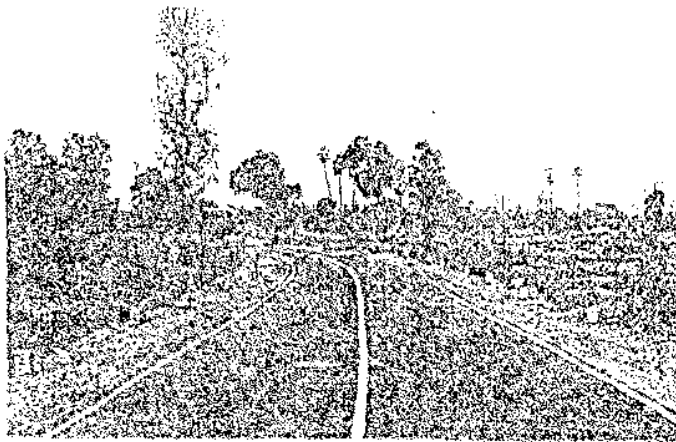
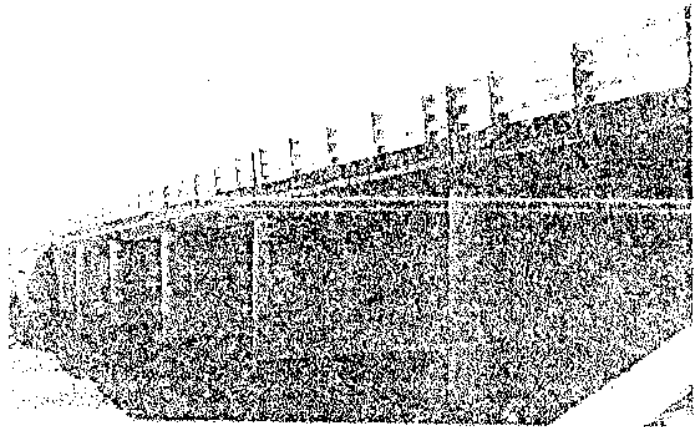


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FORM



GOVERNMENT OF MAHARASHTRA
PUBLIC WORKS DEPARTMENT,
MUMBAI REGION
THANE (P.W.) CIRCLE, THANE



VOLUME - I

FOUR LANING OF OF CHINCHOTI - KAMAN ANJURPHATA
TO MANKOLI ROAD M.S.H.NO.4 KM.0/000 - 26/425
TALUKA BHIWANDI DIST THANE.

EXECUTIVE ENGINEER,
THANE (P.W.) DIVISION, THANE.
PH. 022 25369293

GOVERNMENT OF MAHARASHTRA

PUBLIC WORKS DEPARTMENT

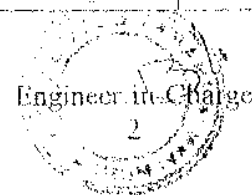
FORM - P

VOLUME - I

FOR THE WORK OF
FOUR LANING OF CHINCHIOTI-KAMAN
ANJURBHATA TO MANKOLI ROAD
M.S.H. NO. 4 KM. 0/000 - 26/425
TALUKA BHIWNADI DIST. THANE

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SECTION- I

INSTRUCTIONS TO BIDDERS (ITB)



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SECTION- I

INSTRUCTIONS TO BIDDERS (ITB)

A. GENERAL

1. SCOPE OF BID:

The Scope of the work is as per Bidding Data in Volume-II.

2. ELIGIBLE BIDDERS:

This invitation to bid is open to any bidder meeting following requirements:

- 2.1 Bidder shall not be affiliated with firms or entity that has provided consulting services related to the works to the Employer during the preparatory stages of the works or of the project of which the work/works is/are forming a part.

3. QUALIFICATION OF BIDDER:

- 3.1 To be eligible for award of the contract the bidder shall provide satisfactory evidence to the Employer of their eligibility, capability and adequacy of resources to carry out the work / contract effectively. For the purpose of this, all the bids submitted shall include the information in the relevant formats as stated in Clause 17.3 of ITB.
- 3.2 For the purpose of this contract, the bidder shall meet the qualifying criteria as mentioned in Bidding Data in Volume-II as a minimum.
- 3.3 In case of the joint ventures, the bids submitted by joint ventures of two or more firms shall comply with the requirements as mentioned in Bidding Data in Volume-II.

4. ONE BID PER BIDDER:

A bidder shall submit only one bid in the above bidding process, either individually as a bidder or as a partner in a joint venture. A bidder who submits or participates in more than one bid will cause all the proposals in which the bidder has participated to be disqualified.



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5. COST OF BIDDING:

The bidder shall bear all cost associated with the preparation and submission of his bid and the Employer will in no case shall be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process. (As per Bidding Data in Volume II)

6. SITE VISIT:

The bidder is advised to visit and examine the site of work and its surrounding and obtain himself at his own responsibility all information such as availability of labour, material, machineries, fuel, water, electricity and such similar information that may be necessary for preparation of the bid. A declaration to this effect will have to be signed by the bidder in the format given in Form (Declaration of the Concessionaire as per schedule V). The site visit and collection of required information / data shall be at the bidder's own expense.

B. BIDDING DOCUMENT**7. CONTENTS OF BID DOCUMENTS:**

The bid document will consists of Volume-I (Non-Variable Document), Volume-II (Variable Document), Volume-III (financial bid), Volume-IV (Specifications & Drawings) together with any addendum thereto issued in accordance with Clause 9 of ITB and any common set of deviations issued in accordance with Clause 8 of ITB. The bidder is expected to examine carefully all instructions, conditions, terms, specifications and drawings contained in various volumes / addendums / common set of deviations which is a part of contract document. Failure to comply with the requirements of bid submissions will be at the bidder's risk. Pursuant to Clause 24 of ITB, the bids, which, are not substantially responsive to the requirements will be rejected.

8. CLARIFICATION OF BIDDING DOCUMENTS:

In case any clarification is required by the bidder, he may obtain it personally or in writing well in advance from the Superintending Engineer. The clarification for which request has been received prior to prebid meeting will be answered.

- 8.1 A prebid conference open to all prospective bidders will be held at the time and place as per Bidding Data in Volume-II wherein the prospective bidders will have an opportunity to obtain clarifications regarding the bid conditions and the work. The prospective bidders are free to ask any additional information or clarification, either in writing or orally and reply to the same will be given in writing by the Employer. The copies of the question raised



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and the replies given will be furnished to all those attending the meeting (and subsequently to all purchasers of bid documents). Any modifications of bid documents, which may become necessary as a result of prebid conference shall be through issuance of an addendum pursuant to Clause 9 of ITB of these instructions.

9. AMENDMENTS TO BIDDING DOCUMENTS:

At any time prior to the deadline for submission of bid, the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the bid document by issuance of an addendum. The addendum will be sent in writing to all prospective bidders who have purchased the bid document, for incorporation in the bid and will be binding on the bidders. This addendum hereinafter called as Common Set of Deviations (CSD).

C PREPARATION OF BIDS

10. LANGUAGE OF BID:

The language of bid shall be English.

11. DOCUMENTS COMPRISING THE BID:

The bid to be submitted by the bidder shall comprise of the form of bid and appendices thereto, the Bid Security, the information on eligibility and qualification and any other such relevant information and any other material required to be completed and submitted in accordance with the instructions to bidders embodied in bid document and contract document. The forms and the data provided in this document shall be used without exception.

12. BID OFFER:

The Bidder shall quote his offer as prescribed in Volume-III of the bid document to be submitted as per procedure set in Clause-17 of ITB.

- a. The offer in the form as prescribed in the bid document shall include all the costs towards raising money and towards executing and completing the works including remedying any defects therein including cost of raising money and interest thereof. The offer shall provide for all superintendence, labour, material, plant, equipments and all other items required for work including all taxes, duties, royalties, octroi and such charges except for the exemption if any provided for the contract.

- c. The offer quoted by bidder shall be valid for the original contract period as well as during extensions if any duly granted and shall not be subject to any further adjustment except as per the Conditions of Contract.



- c The offer shall be inclusive of Royalty under Minor mineral Act 1968 payable directly to Revenue Department as per rates in force. The Royalty to be paid shall not be reimbursed by Government.

13. FORM OF BID:

The concession period quoted by the bidder in the financial Bid shall be in the form of ---years---months---days only, or as alternatively prescribed in the Bidding Data as per volume II.

14. BID VALIDITY:

- 14.1 Validity of the bid will be 180 days or any extended period by Government and shall be reckoned from the last date of submission of bids and thereafter until it is withdrawn by concessionaire by notice in writing duly addressed to the authority opening the bid. After 180 days or the extended period is over Such withdrawal shall be effective from the date of receipt of notice by the Employer.

15. BID SECURITY:

- 15.1 The bidder shall furnish as a part of his bid, a bid security as per Bidding Data in Volume II.
- 15.2 Bid security shall be in the form of Demand Draft, Government Treasury/ Sub-treasury Chalan or Term Deposit Receipt valid for a period of 12 (twelve) months from the date of submission of tender, and drawn on any branch situated in Maharashtra of any Nationalised or Scheduled bank pledged in favour of the Engineer in Charge. The said amount of bid security shall not carry any interest whatsoever. The bid security in any other form other than described above shall not be accepted. (Amount of Bid Security shall be as per Bidding Data in Volume II)
- 15.3 Any bid not accompanied by the Bid Security as mentioned in clause 15.1 above shall be rejected by the Employer as non-responsive.
- 15.4 In the event of his bid being accepted subject to provisions of the Sub Clause 15.5 below, bid security of successful bidder whose proposal is accepted, will be returned only after the Performance Security is paid.
- 15.4 If after submitting the bid, the bidder withdraws his offer or modifies the same or if after acceptance of his bid fails or neglects to furnish the performance security, without prejudice to any rights and powers of the Employer here under or in law, the Employer shall be entitled to forfeit the full amount of Bid Security deposited by the bidder.



Concessionaire

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- 15.6 If the bidder does not accept the correction of the offer, pursuant to Clause 25 of ITB, the bid security shall be forfeited.
- 15.7 The amount of bid security shall be refunded to the unsuccessful bidder after the agreement is signed with the successful bidder or on expiry of the validity period whichever is earlier.
16. **FORMAT AND SIGNING OF BID:**
- 16.1 All pages of Bid documents in original shall be signed by a person or persons duly authorized to sign on behalf of the Bidder. All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid. Names of all directors shall be mentioned and the bid shall be accompanied by a resolution of the Board of Directors of the Company authorising that the person signing the bid is empowered to do so on behalf of the Company.
- 16.2 The bid by partnership firm shall furnish the full names of all the partners in the forwarding letter. The letter shall be signed by the partner or by an authorized representative followed by the name and designation of that person signing having authority to bind all the partners in all the matters pertaining to contract including arbitration clause. An attested copy of the partnership deed shall be furnished.
- 16.3 Witnesses shall be persons of status and probity and their occupations and addresses shall be stated below their signatures. All signatures shall be dated.
- 16.4 The bid shall contain no alterations or additions, except those to comply with instructions issued by the employer, or as necessary to correct errors made by the bidder in which case such corrections shall be initialed by the person or persons signing the bid.
- 16.5 At the time of executing the agreement, the successful bidder shall sign all pages of contract document comprising of Volume I, II, III and IV and any document as prescribed in bid data.

D SUBMISSION OF BIDS

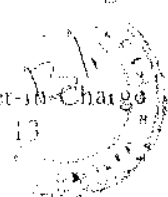
17. SEALING AND MARKING OF BIDS

- 17.1 The bidder shall note that out of 3 sets of bid documents supplied to him, he shall return 2 sets duly signed of Volume I, II and IV in envelope No.1. He shall also return 2 sets of common set of Deviations duly signed in envelope No.1. The bidder should give his Financial offer in the Form specified in the Bid Documents (Volume-III) separately in 2 sets in envelope No. 2.
- 17.2 One set of bid shall be clearly marked as original and the other as Duplicate and which shall be submitted in separate envelopes. The envelope containing Original shall be clearly marked as original and the envelope containing Duplicate offer shall be clearly marked as Duplicate.

Concessionaire



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17.3 The bid shall be submitted in two sealed envelopes marked envelope No. 1 , and envelope No. 2 and both the envelopes shall be again put together in one common cover and sealed. This sealed cover shall be marked on the left hand top corner as "Bid for the work of (As per Invitation for Bids (IFB) in Volume II)". The full name and address of the bidder and the name of authorized agent delivering the sealed cover containing the bid shall be written on the bottom left hand corner. If submitted by post, the sealed envelope marked as above shall be enclosed in another envelope properly addressed and shall be sent by registered post acknowledgment due. The date and time of receipt of bid shall strictly apply in all cases.

17.3.1 Envelope No. 1: This shall contain the following information / documents subject to changes as indicated in Bidding Data - Volume II.

- a) Bid Security in form prescribed in Clause 15 of IFB.
(only in envelope marked as original)
- b) The NON-VARIABLE DOCUMENT (VOLUME-I) .
- c) Covering letter stating clearly, the validity of the bid :
- d) The Organizational set up of the Concessionaires / Partners of the Joint Venture and their Associates, if any
- e) Bank's consent for loan.
- f) Power of Attorney as per the format enclosed, in case of Consortium;
- g) Document issued along with C.S.D. if any.
- h) Copies of agreements entered into, between the Concessionaires / Partners of the Group / Joint venture / Consortium and the associate for executing this project.
- i) Annual Turn Over for the past 5 years, Net Present Worth, Net cash accords and audited Balance Sheet of the Concessionaires.
- j) Scheme and method of resource mobilization proposed for the execution of this project, with proper undertakings (in the form enclosed as per schedule w)
- k) Organizational set up proposed for the execution of the project.(in the forms enclosed as per schedule w)
- l) Reputation and experience of the Consultants to be associated, with Curriculum vitae of the key personnel.



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- m) Any other details which may be relevant to assessment of the financial and technical competence of the Concessionaires and associates.
- n) Litigation History (in the form enclosed as per Schedule- W)
- o) Experience as developer and / or construction contractor.
- p) Preliminary design, outline and broad technical details of the Project.
- q) Works programme including Scheduling and Bar Chart for the Project.
- r) Arrangements proposed for collection of toll and the system to be employed at various Toll Collection Centers.
- s) Any other relevant details.
- t) THE VARIABLE DOCUMENTS (VOLUME-II) VOLUME IV (SPECIFICATION & DRAWING) AND OTHER VOLUMES EXCEPTING VOLUME-III (FINANCIAL OFFER)
- u) Work experience of similar type of projects in past.
- v) Quality assurance approach.
- w) Declaration of Bidder (Schedule V).
- 17.4 Envelope No. 2:- The second envelope clearly marked Envelope No.2 shall contain the financial bid Volume-III Following information should also be given.
 - a) Concessionaire's Bid in terms as prescribed in Schedule E of this bid document along with its accompaniments.
 - b) Two sets of common set of deviations duly signed in token of acceptance.
 - c) Any other details (in duplicate) which may be relevant to the financial details of the project.
- 17.5 The bidder shall quote his offer on the bid form as prescribed in Volume-III at the appropriate place. The offer shall not be quoted anywhere directly or indirectly in Envelope No. 1 and 2 except at appropriate place in Volume-III (financial bid) of the bid document, otherwise the bid will stand to be rejected.



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18. DEADLINE OF SUBMISSION OF BID:

The bid shall be received by the Superintending Engineer at the address mentioned therein not later than as prescribed (As per Bidding Data in Volume-II). The Employer may at his discretion extend the deadline for submission of bid issuing an addendum in accordance with Clause-9 of ITB, in which case, all rights and obligations of the Employer and bidders previously subjected to the original deadline shall therefore be subjected to new deadline as extended.

