitation facilities,

Issues	Measures
	toilets with septic tanks and soak pits.

7.2.3 Operation Phase

Environmental issues change during operation phase and its mitigation plan also has to be spread over a longer period of time. Operation phase environmental aspects relate to vehicular emission in particular. The mitigation measures for different environment aspects are mention below in **Table 79**.

Table 9: Operation phase mitigation measures

Impacts	Mitigation measures
Dust	Bad maintenance of road gives rise to dust pollution. Road maintenance standard shall be prescribed try keep dust dislocation and dispersion at acceptable level
Gaseous pollution	All vehicles should be checked for “PUC” certificates and occasional spot testing of emission from vehicle will be carried out with the assistance of the local administration.
Noise	Noise level for different automobiles has been prescribed in Environment (Protection) Rules, 1986. Signs will be posted to restrict blowing of horns in front of sensitive locations. With the establishment of strip plantation along the project corridor the noise level will get attenuated
Surface runoff	Surface runoff from the road will not be disposed directly in the water bodies used by people for bathing etc.
Flora	Tree plantation will be monitored for a period of three years after planting. All casualties in the first year of creation will require to be beaten up during the next year.
Safety	Safety signs should be kept always clean and updated. Safety signposts, edge markers installed will require proper upkeep.

7.3 Environment Management Plan Matrix

The Environment Management Plan is meant for mitigation/management/avoidance of the negative impacts and the enhancement of the various environment

components along the project road. For each mitigation measures to be taken its location, timeframe, implementation and supervising responsibilities are listed in the EMP matrix in **Table 80**.

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
PRE-CONSTRUCTION PHASE			
Land Acquisition, clearing encroachments and R&R.	Loss of buildings	The land acquisition would be in accordance with the RAP and entitlement framework. All R&R activities are to be completed before starting the construction.	PIU, Revenue Dept., NGOs, Collaborating Agencies
Relocation of Utilities and common property resources (CPR).	Damage to utilities, Inconvenience to Public.	All the utilities and common property resources being impacted due to the project will have to be relocated with prior approval of the concerned Departments/ Agencies before construction starts.	Contractor, PIU
Tree Cutting		Tree cutting is to proceed only after all the legal requirements including attaining of in-principle and formal clearances from the Forest Dept./DM offices are obtained by PIU.	
Debris disposal site identification.	Loss of productive lands or natural habitats.	Selection of the disposal sites will be carried out in consultation with the Rajasthan State Pollution Control Board, Revenue Department and Forest Department in order to ensure that no natural drainage, productive lands or natural habitat is adversely impacted due to disposal. Preferably, debris disposal site has to be identified in barren, infertile land.	Contractor, PIU
Establishment of Stone Crushers, Batching Plants, Hot-mix plants.	Air, Water, Noise and Soil pollution.	Specifications of Stone crushers, hot mix plants and batching plants to be established for the project should comply with the requirements of the relevant State/ Central Pollution control Board legislations.	Contractor
Selection of construction vehicles, machinery and	Air, Water, Noise and Soil pollution.	All the vehicles, machinery and equipments to be engaged for the construction work should be attached with the	Contractor, PIU

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
equipment.		latest, advanced pollution control measures available in the country and those should conform to the relevant Indian standards.	
Materials (Sand, earth and aggregates) sourcing.	Loss of productive land, Noise and Air Pollution.	Contractor should procure materials from licensed sources. Every detail (Location, ownership, agreement, redevelopment Plan) of the material sourced should be intimated to CSC for periodic inspections so that appropriate measures are implemented at site towards safe operation and minimizing impacts.	Contractor, PIU
Selection of Borrow areas.	Air, Water and Noise pollution, loss of productive lands	Compliance to all the State norms towards operation and environmental protection of borrow areas is the sole responsibility of the Contractor. CSC will inspect locations intended for operation and mitigation measures will be instructed towards satisfactory redevelopment. Inspection to the borrow areas will be carried out by raising Request for Inspection (RFI) by the Contractor for each of the borrow areas and obtain subsequent approval from CSC.	Contractor, CSC
Selection of Stone Quarries.	Air and Noise pollution, loss of productive lands	Contractor will identify the stone quarries in consultation with the Mining Department. A comprehensive Quarry Management Plan need to be prepared incorporating Environmental and	Contractor

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
		Safety Management Plan with special emphasis to Quarry redevelopment for approval from CSC.	
Haul roads maintenance.	Air and Noise pollution	During the inception of the project, Contractor should identify the network of roads (especially the village roads) to be used for haulage of construction materials. Strategy for the maintenance of identified haul road stretches is to be prepared so that regular maintenance is carried out to those stretches by the Contractor for easy plying of construction vehicles as well as the regular local commuters.	Contractor, CSC, PIU
Labor Requirements	Induced development and potential spread of diseases by outside labors.	The Contractor preferably will use unskilled labor drawn from local areas to provide maximum benefit to the local Community along the corridor.	Contractor
CONSTRUCTION PHASE			
Impact on Soil Quality			
Removal of vegetation, cover, Excavations of borrow pits.	Increased soil erosion, loss of top soil.	Turfing of road embankment slopes, development of compensatory afforestation and Borrow area rehabilitation has to be done as preventive measures for soil erosion. Further Top soil from borrow areas has to be stripped to a specified	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
		depth of 150 mm and stored in stockpiles of height not exceeding 2 meters with proper covering. This shall be restored for rehabilitation of borrow pits. In borrow pits, the depth of the pit should be regulated so that the sides of the excavation will have a slope not steeper than 1 vertical to 4 horizontal from the edge of the final section of bank. The device for checking soil erosion include the formulation of sediment basins, slope drains etc. Such works and maintenance thereof will be deemed as incidental to the earthwork. Cutting of trees will be carried out in phases and compensatory afforestation to start at the earliest with sufficient protection measures.	
Acquiring of RoW for construction of realignments, Use of productive lands for storing, stock yards and workers camp.	Loss of productive topsoil	The topsoil from all areas of cutting and areas of storing and stock yards and workers camp shall be stripped to a specified depth of 150 mm and stored in stockpiles of height not exceeding 2 meters with proper covering. The stored topsoil will be spread back to restore the productivity of the exhausted borrow areas, turfing of embankment slopes, distributed to locals within 1 year of its removal. Also the accumulated soil will be utilized for developing median plantation and	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
		raising turfs in the embankment slopes.	
Movement of Heavy Vehicles	Compaction of productive top soil	Construction vehicles, machinery and equipment shall move, or be stationed in pre-identified designated areas only. If operating from temporarily hired land, it will be ensured that the topsoil for agriculture remains preserved & not get compacted.	Contractor, CSC
Spillage of fuel, lubricants and hazardous chemicals	Contamination of soil and negative impact on the growth of the floral vegetation and faunal distribution.	Vehicles and machinery are maintained and refilled in such a fashion that fuel spillage does not contaminate the soil. Fuel storage and refilling sites should be kept away from cross drainage structures and important water bodies. All spills shall be disposed-off as desired and the site shall be fully cleaned before handing over. Soil quality monitoring should be conducted as per Environmental Monitoring Plan to ascertain level of contamination.	Contractor, CSC
Disposal of construction wastes	Loss of productive lands	The construction wastes should be dumped in selected pits, developed on barren land. All applicable waste disposal norms to be followed. Waste land to be preferred for construction debris disposal.	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
2. Impact on Water Quality			
Surface runoff from the construction site, dumping of construction debris in or nearby water bodies	Increased turbidity of water. Deterioration of Water quality of Community water sources. Adverse impact on aquatic ecosystem.	No labour camps, stone crushers, hot mix plants and other heavy machinery should be located near to water bodies. No discharge from such establishments should follow their path into nearby water bodies. Dumping of debris in or nearby water bodies to be strictly avoided. Waste products must be collected, stored and taken to the approved disposal sites as per prevailing disposal norms. Runoff from the construction site should be passed through silt traps. Pitching, stabilization of soil and slope protection measures should be taken up to reduce erosion of soils. Water quality monitoring should be conducted as per Environmental Monitoring Plan so that appropriate measures are taken up towards abatement of pollution.	Contractor, CSC
Spillage of fuels and lubricants, spillage of hazardous chemicals	Deterioration of water quality of Community water sources. Adverse impact on aquatic ecosystem.	Appropriate drainage arrangements with catch drains and catch pits designed to safely drain out the hazardous chemicals should be provided. To avoid spillage of fuel and lubricants, the vehicles and equipment shall be properly maintained and repaired. Maintenance to be carried out on impervious platforms with spill collection	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
		provisions. Surface run off from vehicle parking, washing and fueling areas and hot mix plant areas has to be passed through oil interception chambers and the oil will be skimmed off manually from the chamber and will be disposed off in approved landfill sites. The Schematic drawing of Oil interception chamber is presented as Annexure. Water quality monitoring should be conducted as per Environmental Monitoring Plan to detect any contamination or spillage.	
Acquisition of water sources like wells, tube-wells & ponds	Loss of drinking water and irrigation water sources.	Any source of water for the community such as ponds, wells, tube-wells etc. lost incidentally shall be replaced immediately.	Contractor, CSC
Construction of bridges across major water bodies	Water shortage in downstream water users.	The construction of bridges across major water bodies has to be done by serving prior notice to the users. Care should be taken to avoid mixing of construction materials with water channel such that it may affect the downstream users or water supply schemes.	Contractor, CSC
Construction of embankments	Blocking of cross drainage and resultant flooding.	Earth, stone or any other construction material should be properly disposed-off so that the flow of water in cross drainage channels is not blocked.	Contractor, CSC
Absence of proper	Contamination of	Construction laborer's camps shall be located away	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
sanitation and waste disposal in construction Camps.	water bodies and spreading of water-borne diseases. Health risk to workers & public.	from the habitation and from major water bodies. Adequate sanitary facilities, drainage, washing and toilet facilities with septic tanks and refuse collection and disposal should be provided to the workers. The provision of water supply and toilet facilities should be made as per the stipulated guidelines in the Indian Labour Act. Water quality monitoring should be conducted as per Environmental Monitoring Plan.	
Use of water for construction from community water sources.	Scarcity of water to the community.	Arrangement for supply and storage of water will be made by the contractor in such a way that the water availability and supply to nearby communities remain unaffected. If a new tube-well is to be bored, proper sanction and approval by Ground Water Department is needed. The wastage of water during the construction should be minimized. In case of tapping water from community sources, consent to be obtained from local Administration for the same.	Contractor, CSC
Construction of impervious bituminous pavement and drains.	Reduction in area for ground water recharge.	Rain water harvesting pits will be constructed at average distance of 500 m. The pits should be atleast 3-5 m above the highest ground water table. The schematic diagram of Rain water harvesting pit is presented as Annexure subsequently.	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
3. Impact on Air Quality			
Gaseous emission from construction vehicles and machinery.	Deterioration of ambient air quality and adverse health impacts.	All vehicles, equipment and machinery used for construction should be fitted with latest air pollution control equipment and should be regularly maintained to ensure that the emission levels are as per norms of PCB. Idling of delivery trucks or other equipment should not be permitted during periods of unloading or when they are not in active use. The human settlements should be at least 500 m down windward direction of Hot (asphalt) mix plant. The construction operations during nights, especially in the winter season should be carried out under restricted conditions. Air quality monitoring should be conducted as per Environmental Monitoring Plan to detect any deterioration in air quality due to the construction activities.	Contractor, CSC
Dust generation due to material handling, operation of crushers and hot mix plants, movement of construction vehicles and construction activities	Dust emissions will have adverse effect on the health of construction workers as well as the local communities. Dust settled on leaves may reduce growth	All precautions to reduce the level of dust emissions from the hot mix plants shall be taken. The hot-mix plants should be sited at least 500 m from the nearest habitation and from major water bodies. They should be fitted with dust extraction units. Water should be sprayed on the earth mixing sites, asphalt mixing site and service roads.	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
	rate of the plants.	During subgrade construction, sprinkling of water should be carried out at least twice a day on a regular basis during the entire construction period especially in the winter and summer seasons. Special attention should be given in the sections where the alignment passes through sensitive areas such as schools, hospitals and urban areas. As soon as construction is over the surplus earth should be utilized to fill up low-lying areas. In no case, loose earth should be allowed to pile up along the alignment. Vehicles delivering material should be covered. Air quality monitoring should be conducted as per Environmental Monitoring Plan.	

4. Impact on Noise Levels

Noise generated from construction vehicles, asphalt plants and Equipments.	Since the noise generating activities are localised and intermittent, no serious impact on human health is anticipated. Residential areas nearby the construction site may experience increase in	Construction contract should clearly specify the use of equipment emitting noise of not greater than 90 dB(A) for the eight hour operation shift. The siting of construction yards should be done leaving at least 100 m distance from any residential areas which will allow noise to attenuate. The main noise producing sources such as the concrete mixers, generators, grader etc. should be provided with noise shields around them. The noise shields can be any physical barriers, which is effective in adequate attenuation of noise levels. A	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
	night time ambient noise levels.	3 m high enclosure made up of brick and mud with internal plastering of a non-reflecting surface will be very effective in this regard. For protection of construction workers, earplugs should be provided to those working very close to the noise generating machinery. At construction sites within 150 m of human settlements, noisy construction should be stopped between 10:00 pm and 8:00 am. Noise level monitoring should be conducted as per Environmental Monitoring Plan.	

5. Impact on Flora and Fauna

Removal of trees for construction realignments.	The impact on biodiversity will be negligible since most of the trees are of common occurrence. Loss of trees will lead to Increase in soil erosion, loss of shade and other benefits of trees, and decline in air quality.	Small trees shall be transplanted wherever possible to minimize the impacts of loss of trees. Trees should be removed in phases. Areas of tree plantation cleared will be replaced according to Compensatory Afforestation Policy under Forest Conservation Act-1980. The compensatory plantation should be carried out in consultation with the State Forest Department. Adequate care of the compensatory plantation should be taken up so as to achieve optimum survival rate. Landscaping should be done with a lag of 3 to 4 months from the start of the work on any section. The section should be deemed to be complete	Contractor, CSC

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility

when the landscaping is over.
Survival rate of plants must be included in the contract specifications so as to ensure that the compensatory plantation achieves the objective of compensating lost trees.
Indigenous and endemic tree species suitable for the area should be planted at the onset of monsoon season. The plants should be provided with adequate protection from animals and proper monitoring should be carried out to ensure their growth.

6. Impact on Health and Safety of Workers

Poor maintenance of machines and vehicles, poor light conditions at the work place, carelessness and poor management of work.	Accident risk to workers from construction activities.	To ensure safe construction environment, lighting devices and safety signal devices shall be installed. Traffic rules and regulations to be strictly followed. Safety of workers undertaking various operations during construction should be ensured by providing them helmets, masks, safety goggles etc. Regular tool talks, mock drills, training programmes to be organized towards educating workers towards adopting safe working methods. The electrical equipment should be checked regularly to avoid risks to workers. At every work place, a readily available first aid unit including an adequate supply of dressing materials, a mode of transport (ambulance), nursing staff	Contractor, Authority Engineer

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
		and an attending doctor to be provided.	
Unhygienic conditions at work place and camp sites, Non-availability of good drinking water.	Health problems to workers	Adequate drainage, sanitation and waste disposal to be provided at workplaces. First Aid facility to be made available at each work locations. Periodical medical checkup facility to be provided to all the workers. At every workplace, good and sufficient water supply shall be maintained to meet the daily chore of the residing population. Measures to be implemented so that waste water is collected in septic tanks/soak pits. No surface stagnation of water shall be allowed to avoid vector outburst.	Contractor, , Authority Engineer
7. Impact on Cultural Properties and Amenities			
Construction at culturally important locations	Damage or loss of cultural properties	All necessary and adequate care should be taken to minimise the impact on cultural properties. If articles such as fabrics, coins, artifacts, structures or other geographically or archaeologically important materials are discovered, the excavation should be stopped and the Archaeological Department should be intimated.	Contractor, , Authority Engineer
Roadside landscaping	Improved aesthetics	Avenue plantation to be carried out with foliage, shady trees mixed with flowering trees & shrubs.	

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
Improvement of roadside amenities	Improved comfort level travelers.	Restoration and improvement of bus shelters to be carried out as per detailed design. Road furniture like footpaths, railings, traffic signs etc. shall be erected as per design.	Contractor, , Authority Engineer
Enhancement of cultural properties	Harmony, goodwill and coherence amongst communities	Enhancement of all cultural properties and access road shall be completed as per the design.	Contractor, , Authority Engineer
OPERATION PHASE			
Bypass to the town, improvement of road geometry and pavement condition.	Less chances of congestion, accidents.	Proper implementation of traffic rules by the traffic Police. Proper maintenance of traffic signs and implementation of accident care facilities along the road by the project implementation agency.	Contractor, PIU and Police
Road surface and its maintenance.	Reduced dust generation from road. Increased vehicular emissions due to increased traffic.	Proper implementation of vehicular emission control rules by the Motor Vehicles Department. Roadside tree plantation to be restored and maintained as per the compensatory plantation plan. Criteria pollutant to be monitored as per Environmental Monitoring Plan.	Contractor, PIU and Motor Vehicles Department

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
Increase in traffic	Increase in the ambient noise levels, especially during night time along the project road.	Development of greenbelt comprising selected species of trees with high canopy along the project road for attenuation of noise. Use of horns should be restricted at sensitive locations like schools and hospitals through the use of appropriate signboards along the road. Use of air horns should be minimized during night. Noise barriers should be provided along the road at sensitive locations such as hospitals, schools, residential areas, courts etc. Noise monitoring should be conducted as per Environmental Monitoring Plan.	Contractor, PIU and Police
Increase in embankment height and improvement of flood water drains.	Water logging during monsoon will not take place.	The cross drainage system and the flood water drains should be periodically cleared.	Contractor and PIU
Construction of Rain water harvesting pits at an average distance of 500m.	Enhanced ground water recharge.	The rain water harvesting pit opening should be periodically cleaned during operation phase such as to ensure enhanced ground water recharge. The schematic diagram of Rain water harvesting pit is presented as Annexure.	Contractor and PIU
Compensatory plantation.	Improved biodiversity and aesthetics.	The re-plantation scheme, containing indigenous and endemic tree species suitable for the area, should be strictly implemented.	Contractor and PIU
Spillage of hazardous chemicals due to accidents.	Soil and water bodies nearby the accident site may get	The rules as defined in Environmental (Protection) Act, 1986 should be complied. For delivery of hazardous substances, three	Motor Vehicles Department, Police

Table 10:EMP Matrix

Activity	Environmental Impact	Mitigation Measures	Responsibility
	contaminated. Safety risk to the public nearby the accident area.	certificates namely permit license, driving license and guarding license issued by Transport Department should be maintained. Vehicles carrying hazardous substances should display mandatory safety signs. In case of spillage, it should be reported to relevant department and their instructions should be followed. Cleaning of the spills at the accidental site should be carried out as per regulations.	
Improved safety measures and improved traffic management.	The chances of accidents would be reduced.	Traffic management plan to be developed, especially in congested locations. Traffic control measures including speed limits to be enforced strictly. RoW should be properly marked and further encroachment of RoW should be strictly prevented. Road side vendors should be restricted to designated areas only.	PIU, Motor Vehicles Department and Police

Environmental Compliance Monitoring Plan

The purpose of the monitoring program is to ensure that the envisaged purpose of the project is achieved and results in desired benefits to the environment and population affected. To ensure the effective implementation of the EMP, it is essential that an effective monitoring program be designed and carried out. The broad objectives are

- To evaluate the performance of mitigation measures proposed in the EMP;
- To evaluate the adequacy of Environmental Impact Assessment;
- To suggest improvements in management plan, if required;
- To enhance environmental quality; and
- To satisfy the legal and community obligations.

Various physical, biological and social components identified as of particular significance in affecting the environment at critical locations in various stages of the project have been suggested as Performance Indicators (PIs) listed below shall especially be additional focus for monitoring.

- Air quality with respect to criteria pollutants;
- Water quality with respect to DO,BOD and Coliform count;
- Noise levels around sensitive locations; and
- Re-plantation success / survival rate.

9.1 Environmental Monitoring Program

For each of the environmental components, the monitoring plan specifies the parameters to be monitored; location of monitoring sites; frequency and duration of monitoring. The monitoring plan also specifies the applicable standards, implementation and supervising responsibilities.