19. LATE BIDS:

Bid submitted after the deadline for submission will either not be received or if received inadvertently, will not be opened and shall be returned unopened to the bidder.

20. MODIFICATION AND WITHDRAWAL OF BID:

If after submission of the bid the bidder withdraws his offer or modifies the same, without prejudice to any other rights and power of the Employer hereunder or in law, the Employer shall be entitled to forfeit the full amount of the Bid Security deposited by the bidder.

E. BID OPENING AND EVALUATION**21. BID OPENING:**

21.1 The information submitted by the bidders in envelopes 1 & 2 will be scrutinized and evaluated as mentioned below. Right of evaluation through a committee constituted by the Employer, for the purpose or through consultants appointed for the same, is reserved by the Employer.

Bid Evaluation committee comprises of -

- | | | |
|--|---|------------------|
| 1) Chief Engineer | - | Chairman |
| 2) Superintending Engineer (Territorial) | - | Member |
| 3) Superintending Engineer (Q.C. & Vig.) | - | Member |
| 4) Executive Engineer (In-charge) | - | Member Secretary |

21.2 The bids will be opened in the presence of bidders / their authorized representatives who choose to remain present at the date, time and place stipulated in Bidding Data in Volume II.

21.2 Following procedure shall be adopted for opening of the bids. First of all information about number of bids received will be announced.

21.4 The envelope containing Envelope No. 1 and 2 of all the bids received will be opened first and Envelope No. 1 and 2 of all the bids will be arranged alphabetically and will be marked with serial number accordingly.



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Envelope No-1

- 21.5 Envelope No. 1 of each bidder will be opened serially. Documents in the envelope will be verified to check their validity as per requirement. If any particular document of any bid is either missing or does not meet the requirements specified then a note to that effect will be made by the bid opening authority. After opening of Envelope No. 1, the Employer will carryout the process of scrutiny and analysis of various documents / data submitted in Envelope No. 1.
- 21.6 The Envelope No. 2 of the bids whose Envelope No. 1 does not contain the specified documents or any of the specified document is missing, will be separated out. A note on the Envelope No. 1 of such bids indicating the nature of deficiency will be made. The Envelope No. 2 of such bid shall not be opened and a note to that effect will be made on the Envelope No. 2.
- 21.7 The right to ask for the missing / incomplete information is reserved by Government. Clarification in the bid documents may be demanded from the Concessionaires, if found necessary after the scrutiny. Refusal for compliance or giving clarification may render the offer invalid and Envelope No 2 in that case shall not be opened, but recorded with a suitable note.
- 21.8 Detailed scrutiny of the contents of the Envelope No.1 may take quite some time, as it involves evaluating financial capabilities, technical capabilities, references, past performance of the Concessionaire, etc. and soundness of the technical proposal, and also asking for missing information, clarification or compliance with bid documents. It may not be possible to open the financial bid in Envelope No.2 on the date of opening of Envelope No.1.
- 21.9 After the analysis and scrutiny of documents with respect to requirements of bidding is over, the Employer shall declare the outcome of scrutiny and shall intimate the date and time of opening of financial bid (Envelope No. 2) to the qualified bidders.

Envelope No-2

- 21.10 On the specified date, the Envelope No. 2 of the qualified bidders shall be opened serially. Concession period of Government component quoted by each qualified bidder will be read out loudly by bid opening authority for information of those present.



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22. PROCESS TO BE CONFIDENTIAL:

The information relating to the examination, clarification, evaluation, comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award of the contract to successful bidder has been announced. Any effort by a bidder to influence the Employer in the process of examination, clarification, evaluation, comparison of bids and in decision concerning the award of contract may result in rejection of bid.

23. CLARIFICATION OF BID:

To assist in examination, evaluation of bid, the Employer may ask bidders individually for clarification of their offer including break up of costs, reasons in case of very low / very high offer. Such request shall be in writing and the response shall also be in writing. But no change in financial offer or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of the arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause 26 of ITB.

24. BID LIABLE FOR REJECTION:

The bid is likely to be rejected if on opening, it is found that:

- a. The bidder has not strictly followed the procedure laid down for submission of bid.
- b. The bidder has proposed conditions, which are inconsistent with or contrary to the terms and conditions specified.
- c. Additions, corrections or alteration are made by the bidder on any page of the bid document, without affixing signature / initials.
- d. Any page or pasted slips are missing or replaced.
- e. The bidder has not signed each page of the bid.
- f. The bidder has specified any additional condition/ conditional Bid.
- g. The bidder has not attached the addendum and documents to the main bid form as stated in Clause 9 and Clause 17.3.1 of ITB.
- h. Any erasures are made by the bidder in the bidding document.
- i. The offer not signed in presence of two witnesses before submission.
- j. If the bidder does not satisfy the bid capacity, the bid shall be treated as non-responsive and rejected.



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- k. The Concessionaire shall submit detailed information about all completed and ongoing works.
- l. The Employer reserves the right to inspect the sites of the completed ongoing works to ascertain the correctness of the informations submitted by the bidder. If false information is found to have been submitted, the bidders bid shall be liable for rejection.
- m. Bid without Bid Security Deposit.

25. CORRECTION OF ERRORS:

25.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

- a. If there is any discrepancy between the offer quoted in figures and in words, the offer which is beneficial to Government will be treated as the offer.
- b. If there is any arithmetical error in totaling or cost of project, the correct total shall be computed by the Employer and the same shall govern.

25.2 The amount stated in the bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and with the concurrence of the bidder, shall be considered as binding upon the bidder.

25.3 If the bidder does not accept the corrected bid offer, the bid will be rejected and the bid security shall be forfeited in accordance with Sub Clause 15.6 of ITB.

26. EVALUATION AND COMPARISON OF BIDS:

26.1 The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 24 of ITB.

26.2 In evaluating the bids, the Employer will determine for each bid the Evaluated Bid offer by adjusting the concession period as follows:

- a. making any correction for errors pursuant to Clause 25 of ITB.
- b. making an appropriate adjustment on sound technical and or financial grounds for any other quantifiable acceptable variations, deviations, etc.

26.3 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, alternative offers and other factors,



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which are in excess of the requirements of the bidding documents or otherwise result in unsolicited benefits of the Employer shall not be taken into account in bid evaluation.

- 26.4 The estimated effect for the concession period as per provisions of the Conditions of Contract, applied over the period of execution of the Contract shall not be taken into account in bid evaluation.

F AWARD OF CONTRACT :

27. AWARD CRITERIA :

- 27.1 Subject to Clause 27.3 the Employer will award the contract to a bidder whose bid has been found to satisfy all the requirements of bid document and who has offered the lowest concession period, as the offer which is most beneficial to GOM.
- 27.2 Financial Bid (Envelope No. 2) containing Volume-III of only such bidders who qualify as per Clause 25, Sub Clause 17.3, and 17.4 of ICB shall be opened. Provided however that bidders who otherwise qualify as aforesaid, shall be liable to be disqualified if they have -
- made misleading or false representations in any of the forms, statements and attachments submitted in proof of the qualification requirements;
 - a record of poor performance in respect of the works e.g. not properly completing contracts, inordinate delays in completion, poor quality of work, litigation history or financial failures etc.

27.3 DECIDING AWARD OF CONTRACT :

The process of decision and award of the contract shall be as under.

- Only bids that qualify pursuant to Clause 27.2 above shall be considered for further evaluation. The Envelope No. 2 of non-qualifying bids shall not be opened. The decision of the Employer regarding the post qualification and opening of bids shall be final and binding on all bidders.
- In case no subsidy is proposed to be given by Government, the bidder with the lowest correct concession period, determined as per Clause 23 of ICB will be invited for further negotiations as may be necessary. If the negotiations with the firm are successful, the award will be made to that bidder. If, however, it is seen that a contract with reasonable terms cannot be concluded with the bidder with the lowest corrected concession period, the bidder with the second lowest concession period, will be invited for negotiations. The process will be repeated until an agreed contract is concluded.
- In case the Government proposes to give subsidy as mentioned in Article 10.4 of the ICB, the bidder with the lowest subsidy for the fixed concession period will be



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invited for further negotiations as may be necessary. If the negotiations with the firm are successful, the award will be made to that bidder. If, however, it is seen that a contract with reasonable terms cannot be concluded with the bidder with the lowest subsidy, the bidder with the second lowest subsidy, will be invited for negotiations. The process will be repeated until an agreed contract is concluded.

- d. The Employer reserves the right to reject any or all offers received from the bidders without assigning any reasons.

27.4 For projects where Government subsidy is not proposed if the bid of the successful bidder is seriously unbalanced in relation to the Employer's estimate of concession period under the contract, the Employer may require the bidder to produce detailed price analysis for any or all items of the project to demonstrate the internal consistency at those rates with the construction methods and schedule proposed. After evaluation of the rate analysis, the Employer may require that the amount of the performance security set forth in Clause-30 of ITB be increased at the expense of the successful bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the contract.

28 EMPLOYERS RIGHT TO REJECT :

Notwithstanding the Clause-27 of ITB the Employer reserves the right to accept or reject bid, without giving reason thereof to cancel the bid process and reject all the bids at any time prior to award of contract without thereby incurring any liability to the affected bidders or any obligation to inform affected bidders of the ground for Employer's action.

29 NOTIFICATION OF AWARD :

Prior to the expiration of bid's validity period or any such extended period, the Employer will notify the successful bidder in writing by a registered letter that his bid has been accepted. This letter (herein after and in conditions of contract called letter of acceptance) shall name the concession period of work to be constructed by the Concessionaire. This letter of acceptance will constitute formation of contract.

Upon furnishing the performance security by the successful bidder in accordance with the Clause 30 of ITB, the order to start work will be given. The work order shall be accompanied by a true copy of the agreement bearing the number under which it is registered in the office of the Engineer in Charge.

30. PERFORMANCE SECURITY :

- 30.1 Within 15 days of receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security as per Article 3.1 & 3.2 of Conditions of Contract and sign the agreement.



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- (3)
- a. a bank guarantee in the form stipulated.
 - b. Fixed Deposit Receipt (FDR)

30.2 If the performance security provided by the successful Bidder is in the form of a Bank Guarantee, it shall be issued at the Bidder's option, by a branch situated in Maharashtra of Nationalized or Scheduled bank and acceptable to the Employer.

30.3 Failure of the successful Bidder to comply with the requirements of Sub-Clause 31.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

31. CORRUPT OR FRAUDULENT PRACTICES :

31.1 Government requires that the Bidders /Suppliers/Concessionaires shall observe the highest standard of ethics during the execution of contracts. In pursuance of this policy, Government :

- (a) Defines, for the purposes of this provision, the terms set forth below as follows
- (i) "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution; and
- (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer.
- (b) will reject a proposal for award, if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
- (c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded any Government contract, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing Government contracts.



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32. CONDITIONS AND STIPULATIONS TO BE OBSERVED WHILE MAKING THE PROPOSAL:

- 32.1 The Concessionaire shall carry out his own studies and assessment independently to arrive at the financial viability of the project. Similarly he shall carry out his own field survey and investigations including soil investigation and collect necessary data and prepare his own cost and time estimates for formulating the proposal.
- 32.2 The Concessionaire shall make his own arrangements for financing the scheme from his own resources and / or from open market or through Loan. No Government Guarantee will be given for repayment of loans taken or debentures/bonds floated by the Concessionaire. Substitution Agreement as per Schedule 'F' may be executed for easy financial assistance if desired by the Concessionaire.
- 32.3 No advance or loans or subsidy or equity will be provided for the project by the Government unless otherwise specified as per article 10.4.
- 32.4 No separate land shall be made available by the Department for accommodating temporary structures such as construction yards, labour huts, etc. and the Concessionaire shall make his own arrangements for the same.
- 32.5 The specifications enclosed in tender document in volume IV are minimum for scope of the project. The Concessionaire has liberty only to offer higher specifications while submitting his offer.
- 32.6 The Concessionaire shall be deemed to have carefully studied the work and site conditions, specifications, schedules and drawings and various other data and shall be deemed to have visited the site of the work and to have fully acquainted himself regarding the local conditions including market conditions of rent, estate, etc. He shall be deemed to have carried out his own surveys, investigations, and assessment of site conditions. He is deemed to be fully aware of all statutory requirements including those concerning with labour and the local conditions / status of availability and employment of labourers. He is deemed to have his own assessment of present and future market. The data given by the Department is made available in good faith only for general information without any commitment or responsibility on the part of Government about its accuracy. The Concessionaire shall accordingly work out his proposal.



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In case the Concessionaire floats a separate company, after taking due approvals from the employer to implement the project after the same has been awarded to the Concessionaire, the Concessionaire shall undertake full responsibility for the all Acts, commissions and omissions of the company so floated by the Concessionaire. In such cases, the Concessionaire shall submit the separate agreement between the Concessionaire and the company so floated to the Engineer-in-charge signed by both the parties.



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SECTION- II

CONCESSION AGREEMENT



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SECTION- II

CONCESSION AGREEMENT

THIS CONCESSION AGREEMENT is entered into on this the ----- day of -----
(Month) --- (Year) at -----.

BETWEEN,

THE GOVERNOR OF MAHARASHTRA in his executive capacity for the Government of Maharashtra, represented by the Public Works Department, Government of Maharashtra, hereinafter referred to as the "GOM" (which expression shall include its successors and assigns),

AND

M/s XXXX Limited, a company incorporated under the Companies Act, 1956, having its registered office at ----- hereinafter referred to as the "Concessionaire" (which expression shall include its permitted successors and assigns)

WHEREAS,

- A. The GOM is keen to implement a project envisaging construction, operation and maintenance and handing over of Four Laning of Chinchoti-Kaman Ajourphata to Mankoli Road M.S.H. No. 4 Km. 0/000 - 26/425 Taluka Bhiwandi Dist. Thane (more particularly described in Schedule 'A' and hereinafter referred to as 'the Project') with private sector participation on Build Operate and Transfer (BOT) basis and has carried out feasibility study for the Project;
- B. The Public Works Department (the GOM, (PWD)) is responsible for development and maintenance of State Roads in Maharashtra;
- C. For and on behalf of the GOM, Public Works Department invited tenders from eligible persons for implementing the Project;
- D. In response to the aforesaid invitation for tenders, GOM received bids from several persons including the Concessionaire/the Consortium for implementing the Project;
- E. GOM after evaluating the aforesaid bids, accepted the bid submitted by the Concessionaire/the Consortium and issued the Letter of Acceptance dated --- --- (LOA) to the Concessionaire/the Consortium;
- F. The Concessionaire has delivered to the GOM performance security for construction issued by --- for an amount of Rs. 190.00 Lakhs (Rs. One Hundred Ninety Lakhs only) valid upto -----.



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- G. In accordance with the requirements of the said tender/bid submitted by the Consortium, the Consortium has incorporated the Concessionaire as a special purpose vehicle to implement the Project on BOT basis through private participation and the GOM has agreed to grant to the Concessionaire, the Concession (as hereinafter defined) on the terms, conditions and covenants hereinafter set forth in this Agreement.



NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

ARTICLE I

DEFINITIONS AND INTERPRETATION

1.1 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 1st April of any calendar year and ending on 31st March of the next calendar year.

"Agreement" means this agreement including Schedules 'A' through 'V' hereto, and any amendments thereto made in accordance with the provisions of this Agreement.

"Applicable Laws" means all laws promulgated or brought into force and effect by COM and Government of India including regulations and rules made thereunder, and judgments, decrees, injunctions, writs and orders of any court of record, as may be in force and effect during the existence of this Agreement.

"Applicable Permits" means all clearances, permits, authorizations, consents and approvals under or pursuant to Applicable Laws, required to be obtained and maintained by the Concessionaire, in order to implement the Project and to provide Project Facility in accordance with this Agreement.

"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.

"Bill of Quantities" means bill of quantities set forth in Schedule E.

"Cashflow Projections" means the estimates of cashflows of the Project as set out in Schedule 'G'.

"Change in Law" means the occurrence of any of the following after the date of this Agreement:

- 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 date of this Agreement;
- d. A change in the interpretation or application of any Indian law by a court of record as compared to such interpretation or application by a court of record prior to the date of this Agreement; or



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e. Any change in the rates of any of the Taxes.

"COD" means the commercial operations date of the Project which shall be the date on which the Engineer in charge has issued the Provisional completion or the Completion Certificate upon completion of construction of the Project and which shall, subject to the provisions of this Agreement, be not later than as mentioned in contract data.

"Chief Engineer" shall mean the Chief Engineer of Public Works Department, as mentioned in contract data or any other officer of equivalent rank, if so designated by the Government of Maharashtra.

"Commencement Date" means the date on which the work order is issued to Concessionaire.

"Completion Certificate" means the certificate issued by the Engineer in charge pursuant to Article 9.3(d).

"Concession" shall have the meaning ascribed thereto in Article 2.1.

"Concession Period" means the period as applicable specified in Article 2.2.

"Concessionaire" means, M/s. XXXX (As per Volume-II) and shall include its successors and permitted assigns expressly approved by GOM.

"Consortium" means the consortium consisting of (i) AAAA, (ii) BBBB and (iii) CCCC formed/ acting pursuant to the Memorandum of Understanding (As per Volume-II) (Schedule 'I') entered into by them, for the purpose of bidding for the Project and in the event of being successful to implement the Project through a special purpose vehicle to be formed and incorporated by them in India.

"Construction Works" means all works and things necessary to achieve commercial operation of the Project in accordance with this Agreement.

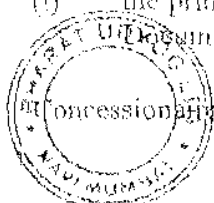
"Contractor" means Person with whom the Concessionaire has entered into/ may enter into all or any of the Project Agreements.

"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.

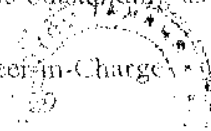
"Days" are calendar days, months are calendar months.

"Debt Due" means the aggregate of the following sums expressed in Rupees outstanding and payable to the Lenders under the Financing Documents:

- (i) the principal amount of the debt provided by the Lenders under the Financing Documents for financing the Project (the "principal") which is outstanding as



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on the Termination Date but excluding any part of the principal that had fallen due for repayment one year prior to the Termination Date unless such repayment had been rescheduled with the prior consent of the GOM; and

- (ii) all accrued interest, financing fees and charges payable on or in respect of the debt referred to in sub-clause (i) above up to the date preceding the Termination Date but excluding (a) any interest, fees or charges that had fallen due one year prior to the Termination Date, and (b) penal interest or charges payable under the Financing Documents to the Lenders.

"Defect" is any part of the Works not completed in accordance with the condition of Contract.

"Defects Liability Period" is the period named in the Contract Data and calculated from the Completion Date.

"Department" shall mean Public Works Department of the Government of Maharashtra.

"Design Approving Engineer" (D.A.E.) shall mean the Superintending Engineer, Public Works Department, Design Circle (Bridges), or any other Person/Consultant nominated by the Chief Engineer for scrutiny and approval of the design calculations and structural drawings prepared and submitted by the Concessionaire.

"Dispute" shall have the meaning ascribed thereto in Article 19.1.

"Dispute Resolution Procedure" means the procedure for resolution of Dispute set forth in Article 19.

"Drawings" means all of the drawings, designs, calculations and documents pertaining to the Project as set forth in Schedule 'K' and shall include "as built" drawings of the Project.

"Emergency" means a condition or situation that is likely to endanger the security of the individuals on or about the Project including users thereof or which poses an immediate threat of material damage to any of the Project Assets.

"Employer" is Government Of Maharashtra represented through Secretary Public Works Department or his authorised representative as indicated in Contract Data.

"Encumbrance" means any encumbrance 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 without limitation any designation of loss to payers or beneficiaries or any similar arrangement under any insurance policy pertaining to the Project, physical encumbrances and encroachments on the Project Site.

"Engineer in charge" shall mean the Executive Engineer of Public Works Department, as mentioned in contract data or any other officer of equivalent rank, if



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so designated or any other person nominated by the Chief Engineer from time to time." (Schedule I)

"Equipment" is the Concessionaire's machinery and vehicles brought temporarily to the Site to construct the Works.

"Equity" means the sum expressed in Rupees representing the equity share capital of the Concessionaire and shall include the funds advanced by any member of the Consortium or by any of its shareholders to the Concessionaire for meeting equity component of the Total Project Cost. Provided, however, that for purposes of computing Termination Payment under this Agreement, Equity shall be reckoned as an amount that is arrived at after excluding from the equity share capital of the Concessionaire the sum by which the capital cost of the Project as stated by the Concessionaire for purposes of claiming Termination Payment exceeded the Total Project Cost unless such excess cost has been incurred with the approval of the Lenders and GOM. Provided further, any equity brought in after COD shall not be considered or taken into account for the purpose of Termination Payment.

"Exempted Vehicles" means vehicles specified as such in the Toll Notification as prescribed in Bombay Motor Vehicle Tax Act, 1958.

"Financing Documents" means the documents executed by the Concessionaire in respect of financial assistance (including refinancing) for the Project to be provided by the Lenders by way of loans, advances, subscription to debentures and other debt instruments and guarantees, risk participation, take-out financing or any other form of credit enhancement and shall include loan agreements, guarantee agreements, subscription agreements, notes and any documents providing security for such financial assistance, and includes amendments or modifications made thereto.

"Financial Close" means the date on which the Financing Documents providing for funding by the Lenders have become effective and the Concessionaire has immediate access to such funding under the Financing Documents.

"Force Majeure Cost" Force Majeure Cost means cost attributable to force majeure events specified in Article 15 and directly related to the project so as to bring the facility to its original state as before occurrence of force majeure event.

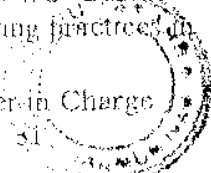
"Force Majeure Event" shall have meaning ascribed thereto in Article 15.1.

The "GOM" means the Government of Maharashtra represented through secretary, public works department or his authorised representative.

"Good Industry Practice" means those practices, methods, techniques, standards, specification, skills, diligence and prudence which are generally and reasonably expected of and accepted internationally from a reasonably skilled and experienced operator engaged in the same type of undertaking as envisaged under this Agreement and acting generally in accordance with MORTH specifications/ PWD Standard Specifications as would be applicable and would mean good engineering practices in



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the design, engineering, construction and project management and which would be expected to result in the performance of its obligations by the Concessionaire and in the operation and maintenance of the Project in accordance with this Agreement, Applicable laws, Applicable Permits, reliability, safety, environment protection, economy and efficiency.

"Government" shall mean the Government of Maharashtra represented through Secretary Public Works Department or his authorised representative as indicated in Contract Data.

"Government Agency" means the GOM, or any state government or governmental, department, commission, board, body, bureau, agency, authority, instrumentality, court or other judicial or administrative body, central, state, or local, having jurisdiction over the Concessionaire, the Project Assets or any portion thereof, or the performance of all or any of the services or obligations of the Concessionaire under or pursuant to this Agreement.

"Implementation Period" means the period beginning from the Commencement Date and ending on the CGD.

"Indirect Political Event" shall have the meaning ascribed therein in Article 15.3.

"Initial Investment" shall have the meaning ascribed therein in Schedule 10.

"Internal Rate of Return" shall have the meaning ascribed therein in Schedule 10.

"Lenders" means financial institutions, banks, funds, trusts or trustees of the holders of debentures or other securities their successors and assigns, who provide financial assistance to the Concessionaire under any of the Financing Documents.

"Maintenance Manual" shall have the meaning ascribed to it in Article 9.5.

"Maintenance Programme" shall have the meaning ascribed to it in Article 9.6.

"Material Adverse Effect" means material adverse effect on (a) the ability of the Concessionaire to observe and perform any of its rights and obligations under and in accordance with the provisions of this Agreement and/or (b) the legality, validity, binding nature or enforceability of this Agreement.

"Material Breach" means a breach by either Party of any of its obligations under this Agreement which has/likely to have a Material Adverse Effect on the Project and which such Party shall have failed to cure within the Cure Period.

"Minimum Maintenance Requirements" means minimum maintenance requirements for the maintenance of the Project as set forth in Schedule 10.

"Non Political Event" shall have the meaning ascribed therein in Article 15.2.



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"O&M" means the operation and maintenance of the Project during Operations Period including but not limited to functions of maintenance, collection and retention of Fees and performance of other services incidental thereto.

"O&M Contract" means the Operation and Maintenance Contract that may be entered into between the Concessionaire and the O&M Contractor for O&M of the Project/Project Facility.

"O&M Contractor" means the person or entity with whom the Concessionaire has entered into for O&M Contract for discharging O&M functions for and on behalf of the Concessionaire.

"O&M Expense" means expenses incurred by or on behalf of the Concessionaire, duly certified by its Statutory Auditors for all regularly scheduled and reasonably anticipated O&M during Operations Period, including, without limitation (a) all cost of salaries and other employee compensation and contract fee payable to the O&M Contractor, if any, (b) cost of materials, supplies, utilities and other services, (c) premium for insurance, (d) all franchise, excise property and other similar taxes and all costs and fees incurred in order to obtain and maintain all Applicable Permits necessary for the O&M of the Project/Project Facility at its full design capacity, (e) all repair, replacement and maintenance costs of the Project/Project Facility, and (f) all other expenditures required to be incurred under Applicable Law or under Applicable Permits necessary for the operation and maintenance of the Project according to the Specifications and Standards at its full design capacity.

"O & M Inspection" O & M inspection means the inspection to be carried out jointly by the Engineer in charge and Concessionaire to determine the condition of project.

"Operations Period" means the period commencing from COD and ending at the expiry of the Concession Period.

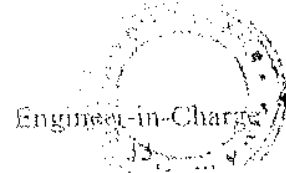
"Parties" means the parties to this Agreement collectively and "Party" shall mean either of the Parties to this Agreement individually.

"Performance Security" means the Performance Security for construction or Performance Security for operation and maintenance as applicable in terms of Article 3.

"Person" means any individual, company, corporation, partnership, joint venture, trust, unincorporated organization, government or Government Agency or any other legal entity.

"Political Event" shall have the meaning ascribed thereto in Article 15.4

"Project" means the project described in Schedule 'A' which the Concessionaire is required to design, engineer, procure, finance, construct, operate, maintain and transfer in accordance with the provisions of this Agreement.



"Project Agreements" means collectively this Agreement, any contract for the design, engineering, procurement and construction of the Project, O&M Contract and any other material contract (other than the Financing Documents) entered into or may hereafter be entered into by the Concessionaire in connection with the Project.

"Project Assets" means all physical and other assets relating to and forming part of the Project including but not limited to (i) rights over the Project Site in the form of license, right of way or otherwise, (ii) tangible assets such as civil Works including foundations, embankments, pavements, road surface, interchanges, bridges, approaches to bridges and flyovers, road over bridges, drainage works, lighting facilities, traffic signals, sign boards, milestones, Toll Plaza, equipment for the collection of tolls or relating to regulation of traffic, electrical works for lighting on the Project, telephone and other communication systems and equipment for the Project, rest areas, wayside amenities, administration and maintenance depots, relief centers, service facilities etc. (iii) Project Facility situated on the Project Site, (iv) the rights of the Concessionaire under any Project Agreements, (v) financial assets, such as security deposits for electricity supply, telephone and other utilities, etc., (vi) insurance proceeds subject to Lenders' rights thereto and (vii) Applicable Permits and authorisation relating to or in respect of the Project.

"Project Completion" shall have the meaning ascribed thereto in Article 9.2

"Project Completion Schedule" means the progressive Project milestones set forth in Schedule 'D' for the implementation of the Project

"Project Facility" means collectively the facilities on the Project Site to be constructed, built, installed, erected provided by the Concessionaire for use of the tollbooth by implementing the Project and more specifically set out in Schedule 'C'.

"Project Site" means the real estate particulars whereof are set out in Schedule 'B' on which the Project is to be implemented and the Project Facility is to be provided in accordance with this Agreement

"Provisional Certificate" shall have the meaning ascribed to it in Article 9.3(g) and (h)

"Punch List" shall have the meaning ascribed thereto in Article 9.3(g)

"Rs." or "Rupees" refers to the lawful currency of the Republic of India

"SBI PLR" means the prime lending rate per annum for loans with 1 (one) year maturity as fixed from time to time by the State Bank of India, and in the absence or such rate, the average of the prime lending rates for loans with 1 (one) year maturity fixed by the State Bank of India and failing that any other arrangement that substitutes such prime lending rate as mutually agreed between the Parties.

"Scheduled Project Completion Date" shall have the meaning set forth in Article 9.2(c).



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"Specifications and Standards" means the specifications and standards relating to the quality, capacity and other requirements for the Project as set forth in Schedule 'L' and any modifications thereof, or additions thereto as included in the design and engineering for the Project submitted by the Concessionaire to, and expressly approved by GOM.

"Sponsors" shall mean (i) ----- (ii) ----- (iii) ----- and (iv) -----
----- (As defined in volume II)

"Statutory Auditors" means a reputed firm of Chartered Accountants duly licensed to practice in India acting as statutory auditors of the Concessionaire.

"Steering Group" means the Steering Group constituted pursuant to Article 7.1.

"Substitution Agreement" means the agreement to be entered into among the Concessionaire, GOM, and the Lenders in the form set forth in Schedule 'T' providing, inter alia, for the substitution of the Concessionaire by another Person subject to and in accordance with the provisions of this Agreement and the Substitution Agreement.

"Superintending Engineer" shall mean the Superintending Engineer of Public Works Department, to be mentioned in contract data or any other officer of equivalent rank, if so designated by the Chief Engineer.

"Supervision consultant" shall mean the consultant appointed by the Concessionaire with the express approval of the engineer in charge to supervise the work on behalf of concessionaire pursuant to article 6.

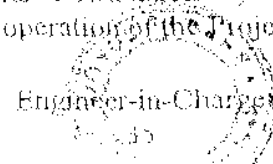
"Termination" means termination of this Agreement and the Concession hereunder pursuant to a Termination Notice or otherwise in accordance with the provisions of this Agreement but shall not, unless the context otherwise requires, include the expiry of this Agreement/Concession due to expiry to the Concession Period in the normal course.

"Termination Date" means the date on which the Termination occurs which shall be the date on which Termination Notice has been delivered or deemed to have been delivered by a Party issuing the same to the other Party in accordance with the provisions of this Agreement.

"Termination Notice" means a communication in writing by a Party to the other Party regarding Termination in accordance with the applicable provisions of this Agreement.

"Termination Payment" means the aggregate of the amounts payable by the GOM to the Concessionaire under this Agreement upon Termination including Termination Payment receivable by the Concessionaire pursuant to Article 16.4.

"Tests" means the tests to be carried out as set forth in and in accordance with Schedule 'M' to determine the Project Completion and its certification by the Independent Engineer prior to commencement of commercial operation of the Project.



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"Toll Plaza" means collectively the structures, equipment, system or mechanism and barriers erected or installed for the purpose of regulating the entry/exit of vehicles using the Project and for collection of Fee in accordance with the provisions of this Agreement.