Table 11: Summary of Environmental Monitoring Program

Component	Stage	Frequency of Monitoring	Implementation
Air PM ₁₀ , PM _{2.5} , SO ₂ , NO _x and CO	Construction	3 times a year during construction	Contractor

Component	Stage	Frequency of Monitoring	Implementation
	Operation	3 times a year for every 3 years.	Contractor/ PIU
Air Stack Monitoring of D.G. sets	Construction	4 times a year during construction	Contractor
	Operation	3 times a year for every 3 years.	Contractor/ PIU
Water For IS 10500-2012 Drinking water specifications	Construction	4 times a year during construction period.	Contractor
	Operation	2 times a year for every 3 years.	Contractor/ PIU
Wastewater analysis Batch plant & Hot Mix Plant	Construction	4 times a year during construction	Contractor
Noise MoEF Noise Rules, 2000	Construction	4 times a year during construction period.	Contractor
	Operation	3 times a year for every 3 years.	Contractor/ PIU
Soil Threshold for each contamination stipulated by CPCB	Construction	Twice a year during construction period.	Contractor
	Operation	Once a year for every 3 years.	Contractor/ PIU

9.3 Institutional Arrangements for EMP Implementation

PWD, as the Project Executing Agency, shall be responsible for overall implementation of the project, and shall perform, or cause to be performed, its obligations as set forth herein and the Project Agreement through Government of Rajasthan.

A dedicated safeguard team for implementation of safeguards for all projects under PWD including the current project shall be appointed. The team will be headed by the Addnl Chief Engineer and supported by a Project Director and at the headquarter level and an Engineer from each Project Implementation Unit (PIU) at the field level.

PWD shall establish 1 field Project Implementation Unit (PIUs) for implementing projects which come under the purview of PWD. Of the 1 PIUs, will oversee works for roads under the project.

One of the engineers in PIU will be appointed as the safeguards focal person and be responsible for overseeing implementation of EMP and RAP.

A Construction Supervision Consultant (CSC) firm will be recruited to supervise and administer civil works contracts and to ensure the works are executed in accordance with the drawings, technical specifications and contract conditions including implementation of EMP. The CSC team will include one Environmental specialist.

Roles and responsibilities of all four groups involved in implementation of EMP have been outlined in Table 84.

Table 12: Responsibilities for Environmental Safeguards Implementation

Sr. No	Agency	Responsibility
1	PWD (PPP) - HQ Level, Addnl Chief Engineer, Project Director	• Ensure that project complies with Bank's and GOI laws and regulations • Ensure that contract documents include all relevant parts of the Environmental assessment and Project agreements. • Ensure that sufficient funds are available to properly implement all agreed Environmental safeguards measures. • Obtain all statutory clearances and permissions. • Review and approve the Contractor's Implementation Plan with Supervision Consultant for the environmental measures as per the EMP. • Review the environmental performance of the project through an assessment of the periodic Environmental monitoring reports submitted by the Supervision Consultants. • Overall project coordination and management through PIU supported by PMC and CSC. • Formation of Grievance Redress Mechanism.

Sr. No	Agency	Responsibility
		• Submit annual safeguards monitoring reports to the Bank and its closure. • Ensure updating of the EMP if any new or unanticipated environmental impacts occur during project implementation due to design change or other reasons • If there are significant new or unforeseen impacts, immediately inform Bank to make a decision on the same besides updating relevant project reports.
2	Project Management Consultant (PMC)	• Assistance in delivering all responsibilities of PWD. • Develop Project Management Manual. • Contract administration of CSC and Contractors. • Capacity building of PWD including PIUs for effective implementation of EMP. • Assisting PWD in obtaining requisite clearances. • Review of checklists and reporting formats prepared by CSC for EMP implementation. • Monitoring of compliance with Bank policy requirements and loan covenants (environment clauses). • Prepare safeguards manual on preparation and implementation of social and environment safeguards. • Using the safeguards manual conduct trainings for PWD.
3	Project Implementation Unit (PIU) – Field Level	• Ensure that Project complies with Bank's and GoI laws and regulations. • Ensure that the environment checklist is completed on time by Contractor, reviewed by CSC and submitted

Sr. No	Agency	Responsibility
		to PWD. • Participating in State and District level meetings to facilitate LA and R&R activities. • Periodic appraisal of progress and reporting to the HQ on monthly basis. • Facilitating the Contractor to obtain necessary permissions/ approvals and its submission to HQ and further to the Bank. • Directly interact with project affected persons and record their views and grievances and transmit the same to HQ. • Settle grievances if any at field level. • Review and approve the package specific EMP's and make necessary modifications if required. • Facilitate the establishment of a grievance redress mechanism, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances related to environment safeguards. • Ensure that all mitigation measures as given in the EMP are implemented properly. • Ensure proper conduction of environmental monitoring during pre-construction, construction and operation phases. • Verify the monitoring checklists/reports prepared by the CSC. • Ensure annual environmental monitoring reports are prepared and submitted to Bank for disclosure on their website on an annual basis.

Sr. No	Agency	Responsibility
		Identify environmental corrective actions and prepare a corrective action plan, as necessary, for submission to Bank during project implementation.
4	Environment Specialist, Construction Supervision Consultant (CSC)	- Review and approve the contract package specific EMAP's prepared by the Contractor. - Daily on site supervision for implementation of environmental safeguards. - Completion of monitoring checklists. - Close coordination and communication with the contractor to facilitate implementation of all mitigation measures identified in EMP. - Preparation of monitoring reports and submission to PIU. - Provide technical support and advice for addressing complaints and grievances. - Provide technical advice and on the job training to the contractors as necessary. - Preparation of annual monitoring reports based on the monitoring checklists and submission to PWD for further submission to Bank. - Review and approve updated/revised contract specific EMP's if an new or unanticipated environmental impacts occur during project implementation due to design change or other reasons.
5	Contractor	Responsible for the physical implementation of the mitigation measures proposed in the Environmental Management Plans (EMP) associated with the construction activities.

Sr. No	Agency	Responsibility
		• Responsible for implementation of the Environmental Monitoring Program (EMOP) on collection of environmental quality data. • Prepare contract package specific (EMOP) for approval by the CSC and/or PIU before the start of physical works. • Ensure that adequate budget provisions are made for implementing all mitigation measures specified in the EMP and EMOP. • Participate in induction training on EMP provisions and requirements delivered by the PIU. • Obtain necessary environmental license(s), permits etc. from relevant agencies for associated facilities for project road works, quarries, hot-mix plant etc., prior to commencement of civil works contracts. • Implement all mitigation measures in the EMP. • Ensure that all workers, site agents, including site supervisors and management participate in training sessions delivered by PMC/CSC. • Ensure compliance with contractual obligations • Collect the baseline data on environmental quality before the start of physical works and continue collection of environmental quality data as given in the Environmental Monitoring Plan during construction. • Participate in resolving issues as a member of the Grievance Redressal Cell. • Respond promptly to grievances raised by the local

Sr. No	Agency	Responsibility
		community or and implement corrective actions.

9.4 Grievance Redress Mechanism

All the three parties involved in this project implementation i.e. Contractor, CSC and executing agency will maintain complaint registers at their following respective offices:

- Contractor's main site offices i.e. office of the Project Manager;
- CSC's main site office i.e. office of the Engineer's Representative; and
- PIU, PD office i.e. Employer's field office

Level 1 – PIU level:

All public complaints regarding environmental issues received by any of the above mentioned offices will be entered into the register with specific details such as name and address of the person or representative of the community registering a complaint, the details of complaint, and time. The Executive Engineer and Engineer's Representative will immediately communicate the details of the complaint to the Contractor. The environment and safety officer of the contractor will promptly investigate and review the environmental complaint and implement appropriate corrective actions to arrest or mitigate the cause of the complaints within 3 day time of receiving the complaint. The contractor will report to CSC Environment expert about the action taken on the complaint, also within 3 day time of receiving the complaint, for his further intimation to PD PIU. The person making the complaint will also be intimated by the complaint receiving person or his representative, about the action taken, within 3 days.

Level 2 – State level:

Grievances not redressed by the PIU level will be brought to the State level Grievance Redress Committee (GRC). The State level GRC will be headed and chaired by Executive Engineer. The state level GRC will comprise of the following:

- Member (Administration), PWD (PPP)
- Environmental Specialist, CSC
- A representative from the respective local community
- Representative of concerned agency such as Forestry Department or State Pollution Control Board depending on the nature of the complaint/issue.

The main responsibilities of the GRC will be to:

- (i) record grievances, categorize, and prioritize grievances and resolve them as soon as possible;
- (ii) immediately inform the EA of serious cases; and
- (iii) Report to the complainants on decisions made regarding their grievances within three weeks of receiving the grievance from the PIU level. The decision must include the agreed timeline for addressing the grievance. Grievances related to resettlement benefits, compensation, relocation, replacement cost and other assistance will be addressed by following the grievance redress system provided in the RAP.

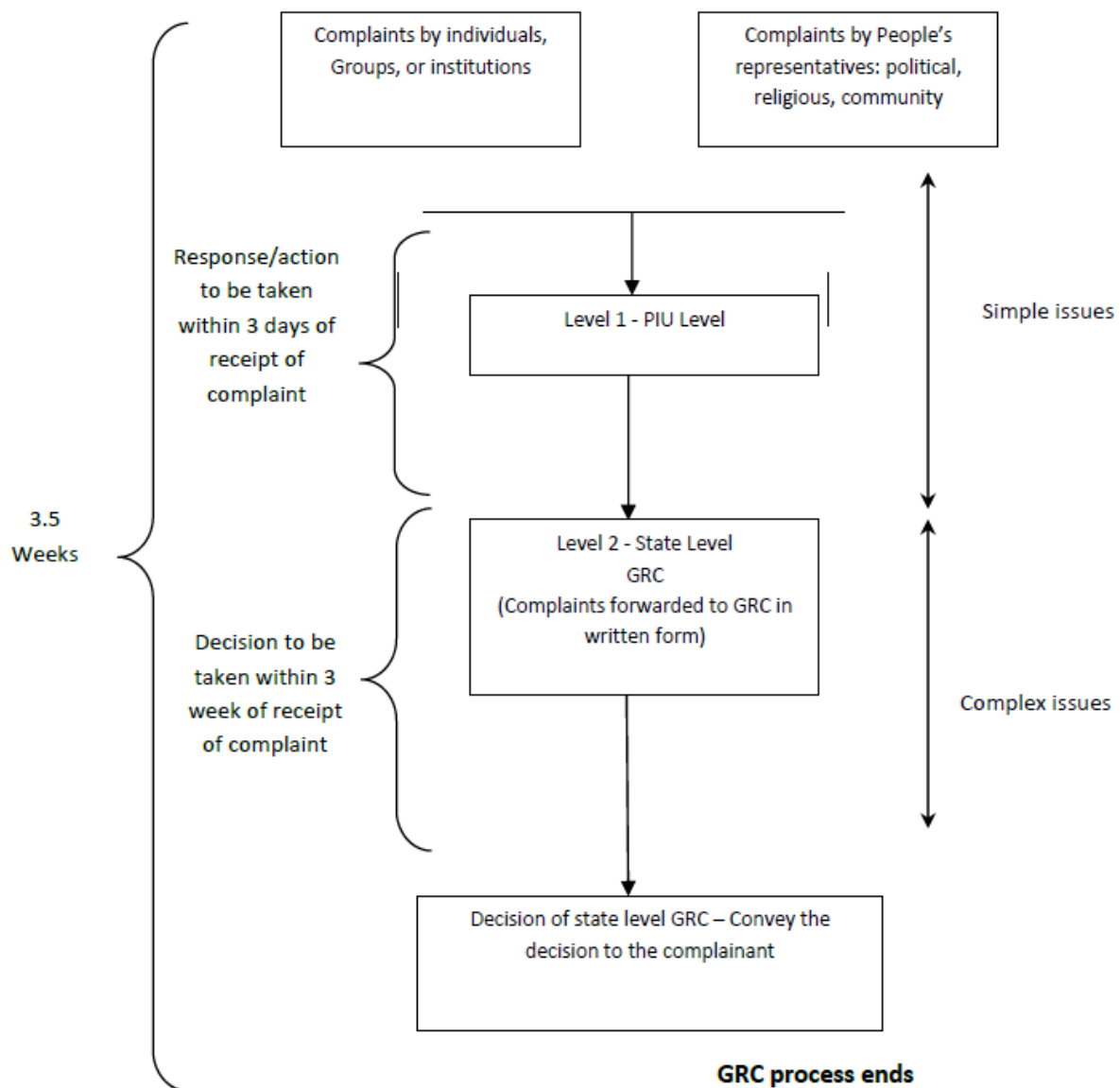
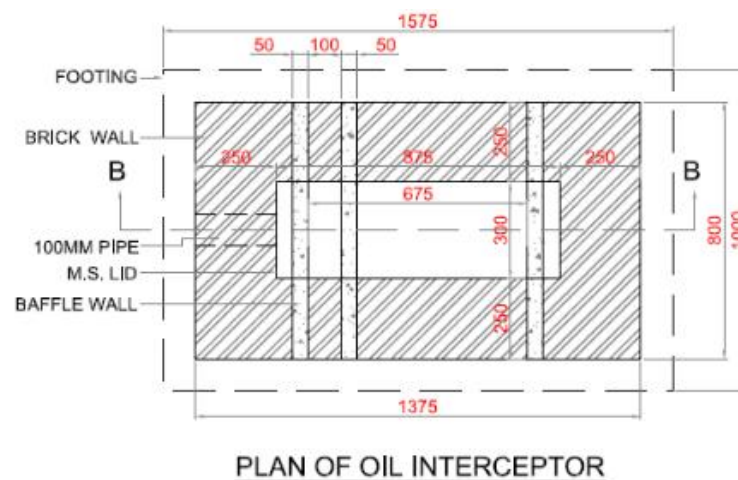
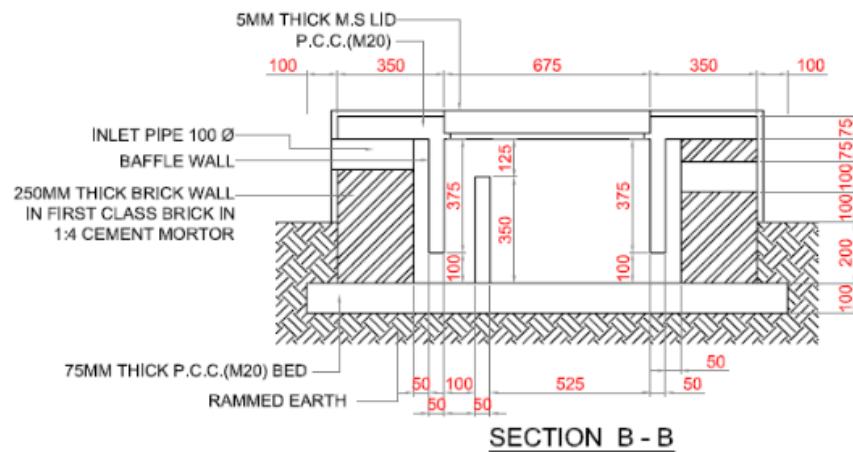
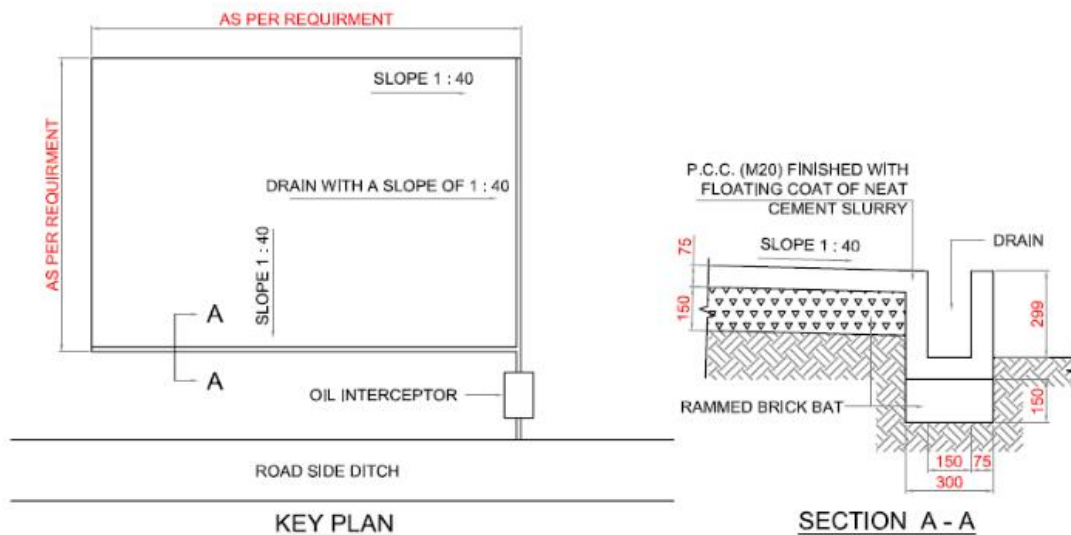


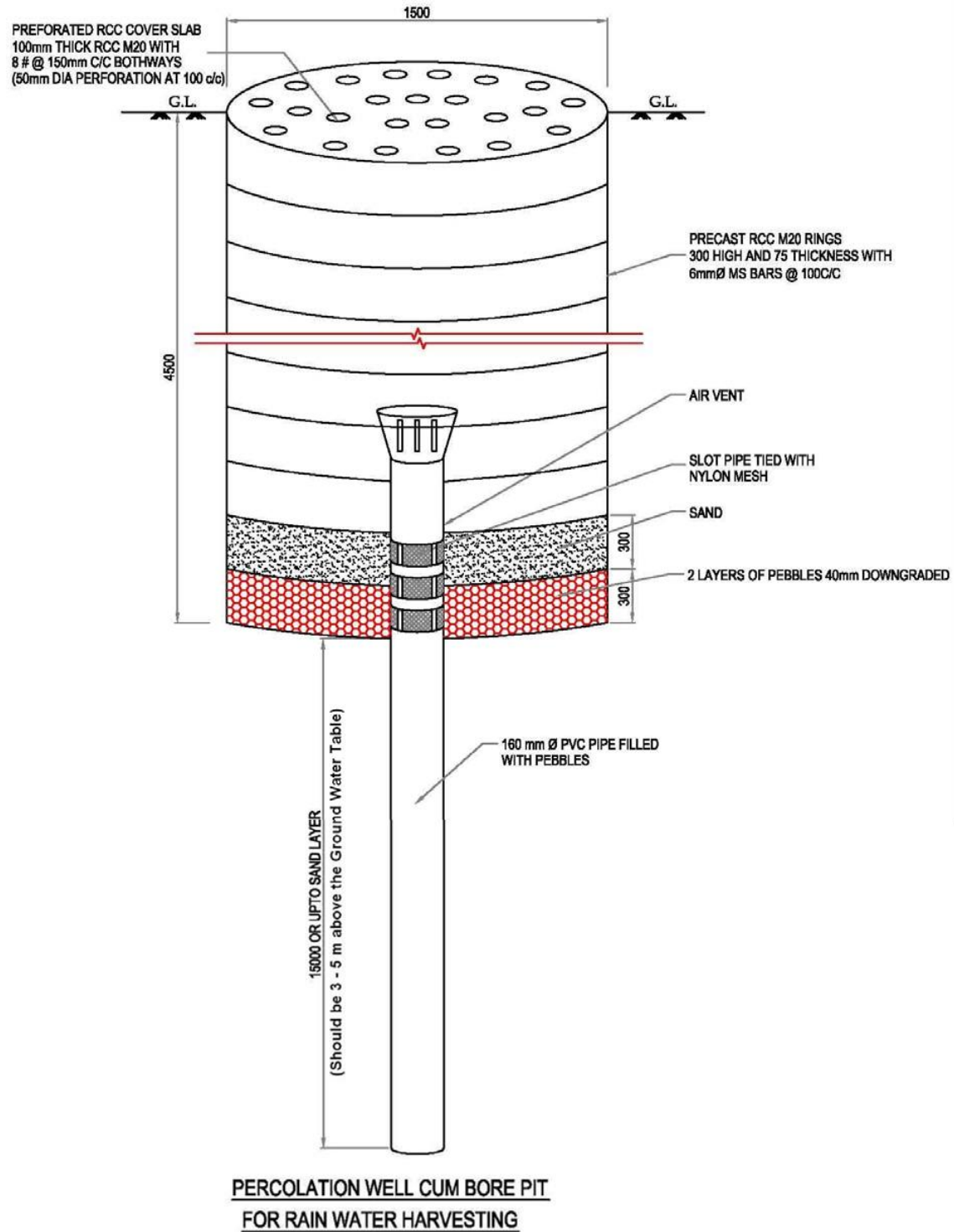
Figure 1: Grievance Redressal Mechanism

ANNEXURES

ANNEXURE 1- SCHEMATIC DIAGRAM OF OIL INTERCEPTION CHAMBER



ANNEXURE 2- SCHEMATIC DRAWING OF RAIN WATER HARVESTING PIT



ANNEXURE 3 - GUIDELINES FOR DUMPING OF DEBRIS / WASTE MATERIAL

The contractor shall take the following precautions while disposing off the waste material:

- During the site clearance and disposal of debris, the contractor will take full care to ensure that the public or private properties are not damaged/affected and that the traffic is not interrupted.
- Contractor will dispose off debris only at the places identified by the Engineer-in-Charge.
- Contractor can also dispose off the debris for the improvements in public utilities after the proper consent of villagers and approval of PIU/ Engineer-in-Charge of works.
- In the event of any spoil or debris from the sites being deposited on any adjacent land, the contractor will immediately remove all such spoil debris and restore the affected area to its original state to the satisfaction of the Engineer-in-Charge.
- The contractor will at all times ensure that the existing water bodies and drains within and adjacent to the site are kept safe and free from any debris.
- Contractor will utilize effective water sprays during the delivery and handling of materials when dust is likely to be created and to dampen stored materials during dry and windy weather.
- Materials having the potential to produce dust will not be loaded to a level higher than the side and tail boards and will be covered with a tarpaulin in good condition.
- Any diversion required for traffic during disposal of debris shall be provided with traffic control signals and barriers after the discussion with local people and with the permission of Engineer-in-Charge.
- During the debris disposal, contractor will take care of surrounding features and avoid any damage to it.
- While disposing debris / waste material, the contractor will take into account the wind direction and location of settlements to ensure against any dust problems.