"Total Project Cost" means the lowest of the following :

- (a) The amount as mentioned in contract data.
- (b) actual capital cost of the Project upon completion of the Project as certified by the Statutory Auditors; or total project cost as set forth in Financing Documents.

"Toll" means the Toll chargeable for a vehicle using the Project Facility in accordance with the Toll Notification.

"Toll Notification" means the notification as per draft appended hereto as Schedule "F" to be published by the GOvt in the Gazette of the GOvt in exercise of the powers conferred by the relevant provisions of the Bombay Motor Vehicle Tax Act (BMVTA) and the rules framed thereunder, authorizing the levy and collection of the Toll by the Concessionaire in accordance with the provisions of this Agreement.

"Work order" shall mean order to start the work issued to Concessionaire after he has paid the Performance Security and signed the agreement in prescribed form.

"WPI" means the wholesale price index published monthly by the Ministry of Industry, the GOvt and shall include any index which substitutes the WPI.



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1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

- (a) any reference to a statutory provision shall include such provision as is from time to time modified or re-enacted or consolidated so far as such modification or re-enactment or consolidation applies or is capable of applying to any transactions entered into hereunder;
- (b) references to Indian law shall include the laws, acts, ordinances, rules, regulations, guidelines or by laws which have the force of law in any State or Union Territory forming part of the Union of India;
- (c) the words importing singular shall include plural and vice versa, and words denoting natural persons shall include partnerships, firms, companies, corporations, joint ventures, trusts, associations, organizations or other entities (whether or not having a separate legal entity);
- (d) the headings are for convenience of reference only and shall not be used to and shall not affect, the construction or interpretation of this Agreement;
- (e) terms and words beginning with capital letters and defined in this Agreement including the Schedules;
- (f) the words "include" and "including" are to be construed without limitation;
- (g) references to "construction" include, unless the context otherwise requires, investigation, design, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction;
- (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) any reference to month shall mean a reference to a calendar month;
- (k) the Schedules 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;
- (l) any reference at any time to any agreement, deed, instrument, license or document of any description shall be construed as reference to that agreement, deed, instrument, license or other document as amended, varied, supplemented, modified or suspended at the time of such reference;
- (m) references to recitals, Articles, sub-articles, clauses, or Schedules in this Agreement shall, except where the context otherwise requires, be deemed to



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be references to recitals, Articles, sub-articles, clauses and Schedules of or to this Agreement;

- (n) any agreement, consent, approval, authorization, notice, communication, information or report required under or pursuant to this Agreement from or by any Party or the Engineer in charge shall be valid and effectual only if it is in writing under the hands of duly authorized representative of such Party or the Engineer-in-charge, as the case may be, in this behalf and not otherwise;
- (o) 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; and
- (p) 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 or liquidated damages;
- (q) unless otherwise expressly provided in this Agreement, any documentation required to be provided or furnished by the Concessionaire to the GOM/Steering Group and/or the Engineer in charge shall be provided free of cost and in three copies and if the GOM/Steering Group and/or the Engineer in charge is required to return any such documentation with their comments and/or approval, they shall be entitled to retain two copies thereof.

1.2.2 Measurements and Arithmetic Conventions

All measurements and calculations shall be in metric system and calculations done to 2 decimal places, with the third digit of 5 or above being rounded up and below 5 being rounded down, except in Tonnage calculation which shall be rounded off to nearest integer.

1.2.3 In case of ambiguities or discrepancies within this Agreement, the following shall apply:

- (i) between two Articles of this Agreement, the provisions of specific Articles relevant to the issue under consideration shall prevail over those in other Articles;
- (ii) between the Articles and the Schedules, the Articles shall prevail;
- (iii) between the written description on the Drawings and the Specifications and Standards, the latter shall prevail;
- (iv) between the dimension scaled from the Drawing and its specific written dimension, the latter shall prevail;

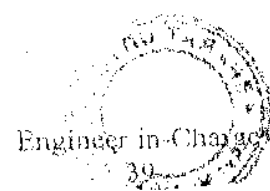


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- (v) between any value written in numerals and that in words, the latter shall prevail.



ARTICLE 2

CONCESSION AND PROJECT SITE

2.1 Grant of Concession

Subject to and in accordance with the terms and conditions set forth in this Agreement, the GOM hereby grants and authorises the Concessionaire to investigate, study, design, engineer, procure, finance, construct, operate and maintain the Project/Project Facility and to exercise and/or enjoy the rights, powers, privileges, authorisations and entitlements as set forth in this Agreement, including but not limited to the right to levy, demand, collect and appropriate Toll from vehicles and Persons liable to payment of Toll for using the Project/ Project Facility or any part thereof (collectively "the Concession").

2.2 Concession Period

The Concession hereby granted is for a period as per accepted Bid in Financial Bid - Volume III commencing from the Commencement Date (the Concession Period) during which the Concessionaire is authorized to implement the Project and to operate Project Facility in accordance with the provisions hereof, (as per Bidding Data - volume II).

Provided that:

- (a) in the event of the Concession being extended by the GOM beyond the said period in accordance with the provisions of this Agreement, the Concession period shall include the period/aggregate period by which the Concession is so extended, and
- (b) in the event of Termination, the Concession period shall remain and be limited to the period commencing from the Commencement Date and ending with the Termination.

2.3 Acceptance of the Concession

The Concessionaire hereby accepts the Concession and agrees and undertakes to implement the Project/provide Project Facility, and to perform/discharge all of its obligations in accordance with the terms and conditions set forth in this Agreement.

2.4 Project Site

- (a) The GOM hereby undertakes to handover to the Concessionaire physical possession of the Project Site as per the schedule mentioned in bid data - volume II free from Encumbrance together with the necessary rights of way/leave for the purpose of implementing the Project in accordance with this Agreement.



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The GOM confirms that upon the Project Site being handed over pursuant to the preceding sub-article (a) the Concessionaire shall have the exclusive right to enter upon, occupy and use the Project Site and to make at its costs, charges and expenses such development and improvements in the Project Site as may be necessary or appropriate to implement the Project and to provide Project Facility subject to and in accordance with the provisions of this Agreement.

- (b) Land for the proposed project shall be handed over to the concessionaire as per schedule mentioned in the Bidding data in volume-II.

The concessionaire shall be responsible for maintenance, repairs, safety of road-user for entire stretch handed over to the concessionaire right from the date of work order.

After the concession period is complete the entire facility including land shall be handed over to the Government of Maharashtra. The concessionaire shall be empowered to carry out the activities mentioned in the bid only for the concession period. The right of the Govt. to carry out any other activities not included in this agreement on the same land is reserved by the Government of Maharashtra.

At the time of handing over of land, project before issuing Work Order position of land/project record, photographs, video films shall be kept and document joint to signed by the Engineer in charge and concessionaire.

2.5 Use of the Project Site

The Concessionaire shall not without prior written consent or approval of the GOM use the Project Site for any purpose other than for the purposes of the Project/the Project Facility and purposes incidental thereto as permitted under this Agreement or as may otherwise be approved by the GOM.

2.6 Information about the Project Site

The information about the Project Site set out in Schedule 'B' is provided by the GOM in good faith and with due regard to the matters for which such information is required by the Concessionaire. The GOM agrees to provide to the Concessionaire, upon a reasonable request, any further information relating to the Project Site, which the GOM may now possess or may hereafter come to possess. Subject to this the GOM makes no representation and gives no warranty to the Concessionaire in respect of the condition of the Project Site.



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2.7 Peaceful Possession

The GOM warrants that :

- (a) the Project Site together with the necessary right of way/ way leaves having been acquired through the due process of law belongs to and vested in the GOM, and that the GOM has full powers to hold, dispose of and deal with the same consistent, inter alia, with the provisions of this Agreement;
- (b) the Concessionaire shall have no obligation/liability as to payment of any compensation whatsoever to or the rehabilitation and resettlement of any Person from whom the Project Site or any part thereof had been acquired and that the same shall be the sole responsibility of the GOM; and
- (c) the Concessionaire shall, subject to complying with the terms and conditions of this Agreement, remain in peaceful possession and enjoyment of the Project Site during the Concession Period. In the event the Concessionaire is obstructed by any Person claiming any right, title or interest in or over the Project Site or any part thereof or in the event of any enforcement action including any attachment, restraint, appointment of receiver or liquidator being initiated by any Person claiming to have any interest in charge on the Project Site or any part thereof, the GOM shall, if called upon by the Concessionaire, defend such claims and proceedings and also keep the Concessionaire indemnified against any direct or consequential loss or damages which the Concessionaire may suffer on account of any such right, title, interest or charge.

2.8 Rights and Title over the Project Site

- (a) The Concessionaire shall have exclusive rights to the use of the Project Site in accordance with the provisions of this Agreement and for this purpose it may regulate the entry and use of the same by third parties.
- (b) The Concessionaire shall allow access to, and use of the Project Site/ Project Facility for telegraph lines, electric lines Crossing of road for any utility purpose including pipe line or canal for irrigation purpose or such other public purposes as the GOM may specify, provided access or use does not result in a Material Adverse Effect or closure of Project Facility for a period exceeding 120 days and the restoration Charges shall be paid by concerned party if payable as per applicable Law/Rules. On such cases where the restoration charges are not payable by the party the Engineer-In-Charge will certify the cost of such restoration of the facility and the concession period would be suitably extended at the rate as mentioned in Bid Data in Volume-II. The responsibility of restoration of facility will be of the concessionaire and no any claim of reduction in toll due to the work of crossing of road will be admissible.



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- (c) The Concessionaire shall not part with or create any Encumbrance on the whole or any part of the Project Site save and except as set forth and permitted under this Agreement provided however that nothing contained herein shall be construed or interpreted as restriction on the right of the Concessionaire to appoint any Contractor for the performance of its obligations hereunder including for operation and maintenance of all or any part of the Project / Project Facility.
- (d) If at any point of time, it is decided to set up octroi station by the concerned local authority along the road, the required access for the same shall be allowed by the concessionaire, as per the plan to be approved by the GOM. No any claim for reduction in toll income due to setting up of octroi station etc. will be admissible.
- (e) The concessionaire may also note that the forest check naka, Excise check naka or traffic check naka may be setup by the competent authority also the road to check the transportation of illegal goods. The concessionaire may facilitate setting up such nakas on receipt of directives from the Engineer-in-Charge. No any claim for reduction in toll income due to setting up of check nakas will be admissible.
- (f) The Concessionaire shall not be entitled to any special tax concession or any other concessions as a result of undertaking the proposed project, other than those declared by the GOM or the GOI upto 30 days before the last date of receipt of the bids.

2.9 Environmental Clearance

The GOM confirms that the Project/Project Site has been granted clearance relating to environmental protection and conservation as listed in Schedule 'H'. The Concessionaire shall, however, apply for and obtain any other Applicable Permits related to environmental matters that may be necessary or required for the Project under any Applicable Laws.



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ARTICLE 3

PERFORMANCE SECURITY

3.1 Performance Security

- (a) Before executing this Concessionaire agreement the Concessionaire has already deposited performance security of Rs. 190.00 Lakhs, for due and punctual performance of its obligations during the Implementation Period, deliver to the GOM, simultaneously with the execution of this Agreement a bank guarantee from a branch situated in Maharashtra of scheduled/ Nationalised bank acceptable to the GOM, in the form set forth in Schedule 'Q', the "Performance Security for construction" for a sum of Rs. 190.00 Lakhs. (as per Bidding Data - volume II)
- (b) The Concessionaire shall for due and punctual performance of obligations during the Operations Period deliver to the GOM, on or before the GOM, the bank guarantee from a branch situated in Maharashtra of scheduled, Nationalised bank acceptable to the GOM in form set forth in Schedule, 'R' Performance Security for operation and maintenance. (as per Bidding Data - volume II) Rs. 60.00 Lakhs.

3.2 Fresh Performance Security

In the event of the encashment of the Performance Security by the GOM pursuant to Encashment Notice issued in accordance with the provisions of Article 16 the Concessionaire shall within 30 (thirty) days of the Encashment Notice furnish to the GOM fresh Performance Security failing which the GOM shall be entitled to terminate this Agreement in accordance with the provisions of Article 16. The provisions set forth in Article 3.1 above shall apply mutatis mutandis to such fresh Performance Security.

3.3 Release of performance security

The performance security shall be released after one year of handing over of the project to GOM on completion of concession period.



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ARTICLE 4

TOLL

4.1 Levy, Collection and appropriation of Toll

- (a) Subject to the provisions of this Agreement, the Concessionaire shall during Operations Period be entitled to levy, demand and collect Toll in accordance with the Toll Notification and to appropriate the same.(as per schedule F)
- (b) The GOM undertakes to publish the Toll Notification as per Schedule 'F' after issue of provisional completion certificate by Engineer in Charge as per Schedule 'N'.
- (c) The concessionaire shall give concession to users as per Toll Notification
- (d) The Concessionaire shall not levy and collect any Toll until it has received Toll Notification issued by the GOM.
- (e) The Concessionaire shall not collect any Toll in relation to exempted Vehicles
- (f) The Concessionaire shall conspicuously display the Toll Rates at the Toll Plaza and also at a distance about 200 meters ahead of Toll Plaza on either side of Project Facility.
- (g) The concessionaire shall provide uniform to staff working on toll stations. The colour and type shall be got approved from the Engineer in Charge.
- (h) The concessionaire shall provide drinking water and toilet facilities for the road users near the toll plaza.
- (i) The concessionaire shall provide sufficient area lighting near the toll plaza.

4.2 Revision of Toll

In the event of extension in Concession Period in accordance with provisions of this Agreement, the GOM shall issue revised Toll Notification(s) taking into account increase in Toll rates (as Specified in Schedule 'F' or as per contract data Volume II)

4.3 Traffic Sampling :-

To ascertain the actual Toll income per traffic survey will be conducted after completion of 5 years from COD. The traffic survey will be conducted twice in a year in the month of March / October of every year for continuous period less than 7 days and average count will be taken as base.



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To compute yearly toll income the following procedure shall be followed.

Yearly Toll Income = Average Traffic count of each category worked-out as above [x] prevailing toll rate [x] 365 days [x] 0.85 [Discount factor for coupons / Monthly passes] From actual Toll income worked out as above, 10% will be deducted and there after from the balance toll income, the estimated, Toll income during that year considered in the cash flow submitted with the bid, will be deducted and balance will be shared equally with Authority.