ANNEXURE-4 GUIDELINES FOR BORROW AND QUARRY AREA MANAGEMENT

Borrow areas will be finalized either from the list of locations recommended by DPR consultants or new areas identified by contractor. The finalization of locations identified by DPR consultant depends upon the formal agreement between landowners and contractor. In cases, when agreement is not reached between the contractor and landowners for the identified borrow areas sites, arrangement for locating the source of supply of material for embankment and sub-grade as well as compliance to environment requirements in respect of excavation and borrow areas as stipulated from time to time by the Ministry of Environment and Forests, Government of India, and local bodies, as applicable shall be the sole responsibility of the contractor.

The contractor in addition to the established practices, rules and regulation will also consider following criteria before finalizing the locations:

- The borrow area should not be located in cultivable land unless unavoidable i.e. no suitable uncultivable land in the vicinity for borrowing or private landowners are willing to allow borrowing in their fields.
- Along the roadside, borrow pits should be located 5m away from the toe line.
- The loss of productive and agriculture soil should be minimum.
- The loss of vegetation is almost nil or minimum.
- Sufficient quality of soil is available.
- The Contractor will ensure that suitable earth is available.
- After identification of borrow areas based on guidelines. Contractor will fill reporting format as under and submit the same for approval to the “Supervision Consultant”. Once approved the contractor will adhere to the recommendation for borrow area to the satisfaction of SC.
- In no case the depth of borrow area should exceed 2m from the existing ground level.
- Borrow pits slope should be maintained, no steeper than 1 Vertical: 4 Horizontal.
- In case of cultivable land, top soil (15cm) should be preserved and stockpiled.
- Ridges of not less than 8m width should be left at intervals not exceeding 300m. Small drains to be cut through the ridges to facilitate drainage
- Water pooling to be avoided/managed so that no disease spread due to water stagnation.
- Borrow pits should be located at least 1000m away from settlements.

- Precautionary measures as the covering of vehicles will be taken to avoid spillage during transportation of borrow area materials.
- The unpaved surfaces used for the haulage of borrow materials should be maintained properly for dust suppression.
- Haulage of material to embankments or other areas of fill shall proceed only when sufficient spreading and compaction facility is operating at the place of deposition, to minimize dust pollution.
- Borrow pits located near settlements will be re-developed immediately after borrowing is completed. If spoils are dumped, that will be covered with a layers of stockpiled topsoil in accordance with compliance requirements with respect MOEF/SPCB guidelines
- Redevelopment of the borrow areas to mitigate the impact will be the responsibility of the contractor. The contractor shall evolve site-specific redevelopment plans for each borrow area locations, which shall be implemented after the approval of the Consultant.
- Borrow area near to any surface water body will be at least at a distance of 15m from the toe of the bank or high flood level, whichever is maximum.
- During rains appropriate measures to be taken to minimize soil erosion, silt fencing to be provided as directed by Consultant.
- Borrow areas might be used for aquaculture in case landowner wants such development. In that case, such borrow area will be photographed after their post use restoration and Environment Expert of Supervision Consultant will certify the post use redevelopment.
- The Contractor will keep record of photographs of various stages i.e., before using materials from the location (pre-project), for the period borrowing activities (construction Phase) and after rehabilitation (post development), to ascertain the pre and post borrowing status of the area.

ANNEXURE 5 - GUIDELINES FOR QUARRY MANAGEMENT

The Contractor will finalize the locations from the list given by DPR Consultant's for procuring materials. The Contractor shall establish a new quarry only with the prior consent of the PIU only in cases when: (i) Lead from existing quarries is uneconomical and (ii) Alternative material sources are not available. The Contractor shall prepare a Redevelopment Plan for the quarry site and get it approved by the PIU.

The construction schedule and operations plans to be submitted to the PIU prior to commencement of work shall contain a detailed work plan for procuring materials that includes procurement, transportation and storage of quarry materials.

Operation & redevelopment plan (if a new quarry is opened)

- Photograph of the quarry site prior to commencement
- The quarry boundaries as well as location of the materials deposits, working equipments, stockpiling, access roads and final shape of the pit.
- Drainage and erosion control measures at site.
- Safety Measures during quarry operation.
- Design for redevelopment of exhaust site.

Option-A: Re-vegetating the quarry to merge with surrounding landscape: This is done by conserving and reapplying the topsoil for the vegetative growth.

Option-B: Developing exhausted quarries as water bodies: The pit shall be reshaped and developed into pond for harvesting rainwater. This option shall only be considered where the location of quarry is at the lowest point, i.e. surrounding areas/natural drainage slopes towards it.

Construction Stage

Development of site: To minimize the adverse impact during excavation of material following measures are need to be undertaken:

- Adequate drainage system shall be provided to prevent the flooding of the excavated area.
- At the stockpiling locations, the Contractor shall construct sediment barriers to prevent the erosion of excavated material due to runoff.
- Construction of offices, laboratory, workshop and rest places shall be done in the up-wind of the plant to minimize the adverse impact due to dust and noise.

- The access road to the plant shall be constructed taking into consideration location of units and also slope of the ground to regulate the vehicle movement within the plant.
- In case of storage of blasting material, all precautions shall be taken as per The Explosive Rules, 1983.

Quarry operations including safety:

- Overburden shall be removed and disposed in line with Guidelines of Disposal Management
- During excavation, slopes shall be flatter than 20 degrees to prevent their sliding. In cases where quarry strata are good and where chances of sliding are less this restriction can be ignored.
- In case of blasting, procedure and safety measures shall be taken as per The Explosive Rules, 1983
- The contractor shall ensure that all workers related safety measures shall be done as per guidelines for Workers and Safety.
- The Contractor shall ensure maintenance of crushers regularly as per manufacturer's recommendation.
- Topsoil will be excavated and preserved during transportation of the material measures shall be taken to minimize the generation of dust and prevent accidents.
- The PIU and the Consultant shall review the quarry site for the management measures during quarry operation, including the compliance to pollution norms.

Post Construction Stage

The Contractor shall restore all haul roads constructed for transporting the material from the quarries to construction site to their original state. The PIU and the Consultant shall be entrusted the responsibility of reviewing the quarry site for the progress of implementation of Redevelopment Plan. These shall include the following two cases;

- Redevelopment of quarries opened by the Contractor for the project
- Redevelopment of existing quarries operated by other agencies

In the first case, the Contractor shall be responsible for the Redevelopment Plan prior to completion after five years, during the defect liability period. The PIU shall be responsible for reviewing this case of redevelopment prior to the issuing the defect liability certificate.

In the second case, the redevelopment of exhaust quarry shall be the responsibility of the agency providing the permit to ensure the implementation of Redevelopment Plan.

ANNEXURE-6 GUIDELINES FOR SITING & LAYOUT OF CONSTRUCTION CAMP

A. SITING

The contractor based on the following guidelines shall identify the location of the construction site. The construction site shall be located:

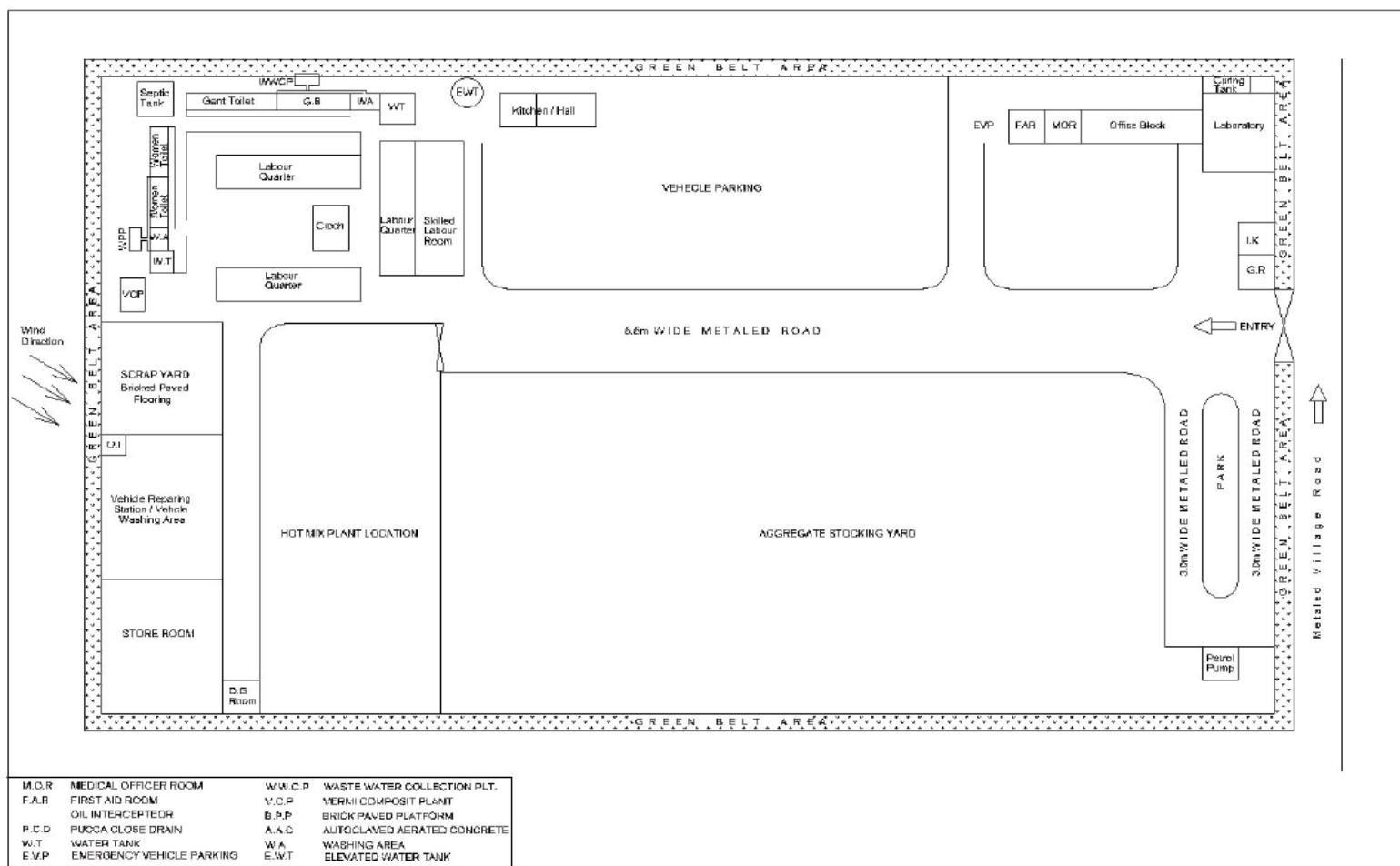
- The construction camps will be located at least 500 m away from habitations at identified sites. The living accommodation and ancillary facilities for labour shall be erected and maintained to standards and scales approved by the Consultant.
- On non- agricultural lands, as far as possible
- Not within 1000m of either side of locations (Wild life Sanctuary/Ecologically sensitive areas)
- All sites used for camps must be adequately drained.
- The camps must be located such that the drainage from and through the camps will not endanger any domestic or public water supply.
- All sites must be graded, ditched and rendered free from depressions such that water may not get stagnant and become a nuisance.

B. LAYOUT

The Contractor during the progress of work will provide, erect and maintain necessary (temporary) living accommodation and ancillary facilities for labour to standards and scales approved by the Consultant as depicted in typical layout. All temporary accommodation must be constructed and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing. Safe drinking water should be provided to the dwellers of the construction camps. Adequate washing and bathing places shall be provided, and kept in clean and drained condition. Construction camps are to be sited away from vulnerable people and adequate health care is to be provided for the work force.

Sanitation Facilities: Construction camps shall be provided sanitary latrines and urinals. Sewerage drains should be provided for the flow of used water outside the camp. Drains and ditches should be treated with bleaching powder on a regular basis. The sewage system for the camp must be properly designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses takes place. Compliance with the relevant

legislation must be strictly adhered to. Garbage bins must be provided in the camp and regularly emptied and the garbage disposed off in a hygienic manner.



Shelter at Workplace: At every workplace, there shall be provided free of cost, four suitable shelters, two for meals and two others for rest, separately for use of men and women labourers. The height of shelter shall not be less than 3m from floor level to lowest part of the roof. Sheds shall be kept clean and the space provided shall be on the basis of at least 0.5m^2

First aid facilities: At every workplace, a readily available first-aid unit including an adequate supply of sterilized dressing materials and appliances will be provided. Workplaces remote and far away from regular hospitals will have indoor health units with one bed for every 250 workers. Suitable transport will be provided to facilitate taking injured and ill persons to the nearest hospital. At every workplace an ambulance room containing the prescribed equipment and nursing staff will be provided.

Canteen Facilities: A cooked food canteen on a moderate scale shall be provided for the benefit of workers wherever it is considered necessary. The contractor shall conform generally to sanitary requirements of local medical, health and municipal authorities and at all times adopt such precautions as may be necessary to prevent soil pollution of the site.

Health Care Facilities: Health problems of the workers should be taken care of by providing basic health care facilities through health centres temporarily set up for the construction camp. The health centre should have at least a doctor, nurses, duty staff, medicines and minimum medical facilities to tackle first-aid requirements or minor accidental cases, linkage with nearest higher order hospital to refer patients of major illnesses or critical cases. The health centre should have MCW (Mother and Child Welfare) units for treating mothers and children in the camp. Apart from this, the health centre should provide with regular vaccinations required for children.

Day Crèche Facilities: At every construction site, provision of a day crèche shall be worked out so as to enable women to leave behind their children. At construction sites where 20 or more women are ordinarily employed, there shall be provided at least a hut for use of children under the age of 6 years belonging to such women. Huts shall not be constructed to a standard lower than that of thatched roof, mud walls and floor with wooden planks spread over mud floor and covered with matting. Huts shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be two maidservants (or aayas) in the satisfaction of local medical, health, municipal or cantonment authorities. Where the number of women workers is more than 25 but less than 50, the contractor shall provide with at least one hut and one maidservant to look after the children of women workers. Size of crèches shall vary according to the number of women workers employed.

ANNEXURE 7- GUIDELINES FOR SITE CLEARANCE

Vegetation Clearance

Vegetation clearance shall comprise uprooting of vegetation, grass, brushwood, shrubs, stumps, trees and saplings of girth upto 30 cm. measured at a height of one meter above the ground level. Where only clearance of grass is involved it shall be measured and paid for separately. The procedure/ steps involved for uprooting, skating and felling trees are described below.

Uprooting of Vegetation

- The roots of trees and saplings shall be removed to a depth of 60 cm. below ground level or 30 cm. below formation level or 15 cm below sub grade level, whichever is lower.
- All holes or hollows formed due to removal of roots shall be filled up with earth rammed and leveled.
- Trees, shrubs, poles, fences, signs, monuments, pipe lines, cables etc. within or adjacent to the area, which are not required to be disturbed during vegetation clearance shall be properly protected by the contractor at his own cost.

Staking and Disposal

- All useful materials obtained from clearing and grubbing operation shall be staked in the manner as directed by the Consultant.
- Trunks and branches of trees shall be cleared of limbs and tops stacked properly at the places indicated by the Consultant. These materials shall be the property of the Government.
- All unserviceable materials are disposed off in such a manner that there is no livelihood of getting mixed up with the materials meant for construction.

Felling Trees

- Marking of tress: Trees, above 30 cm girth (measured at a height of one meter above ground level) to be cut, shall be approved by the Consultant and then marked at the site.
- Felling of trees: Felling of trees shall include taking out roots up to 60 cm. below ground level or 30 cm. below formation level or 15 cm. below sub-grade level, whichever is lower.
- Filling: All excavations below general ground level arising out of removal of trees, stumps etc. shall be filled with suitable material in 20 cm. layers and compacted thoroughly so that the surface at these points conform to the surrounding area.

- Sizing: The trunks and branches of trees shall be cleared of limbs and tops and cut into suitable pieces as directed by the Consultant.
- Staking: The serviceable materials shall be staked in the manner as directed by the Environmental specialist of Supervision Consultant.
- Disposal: The material, which cannot be used or auctioned shall be removed from the area and disposed off as per the directions of the Consultant. Unsuitable waste materials should not get mixed with construction material during disposal.

ANNEXURE 8: STORAGE, HANDLING, USE AND EMERGENCY RESPONSE FOR HAZARDOUS CHEMICALS

A1. Re-fueling/ Maintenance Procedure

- Truck or suitable containers will bring in all fuel and fluids. There will be no storage of fuel, oil or fluids within 100m (or 50m) of the permanent water line.
- Prior to re-fueling or maintenance, drip pans and containment pans will be placed under the equipment.
- Absorbent blankets may also be required to be placed under the equipment and hoses where there is a possibility of spillage to occur.
- All used oils or fluids will be properly contained and transported to appropriately licensed (authorized) disposal facilities;
- Following re-fueling and maintenance, the absorbent blankets (if any) and spill pans will be picked up and the fuel truck or container moved outside of the 100m (or 50m) wide area.

Emergency Spill Procedure

Should a spill occur, either through spillage or equipment failure, the applicable emergency spill procedure outlined in sections A-2 to A-4 must be followed.

A2. Spill Procedure (Inside the Stream)

In the case of a spill, overflow or release fluid into the stream waterway (whether water is flowing during the spill or not), any actions that is practical and safely possible to control the situation, shall be implemented.

• Stop the flow

- Stop the release into the stream waterway
- Shutdown equipment
- Close valves and pumps
- Plug hoses

• Remove Ignition Sources

- Shut off vehicles and other engines
- Do not allow tiger torches, vehicles, smoking or other sources of ignition near the area. Keep a fire extinguisher on hand but keep it a safe distance away from the potential ignition source (if a fire starts, the extinguisher must be easily accessible).

- **Contract the environmental Officer and initiate Emergency Response**

- Notify the site supervisor and the Contractor's Environmental Officer as soon as possible
- The Environmental Officer will review the situation and decide if Emergency Services like Fire Brigade are required
- Appropriate parties to be notified of the spill are The contractor's Project Manager, The Consultant through his designated Environmental Officer, The Client, Regulatory Agencies like Pollution Control Board, Municipal Authorities, as applicable, Site Safety Officer.

- **Cleanup and Disposal**

Emergency Services will be engaged for the containment, cleanup and disposal of contamination release into the environment.

- **Reporting**

The contractor's Environmental Officer will document the event and submit reports to the Consultant, the Client and appropriate regulatory agencies like the Pollution Control Board.

- **Procedure Review**

The Consultant will review the report, determine if changes are required to procedures and recommend implementation of all required changes.

A3. SPILL PROCEDURE (ON LAND)

In the case of a spill, overflow or release fluid onto land:

- **Stop the flow**

- Stop the release into the water body
- Shut down equipment
- Close valves and pumps
- Plug hoses

- **Remove Ignition Sources**

- Shut off vehicles and other engines
- Do not allow tiger torches, vehicles, smoking or other sources of ignition near the area. Keep a fire extinguisher on hand but keep it a safe distance away from the potential ignition sources (if a fire starts the extinguisher must be easily accessible).

- **Contain the Spill**

- Dike around the spill to contain the material
- Spread absorbent or place a spill blanket on the spill
- Enlist the help of personnel on site
- Notify supervisor as soon as possible

• **Notification**

- Appropriate parties to be notified of the spill are: The Contractor's Project Manager, The Consultant through his designated Environmental Officer, The Client, Regulatory Agencies like Pollution Control Board, Municipal Authorities, as applicable, Site Safety Coordinator

• **Cleanup and Disposal**

The Consultant's Environmental Officer will ensure that a proper cleanup and disposal method is determined.

• **Reporting**

The Contractor's Environmental Officer will document the event and submit reports to the Consultant, the Client and appropriate regulatory agencies like the Pollution Control Board.

• **Procedure Review**

The Consultant will review the report, determine if changes are required to procedures and recommend implementation of all required changes.

A4. SPILL PROCEDURE (WITHIN PONDS)

In the case of a spill, overflow or release fluid due to equipment or hose failure:

• **Stop the flow**

- Stop the release
- Shut down equipment
- Close valves and pumps
- Plug hoses

• **Remove Ignition Sources**

- Shut off vehicles and other engines
- Do not allow tiger torches, vehicles, smoking or other sources of ignition near the area. Keep a fire extinguisher on hand but keep it a safe distance away from the potential ignition sources (if a fire starts the extinguisher must be easily accessible).

- **Contain the Spill**

- Stop any pumps that may be moving the water from the area where the spill occurred
- Enlist the help of personnel on site
- Notify supervisor as soon as possible

- **Notification**

- Appropriate parties to be notified of the spill are: The Contractor's Project Manager, The Consultant through his designated Environmental Officer, The Client, Regulatory Agencies like Pollution Control Board, Municipal Authorities, as applicable, Site Safety Coordinator

- **Cleanup and Disposal**

The Consultant's Environmental Officer will ensure that a proper cleanup and disposal method is determined. Absorbent pads will soak up the spilled material. The pads will be contained and removed from site for disposal at a licensed (authorized) facility.

- **Reporting**

The Contractor's Environmental Officer will document the event and submit reports to the Consultant, the Client and appropriate regulatory agencies like the Pollution Control Board.

- **Procedure Review**

The Consultant will review the report, determine if changes are required to procedures and recommend implementation of all required changes.

APPENDIX 9: SOIL EROSION AND SEDIMENTATION CONTROL

All materials shall meet commercial grade standards and shall be approved by the Consultant before being used in the work.

Construction Stage

Prior to the start of the relevant construction, the Contractor shall submit to the Consultant for approval, his schedules for carrying out temporary and permanent erosion/sedimentation control works as are applicable for the items of clearing and grubbing, roadway and drainage excavation, embankment/sub-grade construction, bridges and other structures across water courses, pavement courses and shoulders. He shall also submit for approval his proposed method of erosion/sedimentation control on service road and borrow pits and his plan for disposal of waste materials. Work shall not be started until the erosion/sedimentation control schedules and methods of operations for the applicable construction have been approved by the Consultant.

The surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations shall be limited to the extent practicable. The Contractor may be directed to provide immediate control measures to prevent soil erosion and sedimentation that will adversely affect construction operations, damage adjacent properties, or cause contamination of nearby streams or other watercourses. Such work may involve the construction of temporary berms, dikes, sediment basins, slope drains and use of temporary mulches, fabrics, mats, seeding, or other control devices or methods as necessary to control erosion and sedimentation.

The Contractor shall be required to incorporate all permanent erosion and sedimentation control features into the project at the earliest practicable time as outlined in his accepted schedule to minimize the need for temporary erosion and sedimentation control measures.

Temporary erosion/sedimentation and pollution control measures will be used to control the phenomenon of erosion, sedimentation and pollution that may develop during normal construction practices, but may neither be foreseen during design stage nor associated with permanent control features on the Project.

Where erosion or sedimentation is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion or sedimentation control features can follow immediately thereafter if the project conditions permit; otherwise temporary erosion or sedimentation control measures may be required between

successive construction stages. Under no conditions shall a large surface area of credible earth material be exposed at one time by clearing and grubbing or excavation without prior approval of the Consultant.

The Consultant may limit the area of excavation, borrow and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other such permanent erosion, sedimentation and pollution control measures, in accordance with the accepted schedule.

Temporary erosion is sometimes caused due to the Contractor's negligence, carelessness or failure to install permanent controls. Sedimentation and pollution control measures then become necessary as a part of the work as scheduled or ordered by the Consultant, and these shall be carried out at the Contractor's own expense. Temporary erosion, sedimentation and pollution control work required, which is not attributed to the Contractor's negligence, carelessness or failure to install permanent controls, will be performed as ordered by the Consultant.

Temporary erosion, sedimentation and pollution control may include construction work outside the right of way where such work is necessary as a result of road construction such as borrow pit operations, service roads and equipment storage sites.

The temporary erosion, sedimentation and pollution control features installed by the Contractor shall be maintained by him till these are needed, unless otherwise agreed by the Consultant.

APPENDIX 10- WORKERS SAFETY DURING CONSTRUCTION ACTIVITIES

Safe Layout in the Construction Plant, Camp and Quarry Areas

- Arrange border to perimeter fencing.
- Ensure good visibility and safe access at site entrances.
- Provide adequate warning signs at the entrance and exit where necessary.
- Provide adequate space/area for loading and unloading, storage of materials, plant and machinery.
- Display emergency procedure and statutory notices at conspicuous location.
- Consider welfare facilities required.
- Provide areas for dumping garbage and other waste materials, and also arrange for their regular clearance.
- Arrange storage, transport and use of fuel, other flammable materials and explosives in line with the license requirements to be obtained from appropriate authorities.
- Plan emergency assembly points, fire escape routes and locate fire-fighting equipments.
- Provide access roads and plant movement areas within the site.
- Ensure the availability of first aid facilities and display notices at the various works to show the location of these facilities.
- Provide proper drainage and sewage & drainage facilities.

House Keeping Practices

- Maintain washrooms and canteens clean.
- Keep all walkways clear and unobstructed at all times.
- Ensure that spillages of oil and greasy.
- Stack raw materials and finished products clear of walkways or inside roads.
- Do not leave tools on the floor or in any location where they can be easily dislodged.
- Keep windows and light fitting clean.
- Maintain the workplace floors dry and in a non-slippery condition.
- Provide and maintain proper drainage system to prevent water ponding.
- Use metal bins for oily and greasy rags and store all flammable materials in appropriate bins, racks or cabinets.

- Ensure that the metal bins for storing oily and grease rags should be covered with lids.
- Ensure that protruding nails in boards or walls are moved or bent over so that they do not constitute a hazard to people.
- Make sure that hazardous/dangerous chemicals are kept in the goods stores with the appropriate labeling, display of the material-safety-data-sheet (MSDS) and other precautionary measures.
- Display 'no smoking' signs in areas with high fire risks, e.g. paint stores, wood working area and others.

Tree Felling

- Use hard hats during tree felling.
- Ensure tools such as the axes are in good condition.
- Determine proper foot and body position when using the axe. Do not cut above your head.
- Wear appropriate foot protection.
- Carry a first aid kit to the site.
- Determine possible hazards in the area, e.g. electrical or telephone or other utility lines.
- Prior to felling, determine the safest direction for the fall.
- Determine the proper hinge size before directing the tree fall.

Noise Hazards and its Control

- Note that indications of noise levels are: needed to shout to be heard; Hearing is dulled just after work; Getting head noises or ringing in the ears after work; Difficulty hearing people while others are talking.
- Use sound level meters to measure. If the sound level exceeds 75 dB(A), then preventive measures should be taken.
- Make personnel aware of noisy areas by using suitable warning signs and insisting that ear protectors should necessarily be worn.
- Reduce noise at source by improved maintenance, replacing noisy machines, screening with noise absorbing material, making changes to the process/equipment, controlling

machine speeds, ensuring that two noise generating machines are not running at the same time, using cutting oils and hydraulic breakers.

- Appoint a competent person to carry out a detailed noise assessment of the site, designate ear protection zone, and give instructions on the necessary precautionary measures to be observed by site personnel, including the use of suitable type of ear protections.
- Wear and maintain ear muffs and ear plugs as required.
- In construction or repair work, noise should be kept to a low-level bearing in mind the disturbance to local residents.

Road Works

- The use of signage is most important to caution the road users of possible unsafe conditions due to the road works.
- Use the appropriate signage devices as required by the site conditions/situation. The devices include regulatory signs, delineators, barricades, cones, pavement markings, lanterns and traffic control lights.
- In using signs, make sure that they are (i) simple, easy-to-understand and convey only one message, (ii) luminescent and with reflective properties, and (iii) broad, prominent and of appropriate size.
- In using barricades, make sure that the traffic is kept away from work areas and the drivers are guided to keep along a safe, alternative path.
- Ensure that proper personal protective equipment (PPE) is provided to all the workers.
- Cover existing road signs and install new ones at appropriate locations taking into account the distances that would be required and reaction times.
- Plan layout and traffic management so that the hazards are not created.
- Deploy flagmen, who control traffic at the work areas. The flag should be 600mm x 600mm fastened to a 1m length staff.
- Flagmen should wear reflective safety vests along with hard hats.
- If required, use wireless devices for flagmen to co-ordinate from either ends of the road, where works are being carried out.

Electrical Hazards in Construction Areas

- Treat all wires as live wires
- Never touch dangling wires, but report them to your manager
- Unless a qualified electrician, do not attempt electrical repairs
- Never use electrical equipment if hands are wet or you are standing in water
- If electrical equipment is sparking or smoking, turn the power off and report the condition to the supervisor
- Never use electrical wires that have physical damage
- Never allow equipment or traffic to run over electrical wires.

Use and Storage of Gas/LPG

- Store filled gas/LPG cylinder in the open area, i.e. outside of the building
- Transport, store, use and secure cylinders in upright position
- Ensure proper ventilation at the ground level in locations where gas/LPG is in use
- Avoid physical damage to the cylinders
- Never weld or cut on or near the cylinders
- Store empty cylinders secured and upright
- Make sure that the cylinder is closed immediately after use
- Investigate immediately if there is the smell of LPG or gas
- Never use de-stenched gas/LPG on site.
- Make sure that there is no other unrelated fire in the vicinity of the cylinder

Operation of Excavators

- Ensure that excavators are operated by authorized persons who have been adequately trained.
- Prevent unauthorized movement or use of the excavators
- Check regularly and maintain the machine thoroughly
- Ensure that all relevant information, including those related to instruction, training, supervision and safe system of work are provided to the operators.

- Ensure that the operation and maintenance manuals, manufacturer's specifications, inspection and maintenance log books are provided for the use of the mechanics, service engineers or other safety personnel during periodic maintenance, inspection and examination.
- During tipping or running alongside the trenches, excavators must be provided with stop blocks.
- Excavators must be rested on firm ground during operation
- Avoid operating the machine too close to an overhang, deep ditch or hole and be alert to potential carving edges, falling rocks and slides, rough terrain and obstacles.
- Locate and identify underground services by checking with all utility companies before excavations.
- Ensure that all excavations are supervised by experienced and competent persons.
- When reversing or in case the operator's view is restricted, adequate supervision and signaling should be provided.
- Ensure that the type and capacity of the excavator are properly chosen for the intended purposes and site conditions. Never use a machine for any purposes other than it is designed for.
- Check and report for excessive wear and any breakage of the bucket, blade, edge, tooth and other working tools of the excavator.
- Check that all linkages/hinges are properly lubricated and ensure that the linkage pins are secured. Never use improper linkage pins.
- Never dismount or mount a moving machine
- Work only with adequate ventilation and lighting
- Ensure that the protective front screen of the driving cabin is fixed in position during excavations to avoid eye injury to the operator.
- Ensure switch-off of the unattended vehicle.

Operation of Trucks and Dumpers

- Ensure that only trained, authorized and licensed drivers operate the vehicles
- Enlist the help of another worker before reversing the vehicle

- Switch-off the engine of an unattended vehicle
- Lower the tipping bodies when the machine is unattended, but if it is necessary to leave them in the raised position they should be blocked to prevent their fall.
- Wear safety boots or shoes to avoid injuries during loading and unloading.
- Carryout periodic servicing to the manufacturer's requirements. All records of maintenance and repairs should be in writing or kept on site.
- Keep the vehicle tidy and the cabin free from tools and material, which might obstruct the controls.
- Keep to speed limits.
- No passenger should be carried on a dumper except the driver
- Never drive the vehicle across a slope
- Provide stop blocks when the vehicle is tipping into or running alongside excavations
- Do not overload the vehicle.
- Carry only well secured loads
- Park only on level ground, in neutral with the parking brake applied
- Never mount or dismount from a moving vehicle

Gas Welding

- Use the following personal protective equipment during welding
 - Face or hand shield fitted with filters
 - Goggles, particularly when chipping slag
 - Gloves long enough to protect wrists and forearms against heats, sparks, molten metal and radiation
 - High-top boots to prevent sparks from entering footwear.
- Screen off the work area with sturdy opaque or translucent materials because glare can cause eye injury.
- Key for opening the acetylene cylinder valve must be on the valve stem while the cylinder is in use so that the cylinder valve may be immediately shut-off in an emergency.

- Ventilate the workplace using air blowers and exhaust fans to remove poisonous fumes and gases that are given off during welding
- Take precautions against flying sparks and hot slag where welding is being done near flammable materials and check the area before leaving.
- Do not weld material degreased with solvents until completely dry.
- Do not use gas cylinders for supporting work or as rollers
- Do not use oil grease on oxygen cylinder fittings
- Do not use cylinders with damaged valves.
- Do not use too much force if valves are stuck.
- Replace valve caps after use
- Search for leaks in equipment by using a solution of soapy water.
- Shut the cylinder valve if acetylene from a cylinder catches fire at the valve or regulator due to leakage at a connection.
- Treat all gas cylinders as “full” unless sure otherwise.
- Never attempt to transfer acetylene from one cylinder to another or attempt to refill an acetylene cylinder.
- Place portable fire extinguishers near the welding area
- Secure all cylinders against accidental displacement.
- Always lift gas cylinders. Do not slide them along the ground or drop them from trucks.
- Keep gas cylinders in vertical position both in storage and when in use
- Keep the work place dry, secure, free from combustible materials and obstruction.
- Store the acetylene and oxygen cylinders separately, and in a proper store.
- Keep the gas cylinders from source of heat, flammable materials, corrosive chemicals and fumes.

Manual Handling and Lifting

- Use mechanical equipment in place of manual handling as far as possible.
- Assess the manpower required to handle or lift the load safely and arrange the manpower accordingly.

- In handling hazardous materials, the workers shall be informed of the hazards and safety precautions.
- All relevant persons shall be trained in the proper methods of lifting and carrying.
- Where team work is required, select the persons whose ages and physical builds are compatible for teaming up.
- Coordinate the actions of the team members by giving necessary instructions.
- Always lighten or suitably shape the load for manual handling as far as possible. Keep a look out for splinters, sharp edges, loose banding and nails.
- Clear path or obstruction and tripping hazards.
- Stack and secure goods safely on trucks, otherwise they fall off and injure passers-by.
- Use personal protective equipment such as gloves, safety shoes, etc.

Handling Chemicals and Hazardous Substances

- Always substitute hazardous chemicals with harmless or less hazardous ones wherever possible.
- Enclose the process using chemicals or provide other engineering controls such as local exhaust ventilation, a fume cupboard or a safety cabinet.
- Exercise great care in the storage and use of chemicals because they may be explosive, poisonous, corrosive or combustible.
- Separate different chemicals physically
- Store chemicals classified as dangerous goods in a properly constructed and approved goods store.
- Keep proper records of all chemicals and hazardous substances delivered, stored and used on site.
- Consider unknown substances and liquids as dangerous until proven otherwise.
- All containers should be clearly labelled to indicate contents. Never use a wrongly labelled container for chemicals.
- Prohibit smoking in the vicinity of dangerous chemicals
- Ensure wearing of correct personal protective equipment before handling chemicals

- Maintain the Material Safety Data Sheet of all chemicals for reference on safety precautions to be taken and the use of suitable PPE.
- When opening containers, hold a rag over the cap or lid, as some volatile liquids tend to spurt up when released.
- Wash before eating and do not eat at the work place.
- If the skin is splashed with a chemical, rinse it immediately with plenty of clean water. Eye should be flushed thoroughly with water followed by immediate medical attention.
- Eye fountain, emergency shower and breathing apparatus should be available in the vicinity of the workplace.
- Safety instructions for handling emergency situations should be displayed prominently at both the storage and use locations.

First Aid

- Provide first aid boxes at every site
- Ensure that training on the use of the first aid box is provided to a handful of staff working in the site.
- Display the list of persons who are trained on providing first aid.
- Ensure that every first aid box is marked plainly “First Aid” in English and local language.
- The responsible person or first aider should replenish the contents of the first aid box as necessary.

Personal Protective Equipment

General

- Consider the provision of personal protective equipment only after all measures for removing or controlling safety hazards have been provided reasonably impractical.
- Ensure that sufficient personal protective equipment are provided and that they are readily available for every person who may need to use them.
- The Contractor should ensure that all persons make full and proper use of the personal protective equipment provided.

- Provide instruction and training in the proper use and care of any specific protective equipment where necessary
- Do not willfully misuse, interfere with or ill-treat any protective clothing and equipment provided.
- Ensure that the personal protective equipment are in good condition. Report immediately any damage to the management for replacement. Always keep the personal protective equipment as clean as possible.

Eye Protection

- Issue eye protection equipment where there is a foreseeable risk of eye injury
- Ensure an adequate supply of goggles/shields is available.
- Keep the goggles clean and make sure they are good fit.
- Do not watch welding operations unless eyes are protected from the damaging effect of flash.

Head Protection

- No person shall enter a construction site unless he is wearing a suitable safety helmet
- Wear a safety helmet:
 - When there is the risk of being hit by falling objects
 - While on or near a construction site
 - During adverse weather conditions
 - When in any area designated as a “hard hat” area.
- Provide identification labels to all helmets in some way to prevent random exchange among wearers, with one helmet exclusive to each person.
- Inspect helmets for cracks of sign of impact or rough treatment before each usage. Destroy, remove and replace all worn, defective or damaged helmets.

Hearing Protection

- Provide ear plugs or ear muffs as required. Use re-usable ear plugs when the reduction required (15-25 dBA) is not excessive. Use ear muffs where a large attenuation of upto 40 dBA is demanded.
- Do not use dry cotton wool for hearing protection because it cannot provide any.
- Provide disposable ear plugs for infrequent visitors and ensure that they are never re-used.
- Provide re-usable ear plugs for those who need to work continuously for a long period in a high noise area.
- Use ear muffs with replaceable ear cushions because they deteriorate with age or may be damaged in use.
- Avoid wearing spectacles with ear muffs.
- Use soap and water or the recommended solvent for cleaning ear muffs.
- Provide ear muffs for those who may need to get in and out of a high noise area frequently.

Respiratory Protective Equipment

- Wear suitable respirable equipment for protection when there is a potential for small particles entering the lungs, e.g. emptying of cement bags.
- Ensure that the exhalators can provide adequate protection.
- Provide training to all persons using the respirators for their correct fitting, use, limitations and symptoms of exposure.
- Clean and inspect all respirators before and after use.
- Store respirators properly when not in use.

Safety Footwear

- Wear suitable footwear for work
- Use safety footwear on site or in other dangerous areas
- Wear suitable safety shoes or ankle boots when working anywhere where there is high risk of foot injuries from slippery or uneven ground, sharp objects, falling objects, etc.

- All safety footwear, including safety shoes, ankle boots and rubber boots, should be fitted with steel toecaps.
- Avoid wearing flip flops, high heeled shoes, slippers, light sport shoes in situations where there is a risk of foot injury.
- Keep shoe lace knots tight.