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ARTICLE 5

OBLIGATIONS AND UNDERTAKINGS

In addition to and not in derogation or substitution of any of the obligations set out elsewhere in this Agreement, the Parties agree and undertake as under :

5.1 General Obligations of the Concessionaire

The Concessionaire shall at its own cost and expense

- i) investigate, study, design, construct, operate and maintain the Project Assets/Project Facility in accordance with the provisions of this Agreement, Good Industry Practice and Applicable Laws;
- (ii) obtain all Applicable Permits in conformity with the Applicable Laws and be in compliance with thereof at all times during the Concession Period; at his own cost;
- (iii) procure and maintain in full force and effect, as necessary, appropriate proprietary rights, licenses, agreements and permissions for materials, methods, processes and systems used in or incorporated into the Project;
- (iv) ensure and procure that each Project Agreement contains provisions that would entitle the GOM or a nominee of the GOM to step into such agreement at the GOM's discretion, in place and substitution of the Concessionaire in the event of Termination pursuant to the provisions of this Agreement;
- (v) provide all assistance to the Engineer in charge and Steering Group as they may reasonably require for the performance of their duties and services under this Agreement;
- (vi) provide to the Steering Group reports on a regular basis during the Implementation Period and the Operations Period in accordance with the provisions of this Agreement;
- (vii) appoint, supervise, monitor and control the activities of Contractors under their respective Project Agreements as may be necessary;
- (viii) make efforts to maintain harmony and good industrial relations among the personnel employed in connection with the performance of the Concessionaire's obligations under this Agreement;
- (ix) develop, implement and administer a surveillance and safety program for the Project/Project Facility and the users thereof and the Contractors personnel engaged in the provision of any services under any of the Project Agreements including correction of safety violations and deficiencies, and taking of all other actions necessary to provide a safe environment in accordance with Applicable Laws and Good Industry Practice;



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- (x) take all reasonable precautions for the prevention of accidents on or about the Project Site/Project Facility and provide all reasonable assistance and emergency medical aid to accident victims;
- (xi) not to place or create nor to permit any Contractor or other person claiming through or under the Concessionaire to create or place any Encumbrance over all or any part of the Project Assets, or on any rights of the Concessionaire therein, save and except as expressly set forth in this Agreement;
- (xii) make its own arrangements for quarrying and payment of royalty charges, and observe and fulfill the environmental and other requirements under the Applicable Laws and Applicable Permits;
- (xiii) be responsible for safety, soundness and durability of the Project Facility including all structures forming part thereof and their compliance with the Specifications and Standards;
- (xiv) ensure that the Project Site remains free from all encroachments and take all steps necessary to remove encroachments, if any;
- (xv) make payment to Police Department or any the GOM Agency, if required, for provision of such services as are not provided in the normal course or are available only on payment;
- (xvi) operate and maintain the Project at all times during the Operations Period in conformity with this Agreement including but not limited to the Specifications and Standards, the Maintenance Program and Good Industry Practices; and shall pay to the GOM the cost of maintenance and repair works which would be carried out by the GOM in case of failure of the Concessionaire to carryout the maintenance of the project within stipulated time as per Schedule 'D'.
- (xvii) remove promptly according to Good Industry Practice, from the Project Site, all surplus construction machinery and materials, waste materials (including, without limitation, hazardous materials and waste water), rubbish and other debris (including without limitation accident debris) and keep the Project Site in a neat and clean condition and in conformity with the Applicable Laws and Applicable Permits.



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12/11/2018

5.2 Obligations of the Concessionaire during Implementation Period

- (a) The Concessionaire shall, before commencement of construction of the Project;
- (i) submit to the Engineer in Charge with due regard to Project Completion Schedule and Scheduled Project Completion Date, its design, engineering and construction time schedule and shall formulate and provide Critical Path Method (CPM)/ Project Evaluation and Review Technique (PERT) charts for the completion of the said activities;
- (ii) have requisite organization and designate and appoint suitable Supervision Consultant to supervise the Project and to deal with the Engineer in charge /the Steering Group and to be responsible for all necessary exchange of information required pursuant to this Agreement;
- (iii) undertake, do and perform all such acts, deeds and things as may be necessary or required to adhere to the Project Completion Schedule and to achieve Project Completion under and in accordance with this Agreement;
- (iv) construct, provide and maintain a furnished site office accommodation as per approved drawing at the Project Site; and
- (v) provide and maintain an adequately equipped field laboratory as required for the Project Site control on the quality of materials and the Construction Works.
- (b) The Concessionaire shall, at all times, afford access to the Project Site, to the Engineer in charge, the authorized representatives of the GOM, the Engineer in charge and officer of any the GOM Agency having jurisdiction over the Project, including those concerned with safety, security or environmental protection to inspect the Project and to investigate any matter within their authority and upon reasonable notice, the Concessionaire shall provide to such persons reasonable assistance necessary to carry out their respective duties and functions.
- (c) The Concessionaire shall:
- (i) apply for and obtain all necessary clearances and/or approvals for the construction of Road Over Bridge (ROB)/ Road Under Bridge (RUB) from the Ministry of Railways;
- (ii) shall apply for and obtain all necessary approvals of the General Arrangement Drawing (GAD), detailed designs and all construction drawings for the construction of ROB from the concerned zone of Railways;
- (iii) make payments, if any, to Railways for (a) for approval of designs, (b) shunting of materials, (c) safety features, (d) supervision of construction and (e) maintenance during the Concession Period;



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- (iv) shall also make arrangements for entering into an agreement with the GOM and/or railway zone for construction of the ROB/RUB as per the requirements of the Ministry of Railway. A model agreement is provided at Schedule 'S'.
- (d) The Concessionaire shall be responsible for ensuring that any existing utility on, under or above the Project Site is kept in continuous satisfactory use, if necessary, by the use of suitable temporary or permanent diversions.
- (e) The Concessionaire shall bear all costs and charges for special or temporary right of way required by it in connection with access to the Project Site. The Concessionaire shall obtain at its cost such facilities on or outside the Project Site as may be required by it for the purposes of the Project and the performance of its obligations under this Agreement.

5.3 Obligations of the GOM.

The GOM shall:

- (i) hand over the physical possession of Project Site together with necessary right of way/way leaves to the Concessionaire. (as per bidding data Volume-II)
- (ii) grant or where appropriate provide necessary assistance to the Concessionaire in securing Applicable Permits. However the GOM does not own any responsibility for the delay which may occur in receiving such permits.
- (iii) Assist grant in a timely manner all such approvals, permissions and authorisations which the Concessionaire may require or is obliged to seek from the GOM in connection with implementation of the Project and the performance of the Concessionaire's obligations under this Agreement;
- (iv) ensure peaceful use of the Project Site by the Concessionaire under and in accordance with the provisions of this Agreement without any let or hindrance from the GOM or persons claiming through or under it;
- (v) upon written request from the Concessionaire, assist the Concessionaire in obtaining access to all necessary infrastructure facilities and utilities, including water, electricity and telecommunication facilities at rates and on terms no less favourable to the Concessionaire than those generally available to commercial customers receiving substantially equivalent facilities/utilities;
- (vi) assist the Concessionaire in obtaining necessary authority to regulate traffic on the Project Site/Project Facility subject to and in accordance with the Applicable Laws;
- (vii) assist the Concessionaire in obtaining police assistance against payment of prescribed costs and charges, if any, for traffic regulation, patrolling and provision of security on the Project Site/Project Facility and implementing this Agreement in accordance with the provisions hereof;



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(viii) observe and comply with all its obligations set forth in this Agreement.

- (ix) assist the concessionaire for shifting of utility and cutting of trees if such utility and tree cause a material adverse effect on the construction or maintenance of project Highway, to seek the permissions from various department. The cost of shifting of utility shall be borne by concessionaire. The concessionaire shall carry out the work of utility shifting and tree cutting and will bear the cost to the extent specified in the NIT.

the GOM shall compensate the additional amount over and above what has been provided in the NIT to the concessionaire either in the form of extended concession period or in cash as would be decided by Engineer in charge

- (x) shall carry out the necessary proceeding for the land acquisition and encroachment removal. The cost to the extent as specified in NIT shall be borne by the concessionaire.

the GOM shall compensate the additional amount over and above what has been specified in the NIT to concessionaire either in the form of extended concession period or in cash as would be decided by Engineer in charge



Engineer-in-Charge

ARTICLE 6

SUPERVISION CONSULTANT

6.1 Appointment of Supervision Consultant

- (a) The Concessionaire shall within 30 days from the date hereof submit to the Chief Engineer a panel consisting of atleast three reputed firms or companies or body corporates or a combination thereof, having necessary expertise for appointment of the Supervision Consultant to undertake, perform, carry out the duties, responsibilities, services and activities set forth in the schedule 'I' of this Agreement
- (b) The Chief Engineer shall within 30 days from the date of receipt of such panel, appoint the Supervision Consultant from out of such panel, and communicate the same to the Concessionaire. The concessionaire shall carry out all his responsibilities and obligations under the Supervision of supervision consultant. The Supervision Consultant shall assist the engineer in Charge and ensure Compliance of instructions issued by the Engineer in Charge from time to time.
- (c) Concessionaire shall deposit the fees of supervision consultant with Engineer in Charge as specified in bidding data volume II.
- (d) In case of failure of payment as mentioned in 6.1 (c) above Engineer in Charge shall have right to pay the fees to the supervision consultant and recover the same from the Performance Security.
- (e) In case of any delay or dispute between Concessionaire and Engineer in Charge pertaining to consultant's work, the matter shall be referred to Superintending Engineer by the Engineer in Charge/Concessionaire. The decision of Superintending Engineer shall be binding upon Concessionaire.
- (f) The Supervision Consultant shall submit to the Engineer in charge/Steering Group reports at least once every month or more frequently as the situation may warrant on the progress of implementation of the Project.

6.2 Termination and Fresh Appointment

If the Chief Engineer has reason to believe that the Supervision Consultant is not discharging its duties in a fair, appropriate and diligent manner, the Chief Engineer may terminate the appointment of the Supervision Consultant and appoint another Supervision Consultant in accordance with the preceding sub-articles (a) and (b) of Article 6.1 above.



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ARTICLE 7

STEERING GROUP

7.1 Constitution

The Chief Engineer shall through an office order, constitute a Steering Group under his Chairmanship comprising of a Superintending Engineer as a member, and the engineer in charge as a member-secretary, within 60 days of Agreement and The Concessionaire or his representative, whenever required shall be called as a special invitee.

7.2 Functions

The Steering Group shall hold meetings atleast once every three months to review the progress during the Implementation Period and every six months during the Operations Period. The Steering Group shall carry out such functions and exercise such powers as are prescribed/conferred under this Agreement.

Concessionaire



Engineer in Charge

ARTICLE 8

DRAWINGS

8.1 Preparation of Drawings.

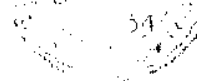
The Concessionaire shall, at its cost, charges and expenses, cause Drawings to be prepared in accordance with the Specification and Standards. The Concessionaire may, for this purpose, adopt with or without any modifications the Drawings, if any, made available by the GOM, provided, notwithstanding such adoption, the Concessionaire shall be solely responsible for the adequacy of the Drawings.

8.2 Review and Approval of Drawings.

- (a) The Concessionaire shall promptly and in such sequence as is consistent with the Project Completion Schedule, submit a copy each of all Drawings to the Engineer in charge and the Steering Group.
- (b) By forwarding the Drawings to the Engineer in Charge pursuant to sub article (a) above, the Concessionaire represents that it has determined and verified that the design and engineering including field construction criteria related thereto are in conformity with the Specifications and Standards as mentioned in schedule in 'F' and as per bid data in volume II
- (c) Within 30 (thirty) days of the receipt of the Drawings the Engineer in charge shall review the same and convey its comments/observations, if any, thereon to the Concessionaire with particular reference to the conformity or otherwise with the Specifications and Standards. It is expressly agreed that notwithstanding any review or failure to review by the Engineer in charge or any comments/observations of the Engineer in charge / Steering Group, the GOM shall not be liable for the adequacy of the Drawings and that the Concessionaire shall solely be responsible therefor and shall not be relieved or absolved in any manner whatsoever of its obligations, duties and liabilities as set forth in this Agreement.
- (d) If the comments/observations of the Engineer in charge indicate that the Drawings are not in conformity with the Specifications and Standards, such Drawings shall be revised by the Concessionaire to the extent necessary and resubmitted to the Engineer in charge for further review. The Engineer in charge shall give its observations and comments, if any, within 30 (Thirty) days of the receipt of such revised Drawings. Provided, however, that any observations or comments of the Engineer in charge or failure of the Engineer in charge to give any observations or comments on such revised Drawings shall not relieve or absolve the Concessionaire of its obligation to conform to such Specifications and Standards.
- (e) If the Engineer in charge does not object to the Drawings submitted to it by the Concessionaire within a period stipulated in above sub-article (c) or (d) as



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applicable, the Concessionaire shall be entitled to proceed with the Project accordingly.

- (f) The Concessionaire shall be responsible for delays in Project Completion and consequences thereof caused by reason of any Drawings not being in conformity with the Specifications and Standards and shall not be entitled to seek any relief in this regard from the GOM.
- (g) Within 90 (ninety) days of the COD, the Concessionaire shall furnish three copies of "as built" Drawings duly vetted by the Engineer in charge reflecting the Project as actually designed, engineered and constructed, including without limitation an "as built" survey illustrating the layout of the Project and setback lines, if any, of the buildings and structures forming part of Project Facility.
- (h) In case the concessionaire fails to submit "as built" drawings within specified period amount as mentioned in contract data volume II shall be withheld



Concessionaire

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ARTICLE 9

PROJECT IMPLEMENTATION AND OPERATIONS

9.1 Monitoring and Supervision during Implementation

- (a) During the Implementation Period, the Concessionaire shall furnish to the Engineer in charge /Steering Group quarterly reports on actual progress of the Construction Works and furnish any other relevant information as may reasonably be required by the Engineer in Charge.
- (b) For the purposes of determining that Construction Works are being undertaken in accordance with Specifications and Standards and Good Industry Practice and for quality assurance, the Concessionaire shall carry out such Tests at such time and frequency and in such manner as may be required by the Engineer in charge or as may be necessary in accordance with Good Industry Practice as per specification in Vol II and Vol IV or in any other volume or document which forms the part of the contract. The Concessionaire shall with due diligence carry out all such Tests in accordance with the instructions and under the supervision of the Engineer in charge. The Concessionaire shall promptly carry out such remedial measures as may be necessary to cure the defects or deficiencies, if any, indicated in such Test results.
- (c) If the Engineer in charge reasonably determines that the rate of progress of the construction of the Project is such that the Project Completion is not feasible on or before the Scheduled Project Completion Date, it shall so notify the Concessionaire. Thereupon, the Concessionaire shall within 15 (fifteen) days thereof notify Engineer in charge about the steps it proposes to take to expedite progress and the period within which it shall achieve COD.
- (d) The Engineer in charge may, by a written notice, require the Concessionaire to suspend forthwith the whole or any part of the Construction Works if in the reasonable opinion of the Engineer in charge such work is being carried on in a manner which threatens the safety of the Construction Works or the users of the Project.
- (e) The Concessionaire shall upon, instructions of the Engineer in charge pursuant to sub-article (d) above suspend the Construction Works or any part thereof as the case may be, for such time and in such manner as may be specified by the Engineer in charge and the costs if any incurred by the GOM during such suspension to properly protect and secure the Construction Works or such part thereof as is necessary in the opinion of the Engineer in charge ("Preservation Costs"), shall be borne by the Concessionaire.
- (f) If the Engineer in charge issues any instructions requiring suspension of Construction Works for any reason other than default or breach of this Agreement by the Concessionaire -



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- (i) the Project Completion Schedule and the Scheduled Project Completion Date shall be extended by the period of suspension, and
- (ii) the Concession Period shall be extended pursuant to and in accordance with sub-article (g) below.
- (g) The Engineer in charge shall add the Preservation Costs if any incurred by the Concessionaire to the Initial Investment in the Cashflow Projections taking into account the resultant loss of revenue due to suspension of Construction Works and determine extension to the Concession Period in order to maintain the Internal Rate of Return. Provided, that the projections for years beyond the Concession Period shall be average of three years immediately preceding the last year of the original Cashflow Projections.

9.2 Project Completion

- (a) The Project shall be deemed to be complete and open to traffic only when the Completion Certificate is issued by the Engineer in charge in accordance with the provisions of Article 9.3, (the "Project Completion") (as per contract data in volume II).
- (b) The Concessionaire guarantees that the Project Completion shall be achieved in accordance with the provisions of this Agreement on a date not later than - 30 Calendar months from the Commencement Date, ("the Scheduled Project Completion Date") (As per contract data in volume II).
- (c) If the Project Completion is not achieved by the Scheduled Project Completion Date for any reason other than Force Majeure or reasons attributable to the GOM, the Concessionaire shall be liable to pay liquidated damages for delay beyond the Scheduled Project Completion Date, to the extent of Rs. 1.5 Lacs per day for every day of delay. Provided that such liquidated damages do not exceed in aggregate ~~Rs. 1.5 Lacs~~ (As per contract data Volume-II) Provided further that nothing contained in this sub-article (c) shall be deemed or construed to authorise any delay in achieving Project Completion
- (d) If the COD does not occur within 180 days from the Scheduled Project Completion Date, the GOM shall subject to the provisions of this Agreement relating to excuse from performance of the Concessionaire's obligations hereunder, be entitled to Terminate this Agreement in accordance with the provisions of Article 16.2.