Hand Protection

- Wear suitable gloves for selected activities such as welding & cutting and manual handling of materials & equipment.
- Do not wear gloves where there is a risk of them becoming entangled in moving parts of machinery
- Wash hands properly with disinfectant soap and clean water before drinking, eating or smoking. Wash hands immediately after each operation on site when the situation warrants.

Fire Prevention, Fighting and Equipment

Before fire breaks out

- Store flammable material in proper areas having adequate fire protection systems.
- Display sufficient warning signs.
- Train selected personnel to use these fire extinguishers
- Inspect fire extinguishers regularly and replace as necessary
- Fire escape route should be kept clear at all times and clearly indicated.
- Know the escape route and assembly point.
- Display escape route maps prominently on each floor
- Carryout fire drill regularly. Designate fire officers
- Install fire alarm wherever required and test regularly.
- Provide sufficient exit signs at prominent locations for directing people to the escape staircases and routes.

When fire breaks out

- Alert all persons
- Put off the fire with appropriate fire extinguishers only when you are sure that you are safe to do so.
- Escape if in danger through the fire escape route to assembly point.
- Fire officers to carryout head count at the assembly point.

Incident and accident investigations

- Carryout the investigation as quickly as possible.
- Conduct interviews with as many witnesses as necessary
- Do not rely on any one sole source of evidence
- Use the following tools: Checklists for obtaining basic and typical information for accidents:
 - Notebook
 - Tape records
 - Camera
 - Measuring tape
 - Special equipment for the particular investigation
- Obtain answers to the following questions:
 - When did the accident occur?
 - Where did it occur?
 - Who was injured and what was damaged?
 - What caused the accident?
 - Why did it occur?
 - How could it have been prevented?
 - How can a recurrence be prevented?
- Prepare a short but sufficient investigation report that contains the following:
 - A summary of what had happened
 - A summary of events prior to the accident
 - Information gathered during the investigation
 - Details of witnesses
 - Information on injury or loss sustained

- Conclusions and possible causes of the accident
- Recommendations to prevent recurrence
- Supporting materials (photos, diagrams, etc.)

Workers Safety during Construction

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
1	Excavation in soft loose & slushy soil above 2.00 m depth sliding of earth or collapsing of sides.	The Excavation beyond 1.5 m to 2.00 m to be done in steps of minimum 500 mm offsets and also planking and strutting should be done.
2	Excavation in slippery area (water logged) – The labour may fall or machinery on site may slip.	Try to dewater the area and spread minimum 150 mm thick sand layer to avoid slipping.
3	Excavation in Rock where chiseling is involved – The fall of hammer may injure the hand, small rock pieces may injure the eyes and legs.	For hammer work, only experienced and skilled labour should be employed. Chisel should not be allowed to be held by hand, while hammering but chisel holding clamp should be provided. The labour should be provided with goggles and leg cover to protect eyes and legs, from injuries due to small rock pieces.
4	Excavation in Rock where blasting is involved - Careless handling may lead to injury to main worker or a passerby.	The work of blasting should be entrusted to only experienced persons. Provide sufficient length of fuse to give ample margin of time from the time of lighting to the time of explosion. A danger zone at least 180m diameter is to be flagged off 10 minutes before actual firing. All workmen should be sent away from danger zone except the firing man, who should be provided

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
		with a whistle.
5	Excavation for drain across road or manhole adjacent to a road – chances of a passer by falling into the excavated portion.	The area should be well barricaded & a red lamp provided at night. A watchman should be deputed to prevent any movement of persons, or vehicles.
6	During Excavation or sometimes even while concreting – Snake bites or Scorpion stings	In places where the movement of snakes are more the contractor should provide the labour with gum boots, gloves etc. and also make snake antidotes available on site. A particular care that has to be taken on such site is to always keep a vehicle available on site to rush the patient to a doctor. This applies to snake stinged patients as well.
7	Centring (form-work) and scaffolding – Form-work collapse while concreting or just before concreting especially when wooden ballies are used.	Many a times ballies joined together give way due to weak joint. Hence the use of joined ballies should be restricted. Only 2 joined ballies out of 8 ballies should be allowed. In case of double staging for a Slab at a height, utmost care should be taken to see that the top balli rests on the bottom balli. A particular care that should be taken during each concreting operating of slabs and beams is that, one carpenter and two helpers with spare ballies, nails etc. should be deputed below the slab/beam that is being concreted to watch any disturbance in the supports of the form-work below during concreting and in case of any doubt the concreting should be stopped immediately and the form work strengthened.

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
		Never allow bricks below a balli to make up the required height. This is most dangerous.
8	Form-work for beams and slabs: The bottom of beam collapses and many a times brings down the slab as well, injuring the labour and supervision staff.	This case is noticed when slender ballies are used without bracing. In fact, no concreting should be allowed without bracing at 300 mm above ground, and at mid way, in normal beams & slabs. The bracings should be for the support of beams as well as slabs.
9	Form-work for sides of a slab–The labour just rests his foot on the plank and loses balance and falls resulting a fatal accident.	This is noticed when the carpenter fixes the side shuttering of a slab with a plank just tied by binding wire to the steel reinforcements and by wooden pieces nailed in wall and plank. This is so weak a portion that with little pressure the plank gives way. Hence side shuttering should be done with a direct balli support from ground or floor, and the practice of tying planks with binding wire to the steel reinforcement should be totally avoided. A temporary railing along the periphery of slab will guard the life of labour and supervision staff.
10	Form-work for beams and slabs– Opening the form- work–Accident due to fall of materials during removing the forms.	In fact, this is a most dangerous work. One should be very careful while form-work is removed. Only trained carpenters should be deputed for the work. A safe resting place outside the area of slab as a temporary measure should be constructed from where the Slab can be removed safely. Removal of formwork during night should not be permitted under any

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
		circumstances.
11	Scaffolding–Fall of work-man, Supervision Staff, Standing on Chalis not tied properly or tied only at one end. (Chalis mainly made of Bamboos).	This is a very common negligence on the part of labour who do scaffolding work. The Chalis on which they work either span over its complete length or is tied loosely and many a times at one end only. Hence, care must be taken that the Chali do not span over the full length but some middle support should be provided and also the same is tied properly on both ends.
12	Ladders–Balli or bamboo ladders – The horizontal member breaks and the person falls. Sometimes the top face just rests on wall and the whole ladder tilts causing an accident.	The ladders should be strong enough to bear the weight of a labour with materials on head. As far as possible a hand rail should be provided at one end. The horizontal member should be preferably fixed with bolt & nuts or strong nails. When the ladder is placed across a wall the top portion should be tied firmly to a strong support so that the ladder does not move laterally.
13	Column Reinforcements – Column reinforcements mainly in independent footings collapses – Injury to persons working nearby.	The tendency of bar-benders is to tie the vertical steel with coir rope or 8 mm steel rods as ties on all four sides of the column reinforcement. This method of supporting the column reinforcements results in a weak support. Hence, the column reinforcements should be supported by strong ballies on all four sides of reinforcements and as far as possible a combined platform should be constructed out of ballies over which the reinforcements can be supported.
14	Concreting chajjas – When chajjas	While concreting chajjas care must be taken that

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
	are concreted without care and on opening the form-work the chajja would collapse, causing injury to labour on top or bottom of chajja.	the labour do not stand on the reinforcement and disturb the position. Separate scaffolding must be tied over which the labour can stand and work without disturbing the reinforcements. The main reason is in chajja the steel is placed on top face but if the labour stands on the steel, it will bend and come to bottom face and hence the chajja will fall when form-work is removed, thus, causing injury to labour working on top, or bottom.
15	Dismantling–Dismantled materials may fall on passerby or the person engaged in dismantling work may fall due to slipping. The dismantled materials may fall on persons working below.	When work of demolition is to be taken up the area should be closed for all outsiders. No one should be allowed up to 50 m. from the place of demolition. The workers engaged in demolition should be asked to wear safety belts. Helmets must be worn by all the workers engaged in dismantling work. The place should be strictly guarded at night with red lights at prominent places, and watchman should be posted.
16	Electric-Connections/Cables etc. – High tension/L.T. Electric wire passing near the slab structure-while bending, lifting or tying reinforcements the bar benders may sustain the Electric Shock, causing fatal injury.	The work in such places, should not be allowed to the workers themselves, but in such position the work must be executed under the strict supervision of a responsible Foreman or a Supervisor.
17	Electric Connections/Cables etc. – Cables below ground may get punctured during excavation & thus	Before taking up the work all available drawings should be studied, local enquiry to be made to know the position of cables and work in such

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
	electrocute the labour working. Similarly when concreting is in progress the punctured cable may prone to be fatal to the labour.	area should be got executed under strict supervision of an experienced Foreman or a Supervisor.
18	Electric Connections/Cables etc. – Temporary Electric lines near damp walls, near joinery stretched on a considerable length – There is every chance that the wire may get cut due to usage and may develop short circuits/leakages etc. and may electrocute the person touching the wire accidentally.	The Electric wires should be maintained by an electrician who should regularly checkup the insulation of wires especially placed near steel items & damp areas. The temporary wiring should be supported properly. As far as possible a good quality wire should be used which may not get damaged easily.
19	Electric and gas welding work – Drilling, polishing work – Done by temporary cables used on a number of works – Due to the fact that the wires are old & when they come in contact with water even in the process of curing the surrounding area may get affected due to leakage in the electric current thus causing damage to the workers & supervision staff.	All wiring works to be inspected by experienced electrician. All wires to be properly insulated and fixed at height on temporary poles. No welding work should be permitted near damp area. The welders to be provided with welder's goggles & gloves. As far as possible machine in good condition should be used.
20	Construction Machinery & Lifts – Concrete Mixers – Safety precautions. A mixer with hopper tried to be operated by an helper could not release brake in time thus	The Mixers with hopper should be operated by an experienced mixer operator and such mixers should not be allowed to be handled by a helper or a labour.

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
	causing injury to the person near hopper- sometimes fatal one.	
21	Construction Machinery & Lifts - Lifts - Safety precautions. (1) The lift pit if left unguarded the children of workers may fall in the pit resulting in fatal accident	(1) A brick protection wall of minimum 1.00 m height should be constructed around the Lift Pit, thus, preventing the children going near the pit. A special care should be taken to see that the children are not allowed to come near the machinery.
	(2) The manually operated brakes of the lift failed or the communication between the labour at the top and the liftman failed and thus, the lift was not controlled and resulted in fatal accident.	(2) The condition of the lift must be maintained properly. The lift operator should be well trained. The labour receiving the bucket at top should be smart and active enough to convey the message of stopping & releasing the lift-to-lift operator properly.
22	Water Storage Tank for general use & curing - chances of children of workers falling in the tank with fatal accident.	The water tanks constructed on site should be protected by at least 1.00 m high walls on four sides, so that the children do not fall.
23	Misuse of lift by labour and sometimes supervision staff. The lifts that are meant for lifting materials used by labour to go to upper floors – The labour thus traveling many a times get injured.	No person should be allowed to go to upper floors by lifts that are mainly meant for conveying the building materials. Fatal accidents have taken place due to above action of workers.
24	Site Cleaning–Cleaning top floors of buildings – Upper portion of any structure – Throwing waste materials broken concrete pieces,	This dangerous practice should not be allowed at all. The materials should be brought to the ground with the help of lift or the use of rope over pulley with a bucket, thus bringing down

Sr. No.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
	brick bats, sand etc. straightway from top to ground injuring person below or even a passerby.	materials safely.
25	Bar bending work-Helpers of bar benders to follow short cut method, throw surplus steel pieces from top floors to ground and may cause fatal injuries.	This is a not a proper practice. The helpers should bring the rods to ground with the help of lift or rope & pulley.

APPENDIX 11- GUIDELINES FOR ENVIRONMENT FRIENDLY CONSTRUCTION METHODOLOGY

The contractor shall be deemed to have acquainted himself with the requirements of all the current statutes, ordinances, by-laws, rules and regulations or their instruments having the force of law including without limitation those relating to protection of the environment, health and safety, importation of labour, demolition of houses, protection of environment and procurement, transportation, storage and use of explosives, etc.

1. Protection of Environment

- The contractor will take all necessary measures and precautions and ensure that the execution of the works and all associated operations on site or offsite are carried out in conformity with statutory and regulatory environmental requirements including those prescribed in EMP.
- The contractor will take all measures and precautions to avoid any nuisance or disturbance to inhabitants arising from the execution of works.
- All liquid waste products arising on the sites will be collected and disposed of at a location on or off the sites and in a manner that will not cause either nuisance or pollution.
- The contractor will at all times ensure that all existing water courses and drains within and adjacent to the site are kept safe and free from any contamination.
- The contractor will submit details of his temporary drainage work system (including all surface channels, sediment traps, washing basins and discharge pits) to the Project Implementation Unit/ Environment Officer for approval prior to commencing work on its construction.
- The contractor will arrange all the equipment in good condition to minimize dust, gaseous or other airborne emissions and carry out the works in such a manner as to minimize adverse impact on air.
- Any vehicle with an open load-carrying area used for transporting potentially dust-producing material will have properly fitted side and tailboards. Materials having the potential to produce dust will not be loaded to a level higher than the side and tail boards and will be covered with a clean tarpaulin in good condition.

- The contractor will take all necessary measures to ensure that the operation of all mechanical equipment and condition processes on and off the site will not cause any unnecessary or excessive noise, taking into account applicable environmental requirements.
- The contractor will take necessary measures to maintain all plant and equipment in good condition.
- Where the execution of the works requires temporary closure of road to traffic, the contractor will provide and maintain temporary traffic diversions subject to the approval of the EO/Consultant.
- Where the execution of the works requires single-lane operation on public road the contractor will provide and maintain all necessary barriers, warning signs and traffic control signals to the satisfaction of the EO/ Consultant.
- Wherever traffic diversions, warning signs, traffic control signals, barriers and the like are required, the contractor will install them to the satisfaction of EO/ Consultant prior to commencing the work, in that area.
- Contractor will install asphalt plants and other machineries away from the populated areas as per laid down regulations.
- Permit for felling of trees will be obtained from the forest department before the execution of any work.
- Trees and plants going to be uprooted will be duly compensated and maintained up to 3 years.
- Mist sprays should be provided at appropriate places for preventing dust pollution during handling and stockpiling of stones and loose earth.
- Over Burden (OB) waste dumps shall be sprayed with water, as they are the major source of air borne particulate matter.
- OB waste dumps shall be reclaimed / afforested to bind the loose soil and to prevent soil erosion. The frequency of sprinkling should be fixed as per the seasonal requirement and in consultation with Consultant.
- Regular water spraying on haulage roads during transportation of construction material by water sprinklers.

- The frequency of sprinkling should be fixed as per the seasonal requirements in consultation with engineer.
- Transfer point for transporting construction material shall be provided with appropriate hoods/ chutes to prevent dust emissions.
- Dumping of construction material should be from an optimum height (preferably not too high), so as to reduce the dust blow.
- Innovative approaches of using improvised machinery designs, with in-built mechanism to reduce sound emission.
- Procurement of drill loaders, dumpers and other equipment with noise proof system in operator's cabin.
- Confining the equipment with heavy noise emissions in soundproof cabins, so that noise is not transmitted to other areas.
- Regular and proper maintenance of noise generating machinery including the transport vehicles to maintain noise levels.
- Provisions should be made for noise absorbing pads at foundations of vibrating equipments to reduce noise emissions.

2. QUARRY OPERATIONS

The Contractor shall obtain materials from quarries only after the consent of the Forest Department or other concerned authorities and in consultation with the EO/ Consultant. The quarry operations shall be undertaken within the purview of the rules and regulations in force and instructions.

3. PREVENTION OF WATER COURSES FROM SOIL EROSION AND SEDIMENTATION SILTATION

The Contractor shall apply following mitigation measures to prevent sedimentation and pollution of watercourses:

- To prevent increased siltation, if needed existing bridges may be widened downstream side of the water body;

- Cement and coal ash should be stacked together, fenced by bricks or earth wall, and kept away from water, to prevent leachate formation and contamination of surface and ground water;
- If needed, slope of the embankments leading to water bodies should be modified and re-channelized to prevent entry of contaminants into the water body;
- During construction silt fencing (consists of geo-textile with extremely small size supported by wire-mesh mounted on a panel made up of angle frame) could be used along the road at all canals and rivers to prevent sediments from the construction site to enter into the watercourses.

4. POLLUTION FROM HOT-MIX PLANTS AND BATCHING PLANTS

Bituminous hot-mix plants and concrete batching plants shall be located sufficiently away from habitation, agricultural operations. The Contractor shall take every precaution to reduce the levels of noise, vibration, dust and emissions from his plants and shall be fully responsible for any claims for damages caused to the owners of property, fields and residents in the vicinity.

5. ARRANGEMENT FOR TRAFFIC DURING CONSTRUCTION

The Contractor shall at all times carry out work on the road in a manner creating least interference to the flow of traffic with the satisfactory execution. For all works involving improvements to the existing state highway, the Contractor shall, in accordance with the directives of the Consultant, provide and maintain, during execution of the work, a passage for traffic either along a part of the existing carriageway under improvement, or along a temporary diversion constructed close to the state highway. The Contractor shall take prior approval of the Consultant regarding traffic arrangements during construction.

6. TRAFFIC SAFETY AND CONTROL

- Where subject to the approval of the Consultant the execution of the works requires temporary closure of road to traffic use, the Contractor shall provide and maintain temporary traffic diversions. The diversion shall generally consist of 200 mm thickness of gravel 4.5 meters wide laid directly upon natural ground and where any additional earthworks are required for this purpose that will be provided under the appropriate payment items.

- Where the execution of the works requires single-lane operation on public road, the Contractor shall provide and maintain all necessary barriers, warning signs and traffic control signals to the approval of the Consultant.
- The colour, configuration, size and location of all traffic signs shall be in accordance with the code of practice for road sign. In the absence of any detail or for any missing details, the signs shall be provided as directed by the Consultant.
- The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, marking, flags, lights and flagmen as may be required by the Consultant for the information and protection of traffic approaching or passing through the section of the road under improvement. Before taking up any construction, an agreed phased programme for the diversion of traffic or closer of traffic on the road shall be drawn up in consultation with the Consultant.
- At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the carriageway) the lane width path for traffic shall be clearly marked with the aid of pavement markings, painted drums or a similar device to the directions of the Consultant. At night, the passage shall be delineated with lanterns or other suitable light source.
- One-way traffic operation shall be established whenever the traffic is to be passed over part of the carriageway inadequate for two-lane traffic. This shall be done with the help of temporary traffic signals or flagmen kept positioned on opposite sides during all hours. For regulation of traffic, the flagmen shall be equipped with red and green flags and lanterns / lights.
- On both sides, suitable regulatory / warnings signs as approved by the PIU-APRDC shall be installed for the guidance of road users. On each approach, at least two signs shall be put up, one close to the point where transition of carriageway begins and the other 120 m away. The signs shall be of design and of reflectory type, if so directed by the Consultant.
- Upon completion of the works for which the temporary traffic arrangements or diversions have been made, the Contractor shall remove all temporary installations and signs and

reinstate all affected roads and other structures or installations to the conditions that existed before the work started, as directed by the Consultant.

7. HEALTH AND SAFETY

The contractor shall take all measures and precautions necessary to ensure the health, safety and welfare of all persons entitled to be on the site. Such precautions shall include those that, in the opinion of the Consultant, are reasonable to prevent unauthorized entry upon the site and to protect members of the public from any activities under the control of the contractor. The contractor's responsibilities shall include but not be limited to:

- The provision and maintenance of the Contractor's Equipment in a safe working condition and the adoption of methods of work that are safe and without risks to the health of any person entitled to be on the site.
- The execution of suitable arrangements for ensuring safety and absence of risks to health in connection with the use, handling, storage, transport and disposal of articles and substances.
- The provision of lighting, including standby facilities in the event of failure that, in the opinion of the Consultant, is adequate to ensure the safe execution of any works that are to be carried out at night.
- The provision of protective clothing and safety equipment, with such personnel and equipment and such information, instruction, training and supervision as are necessary to ensure the health and safety at work of all persons employed on or entering on the site in connection with the works, including the Consultant supervisory staff, all in accordance with the laws.
- Near towns, villages and all frequented places, trenches and foundation pits shall be securely fenced provided with proper caution signs and marked with lights at night to avoid accidents. Contractor shall take adequate protective measures to see that the excavation operations do not affect or damage adjoining structures.
- The contractor shall not use or generate any materials in the works, which are hazardous to the health of persons, animals or vegetation. Where it is necessary to use some substances, which can cause injury to the health of workers, the Contractor shall provide protective clothing or appliances to his workers.