9.3 Tests

- (a) At least 60 (Sixty) days prior to the likely completion of the Project, the Concessionaire shall notify the Engineer in Charge of the same and shall give notice to them of its intent to conduct Tests. The Concessionaire shall give the Engineer in Charge at least 10 (ten) days prior notice of the actual date on



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which it intends to commence the Tests and at least 7 (seven) days prior notice of the commencement date of any subsequent Tests.

- (b) All Tests shall be conducted in accordance with Schedule 'M' and the Applicable Laws and Applicable Permits. The Engineer in Charge shall have the right to suspend or postpone any Test if it is reasonably anticipated or determined during the course of the Test that the performance of the Project or any part thereof does not meet the Specifications and Standards. The Engineer in Charge may designate a representative with suitable qualifications and experience to witness and observe the Tests.
- (c) The Engineer-in-Charge shall monitor the results of the Tests to determine the compliance of the Project with the Specifications and Standards.
- (d) Concessionaire for the purpose of testing of material shall establish a field laboratory of adequate floor area as approved by the Engineer. The 70% of the total test shall be carried out of field laboratory and 30% of the total test shall be carried out at Government laboratory. The concessionaire shall provide all equipment as per list attached in Bid data Volume-II.
- (e) Material for which the test can not be carried out in Field Laboratory shall be tested at the other Reputed/Authentic Laboratory approved by the Engineer in Charge. Testing of material shall be in presence of Engineer in Charge or his representative.
- (f) Upon the Engineer-in-Charge determining the Tests to be successful, it shall forthwith issue to the Concessionaire a certificate substantially in the form set forth in Schedule 'N'. (the "Provisional Completion Certificate")
- (g) The Engineer-in-Charge may at the request of the Concessionaire issue a provisional certificate of completion ("Provisional Completion Certificate") if the Tests are successful and all parts of Project can be legally, safely and ~~editably opened to commercial operation though certain works or things~~ ~~being part thereof are not yet complete.~~ In such an event, Provisional Certificate shall have appended thereto a list of outstanding items signed jointly by the Engineer in Charge and the Concessionaire ("Punch List"). All Punch List items shall be completed by the Concessionaire within 60 (Sixty) days of the date of issue of such Provisional Certificate. The total cost of ~~such items shall not be more than 2% of project cost upon completion of~~ all Punch List items to the satisfaction of the Engineer-in-Charge, it shall issue the Completion Certificate to the Concessionaire with a copy marked to the GOM. In the event of the Concessionaire's failure to complete the Punch List items within the said period of 60 days, the Engineer in charge may, without prejudice to any other rights or remedy available to it under this Agreement, have such items completed at the risk and costs of the Concessionaire. The Concessionaire shall reimburse to the GOM on demand the entire costs incurred by the GOM in completing the Punch List items. If the ~~concessionaire fails to reimburse the entire cost of the work done by the~~ Engineer in charge within 60 days from the date of making such demand the



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Engineer in charge may by an order suspend the collection of toll and the concessionaire's claim due to loss of revenue will not be admissible.

- (b) If the Engineer-in-Charge certifies that it is unable to issue the Completion Certificate or Provisional Completion Certificate because of events or circumstances which excuse the performance of the Concessionaire's obligations in accordance with this Agreement and as a consequence thereof the Tests could not be held or had to be suspended, the Concessionaire shall re-schedule the Tests and hold the same as soon as reasonably practicable.
- (i) The Concessionaire shall bear all the expenses relating to Tests under this Agreement.

9.4 Operation and Maintenance

The Concessionaire shall operate and maintain the Project/Project Facility by itself, or through a Contractor and if required, modify, repair or otherwise make improvements to the Project/ Project Facility to comply with Specifications and Standards, and other requirements set forth in this Agreement, Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to Toll Plaza. More specifically, the Concessionaire shall be responsible for:

- (i) ensuring smooth and uninterrupted flow of traffic during normal operating conditions;
- (ii) charging, collecting and appropriating Toll in accordance with the Toll Notification and this Agreement;
- (iii) minimizing disruption to traffic in the event of accidents or other incidents affecting the safety and use of the Project/ Project Facility by providing a rapid and effective response and for this purpose maintaining liaison with emergency services;
- (iv) undertaking routine maintenance including prompt repairs of potholes, cracks, concrete joints, drains, line marking, lighting and signage;
- (v) undertaking maintenance works in accordance with Maintenance Manual and the Maintenance Programme;
- (vi) preventing with the assistance of concerned law enforcement agencies where necessary, any unauthorised entry to and exit from the Project;
- (vii) preventing with the assistance of the concerned law enforcement agencies where necessary, any encroachments on the Project/Project Site and preserving the right of way of the Project;
- (viii) adherence to the Safety Standards set out in Schedule 'D'



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9.5 Maintenance Manual

The Concessionaire shall in consultation with the Engineer in Charge evolve not later than 120 (one hundred twenty) days before the Scheduled Project Completion Date, a manual for the regular and preventive maintenance (the "Maintenance Manual"), and shall ensure and procure that at all times during the Operations Period, the Project is maintained in a manner that it complies with the Specifications and Standards mentioned in schedule 'O'. The Concessionaire shall supply, at least two months before the COD, 10 (ten) copies of the Maintenance Manual to the Engineer in Charge.

9.6 Maintenance Programme

- (a) Not later than forty five (45) days before the beginning of each Accounting Year, the Concessionaire shall provide to the Engineer in Charge its proposed programme of preventive and other scheduled maintenance of the Project subject to the Minimum Maintenance Requirements set forth in schedule 'O' necessary to maintain the Project at all times in conformity with the Specifications and Standards (the "Maintenance Programme"). Such Maintenance Programme shall include but not be limited to the following:
 - (i) intervals and procedures for the carrying out of inspection of all elements of the Project;
 - (ii) criteria to be adopted for deciding maintenance needs;
 - (iii) preventive maintenance schedule;
 - (iv) intervals at which the Concessionaire shall carry out periodic maintenance, and
 - (v) intervals for major maintenance and the scope thereof.
- (b) Maintenance shall include replacement of equipment, consumables, horticultural maintenance and repair to equipment, pavements, bridges, structures and other civil works which are part of the Project/Project Facility.
- (c) The Concessionaire shall keep the Project Facility in a clean, tidy and orderly condition free of litter and debris.
- (d) The Concessionaire shall be responsible for the maintenance of the approach roads to and underpasses, overpasses and drainages within the Project Site in accordance with Good Industry Practice, (as per criteria mentioned in schedule-'O').



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9.7 Vehicle Breakdown and Accident

- (a) In the case of unsafe conditions, vehicle breakdowns and accidents, the Concessionaire shall follow the relevant operating procedures, which shall include the setting up of temporary traffic cones and lights as well as the removal of obstruction and debris expeditiously. Such procedures shall be in accordance with Applicable Laws, Applicable Permits and the provisions of this Agreement.
- (b) The Concessionaire shall ensure that any diversion or interruption of traffic is remedied without delay. The Concessionaire's responsibility for rescue operations on the Project shall be limited to the removal of vehicles or debris or any other obstruction, which may endanger or interrupt the smooth traffic flow on the Project.

9.8 Emergency De-commissioning

- (a) If, in the reasonable opinion of the Concessionaire there exists an Emergency which warrants de-commissioning and closure of whole or any part of the Project/Project Facility, the Concessionaire shall be entitled to de-commission and close the whole or the relevant part of the Project to traffic for so long as such Emergency and the consequences thereof warrant. Provided, however, that such de-commissioning will be notified to the Engineer in charge promptly. The Engineer in charge may issue such directions as it may deem appropriate to the Concessionaire for dealing with such Emergency and the Concessionaire shall abide by the same.
- (b) The Concessionaire shall re-commission the Project/Project Facility or the affected part thereof as quickly as practicable after the Emergency leading to its de-commissioning and closure has ceased to exist.
- (c) The Concessionaire shall not close any part/lane of the Project/Project Facility for undertaking maintenance or repair works except with the prior written approval of the Engineer in Charge. Such approval shall be sought by the Concessionaire through a written request to be made at least 7 (seven) days before the proposed closure of part / lane and shall be accompanied by particulars indicating the nature and extent of repair works and the arrangements made for safe movement of traffic, the length and section required to be closed and the period of closure. The Concessionaire shall also furnish particulars indicating the maximum time required for completing such repair works. Within 5 (five) days of receiving such request, the Engineer in charge shall grant permission with such modifications as he may deem necessary. Upon receiving such permission, the Concessionaire shall be entitled to close the part / lane in accordance with such permission and re-open it within the period stipulated in such permission.
- (d) Save and except as otherwise expressly provided in this Agreement, if the Project or any part thereof shall suffer any loss or damage during the Concession Period, from any cause whatsoever, the Concessionaire shall, at its

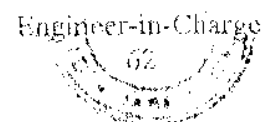


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cost and expense rectify and remedy such loss or damage in a manner so as to make the Project conform in every respect to the Specifications and Standards, quality and performance as prescribed by this Agreement.

- (e) In the event the Concessionaire does not maintain and/ or repair the Project or part thereof upto and in accordance with the Specifications and Standards and / or in accordance with the Maintenance Programme or the Maintenance Manual or the O&M Inspection Report, as the case may be, and shall have failed to commence remedial works within (30) thirty-days of notice in this behalf from the Engineer in Charge the GOM shall, without prejudice to its rights/remedies under this Agreement, including Termination, be entitled to undertake to cause the repair and maintenance of the Project from the performance security at the risk and cost of the Concessionaire. If the performance security is inadequate to cover then the Concessionaire shall, reimburse to the GOM within seven days of demand the costs and expenses incurred for undertaking such repairs and maintenance. In any case the performance security shall have to be recouped to the full extent by the concessionaire within 30 days from the date of receipt of such demand from the Engineer in charge. If the concessionaire fails to recoup the performance security or also reimburse the expenditure which can not be met with from the performance security the Engineer in charge may by an order suspend the collection of toll till the amount is fully realized and the concessionaire's claim due to loss of revenue will not be admissible.
- (f) If the Concessionaire commences any works for curing any defects or deficiencies in the Project, it shall complete such works expeditiously in accordance with Good Industry Practice.
- (g) The Concessionaire shall not be considered in breach of its obligations under this Agreement if any part of the Project is not available to traffic on account of any of the following for the duration thereof.
- (i) Force Majeure Event,
 - (ii) measures taken to ensure the safe use of the Project except when unsafe conditions on the road occurred because of failure of the Concessionaire to perform its obligations under this Agreement; or
 - (iii) compliance with a request from the GOM or the directions of any the GOM Agency the effect of which is to close all or any part of the Project.

Notwithstanding the above, the Concessionaire shall keep all unaffected parts of the Project open to traffic and use provided they can be safely operated and kept open to traffic.



9.9 Monitoring and Supervision during Operations

- (a) The Concessionaire shall undertake periodic inspection of the Project in accordance with the Maintenance Manual, the Maintenance Programme, Specifications and Standards and this Agreement and shall submit reports of such inspection ("Maintenance Reports") to the Engineer in charge and the Engineer in charge.
- (b) The Engineer-in-charge shall undertake periodic (at least once every calendar quarter but once every week during monsoon) inspection of the Project jointly with the Concessionaire to determine the condition of the Project including its compliance or otherwise with the Maintenance Manual, the Maintenance Programme, Specifications and Standards and this Agreement and make out a report of such inspection (the "O&M Inspection Report") and forward it to the Concessionaire. The O&M Inspection Report shall set forth defects and deficiencies, if any, and may also require the Concessionaire to undertake such tests as may be specified by the Engineer in charge for the purpose of determining that the Project is at all times in conformity with the Specifications and Standards. The Concessionaire shall within 30 (thirty) days of the receipt of the O&M Inspection Report from the Engineer in charge remedy the defects and deficiencies and undertake such tests, if any, set forth therein, without any delay and furnish compliance thereto and/or results thereof to the Engineer in Charge along with a report (O&M Inspection Compliance Report). Such inspection or submission of O&M Inspection Compliance Report by the Concessionaire shall not relieve or absolve the Concessionaire of its obligations and liabilities hereunder in any manner whatsoever. Where the remedying of such defects or deficiencies and/or undertaking such tests is likely to take more than 30 (thirty) days in accordance with Good Industry Practice, the Concessionaire shall undertake the works in accordance with such practice and submit progress reports of such works every fortnight and finally the O&M Inspection Compliance Report.

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ARTICLE 10

FINANCING ARRANGEMENT

10.1 Financing Arrangement

For projects where no government subsidy is proposed.

- (a) The Concessionaire shall at its cost, expenses and risk make such financing arrangement as would be necessary to finance the Project and to meet its obligations under this Agreement in a timely manner.
- (b) In the event of the Concessionaire employing the funds borrowed from the Lenders to finance the Project, the provisions relating to Lenders including those relating to Financial Close and Substitution Agreement shall apply.

10.2 Amendments to Financing Documents

For the avoidance of doubt the Parties agree that no amendment made to the Financing Documents without express consent of the GOM shall have the effect of enlarging in any manner, the obligation of the GOM in respect of Termination Payment under this Agreement.

10.3 Foreign exchange

Foreign Exchange will not be furnished by the Government for the proposed project. The concessionaire shall have to make his own arrangements in this regard. In case any Foreign Exchange is required for importing specialized equipment for construction or maintenance a letter of recommendation for the release of Foreign Exchange may be given by the Government (without any guarantee for sanction by the Government of India).

10.4 For projects with Government Subsidy

- 10.4.1 In case the Government has offered a fixed concession period as mentioned in Bid Data (volume-II), the bidder has to quote the subsidy required by him from the Government. The bidder can quote negative subsidy i.e. the amount he will pay to the Government up front which shall be paid in lumpsum within 90 days of issue of letter of acceptance.

The grant will be disbursed to the concessionaire in installments as mentioned below only after he submits proof of achieving financial close with details of financial close.



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Cumulative Cost Incurred By the concessionaire	Cumulative Release of Subsidy after the cumulative cost incurred by the Concessionaire
25 % of quoted offer	10 % of agreed subsidy from GOM
50 % of quoted offer	25 % of agreed subsidy from GOM
75 % of quoted offer	50 % of agreed subsidy from GOM
90% of quoted offer	75 % of agreed subsidy from GOM
100 % of quoted offer	100 % of agreed subsidy from GOM

10.4.2 For Example, if the Total Project cost is Rs. 100 crore, the Subsidy amount is Rs. 30 crore and the balance project finance to be raised by the concessionaire is Rs. 70 crore, then for first Rs. 17.5 crore (being 25 %) invested and spent for the project by the concessionaire, (To be duly assessed by the Engineer in Charge), then an amount of Rs. 3 crore (being 10 % of Subsidy) shall be paid as Government Subsidy / Grant to the concessionaire for incurring further project cost. Likewise the Government Subsidy / Grant to be given at different stages of work is as below:-

Installation No.	Cumulative Project Cost Incurred by Concessionaire (Crore)	Cumulative Government Subsidy Grant (Crore)
1	17.5	3.0
2	35.0	7.5
3	52.5	15.0
4	63.0	22.5
5	70.0	30.0

Subject to provisions of this Clause the Grant shall be invested for meeting the capital expenditure of the Project and shall not be consumed as debt.