- The contractor will take all measures necessary to safeguard the health; safety and welfare of all persons entitled to be on site and will ensure that works are carried out in a safe and efficient manner.
- The contractor will provide, and ensure the utilization of appropriate safety equipment for all workmen and staff employed directly or indirectly by the contractor. Such safety equipment will include but not be limited to the safety helmets, goggles and other eye protectors, hearing protectors, safety harnesses, safety equipment for working over water, rescue equipment, fire extinguishers and first-aid equipment. The personnel working at vulnerable locations at site will wear safety helmets and strong footwear.
- The contractor will provide an adequate number of latrines and other sanitary arrangements at areas of the site where work is in progress and ensure that they are regularly cleaned and maintained in a hygienic condition.

8. FIRST AID

The provision and maintenance of suitably equipped and staffed first aid stations throughout the extent of the works to the satisfaction of the Consultant. The contractor shall allow in his prices and the responsible for the costs of all such site welfare arrangements and requirements.

- Injuries might occur during the construction period. It is therefore pertinent to provide first aid facilities for all the construction workers. At construction camps and at all workplaces first aid equipment and nursing staff must be provided. Since many of the workplaces may be far away from regular hospitals, an indoor health unit having one bed facility every 250 workers needs to be provided.
- Adequate transport facilities for moving the injured persons to the nearest hospital must also be provided in ready to move condition.
- The first-aid units apart from an adequate supply of sterilized dressing material should contain other necessary appliances as per the factory rules.

9. MAINTENANCE

- All buildings, rooms and equipment and the grounds surrounding them shall be maintained in a clean and operable condition and be protected from rubbish accumulation.
- Each structure made available for occupancy shall be of sound construction, shall assure adequate protection against weather, and shall include essential facilities to permit maintenance in a clean and operable condition.
- Comfort and safety of occupants shall be provided for by adequate heating, lighting, ventilation or insulation when necessary to reduce excessive heat.
- Each structure made available for occupancy shall comply with the requirements of the Uniform Building Code. This shall not apply to tent camps.

10. MAINTENANCE OF DIVERSIONS AND TRAFFIC CONTROL DEVICES

Signs, lights, barriers and other traffic control devices, as well as the riding surface of diversion shall be maintained in a satisfactory condition till such time they are required as directed by the Consultant. The temporary travelled way shall be kept free of dust by frequent applications of water, if necessary.

FORMATS

P1: IDENTIFICATION OF DISPOSAL SITE LOCATIONS
(To be filled by the Contractor)

LOCATION DETAILS:

(Give chainages and nearest settlements from both ends)

Sl. No.	Criteria on which information for each site is to be collected	Site 1	Site 2	Site 3	Site 4
1	Existing Land Use				
2	Area covered (m ²)				
3	Total Material that can be dumped within the site (m ²)				
4	Depth to which dumping is feasible (m)				
5	Distance of nearest watercourse (m)				
6	Nearest Settlement (m)				
7	Date/s of Community Consultation/s				
8	Whether the community is agreeable to sitting of dumping site (Y/N)				
9	Date of Permission from Villager/local community				
10	Proposed future use of the Site				
11	Selected Site (tick any one column only)				

Enclosures (Tick as appropriate)

1. Map of each location
2. Photographs
 - a. Each disposal location
 - b. Each community consultation
3. Photo copy of Agreement

Remark

Submitted

Signature.....

Name.....

Approved

Signature.....

Name.....

**Environmental Engineer
Contractor**

**Environmental Engineer
Consultant**

P2: SETTING-UP CONSTRUCTION CAMP AND STORAGE AREA
(To be filled by the Contractor)

LOCATION DETAILS:

Construction Stage Report: Date_____Month_____Year_____

(Site Layout of Construction camp and working drawings of dwelling units with allied facilities to be attached with format)

Format to be submitted before target date of establishing camps

Location of Camp

Sl. No.	Item	Unit	Details	Remarks by CMU if any
1.	Detail of item camp			
a.	Size of Camp	m x m		
b.	Area of Camp	Sq.m		
c.	Distance from Nearest Settlement			
d.	Distance from Nearest Water Source	Type/Size/Capacity/ present Use/Ownership		
	Date of camp being operational dd/mm/yy			
	Present land use			
	No of trees with girth > 0.3m.			
e.	Details of Storage area (Availability of impervious surface)	Mxm		
f.	Availability of separate waste disposal from storage area	Cum		
2.	Details of topsoil stacking			
a.	Quantity of top soil removed	Sq.m		
b.	Detail of storage of topsoil	Describe stacking arrangement		
3.	Details of workforce			
a.	Total No of Laborers	Nos		
b.	Total no of Male Workers	Nos		
c.	No of Male Workers below 18 years of age	Nos		
d.	Total No of Female Workers	Nos		
e.	No of Female workers below 18 years of age	Nos		
f.	No of children	Nos		
4.	Details of dwelling units			
a.	No of dwellings/huts			
b.	Minimum Size of Dwelling	Mxm		

P3: ESTABLISHMENT OF BORROW AREAS
(To be submitted by Contractor for taking consent for opening of Borrow area)

Location Details:

Sl. No.	Location				Area (m ²)	Quantity of Available Material	Type of Material	Distance from nearest Water Course (m)	Distance from nearest Settlement	Land Use		No. of Trees to be Affected	Approved by EO (Y/N)	Remark
	Name of Village	Chainage (km)	Side (LHS /RHS)	Haul road length (m)						Before	After			

Attach Photograph of Proposed Site, Location Map, Agreement

Rehabilitation Plan Measures

Location 1:

Location2:

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

**P4: ESTABLISHMENT OF HOT MIX PLANT /BATCH MIX PLANT
(To be submitted by Contractor for taking permission from IC)**

Location details:

Sl. No.	Location				Area (m ²)	Distance from nearest Water Course (m)	Distance from nearest Settlement	Existing Land Use	Prevalent Wind Direction	Weather in Down Wind Direction (Y/N)	Approved by EO (Y/N)	Remark
	Name of Village	Chainage (km)	Side (LHS /RHS)	Haul road length (m)								

1. Attach Photograph of Proposed Site

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

P5: ROAD SAFETY REPORTING FORMATS

Location details:

One time reporting before commencement of construction. The Construction Zone Sketch of construction zone showing all sub zones and location of signs, etc. to be attached with format (Reporting by Contractor to IC) Format on Acquisition of Temporary diversions to be attached with format Construction stage: Monthly Report
Date.....Month.....Year.....DIVERSION NO.____location
(km_____)

Sl. No.	Item	Unit	Compliance	Remarks
Details of Construction Zone				
1.	Length of Construction Zone	km		
2.	Distance between this and next construction zone	km		
3.	Length of transition sub zone (should be min 50 for a speed of 50 km/hr)			
4.	Length of work sub zone in urban stretch (should be <2 km)	km		
5.	Length of work sub zone in rural stretch (5-10 km)	km		
6.	Distance between two work sub zones			
Signage's in Construction Zones				
1.	Sign saying 'Men at Work' 1 km ahead of transition sub zone	Y/N		
2.	Supplementary sign saying diversion 1 km provided	Y/N		
3.	Sign saying 'Road Closed ahead' provided	Y/N		
4.	Compulsory Right Turn /Left sign provided	Y/N		
5.	Detour sign placed			
6.	Sharp deviation sign placed at end of advance warning sub zone	Y/N		
Signage in Transition Sub Work Zone				
1.	Signage saying 'Keep Right /Left' provided	Y/N		
2.	Delineators placed along length of transition	Y/N		
Signage in work sub zone				
1.	Hazard Marker placed where railing for CD structure on diversion starts	Y/N		
2.	Barricade on either side of work sub zone	Y/N		
Signage in Termination sub zone				
1.	Sign for indication of end of work zone 120 m from end of termination sub zone	Y/N		
Road Delineator				
1.	Roadway indicators provided			
2.	Hazard Markers provided			
3.	Object Markers Provided			

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

P6: ARRANGEMENT FOR TEMPORARY LAND

Reporting by Contractor to Independent Consultant

Location Details:

Construction stage: quarterly Report – Date: _____ Month _____ Year _____

(Site Layout of all locations to be attached with format)

Sl. No.	Item	Target date for Establishment	Date of Establishment	Location					Present Land use	Size (m x m)	Existing Trees >30 cm girth	Dist. From nearest settlement	Dist. From nearest water source	Site approved or not (Y/N)	Remarks by CMU (PRBDB) if any
				Name of Village	Chainage (km)	Side (LHS /RHS)	Area (m ²)	Haul road length (m)							
1	Borrow Areas BA 1														
2	Workers Camps WC 1														
3	Site for Batching Plant BP 1														
4	Site for Hot Mix Plant HMP 1														
5	Stock Yard SY 1														

Remark

Submitted

Signature.....

Name.....

**Environmental
Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental
Engineer
Independent
Consultant**

P7: POLLUTION MONITORING

Location Details:

Construction Stage: Report – Date: _____ Month _____ Year _____

Mitigation measures suggested in last report complied or Not.....

If not reasons thereof.....

(Location at which monitoring to be conducted as per EMP)

Sl. No.	Chainage (km)	Details of locations	Duration of monitoring	Instruments used	Completion	Standards	Results	Reasons for exceeding standards	Mitigation Measures suggested	Type of area (Residential /Industrial / Commercial)	Remarks
1. Air Monitoring											
						SPM RSPM HC SO _x NO _x	SPM RSPM HC SO _x NO _x				
2. Water Monitoring											
						pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease	pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease				

Sl. No.	Chainage (km)	Details of locations	Duration of monitoring	Instruments used	Completion	Standards	Results	Reasons for exceeding standards	Mitigation Measures suggested	Type of area (Residential /Industrial / Commercial)	Remarks
3. Soil Monitoring											
						pH Organic Matter Alkalinity Conductivity Water holding capacity Pb	pH Organic Matter Alkalinity Conductivity Water holding capacity Pb				
4. Noise Monitoring											
						L day equivalent L night equivalent L equivalent	L day equivalent L night equivalent L equivalent				

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Independent Consultant**

P8: TREE CUTTING/STUMP REMOVAL

Location Detail:

Date: _____ Month _____ Year _____

Sl. No.	Section (km)	Distance from edge of existing road	Identification Number Marked in Field	Species		Girth (cm)	Dry / Green	Average Height (m)	Remarks
				Local	Botanical Name				

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer.
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

P9: IDENTIFICATION OF SOURCE OF WATER FOR CONSTRUCTION

Location details:

Construction Stage: Monthly Report – Date:
Month _____ Year _____

Sl. No.	Source (Name)	Location /Ch.	Distance from Road	Permission Required	Remarks

Remark

Submitted

Signature.....

Name.....

**Environmental
Engineer.
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

**C1: DETAILS OF EARTHWORK
(To be filled by the Contractor)**

Location details:
Monthly Report for Each Borrow Area under use

Month.....

Reporting

Date of Submission.....

Location of Borrow Area under use

	Name of Village	Chainage (km)	Side (LHS / RHS)	Haul road length (m)
I				
II				

2. Details of Borrow Areas

2.1	Capacity of the Borrow Area	
2.2	Percentage of the capacity exhausted	
2.3	Total quantity of the Earth Excavated (in cum)	
2.4	Quantity of Top Soil removed from the Borrow Areas	
2.5	Location of Top Soil stored removed	
2.6	Quantity of Top Soil stored at the beginning of the month	
2.7	Quantity of Top Soil utilized at the end of the month	
2.8	Location (s) where Top Soil has been utilized (Specify on a location plan)	
2.9	Quantity of earthwork excavation from existing road	
2.10	Total quantity of earthwork reused in cum. (5%)	
2.11	Location disposal (if other than sites) (Specify clearly on a location plan)	
2.12	Quantity of earthwork re-used in fill operation	
2.13	Location of borrow areas in disuse / exhausted	
2.14	Outline a rehabilitation plan for each of the exhausted borrow areas with special reference to Erosion Protection Measures. Also, submit at separate detailed rehabilitation plan for exhausted borrow areas for approval supported adequately with layouts, plans and drawings.	

Remark

Submitted

Signature.....

Name.....

Approved

Signature.....

Name.....

**Environmental
Engineer.
Contractor**

**Environmental Engineer
Consultant**

C2: DETAILS OF HOT MIX PLANT

(To be filled by the Contractor)

Location details:

Reporting Month.....

Date of Submission.....

1. Environment Features of the surrounding area

1.1	Name and location of Hot Mix Plant (w.r.t. PWD km ch.)	
1.2	Wind direction	
1.3	Name (s), distance population and type of settlements in a 1.5 km radius of site.	

2. Draw Sketch Plan of HMP clearly indicating distance and approach roads.

3. Details of HMP and Mitigation Measures taken

3.1	Installed Capacity	
3.2	Average Utilization	
3.3	Make	
3.4	Model	
3.5	Last Serviced	

4. Explain Air Pollution Control Measures taken at the HMP site

5. Explain Noise Pollution Control Measures taken at the HMP site

Remark

Submitted

Signature.....

Name.....

**Environmental
Engineer.
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

C3: DETAILS OF LAND FILL OPERATIONS

(To be filled by the Contractor)

Location details:

Monthly Report for Each Contract Package

Reporting Month.....

Date of Submission.....

1. Environment Features of the surrounding area

1.1	Location of each land fill site (Provide sketch Map below)	Name of Village	Chainage (km)	Side (LHS/RHS)	Haul road length (m)
	I				
	II				
1.2	Capacity of each land fill site				
1.3	Safety measure taken at land fill site (s)				
1.					
2.					
3.					
4.					
5.					

Remark

Submitted

Signature.....

Name.....

**Environmental
Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

C4: DETAILS OF MACHINERY IN OPERATION
(To be filled by the Contractor)

Location details:

Monthly Report for Each Contract Package

Reporting Month.....

Date of Submission.....

(Attach copy of Pollution emission control certificate every 3 months)

1. Details of Machinery Operation

1.1	Total machinery in operation (Nos.)	
1.2	Number of pavers	
1.3	Number of rollers	
1.4	Number of excavators	
1.5	Number of graders	Nos.
1.6	Number of dumpers	Nos.
1.7	No. of workshops with repairs facility (furnish location and type of facility provided)	Workshop on Facility Location Provided
1.8	Number of vehicles in repair at each location	
1.9	Number of oil interceptor provided in each repair / fuelling site	
1.10	Total quantity of oil and wastes recovered in each interceptor during last month.	Oil waste Liters, Kg.
1.11	Details of waste disposal. (Whether Sold/ Disposed)	

Remark

Submitted

Signature.....

Name.....

**Environmental
Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

C5: REDVELOPMENT OF BORROW AREAS

(To be filled by the Contractor)

Location Details:

Construction stage: Monthly Report-
Date_____Month_____Year

Drawing for Redevelopment to be attached for each Borrow Area (photographs of sites before use & after rehabilitation to be attached)

Sl. No.	Borrow Area No.	Borrow Area Location					Land use	Rehabilitati on Measures	Date of approval of Rehabilitation on
		Name of Village	Chainage (km)	Side (LHS/ RHS)	Area (M2)	Haul road length (m)			

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

C6: SAFETY CHECK LIST
(To be filled by the Contractor)

1 Contract No. _____
 2 Name of Contractor _____
 3 Representation _____
 4 Name of Safety Officer _____
 5 Date of Inspection _____
 Location 1..... Location 2..... Location 3

Adequate at time of Inspection Needs Improvement Needs Immediate Attention	Location 1			Location 2			Location 3			Remarks
	A	B	C	A	B	C	A	B	C	
General										
House Keeping										
Stacking of Material										
Passageway										
Lighting										
Ventilation										
Others										
Electrical										
Switches										
Wirings										
Fixed Installation										
Portable Lighting										
Portable Tool										
Welding Machine										
Others										
Fire Prevention										
Fire Fighting Appliance										
Dangerous Goods Store										
Gas Welding Cylinders										
Others										
Others										
Dust Control										
Noise Control										
First Aid Equipment										
Washing Facility										
Latrine										
Canteen										
Provision of Personal Protective										
Helmet										
Eye Protector										
Ear Protector										
Respirator										
Safety Shoes										
Safety Belts										
Others										

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

C7: ACCIDENT REPORT
(To be completed on Occurrence of Injury by the Safety Officer, Contractor)

Type of Accident

D01 ()	Fall of person from a height	D11 ()	Explosion
D02 ()	Slip, trip or fall on same level	D12 ()	Fire
D03 ()	Struck against fixed objects	D13 ()	Contact with hot or corrosive substance
D04 ()	Struck by flying or falling objects	D14 ()	Contact with poisonous gas or toxic substances.
D05 ()	Struck by moving objects	D15 ()	Contact with poisonous gas or toxic substances
D06 ()	Struck / caught by cable	D16 ()	Hand tool accident
D07 ()	Stepping on nail etc.	D17 ()	Vehicle / Mobile plant accident
D08 ()	Handling without machinery	D18 ()	Machinery operation accident
D09 ()	Crushing / burying	D19 ()	Other (please specify)
D10 ()	Drowning or asphyxiation		

Agent Involved in Accident

E01 ()	Machinery	E11 ()	Excavation / underground working
E02 ()	Portable power appliance	E12 ()	
E03 ()	Vehicle or associated equipment / machinery	E13 ()	Ladder
E04 ()	Material being handled, used or stored	E14 ()	Scaffolding / gondola
E05 ()	Gas, vapor, dust, fume or oxygen	E15 ()	Construction formwork, shuttering and false work.
E06 ()	Hand tools	E16 ()	Electricity supply cable, wiring switchboard and associated equipment
E07 ()	Floor edge	E17 ()	Nail, slinter or chipping
E08 ()	Floor opening	E18 ()	Other (Please specify)
E09 ()	Left shaft	E19 ()	
E10 ()	Stair edge		

Unsafe Action Relevant to the Accident

F01 ()	Operating without authority	F11 ()	Failure to use eye protector
F02 ()	Failure to secure objects	F12 ()	Failure to use respirator
F03 ()	Making safety devices inoperative	F13 ()	Failure to use proper clothing
F04 ()	Working on moving or dangerous equipment	F14 ()	Failure to use warn others or given proper signals
F05 ()	Using un-safety equipment	F15 ()	Horseplay
F06 ()	Adopting unsafe position or posture	F16 ()	No unsafe action
F07 ()	Operating or working at unsafe speed	F17 ()	Others (please specify)
F08 ()	Unsafe loading, Placing, mixing etc.	F18 ()	
F09 ()	Failure to use helmet	F19 ()	
F10 ()	Failure to use proper footwear		

G01 ()	No protective gear	G08 ()	Unsafe layout of job, traffic etc.
G02 ()	Defective protective gear	G09 ()	Unsafe process of job methods

G03 ()	Improper dress / footwear	G10 ()	Poor housekeeping
G04 ()	Improper guarding	G11 ()	Lack of warning system
G05 ()	Improper ventilation	G12 ()	Defective tool, machinery or materials
G06 ()	Improper illumination	G13 ()	No unsafe condition
G07 ()	Improper procedure	G14 ()	Others (please specify)

Personal Factor Relevant to the Accident

H01 ()	Incorrect attitude /motive	H04()	Unsafe act by another person
H02 ()		H05()	No unsafe personal factor
H03 ()		H06()	Other (please specify)

Remark

Submitted

Signature.....

Name.....

Approved

Signature.....

Name.....

**Environmental Engineer
Contractor**

**Environmental Engineer
Consultant**

Part-II –To be completed Upon Finalization of Employee's compensation Claim

101 () No permanent incapacity

102 () Less than 5% incapacity

103 () More than 5% incapacity

104 () Final

Submitted

Signature.....

Name.....

Approved

Signature.....

Name.....

**Environmental Engineer
Contractor**

**Environmental Engineer
Consultant**

C8: POLLUTION MONITORING

Location Details:

Construction Stage: Report-Date: _____Month_____Year_____

If not reasons thereof.....

(Location at which monitoring to be conducted as per EMP)

Sl. No.	Chainage	Details of location	Duration of monitoring	Instruments used	Completion	Standards	Results	Reasons for exceeding standards	Mitigation measures suggested
1. Air Monitoring									
2. Water Monitoring									
3. Soil Monitoring									
4. Noise Monitoring									

Remark

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

C9: ENHANCEMENT MEASURES
(To be filed up by Contractor)

Location Details:

[illegible]

Remarks

Submitted

Signature.....

Name.....

Environmental Engineer Contractor

Approved

Signature.....

Name.....

Environmental Engineer Consultant

C10: RESTORATION OF CONSTRUCTION SITES
(To be filed up by Contractor)

Location details:

(Reporting by Contractor to IC)

Construction stage: Monthly Report-Date.....Month.....Year.

Sl. No.	Contract Package	Labour Camp		Construction Camp		Plant Site		Borrow areas		Disposal Locations		Top Soil	
		O	R	O	R	O	R	O	R	O	R	Preserved	Restored

Remarks

Submitted

Signature.....

Name.....

Environmental Engineer
Contractor

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

01: POLLUTION MONITORING

Location details:

Construction Stage: Report-Date: _____ Month _____ Year _____

Mitigation measures suggested in last report complied or Not.....

If not reasons thereof

(Location at which monitoring to be conducted as per EMP)

Sl. No.	Chainage (km)	Details of locations	Duration of monitoring	Instruments used	Standards	Results	Reasons for exceeding standards	Mitigation Measures suggested	Type of area (Residential /Industrial Commercial)	Remarks
					SPM RSPM HC SOx NOx	SPM RSPM HC SOx NOx				
					pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease	pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease				
					pH Organic Matter Alkalinity Conductivity Water holding capacity Pb	pH Organic Matter Alkalinity Conductivity Water holding capacity Pb				
					L day equivalent L night equivalent L equivalent	L day equivalent L night equivalent L equivalent				

Remarks

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

O2: CLEANING OF CULVERT OPENINGS AND LONGITUDINAL DRAINS
(To be filled up by IC)

Location details:

Construction Stage: Report-Date: _____Month_____Year

Sl. No.	Structural No.	Pre monsoon	Date	Post monsoon	Date
Name of the Corridor					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Remarks

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental
Engineer Consultant**

**CMU 1: FORMAT FOR KEEPING RECORDS OF CONSENT OBTAINED BY
CONTRACTOR**

Location details:

Construction Stage: Report-Date: _____Month_____Year_____

Sl. No.	Contractor's Name	Clearance	Applicable Acts	Agencies	Obtained on	Valid upto	Remarks
Name of the Corridor							
1							
2							
3							
4							
5							
6							

Remarks

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental
Engineer Consultant**

CMU 2: CHECK LIST FOR ENVIRONMENT INSPECTION
(Points / Issues to be covered)

Location details:

Date of Inspection _____

Sl. No.	ESMP Measures
1	Provision of a personnel accountable for implementation of ESMP /Safety Measures with Contractor
2	Consent of PCB to Establish HMP
3	Consent of PCB to operate HMP
4	Compliance of PCB Conditions for HMP installation and operation
5	Whether compliance reported through monthly Progress report to Divisional Office of Executive Engineer
6	PUC taken for all Construction vehicles
7	Concrete platform with trap under bitumen boiler, Fuel Tank for HMP and generator set provided or not
8	Precautions to prevent contamination of soil by emulsion, Bitumen, oil and lubricant taken while storing
9	Providing cover to fine construction material & bituminous mix during transportation
10	Borrow areas:
	a) Borrow areas approved by Department
	b) Existing land was used
	c) Nos Opened
	d) Available Quantity
	e) Utilized Quantity
	f) Balance Quantity
11	g) Nos of Borrow areas Rehabilitated
	Spoil and debris disposal:
	a) Present status of land
12	b) Closure and completion plan
	Site specific traffic Safety management Plan:
13	a) Contractor installed the warning /regulatory Traffic signs at the construction site
	b) The arrangement adequate
14	Safety equipment i.e. helmet, gloves, gumboot, mask, earplugs etc. provided to workers
15	Health Facility at camp and work site i.e. First Aid kit & suitable vehicle for conveyance in case of emergency / accident
16	Permit for Procuring River sand
17	License from Department of mines for quarrying
18	Consent to establish / operation of crusher
19	Provision of labour camp with sanitation & potable water
20	Fire precautions at Hot Mix Plant and site Office
21	Air and noise monitoring done in camp site
22	Whether any cultural property is being impacted
23	Status of drainage provision in camp area
24	General House Keeping

Remarks

Submitted

Signature.....

Name.....

Approved

Signature.....

Name.....

**Environmental Engineer
Contractor**

**Environmental Engineer
Consultant**

CMU 3: SUMMARY SHEET
(To be filled monthly by IC and Recorded)

Location Details:

Month _____

Date _____

Sl. No.	Description	Remarks
1	No Objection Certificate	
A	Hot mix Plant	
	Location 1	
	Location 2	
	Location 3	
B	Cement batching Plant	
	Location 1	
	Location 2	
	Location 3	
2	Pollution Under Certificate	
	Vehicles	
	Machineries	
3	No objection Certificate for Diesel Gen set	
	Location 1	
	Location 2	
4	Labour Camps	
	No. of sites Identified	
	Approved	
	Opened	
	Conforms to conditions imposed at the time of opening of sites	
	Closed	
5	Workers	
	No of workers employed	
	No of male workers	
	No of female workers	
	No of day workers	
6	Borrow Area	
	No. of sites identified	
	Approved	
	Opened	
	Quantity of available material	
	Quantity of material Utilized	
	Quantity of Topsoil preserved	
	Quantity to top soil used	
	No of sites closed	
	No. of sites Rehabilitated	
7.	Quarry	
	No. of sites identified	
	Approved	
	Opened	

Sl. No.	Description	Remarks
	Material available	
	Material obtained	
	No. of sites Rehabilitated	
8	Disposal Locations	
	No. of sites identified	
	Approved	
	Opened	
	Amount of Waste disposed	
	Type of waste disposed	
	No. of sites Rehabilitated	
9	Road Safety	
	Road Safety norms followed as per guidelines, SP-55 and approved Traffic plan	
10	Cleaning of Culvert/ drains	
	No. of culverts/ drains	
	Nos. Cleaned	
11	Trees	
	No of trees marked for cutting in field	
	No of trees cut	
	No of trees to be Planted	
	Trees Planted	
12	Haul Roads	
	Adequacy of maintenance of Haul Road Network	

Remarks

Submitted

Signature.....

Name.....

**Environmental Engineer
Contractor**

Approved

Signature.....

Name.....

**Environmental Engineer
Consultant**

MONTHLY REPORTING FORMAT FOR EMP PROVISIONS COMPLIANCES

Responsibility : contractor to the Supervision Consultant and onwards to Independent Consultant
Frequency : Monthly and subsequently Quarterly

Sl. No .	EMP Provisions including General and Specific conditions as part of the Contract document	Status of Compliance	Photographic evidences if any	Reasons for variations	Future action plan/remedial measures needed	Remarks
1						
2						
3						
4						
5						

Note : 1.The monthly reporting should address all the issues raised through various correspondences from the supervision consultant and should necessarily describe their detailed status of compliance along with any available evidences annexed to the chapter.
2. Environmental performance indicators Matrix to be attached with the monthly/quarterly reports.

ENVIRONMENT MANAGEMENT PLAN

\$

SCHEDULE - E
(See Clauses 2.1 and 14.2)
MAINTENANCE REQUIREMENTS

1 Maintenance Requirements

- 1.1 The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- 1.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.
- 1.3 All Materials, works and construction operations shall conform to the MoRT&H Specifications for Road and Bridge Works 5th Revision, 2013 and the relevant IRC publications (updated upto the date preceeding the last date of submission of bid by **28 (twenty eight)** days). Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2 Repair/rectification of Defects and deficiencies

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex - I of this Schedule-E within the time limit set forth therein.

3 Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4 Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

5 Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6 Daily inspection by the Contractor

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before 15th July every year in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the 25th July every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the 20th December and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of a Force Majeure Event or default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Annex - I
(Schedule-E)

Repair/rectification of Defects and deficiencies

The Contractor shall repair and rectify the Defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

Nature of Defect or deficiency		Time limit for repair/rectification
ROADS		
(a)	Carriageway and paved shoulders	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator)	120 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (thirty) days
(vi)	Bleeding/skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(b)	Granular earth shoulders, side slopes, drains and culverts	
(i)	Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side drains	7 (seven) days

Nature of Defect or deficiency		Time limit for repair/rectification
(vi)	Desilting of drains in urban/semi-urban areas	24 hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c)	Road side furniture including road sign and pavement marking	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/Once every year
(iii)	Damaged/missing road signs requiring replacement	7 (seven) days
(iv)	Damage to road mark ups	7 (seven) days
(d)	Road lighting	
(i)	Any major failure of the system	24 hours
(ii)	Faults and minor failures	8 hours
(e)	Trees and plantation	
(i)	Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
(ii)	Removal of fallen trees from carriageway	4 hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiring replacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f)	Rest area	
(i)	Cleaning of toilets	Every 4 hours
(ii)	Defects in electrical, water and sanitary installations	24 hours
(g)	Other Project Facilities and Approach roads	
(i)	Damage in approach roads, pedestrian facilities, truck lay-byes, bus-bays, bus-shelters, cattle crossings	15 (fifteen) days

Nature of Defect or deficiency		Time limit for repair/rectification
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a)	Superstructure	
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	within 48 hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	Foundations	
(i)	Scouring and/or cavitation	15 (fifteen) days
(c)	Piers, abutments, return walls and wing walls	
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d)	Bearings (metallic) of bridges	
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e)	Joints	
(i)	Malfunctioning of joints	15 (fifteen) days
(f)	Other items	
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger to safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 (thirty) days

Nature of Defect or deficiency		Time limit for repair/rectification
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g)	Hill Roads	
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours

SCHEDULE - F
(See Clause 3.1.7(a))

APPLICABLE PERMITS

1 Applicable Permits

- 1.1 The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:
- (a) Permission of the State Government for extraction of boulders from quarry;
 - (b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;
 - (c) Licence for use of explosives;
 - (d) Permission of the State Government for drawing water from river/reservoir;
 - (e) Licence from inspector of factories or other competent Authority for setting up batching plant;
 - (f) Clearance of Pollution Control Board for setting up batching plant;
 - (g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;
 - (h) Permission of Village Panchayats and State Government for borrow earth; and
 - (i) Any other permits or clearances required under Applicable Laws.
- 1.2 Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

SCHEDULE -G
(See Clauses 7.1.1, 7.5.3 and 19.2)
FORM OF BANK GUARANTEE

Annex-I
(See Clause 7.1.1)
Performance Security

**Additional Chief Engineer PPP
Public Works Department Rajasthan
PPP Division, Jacob Road, Civil Lines
Jaipur-302006, Rajasthan, India**

WHEREAS:

- (A) _____ [name and address of contractor] (hereinafter called the “**Contractor**”) and [name and address of the authority], (hereinafter called the “**Authority**”) have entered into an agreement (hereinafter called the “**Agreement**”) for the construction of the ***** section of [State Highway No. **] on Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement
- (B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs..... cr. (Rupees crore) (the “**Guarantee Amount**”).
- (C) We, ... through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (hereinafter called the “**Guarantee**”) by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor’s obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the

Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****\$. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

^{\$}Insert date being 60 (sixty) days from the expiry of Defects Liability Period.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

Signed and sealed this day of, 20..... at

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

SCHEDULE –G (Contd...)

FORM OF BANK GUARANTEE

Annex-I (contd...)

(See Clause 7.1.1)

Environmental, Social, Health and Safety (ESHS) Performance Security

**Additional Chief Engineer PPP
Public Works Department Rajasthan
PPP Division, Jacob Road, Civil Lines
Jaipur-302006, Rajasthan, India**

WHEREAS:

- (A) _____ [name and address of contractor] (hereinafter called the “**Contractor**”) and [name and address of the authority], (hereinafter called the “**Authority**”) have entered into an agreement (hereinafter called the “**Agreement**”) for the construction of the ***** section of [State Highway No. **] on Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement
- (B) The Agreement requires the Contractor to furnish an Environmental, Social, Health and Safety (ESHS) Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs..... cr. (Rupees crore) (the “**Guarantee Amount**”).
- (C) We, ... through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (hereinafter called the “**Guarantee**”) by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor’s obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during

and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****\$. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and

^{\$}Insert date being 60 (sixty) days from the expiry of Defects Liability Period.

warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

Signed and sealed this day of, 20..... at

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex –II
(Schedule - G)
(See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

**Additional Chief Engineer PPP
Public Works Department Rajasthan
PPP Division, Jacob Road, Civil Lines
Jaipur-302006, Rajasthan, India**

WHEREAS:

- (A) [name and address of contractor] (hereinafter called the “**Contractor**”) has executed an agreement (hereinafter called the “**Agreement**”) with the [name and address of the authority], (hereinafter called the “**Authority**”) for the construction of the ***** section of [State Highway No. **] on Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement.
- (B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the “**Retention Money**”) after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.
- (C) We, ... through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (hereinafter called the “**Guarantee**”) for the amount of Rs. ----- cr. (Rs.-----crore) (the “**Guarantee Amount**”).

NOW, THEREFORE, the Bank hereby unconditionally and irrevocably guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Retention Money and any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Retention Money.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

Signed and sealed this day of, 20..... at

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Form for Guarantee for Advance Payment

**Additional Chief Engineer PPP
Public Works Department Rajasthan
PPP Division, Jacob Road, Civil Lines
Jaipur-302006, Rajasthan, India**

WHEREAS:

- (A) [name and address of contractor] (hereinafter called the “**Contractor**”) has executed an agreement (hereinafter called the “**Agreement**”) with the [name and address of the authority], (hereinafter called the “**Authority**”) for the construction of the ***** section of [State Highway No. **] on Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement
- (B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest free advance payment (herein after called “**Advance Payment**”) equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in three installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second/third} installment of the Advance Payment is Rs. ----- cr. (Rupees ----- crore) and the amount of this Guarantee is Rs. ----- cr. (Rupees ----- crore)(the “**Guarantee Amount**”)§.
- (C) We, ... through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (hereinafter called the “**Guarantee**”) for the Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid installment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

§ The Guarantee Amount should be equivalent to 110% of the value of the applicable installment.

2. A letter from the Authority, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****\$. Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

Signed and sealed this day of, 20..... at

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

^{\$} Insert a date being 90 (ninety) days after the end of one year from the date of payment of the Advance payment to the Contractor (in accordance with Clause 19.2 of the Agreement).

SCHEDULE - H
(See Clauses 10.1.4 and 19.3)

Contract Price Weightages

1.1 The Contract Price for this Agreement is **Rs. ----- Crores.**

1.2 Proportions of the Contract Price for different stages of Construction of the Project Highway shall be as specified below:

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road works including culverts, widening & Repair of Culverts	[77.97%]	A - Widening and strengthening of existing road 1) Earthwork upto top of the subgrade 2) Sub Base Course (GSB) 3) Non Bituminous Base Course (WMM) 4) Bituminous Base Course 5) Wearing Coat 6) Widening and repair of culverts B.1 - Reconstruction/New 2-lane realignment/ bypass (Flexible Pavement) 1) Earthwork upto top of the subgrade 2) Sub Base Course (GSB) 3) Non Bituminous Base Course (WMM) 4) Bituminous Base Course 5) Wearing Coat B.2 - Reconstruction/New 2-lane realignment/ bypass (Rigid Pavement) 1) Earthwork upto top of the subgrade 2) Sub Base Course (GSB) 3) Dry Lean Concrete (DLC) Course 4) Pavement Quality Control (PQC) Course C.1 - Reconstruction/New Service Road (Flexible Pavement) 1) Earthwork upto top of the subgrade	[9.33%] [6.34%] [5.02%] [22.84%] [0.00%] [0.00%] [10.99%] [7.26%] [4.96%] [28.14%] [0.00%] [0.39%] [0.26%] [0.21%] [1.33%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		2) Sub Base Course (GSB) 3) Non Bituminous Base Course (WMM) 4) Bituminous Base Course 5) Wearing Coat C.2 - Reconstruction/New Service Road (Rigid Pavement) 1) Earthwork upto top of the subgrade 2) Sub Base Course (GSB) 3) Dry Lean Concrete (DLC) Course 4) Pavement Quality Control (PQC) Course D - New Culverts, Minor Bridges, Underpasses, Overpasses on proposed Expressway Culverts (length < 6m)	[0.00%] [0.00%] [0.00%] [0.00%] [2.92%]
Minor Bridges/ Underpasses/ Overpasses	[0.47%]	A.1 Widening and Repair of Minor Bridges (Length>6m and <60m) A.2 New Minor Bridges (Length>6m and <60m) 1) Foundation and Substructure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap. 2) Superstructure: On completion of the superstructure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. 3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use. 4) Guide Bunds and River Training	[66.67%] [20.75%] [12.23%] [0.35%] [0.00%]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		Works: On completion of Guide Bunds and river Training Works complete in all respects [0.00%] B.1 Widening and Repair of Underpasses/ Overpasses [0.00%] B.2 New Underpasses/ Overpasses (1) Foundation +Substructure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap. [0.00%] (2) Super-structure: On completion of the superstructure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests oncompletion etc. complete in all respect. [0.00%] Wearing Coat (a) in case of Overpass-wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as specified as specified [0.00%] (3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	
Major Bridge Works & ROB		A.1- Widening and repairs of Major Bridges (1) Foundation [0.00%] (2) Sub-structure [0.00%] (3) Super-structure (including [0.00%]	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (5) Miscellaneous Items like hand rails, crashbarriers, road markings etc.) (6) Wing walls/return walls (7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works) C.2-New Elevated Section/Flyovers/ Grade Separators (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (5) Miscellaneous Items like hand rails, crashbarriers, road markings etc.) (6) Wing walls/return walls (7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[0.00%] [0.00%] [0.00%] [0.00%]
Other works	[21.57%]	1) Toll Plaza 2) Road side drains 3) Road signs, markings, safety Devices etc. 4) Project facilities a) Bus Bays/Shelter b) Truck Lay byes c) Way Side Amenities (rest area) d) Others 5) Road Side Plantation	[9.28%] [32.28%] [0.00%] [9.40%] [0.00%] [0.00%] [42.76%] [6.28%]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		6) Repair pf Protection works other than approached to the bridges, elevated sections/ flyovers/ grade separators and ROB's/RUB's 7) Safety and traffic management during construction	[0.00%] [0.00%]

* The above list is illustrative and may require modification as per the scope of the work.

* Contractor shall submit detailed designs, drawings and estimates prepared on the basis of scope of work and specifications laid down herein above and draw a realistic Schedule-H for review and approval of the authority Engineer. Authority Engineer will approve the same with the consent of the authority for implementation.

1.3 Procedure of estimating the value of work done

1.3.1 Road works

Procedure for estimating the value of road work done shall be as follows:

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A - Widening and strengthening of existing road		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length
1) Earthwork upto top of the subgrade	[9.30%]	
2) Sub Base Course (GSB)	[6.30%]	
3) Non Bituminous Base Course (WMM)	[5.00%]	
4) Bituminous Base Course	[22.80%]	
5) Wearing Coat	[0.00%]	Cost of completed culverts shall be determined pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of atleast five culverts.
6) Widening and repair of culverts	[0.00%]	
B.1 - Reconstruction/New 2-lane realignment/ bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length.
1) Earthwork upto top of the subgrade	[11.00%]	

Stage of Payment	Percentage weightage	Payment Procedure
2) Sub Base Course (GSB)	[7.30%]	
3) Non Bituminous Base Course (WMM)	[5.00%]	
4) Bituminous Base Course	[28.10%]	
5) Wearing Coat	[0.00%]	
B.2 - Reconstruction/New 2-lane realignment/ bypass (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less.
1) Earthwork upto top of the subgrade	[0.40%]	
2) Sub Base Course (GSB)	[0.30%]	
3) Dry Lean Concrete (DLC) Course	[0.20%]	
4) Pavement Quality Control (PQC) Course	[1.30%]	
C.1 - Reconstruction/New Service Road (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less
1) Earthwork upto top of the subgrade	[0.00%]	
2) Sub Base Course (GSB)	[0.00%]	
3) Non Bituminous Base Course (WMM)	[0.00%]	
4) Bituminous Base Course	[0.00%]	
5) Wearing Coat	[0.00%]	
C.2 - Reconstruction/New Service Road (Rigid Pavement)	[0.00%]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less
1) Earthwork upto top of the subgrade		
2) Sub Base Course (GSB)	[0.00%]	
3) Dry Lean Concrete (DLC) Course	[0.00%]	
4) Pavement Quality Control (PQC) Course	[0.00%]	

Stage of Payment	Percentage weightage	Payment Procedure
D - New Culverts, Minor Bridges, Underpasses, Overpasses on proposed Expressway Culverts (length < 6m)	[2.90%]	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of atleast five culverts.