10.4.3 The Subsidy / Grant shall in no case be more than 30% (Thirty percent) of the Total Project Cost as set forth in this agreement.

10.4.4 The whole or any part of the Grant shall be disbursed by Government to the concessionaire if and only if

- The concessionaire is not in Material Breach of this Agreement at the time of such disbursement; and
- The concessionaire has contributed and spent on the Project at least 25% (Twenty five percent) of the total Equity (excluding Subsidy / Grant) and debt and other amount, which is in the nature of quasi equity, required to be provided as part of the Total Project Cost.
- The concessionaire shall submit to Government along with each disbursement request a certificate from his Statutory Auditors and Consultants certifying the required particulars and the Government be given at least 15 days to process such disbursement request. On the acceptance of the disbursement request the



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Government shall disburse each tranche of the Grant/ Subsidy as stated in clause No.10.4.1 aforesaid, to the concessionaire.

10.4.5 If Government fails to disburse any tranche of the Subsidy / Grant within 30 days of such acceptance by Government for the payment thereof to the Concessionaire, Government shall pay interest on such delayed tranche @ SBI PLR plus two per cent.

10.4.6 For project with Government subsidy Upon termination of this Agreement, either on default of concessionaire or otherwise Government of Maharashtra shall be entitled to encash the Performance Security, and appropriate the proceeds thereof towards the Damages. The amount if any payable to the concessionaire shall be worked out as per clause 16.4 of Article 16 of contract. The Subsidy paid to the concessionaire by the Government will be deducted before making payment to the concessionaire.



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ARTICLE 11

SUPERVISION CHARGES

11.1 Supervision Charges

- (a) All works under or in course of execution/ or executed in pursuance of this Agreement shall at all times be open to the inspection and supervision by the Engineer-in-charge and authorised representatives of the GOM. The Concessionaire shall at all the times during the usual working hours and at all other times at which reasonable notice of the intention of the GOM to visit the work shall have been given to the Concessionaire, have a responsible agent/representative present at the Project for that purpose.
- (b) The Concessionaire shall pay supervision charges if any towards supervision contemplated by the preceding sub-article (a). The supervision charges may be paid in equal annual installments over the original Concession Period with the first installment being paid on the Commencement Date and every subsequent installment on the date of respective anniversary of the Commencement Date by way of a cheque/demand draft(s) drawn in favour of Engineer in charge as per contract data Volume II



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ARTICLE 12

INSURANCES

12.1 Insurance during the Implementation Period

The Concessionaire shall, at its cost and expense, purchase and maintain during the Implementation Period such insurance as are necessary, including but not limited to the following:

- (a) Builders all risk insurance;
- (b) Comprehensive third party liability insurance including injury or death to personnel or of Persons who may enter the Project Site;
- (c) workmen's compensation insurance;
- (d) any other insurance that may be necessary to protect the Concessionaire, its employees and its assets (against loss, damage or destruction at replacement value) including all Force Majeure Events that are insurable and not otherwise covered in items (a) to (c).

12.2 Insurance during the Operations Period

The Concessionaire shall at its cost and expense, purchase and maintain during the Operations Period insurance to cover against:

- (a) loss, damage or destruction of the Project Facility, at replacement value;
- (b) the Concessionaire's general liability arising out of the Concession;
- (c) liability to third parties; and
- (d) any other insurance that may be necessary to protect the Concessionaire and its employees, including all Force Majeure Events that are insurable and not otherwise covered in items (a) to (c).

12.3 Insurance Companies

The Concessionaire shall insure all insurable assets comprised in the Project Assets and/or the Project Facility through Government of Maharashtra, Director of Insurance or Indian insurance companies and if so permitted by the GOM, through foreign insurance companies, to the extent that insurances are necessary to be effected through them.



12.4 Evidence of Insurance Cover

The Concessionaire shall, from time to time, provide to the GOM copies of all insurance policies (or appropriate endorsements, certifications or other satisfactory evidence of insurance) obtained by the Concessionaire in accordance with this Agreement.

12.5 Application of Insurance Proceeds

Subject to the provisions of the Financing Documents, all moneys received under insurance policies shall be promptly applied by the Concessionaire towards repair or renovation or restoration or substitution of the Project Facility or any part thereof which may have been damaged or destroyed. The Concessionaire for the insurance of Concessionaire part may designate the Lenders as the loss payees under the insurance policies/assign the insurance policies in their favour as security for the financial assistance. The Concessionaire shall carry out such repair or renovation or restoration or substitution to the extent possible in such manner that the Project Facility or any part thereof, shall after such repair or renovation or restoration or substitution be as far as possible in the same condition as they were before such damage or destruction, normal wear and tear excepted.

12.6 Validity of the Insurance Cover

The Concessionaire shall pay the premium payable on such insurance policy(ies) so as to keep the policy(ies) in force and valid throughout the Concession Period and furnish copies of the same to the GOM. Each insurance policy shall provide that the same shall not be cancelled or terminated unless 10 Days' clear notice of cancellation is provided to the GOM in writing. If at any time the Concessionaire fails to purchase and maintain in full force and effect any and all of the insurances required under this Agreement, the GOM may at its option purchase and maintain such insurance and all sum incurred by the GOM therefor shall be reimbursed by the Concessionaire forthwith on demand, failing which the same shall be recovered by the GOM (by exercising right of set off or otherwise) from performance security and Concessionaire shall recoup the performance security to its full amount within 15 days otherwise it will be treated as default.



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ARTICLE 13

CHANGE OF SCOPE

13.1 Change of Scope

The GOM may, notwithstanding anything to the contrary contained in this Agreement, require provision of such addition/deletion to the works and services on or about the Project which are beyond the scope of the Project as contemplated by this Agreement ("Change of Scope"), Provided such changes do not require expenditure exceeding 10% project cost and do not adversely affect the Scheduled Project Completion Date. All such changes shall be made by the GOM by an order (the "Change of Scope Order") issued in accordance with the procedure set forth in Article 13.2.

13.2 Procedure for Change of Scope

- (a) The GOM shall whenever it desires provision of addition/deletion of works and services referred to in Article 13.1 above, issue to the Concessionaire a notice of Change of Scope (the "Change of Scope Notice") through the Engineer in charge.
- (b) Upon receipt of Change of Scope Notice, the Concessionaire shall, within a period of 15 (fifteen) days, provide to the Engineer in charge, such information as is necessary and reasonable together with preliminary documentation in support of the following:
 - (i) the impact which the Change of Scope is likely to have on the Project Completion Schedule if the work is required to be carried out before COD, and
 - (ii) the cost to the Concessionaire of complying with such Change of Scope Notice on account of increases in quantities of items of work mentioned in the Bill of Quantities at the rate mentioned therein. In case the Bill of Quantities does not carry certain items of work required under the Change of Scope, the Concessionaire shall carryout such items of work at the rate of prevalent DSR + 15%. If there are no rates available in the DSR then the concessionaire shall provide the analysis of rates for carrying out the items which are not covered by the DSR. The superintending Engineer will scrutinise and approve the rates. The decision of the superintending Engineer shall be final and binding on the concessionaire.
- (c) The Engineer-in-charge shall review the information provided by the Concessionaire, assess quantities of items of work, verify the quantity if required determine the additional cost to the Concessionaire as a result of such Change of Scope, add such additional cost to initial Investment in the Cashflow Projections and determine the extension, if any, to the Concession Period in order to maintain the Internal Rate of Return. Provided, that the projections for years beyond the Concession Period shall be average of three



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years immediately preceding the last year of the original Cashflow Projections.

- (d) The GOM shall issue the Change of Scope Order within a period of 15 (fifteen) days from the date of recommendation made by the Engineer in Charge in accordance with preceding sub-article (c) above.
- (e) The Change of Scope Order shall be effective and binding upon receipt thereof by the Concessionaire. Notwithstanding a Dispute regarding cost and time for implementation of such order, the Concessionaire shall proceed with the performance of such order promptly following receipt thereof. Any Dispute regarding the extension in the Concession Period recommended by the Engineer in charge shall be resolved in accordance with the Dispute Resolution Procedure.
- (f) All claims by the Concessionaire pursuant to this Article 15.2 shall be supported by such documentation as is reasonably sufficient for the Engineer in charge to determine the accuracy thereof, including invoices from Contractors and certification of such claims by the Statutory Auditors.



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ARTICLE 14

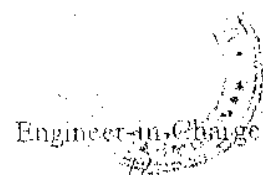
CAPACITY AUGMENTATION AND ADDITIONAL FACILITY

14.1 Capacity Augmentation of the Project

- (a) The GOM may following a detailed traffic study conducted by it, at any time after COD decide to augment/increase the capacity of the Project (Capacity Augmentation) with a view to provide the desired level of service to the users of the Project Facility.
- (b) The GOM shall invite proposals from eligible Persons for Capacity Augmentation. The Concessionaire shall have option to submit its proposal for Capacity Augmentation.
- (c) The bid document for Capacity Augmentation shall specify a Termination Payment to be made to the Concessionaire in case the Concessionaire chooses not to submit its proposal or fails or declines to match the preferred offer as mentioned in sub-article (e) below.
- (d) In case the Concessionaire, after participating in the bidding procedure, fails to give the lowest offer, the Concessionaire shall be given the first right of refusal to match the preferred offer. If the Concessionaire matches the preferred offer the Parties shall enter into a suitable agreement supplemental to this Agreement to give effect to the changes in scope of the Project, Concession Period and all other necessary and consequential changes. In such an event the Concessionaire shall pay to the bidder who had made the lowest offer sum of 0.1% of the estimated project cost of capacity augmentation subject to maximum of Rs.10 Lakhs towards bidding costs incurred by such bidder.
- (e) In case the Concessionaire (i) chooses not to submit its proposal for Capacity Augmentation or (ii) is not the preferred bidder and also fails or declines to match the preferred offer, the GOM shall be entitled to terminate this Agreement upon payment to the Concessionaire of the Termination Payment.
- (f) The Termination Payment referred to in the preceding sub-articles (c) and (e) above shall be the amount equivalent to the amount of Termination Payment set out in Article 16.2(b).

14.2 Additional Facility

The GOM does not bind itself to carry out the work of any other facilities/roads/Bridges near any or all sections of the project at any time during the concession period of the facility. The Concessionaire shall permit access to such facility / works without any claim for damages, compensation, time delay, etc.



ARTICLE 15

FORCE MAJEURE

15.1 Force Majeure Event

As used in this Agreement, a Force Majeure Event shall mean occurrence in Maharashtra of any or all of Non Political Event, Indirect Political Event and/or Political Event as defined in Article 15.2, 15.3 and 15.4 respectively which prevent the Party claiming Force Majeure (the "Affected Party") from performing its obligations under this Agreement and which act or event (i) is beyond the reasonable control and not arising out of the fault of the Affected Party, (ii) the Affected Party has been unable to overcome such act or event by the exercise of due diligence and reasonable efforts, skill and care, and (iii) has a Material Adverse Effect on the Project.

15.2 Non Political Event.

For purposes of Article 15.1 hereinaabove, Non Political Event shall mean one or more of the following acts or events:

- (i) acts of God or events beyond the reasonable control of the Affected Party which could not reasonably have been expected to occur, exceptionally adverse weather conditions, lightning, earthquake, cyclone, flood, volcanic eruption or fire (to the extent originating from a source external to the Project Site or beyond design specifications for the Construction Works);
- (ii) radioactive contamination or ionizing radiation;
- (iii) strikes or boycotts *other than* those involving the Concessionaire, Contractors or (their respective employees/representatives or attributable to any act or omission of any of them) interrupting supplies and services to the Project for a period exceeding 7 (seven) days in an Accounting Year, and not being an Indirect Political Event set forth in Article 15.3;
- (iv) any judgement or order of any court of competent jurisdiction or statutory authority in India made against the Concessionaire in any proceedings for reasons other than failure of the Concessionaire to comply with any Applicable Law or Applicable Permits or on account of breach thereof, or of any contract, or enforcement of this Agreement or exercise of any of its rights under this Agreement by the GOM;

15.3 Indirect Political Event

For purposes of Article 15.1 hereinaabove, Indirect Political Event shall mean one or more of the following acts or events:



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- (i) 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 which prevents collection of Toll by the Concessionaire for a period exceeding a continuous period of 7 (seven) days in an Accounting Year;
- (ii) Industry wide or state wide or India wide strikes or industrial action which prevent collection of Toll by the Concessionaire for a period exceeding a continuous period of 7(seven) days in an Accounting Year; or
- (iii) Any public agitation which prevents collection of Toll by the Concessionaire for a period exceeding a continuous period of 7 (seven) days in an Accounting Year.

15.4 Political Event

For purposes of Article 15.1 hereinabove, Political Event shall mean one or more of the following and or events by or on account of the GOM or any other Government Agency:

- (i) Change in Law, only when provisions of Article 17 cannot be applied;
- (ii) Expropriation or compulsory acquisition by any the GOM Agency of any Project Assets or rights of the Concessionaire or of the Contractors; or

15.5 Effect of Force Majeure Event.

Upon occurrence of any Force Majeure Event, the following shall apply:

- (a) There shall be no Termination of this Agreement except as provided in Article 15.7 hereinafter;
- (b) Where the Force Majeure Event occurs before COD, the dates set forth in the Project Completion Schedule, and the Concession Period shall be extended by the period for which such Force Majeure Event shall subsist;
- (c) Where a Force Majeure Event occurs after COD, the Concessionaire shall continue to make all reasonable efforts to operate the Project and/or to collect Toll, but if it is unable or prevented from doing so, the Concession Period shall, having due regard to the extent of the impact thereof as determined by the Engineer in charge, be extended by the period for which collection of Toll remains affected on account thereof, and
- (d) Costs arising out of or concerning such Force Majeure Event shall be borne in accordance with the provisions of the Article 15.6 hereinafter.



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15.6 Allocation of costs during subsistence of Force Majeure

Subject to the provisions of Article 15.5 hereinabove, upon occurrence of a Force Majeure Event, the costs arising out of such event shall be allocated as follows:

- (a) When the Force Majeure Event is a Non Political Event, the Parties shall bear their respective costs and neither Party shall be required to pay to the other Party any costs arising out of any such Force Majeure Event;
- (b) Where the Force Majeure Event is an Indirect Political Event, the costs attributable to such Force Majeure Event and directly relating to the Project (the "Force Majeure Costs") shall be borne by the Concessionaire to the extent of the Insurance Cover, and to the extent Force Majeure Costs as duly certified by the Statutory Auditors exceed the Insurance Cover, one half of the same shall be considered by GOM and concessionaire period shall be extended to that extent.
- (c) Where the Force Majeure Event is a Political Event, the Force Majeure Costs to the extent actually incurred and certified by the Statutory Auditors of Concessionaire shall be reimbursed by the GOM to the Concessionaire within 180 days from the date of receipt of Concessionaire's claim therefor and alternatively the concessionaire period will be extended to that extent.
- (d) The GOM may at its option reimburse the Force Majeure Costs to the Concessionaire in cash or compensate the Concessionaire for such costs by appropriate extension of the Concession Period, which extension shall also be given effect within the period of 180 days specified in preceding sub-article (b) or (c) as the case may be.

For avoidance of doubt, Force Majeure Costs shall not include loss of Toll revenues or any debt repayment obligations but shall include interest payments on such debt, O&M Expenses and all other costs directly attributable to the Force Majeure Event.