@. For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

Cost per km = P x weightage for road work x weightage for bituminous work x (1/L)

Where P= Contract Price

L =Total length in km

Similarly, the rates per km for other stages shall be worked out accordingly.

Note: The length affected due to law and order problems or litigation during execution due to which the Contractor is unable to execute the work, may be deducted from the total project length for payment purposes. The total length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement.

1.3.2 Minor Bridges and Underpasses/Overpasses

Procedure for estimating the value of Minor bridge and Underpasses/Overpasses shall be asstated in table 1.3.2:

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
A.I-Widening and repair of minor bridges (length> 6m and< 60m)	[66.67%]	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.

Stage of Payment	Weightage	Payment Procedure
A.2 New Minor Bridges (Length>6m and <60m) 1) Foundation and Substructure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[20.70%]	(i) Foundation +Substructure: Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation + sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation +sub-structure of each bridge subject to completion of at least two foundations along with substructure upto abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
2) Superstructure: On completion of the superstructure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	[12.20%]	
3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	[0.40%]	
4) Guide Bunds and River Training Works: On completion of Guide Bunds and river Training Works complete in all respects	[0.00%]	(ii) Superstructure: Payment shall be made on pro rata basis on completion of a stage i.e. completion of superstructure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. (iii) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause. (iv) Guide Bonds and River Training Works: Payment shall be made on pro rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified.

Stage of Payment	Weightage	Payment Procedure
B.1-Widening and repair of underpasses/overpasses	[0.00%]	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2- New Underpasses/Overpasses 1) Foundation and Substructure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[0.00%]	(i) Foundation +Substructure: Cost of each Underpass/Overpass shall be determined on pro rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation +sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation +substructure of each Underpasses/Overpasses subject to completion of at least two foundations along with substructure upto abutment/pier cap level each underpass/overpass.
(ii) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified as specified.	[0.00%]	In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of superstructure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(iii) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[0.00%]	(iii) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified.

Stage of Payment	Weightage	Payment Procedure
A- Repairs of Major Bridges Foundation: On completion of the foundation work including foundations for wing and return walls	[0.00%]	Cost of each Major Bridge (widening and repairs) shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridges (widening and repairs). Payment shall be made on completion of each stage of a Major Bridge as per the Weightage given in this table. Cost of each ROB/RUB (widening and repairs) shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB (widening and repairs). Payment shall be made on completion of an ROB/RUB Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridges. Payment shall be made on completion of each stage of a Major Bridge as per the Weightage given in this table Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment shall be made on completion of an ROB/RUB

1.3.3 Major Bridge works, ROB/RUB and Structures

Procedure for estimating the value of Major Bridge works, ROB/RUB and Structures shall be as stated in table 1.3.3:

Table 1.3.3

Stage of payment	Weightage	Payment procedure
A.1- Widening and repairs of Major Bridges		(i) Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on
(1) Foundation	[0.00%]	
(2) Sub-structure	[0.00%]	
(3) Super-structure (including bearings)	[0.00%]	
(4) Wearing Coat including	[0.00%]	

Stage of payment	Weightage	Payment procedure
expansion joints (5) Miscellaneous Items like hand rails, crash barriers, road markings etc.) (6) Wing walls/return walls (7) Guide Bunds, River Training works etc. (8) Approaches (including Retaining walls, stone pitching and protection works)	[0.00%] [0.00%] [0.00%]	completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of at least two foundations of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) Sub-Structure:. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the major bridge subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the major bridge. (iii) Super-structure: Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure including bearings of at least one span in all respects as specified. (iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified. (v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. (vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. (vii) Guide Bonds, River Training works: Payments shall be made on completion of all guide bunds/river training works

Stage of payment	Weightage	Payment procedure
		etc. complete in all respects as specified. (viii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
A.2- New Major Bridges (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat including expansion joints (5) Miscellaneous Items like hand rails, crash barriers, road markings etc.) (6) Wing walls/return walls (7) Guide Bunds, River Training works etc. (8) Approaches (including Retaining walls, stone pitching and protection works)	[0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%]	(i) Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of at least two foundations of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) Sub-Structure:. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the major bridge subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the major bridge. (iii) Super-structure: Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure including bearings of at least one span in all respects as specified. (iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.

Stage of payment	Weightage	Payment procedure
		(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. (vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. (vii) Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified. (viii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.1- Widening and repair of (a) ROB (b) RUB (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (5) Miscellaneous Items like hand rails, crash barriers, road markings etc.) (6) Wing walls/return walls (7) Approaches (including Retaining walls, stone pitching and protection works)	[0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%]	(i) Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUBs. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of at least two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) Sub-Structure: Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the ROB/RUB subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the ROB/RUB.

Stage of payment	Weightage	Payment procedure
		(iii) Super-structure: Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure including bearings of at least one span in all respects as specified. (iv) Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. (vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. (vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.2- New ROB/RUB (a)ROB (b) RUB (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (5) Miscellaneous Items like hand	[0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%]	(i) Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUBs. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of at least two foundations of the ROB/RUB . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where

Stage of payment	Weightage	Payment procedure
rails, crash barriers, road markings etc.) (6) Wing walls/return walls (7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[0.00%]	specified. (ii) Sub-Structure:. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the ROB/RUB subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB. (iii) Super-structure: Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure including bearings of at least one span in all respects as specified. (iv) Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. (vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. (vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C.1- Widening and repair of Elevated Section/Flyovers/ Grade Separators (1) Foundation (2) Sub-structure	[0.00%] [0.00%] [0.00%]	(i) Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against

Stage of payment	Weightage	Payment procedure
(3) Super-structure (including bearings) (4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (5) Miscellaneous Items like hand rails, crash barriers, road markings etc.) (6) Wing walls/return walls (7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[0.00%] [0.00%] [0.00%] [0.00%]	foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of at least two foundations of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) Sub-Structure:. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the structure subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the structure. (iii) Super-structure: Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure including bearings of at least one span in all respects as specified. (iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified. (v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. (vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. (vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

Stage of payment	Weightage	Payment procedure
C.2-New Section/Flyovers/ Separators Elevated Grade (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified. (5) Miscellaneous Items like hand rails, crash barriers, road markings etc.) (6) Wing walls/return walls (7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%] [0.00%]	(i) Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of at least two foundations of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. (ii) Sub-Structure:. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the structure subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the structure. (iii) Super-structure: Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure including bearings of at least one span in all respects as specified. . (iv) Wearing Coat: Payment shall be made on completion of wearing coat including wearing, expansion joints complete in all respects as specified. (v) Miscellaneous: Payments shall be made on completion of :n miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. (vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

Stage of payment	Weightage	Payment procedure
		(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

Note: (1) In case of innovate Major Bridge projects like cable suspension/cable stayed/ Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of DG(RD)&SS, MoRT&H.

(2) The Schedule for exclusive tunnel projects may be prepared as per site requirements before bidding with due approval of DG (RD) &SS, MoRT&H.

1.3.4 Other works.

Procedure for estimating the value of other works done shall be as stated in table 1.3.4:

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
1) Toll Plaza	[9.28%]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
2) Road side drains	[32.28%]	Unit of measurement is linear length in km. Payment shall be made on prorata basis on completion of a stage in a length of not less than 10 % (ten per cent) of the total length
3) Road signs, markings, safety Devices etc.	[0.00%]	
4) Project facilities a) Bus Bay/Shelter b) Truck Lay byes c) Way Side Amenities (rest area) d) Others	[9.40%] [0.00%] [0.00%] [42.76%]	Payment shall be made on pro rata basis for completed facilities.
5) Road Side Plantation	[6.28%]	Unit of measurement is linear length in km. Payment shall be made on prorata basis on completion of a stage in a length of not less than 10 % (ten per cent) of the total length
6) Repair for Protection works other than approaches to the bridges, elevated sections/ flyovers/ grade separators and ROB's/RUB's	[0.00%]	

7) Safety and traffic management during construction	[0.00%]	Payment shall be made on prorata basis every six months.

2. Procedure for payment for Maintenance

2.1 The cost for maintenance shall be as stated in Clause 14.1.1.

2.2 Payment for Maintenance shall be made in quarterly installments in accordance with the provisions of Clause 19.7.

SCHEDULE - I
(See Clause 10.2.4)
DRAWINGS

1 Drawings

In compliance of the obligations set forth in Clause 10.2 of this Agreement, the Contractor shall furnish to the Authority's Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-I.

2 Additional Drawings

If the Authority's Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-I, it may by notice require the Contractor to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Contractor shall promptly prepare and furnish such drawings to the Authority's Engineer, as if such drawings formed part of Annex-I of this Schedule-I.

Annex - I
(Schedule - I)

List of Drawings

- i) Drawings of horizontal alignment, vertical profile and cross sections at 20 m interval
- ii) Drawings of cross drainage works
- iii) Drawings of interchanges, major intersections, grade separators, underpasses
- iv) Drawings of Control Centre, if any
- v) Drawings of road furniture items including traffic signage, markings, safety barriers, etc.
- vi) Drawings of traffic diversion plans and traffic control measures
- vii) Drawings of bridges and culverts
- viii) Drawings of typical details slope protection measures
- ix) Drawings of landscaping and horticulture
- x) Drawings of pedestrian crossings
- xi) Drawings of project facilities provided
- xii) Drawings of street lighting

SCHEDULE - J
(See Clause 10.3.2)
PROJECT COMPLETION SCHEDULE

1 Project Completion Schedule

During Construction period, the Contractor shall comply with the requirements set forth in this Schedule-J for each of the Project Milestones and the **Scheduled Completion Date**. Within **15 (fifteen)** days of the date of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

2 Project Milestone-I

2.1 Project Milestone-I shall occur on the date falling on the **180th (One hundred eightieth)** day from the Appointed Date (the “Project Milestone-I”).

2.2 Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than **20% (twenty cent)** of the Contract Price.

3 Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the **300th (three hundredth)** day from the Appointed Date (the “Project Milestone-II”).

3.2 Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than **40% (forty per cent)** of the Contract Price.

4 Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the **550th (five hundred and fiftieth)** day from the Appointed Date (the “Project Milestone-III”).

4.2 Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than **75% (seventy five per cent)** of the Contract Price.

5 Scheduled Completion Date

5.1 The Scheduled Completion Date shall occur on the **730th (seven hundred and thirtieth)** day from the Appointed Date.

5.2 On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

6 Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.

SCHEDULE - K

(See Clause 12.1.2)

TESTS ON COMPLETION

1 Schedule for Tests

- 1.1 The Contractor shall, no later than **30 (thirty)** days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than **10 (ten)** days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.
- 1.2 The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after **10 (ten)** days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2 Tests

- 2.1 Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of crack, rutting area, area of potholes, depressions, shoving and settlement and upheaval, shoulder drop, erosion of soil from embankment,
- 2.2 Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be 2,000 (two thousand) mm for each kilometre.
- 2.3 Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.
- 2.4 Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.
- 2.5 Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.

- 2.6 Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

3 Agency for conducting Tests

All Tests set forth in this Schedule-K shall be conducted by the Authority's Engineer or such other agency or person as it may specify in consultation with the Authority.

4 Completion Certificate

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate in accordance with the provisions of Article 12.

SCHEDULE - L
(See Clause 12.2 and 12.4)
PROVISIONAL CERTIFICATE

1. I, ... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated (the "**Agreement**"), for construction of the [****section (km ** to km **) of State- Highway No. ***] (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been undertaken to determine compliance of the Project Highway with the provisions of the Agreement.
2. Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project Highway or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within **30 (thirty)** days hereof. These minor works have also been specified in the aforesaid Punch List.
3. In view of the foregoing, I am satisfied that the Project Highway from km ** to km ** can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the day of 20.....

ACCEPTED, SIGNED, SEALED
AND DELIVERED
For and on behalf of
CONTRACTOR by:

(Signature)

SIGNED, SEALED AND
DELIVERED
For and on behalf of
AUTHORITY's ENGINEER by:

(Signature)

COMPLETION CERTIFICATE

- 1 I, ... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated (the "Agreement"), for [construction of the ****section (km ** to km **) of State Highway No. ***] (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.
- 2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the day of 20.....

SIGNED, SEALED AND DELIVERED

For and on behalf of

the Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE - M
(See Clauses 14.6, 15.2 and 19.7)
PAYMENT REDUCTION FOR NON-COMPLIANCE

1. Payment reduction for non-compliance with the Maintenance Requirements

- 1.1 Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.
- 1.2 Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.
- 1.3 The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments

- 2.1 The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	Carriageway/Pavement	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	Road, Embankment, Cuttings, Shoulders	
(i)	Edge drop, inadequate crossfall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	Bridges and Culverts	
(i)	Desilting, cleaning, vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	Roadside Drains	
(i)	Cleaning and repair of drains	5%
(e)	Road Furniture	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5 th km stones	5%

S. No.	Item/Defect/Deficiency	Percentage
(f)	Miscellaneous Items	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	Defects in Other Project Facilities	5%

- 2.2 The amount to be deducted from monthly lump-sum payment for non compliance of particular item shall be calculated as under:

$$R = P/100 \times M \times L1/L$$

Where P = Percentage of particular item/Defect/deficiency for deduction

M = Monthly lump-sum payment in accordance with the Bid

L1 = Non-complying length

L = Total length of the road,

R = Reduction (the amount to be deducted for non compliance for a particular item/Defect/deficiency

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/deficiency or non compliance.

For any Defect in a part of one kilometer, the non-conforming length shall be taken as one kilometer.

SCHEDULE - N

(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

- 1.1 The provisions of the "World Bank Procurement Guidelines, Selection and Employment of Consultants – Revised July, 2014" shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.
- 1.2 In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2 Terms of Reference

The Terms of Reference for the Authority's Engineer (the "TOR") shall substantially conform with Annex 1 to this Schedule N.

3 Appointment of Government entity as Authority's Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Authority's Engineer; provided that such entity shall be a body corporate having as one of its primary functions the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority shall not be eligible for appointment as Authority's Engineer.

TERMS OF REFERENCE FOR AUTHORITY’S ENGINEER

1 Scope

1.1 These Terms of Reference (the “TOR”) for the Authority’s Engineer are being specified pursuant to the EPC Agreement dated (the “Agreement), which has been entered into between the [name and address of the Authority] (the “Authority”) and (the “Contractor”) for [Two-Laning] of the ***** section (km ** to km **) of State Highway No. ** in the State of *** on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Project Highway.

2 Definitions and interpretation

2.1 The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

3.1 The Authority’s Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

3.2 The Authority’s Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

- (a) any Time Extension;
- (b) any additional cost to be paid by the Authority to the Contractor;
- (c) the Termination Payment; or
- (d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding 0.2% of Contract price.

3.3 The Authority’s Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority’s Engineer within **10 (ten)** days of the beginning of every month.

- 3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.
- 3.5 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.
- 3.6 In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4 Construction Period

- 4.1 During the Construction Period, the Authority's Engineer shall review the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6. The Authority's Engineer shall complete such review and send its observations to the Authority and the Contractor within **15 (fifteen)** days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of **15 (fifteen)** days may be extended upto **30 (thirty)** days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.
- 4.2 The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within **10 (ten)** days of receiving such Drawings.
- 4.3 The Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of **21 (twenty one)** days stating the modifications, if any, required thereto.
- 4.4 The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of **10 (ten)** days from the date of receipt of the proposed methodology from the Contractor.
- 4.5 The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.
- 4.6 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within **7 (seven)** days of receipt of such report.
- 4.7 The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its

Inspection Report, the compliance of the recommendations made by the Safety Consultant.

- 4.8 The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.
- 4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MoRT&H (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.
- 4.10 The Authority's Engineer shall test check all the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.
- 4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.
- 4.12 In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.
- 4.13 The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.
- 4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within **15 (fifteen)** days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.
- 4.15 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.4.
- 4.16 Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer

shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

- 4.17 In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within **3 (three)** days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.
- 4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

- 5.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.
- 5.2 The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.
- 5.3 The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.
- 5.4 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.
- 5.5 The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within **5 (five)** days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6 Determination of costs and time

- 6.1 The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.
- 6.2 The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

- 6.3 The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

7. Payments

- 7.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2.4 (d).
- 7.2 Authority's Engineer shall -
- (a) within **10 (ten)** days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and
 - (b) within **15 (fifteen)** days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.
- 7.3 The Authority's Engineer shall, within **15 (fifteen)** days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.
- 7.4 The Authority's Engineer shall certify final payment within **30 (thirty)** days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8. Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

9 Miscellaneous

- 9.1 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.
- 9.2 The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.
- 9.3 Within **90 (ninety)** days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.
- 9.4 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

- 9.5 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within **one** weeks of its occurrence.

SCHEDULE -O

(See Clauses 19.4.1, 19.6.1, and 19.8.1)

FORMS OF PAYMENT STATEMENTS

2. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

- (a) the estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;
- (b) amounts reflecting adjustments in price for the aforesaid claim;
- (c) the estimated amount of each Change of Scope Order executed subsequent to the last claim;
- (d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3 (a);
- (e) total of (a), (b), (c) and (d) above;
- (f) Deductions:
 - (i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
 - (ii) Any amount towards deduction of taxes; and
 - (iii) Total of (i) and (ii) above.
- (g) Net claim: (e) – (f) (iii);
- (h) The amounts received by the Contractor upto the last claim:
 - (i) For the Works executed (excluding Change of Scope orders);
 - (ii) For Change of Scope Orders, and
 - (iii) Taxes deducted

3. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

- (a) the monthly payment admissible in accordance with the provisions of the Agreement;
- (b) the deductions for maintenance work not done;
- (c) net payment for maintenance due, (a) minus (b);
- (d) amounts reflecting adjustments in price under Clause 19.12; and
- (e) amount towards deduction of taxes

4. Contractor's claim for Damages

Note: The Contractor shall submit its claims in a form acceptable to the Authority.

SCHEDULE -P
(See Clause 20.1)
INSURANCE

1. Insurance during Construction Period

- 1.1 The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:
- (a) insurance of Works, Plant and Materials and an additional sum of 15 (fifteen) per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and
 - (b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.
- 1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

- 3.1 The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

The insurance cover shall be not less than: Rs. **2 (two)** lakhs

- 3.2 The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor's performance of this Agreement excluding:
- (a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and

- (b) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. **Insurance to be in joint names**

The insurance under paragraphs 1 to 3 above shall be in the joint names of the Contractor and the Authority.

SCHEDULE-Q
(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be **2500 (two thousand five hundred)** mm for each kilometre.

2. Visual and physical test:

The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and the permissible values are given below:

Area of cracking: 3 % area

Area of rutting: 1 % area

Area of stripping: Nil

Area of potholes: 0.1 % area

SCHEDULE-R
(See Clause 14.10)

Taking Over Certificate

I, ... (Name and designation of the Authority's representative) under and in accordance with the Agreement dated (the "Agreement"), for [construction of the ****section (km ** to km **) of State Highway No. ***] (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

SCHEDULE-S
(See Clause 17.7.2)

Performance Certificate

I, ... (Name and designation of the Authority's representative) under and in accordance with the Agreement dated (the "**Agreement**"), for [construction of the ****section (km ** to km **) of State Highway No. ***] (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Contractor has discharged all its obligations under the Agreement and in accordance with Article 17 of the Agreement I hereby issue Performance Certificate to the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

SCHEDULE-T

(See Clause 19.1.6)

Table C. Summary of Payment Currencies

The Employer must retain the Table which matches the Currency provisions in BDS ITB 15.1

To be used only with Prices quoted entirely in the currency of the Employer's country with percentage(s) payable in foreign currency(ies). (Clause ITB 15.1)

Summary of payment currencies of the Bid

For [insert name of Section of the Works]

[Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. The Employer should insert the names of each Section of the Works.]

Name of payment currency	A Amount of currency	B Rate of exchange (local currency per unit of foreign)	C Local currency equivalent $C = A \times B$	D Percentage of Total Bid Price (TBP) $\frac{100 \times C}{TBP}$
Local currency _____		1.00		
Foreign currency #1 _____				
Foreign currency #2 _____				
Foreign currency #3 _____				
Total Bid Price				100.00