15.7 Termination.

If a Force Majeure Event continues or is in the reasonable judgement of the Parties is likely to continue beyond a period 120 days, the Parties may mutually decide to terminate this Agreement or continue this Agreement on mutually agreed revised terms. If the Parties are unable to reach an agreement in this regard, the Affected Party shall after the expiry of the said period of 120 days, be entitled to terminate this Agreement by issuing Termination

Notice.



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15.8 Termination Payment for Force Majeure Events

Upon Termination of this Agreement pursuant to Article 15.7 hereinabove, Termination Payment to the Concessionaire shall be made in accordance with the following:

- (a) If the Termination is on account of a Non Political Event, the Concessionaire shall be entitled to receive from the GOM by way of Termination Payment an amount equal to 90% of the Debt Due less pending insurance claims, if any. Provided that in the event such insurance claims or any part thereof are not admitted and paid, the Concessionaire shall be entitled to receive from the GOM further sum equal to 90% of amount of such claims not admitted.
- (b) If the Termination is on account of an Indirect Political Event, the Concessionaire shall be entitled to receive from the GOM by way of Termination Payment an amount equal to:
 - (i) the total Debt Due, less pending insurance claims, if any. Provided, however, that if any of such insurance claims are not admitted and paid, the Concessionaire shall be entitled to receive from the GOM further sum equal to 80%(eighty percent) of such claims not admitted, plus,
 - (ii) 110% (one hundred ten percent) of the Equity subscribed in cash and actually spent on the Project if such Termination occurs at any time during three years commencing from the Commencement Date and for each successive year thereafter, such amount shall be adjusted every year to fully reflect the changes in WPI during such year, and the adjusted amount so arrived shall be reduced every year by 7.5%(seven and half percent) per annum.
- (c) If the Termination of this Agreement is on account of a Political Event, the Concessionaire shall be entitled to receive from the GOM by way of Termination Payment an amount equal to:
 - (i) the total Debt Due, plus
 - (ii) 120%(one hundred twenty percent) of the Equity subscribed in cash and actually spent on the Project if such Termination occurs at any time during three years commencing from the Commencement Date and for each successive year thereafter, such amount shall be adjusted every year to fully reflect the changes in WPI during such year, and the adjusted amount so arrived at shall be reduced by 7.5% (seven and half percent) per annum.

15.9 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 referred to arbitration and shall be settled in accordance with the Dispute Resolution Procedure, provided



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in Article 19 of this contract however 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.

15.10 Liability for other losses, damages etc.

Save and except as expressly provided in this Article 15, neither Party hereto 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 to this Article 15.

15.11 Duty to Report

The Affected Party shall discharge the following obligations in relation to reporting the occurrence of a Force Majeure Event to the other Party:

- (a) The Affected Party shall not claim any relief for or in respect of a Force Majeure Event unless it shall have notified the other Party in writing of the occurrence of the Force Majeure Event as soon as reasonably practicable, and in any event within 7 (seven) days after the Affected Party knew, or ought reasonably to have known, of its occurrence and the probable material effect that the Force Majeure Event is likely to have on the performance of its obligations under this Agreement.
- (b) Any notice pursuant to this Article 15.11 shall include full particulars of:
 - (i) the nature and extent of such Force Majeure Event, which is the subject of any claim for relief under this Article 15 with evidence in support thereof;
 - (ii) 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;
 - (iii) the measures which the Affected Party is taking, or proposes to take, to alleviate the impact of such Force Majeure Event; and
 - (iv) any other information relevant to the Affected Party's claim.
- (c) For so long as the Affected Party continues to claim to be affected by such Force Majeure Event, it shall provide the other Party with regular (and not less than weekly) written reports containing information as required by this Article 15.11 and such other information as the other Party may reasonably request the Affected Party to provide.



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15.12 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 written notice to that effect and shall promptly resume performance of its obligations hereunder.



ARTICLE 16

EVENTS OF DEFAULT AND TERMINATION

16.1 Event of Default

Event of Default means the Concessionaire Event of Default or the GOM Event of Default or both as the context may admit or require.

a) Concessionaire Event of Default

Any of the following events shall constitute an event of default by the Concessionaire ("Concessionaire Event of Default") unless such event has occurred as a result of the GOM Event of Default or a Force Majeure Event;

- (1) The Concessionaire fails to commence the Construction Works within 30 days from the Commencement Date.
- (2) The Concessionaire fails to achieve COD within 180 days from the Scheduled Project Completion Date.
- (3) Any representation made or warranties given by the Concessionaire under this Agreement is found to be false or misleading.
- (4) The Concessionaire creates any Encumbrance on the Project Site/ Project Facility in favour of any Person save and except as otherwise expressly permitted under Article 21.1.
- (5) The aggregate shareholding of the members of the Concessionaire falls below the minimum prescribed under Article 20.1 (xi).
- (6) The transfer, pursuant to law of either (a) the rights and/or obligations of the Concessionaire under any of the Project Agreements, or (b) all or material part of the Concessionaire except where such transfer in the reasonable opinion of the GOM does not affect the ability of the Concessionaire to perform, and the Concessionaire has the financial and technical capability to perform, its material obligations under the Project Agreements.
- (7) A resolution is passed by the shareholders of the Concessionaire for the voluntary winding up of the Concessionaire.
- (8) Any petition for winding up of the Concessionaire is admitted by a court of competent jurisdiction or the Concessionaire 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 property, assets and undertaking of the Concessionaire are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of the Concessionaire under this Agreement and the Project Agreements, and provided that.



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- (i) the amalgamated or reconstructed entity has the technical capability and operating experience necessary for the performance of its obligations under this Agreement and the Project Agreements;
- (ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under this Agreement and the Project Agreements and has a credit worthiness at least as good as that of the Concessionaire as at Commencement Date; and
- (iii) each of the Project Agreements remains in full force and effect.
- (9) A default has occurred under any of the Financing Documents and any of the Lenders has recalled its financial assistance and demanded payment of the amounts outstanding under the Financing Documents or any of them as applicable.
- (10) The Concessionaire suspends or abandons the operations of the Project without the prior consent of the GOM, provided that the Concessionaire shall be deemed not to have suspended/ abandoned operation if such suspension/ abandonment was as a result of Force Majeure Event and is only for the period such Force Majeure is continuing, or (ii).
- (11) The Concessionaire repudiates this Agreement or otherwise evidences an intention not to be bound by this Agreement.
- (12) The Concessionaire suffers an attachment being levied on any of its assets causing a Material Adverse Affect on the Project and such attachment continues for a period exceeding 45 days.
- (13) The Concessionaire has delayed any payment that has fallen due under this Agreement and if such delay exceeds 90(ninety) days.
- (14) The Concessionaire is otherwise in Material Breach of this Agreement.

(b) **The GOM Event of Default.**

The following events shall constitute events of default by the GOM (each a "GOM Event of Default"), unless any such the GOM Event of Default has occurred as a result of Concessionaire Event of Default or due to a Force Majeure Event:

- (1) The GOM is in breach of this Agreement and has failed to cure such breach within 90 (ninety) days of receipt of notice in that behalf from the Concessionaire;
- (2) The GOM repudiates this Agreement or otherwise evidences an intention not to be bound by this Agreement.

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- (3) The GOM or any the GOM Agency has by an act of commission or omission created circumstances that have a Material Adverse Effect on the performance of its obligations by the Concessionaire and has failed to cure the same within 60 days of notice thereof by the Concessionaire.
- (4) The GOM has delayed payment of any amount that has fallen due in terms of this Agreement beyond 90 (ninety) days.
- (5) Any representation made or warranties given by the GOM under this Agreement is found to be false or misleading.

16.2 Termination due to Event of Default

(a) Termination for Concessionaire Event of Default

- (1) Without prejudice to any other right or remedy which the GOM may have in respect thereof under this Agreement, upon the occurrence of a Concessionaire Event of Default, the GOM shall, subject to the provisions of the Substitution Agreement, be entitled to terminate this Agreement by issuing a Termination Notice to the Concessionaire, provided that before issuing the Termination Notice the GOM shall by a notice in writing inform the Concessionaire of its intention to issue the Termination Notice (the "Preliminary Notice"). In case the underlying breach/default is not cured within a period of 60 (sixty) days from the date of the Preliminary Notice (Cure Period) the GOM shall be entitled, to terminate this Agreement by issuing the Termination Notice. Provided further, that
 - (a) If the default is not cured within 30 (thirty) days of the Preliminary Notice, the GOM shall be entitled to encase the Performance Security with a notice to the Concessionaire (Encashment Notice);
 - (b) If the default is not cured within 30 (thirty) days of the Encashment Notice and a fresh Performance Security is not furnished within the same period in accordance with Article 12, the GOM shall subject to the provisions of the Substitution Agreement be entitled to issue the Termination Notice.
- (2) The following shall apply in respect of cure of any of the defaults and/or breaches of this Agreement:
 - (i) The Cure Period provided in this Agreement shall not relieve the Concessionaire from liability for damages caused by its breach or default;
 - (ii) The Cure Period shall not in any way be extended by any period of suspension under this Agreement;
 - (iii) If the cure of any breach by the Concessionaire requires any reasonable action by Concessionaire that must be approved by the GOM or the Government hereunder the applicable cure period shall be extended by the period



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taken by the GOM or the Government Agency to accord the required approval.

(3)

Upon Termination by the GOM on account of occurrence of a Concessionaire Event of Default during the Operations Period, the GOM shall pay to the Concessionaire by way of Termination Payment an amount equal to 90% of the Debt Due actually spent on the project less pending insurance claims, if any. Provided, however, that in the event of such insurance claims or any part thereof are not admitted and paid, the Concessionaire shall be entitled to receive from the GOM further sum equal to 80%(eighty percent) of amount of such claims not admitted.

(b)

Termination for the GOM Events of Default

(1)

The Concessionaire may, upon the occurrence and continuation of any of the GOM Event of Default terminate this Agreement by issuing Termination Notice to the GOM.

(2) Upon Termination of this Agreement by the Concessionaire due to a GOM Event of Default, the Concessionaire shall be entitled to receive from the GOM, by way of Termination Payment a sum equal to:

- (i) The total Debt Due, plus
- (ii) 120% (one hundred twenty percent) of the Equity subscribed in cash and actually spent on the Project if such Termination occurs at any time during three years commencing from the Commencement Date and for each successive year thereafter, such amount shall be adjusted every year to fully reflect the changes in WPI during such year and the adjusted amount so arrived at shall be reduced by 7.5% (seven and half percent) per annum.

16.3 Rights of the GOM on Termination

Upon Termination of this Agreement for any reason whatsoever, the GOM shall have the power and authority to

- (i) Take possession and control of Project Assets forthwith;
- (ii) Prohibit the Concessionaire and any person claiming through or under the Concessionaire from entering upon the Project Assets/dealing with or any part thereof;
- (iii) Step in and succeed upon election by the GOM without the necessity of any further action by the Concessionaire, to the interests of the Concessionaire under such of the Project Agreements as the GOM may in its discretion deem appropriate with effect from the date of communication of such election to the counter party to the relative Project Agreements. Provided any sums claimed by such counter party as being due and owing for work and services performed or accruing on account of any act, omission or event prior to such



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date of election shall and shall always constitute debt between the Concessionaire and such counter party and the GOM shall in no way or manner be liable or responsible for such sums. The Concessionaire shall ensure that the Project Agreements contain provisions necessary to give effect to the provision of this Article 16.3.

16.4 Termination Payments

The Termination Payment pursuant to Article 15 or 16 as the case may be, shall be payable to the Concessionaire by the GOM within ninety days of demand being made by the Concessionaire with the necessary particulars duly certified by the Statutory Auditors. If the GOM fails to pay Termination Payment in full within the said period of 120 days, the amount remaining unpaid shall be paid along with interest @ SBI PLR plus two percent from the Termination Date till payment.

16.5 Mode of Payment

Notwithstanding any instructions to the contrary issued or any direction issued by the Concessionaire, the Termination Payment and all other payments that would become payable by the GOM under any or the provisions of this Agreement shall, so long as the Debt Due is remaining outstanding, be made only by way of credit directly to a bank account designated thereto by the Lenders and advised to the GOM and the Concessionaire in writing. Any payment so made shall to the extent of such payment constitute a valid discharge to the GOM of its obligations towards the Concessionaire with regard to the Termination Payment and payment of any other monies due hereunder.

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



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ARTICLE 17

CHANGE IN LAW

17.1 Change in Law

If as a result of Change in Law, the Concessionaire suffers an increase in costs or reduction in net after tax return or other financial burden, the aggregate financial effect of which in any Accounting year, the Concessionaire may notify the same to the Engineer in charge and propose amendments to this Agreement so as to put the Concessionaire in the same financial position as it would have occupied had there been no such Change in Law resulting in such cost increase, reduction in return or other financial burden as aforesaid.

17.2 Extension of Concession Period

The Engineer in charge shall upon being notified by the Concessionaire of the Change in Law and the proposed amendments to this Agreement, assess the change in the financial position as a result of such Change of Law and determine the extension to the Concession Period so as to put the Concessionaire in the same financial position as it would have occupied had there been no such Change in Law and recommend the same to the GOM. The GOM shall, within 60 days of receipt of such recommendation, decide the extension to the concession period extend the Concession Period by such period.



ARTICLE 18

HANDOVER AND DEFECT LIABILITY PERIOD

18.1 Handing Over of the Project Assets

Upon the expiry of the Concession by efflux of time and in the normal course, the Concessionaire shall at the end of the Concession Period, hand over vacant and peaceful possession of the Project Assets including Project Site/Facility at no cost to the GOM.

18.2 Joint Inspection and Removal of Deficiency

The handing over process shall be initiated atleast 12 months before the actual date of expiry of the Concession Period by a joint inspection by the Engineer in charge and the Concessionaire. Engineer in charge shall, within 15 days of such inspection prepare and furnish to the Concessionaire a list of works/jobs/ additions/ alterations, if any, to be carried out to bring the Project to the prescribed level of service condition at least two months prior to the date of expiry of the Concession Period. In case the Concessionaire fails to carry out the above works, within the stipulated time period the GOM shall be at liberty to have these works executed by any other Person at the risk and cost of the Concessionaire and any cost incurred by the GOM in this regard shall be reimbursed by the Concessionaire to the GOM within 7 days of receipt of demand. For this purpose, the GOM shall without prejudice to any other right/remedy available to it, under this Agreement, have the right to appropriate the Performance Security and/or to set off any amounts due, if any, and payable by the GOM to the Concessionaire to the extent required, available and to recover deficit amount, if any, from the Concessionaire.

18.3 Defect liability period

Defect liability period for road- bridge work shall be as per contract data volume II



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ARTICLE 19

DISPUTE RESOLUTION

19.1 Amicable Resolution

- (a) Save where expressly stated otherwise in this Agreement, any dispute, difference or controversy of whatever nature howsoever arising under, out of or in relation to this Agreement including incompleteness of the Project between the Parties and so notified in writing by either Party to the other (the "Dispute") in the first instance shall be attempted to be resolved amicably by the Engineer in charge and failing resolution of the same in accordance with the procedure set forth in sub-article (b) below.
- (b) Either Party may require the Dispute to be referred to the Chief Engineer. The Chief Engineer shall give his decision within 30 days. In case the Concessionaire is not satisfied with the decision of the Chief Engineer the Concessionaire may request in writing to the Secretary Public Works Department, Government of Maharashtra. Upon such reference, the two parties shall meet at the earliest mutual convenience and in any event within 60 days of such reference to discuss and attempt to amicably resolve the Dispute. If the Dispute is not amicably settled within 60 (Sixty) days of such meeting between the two, either Party may refer the Dispute to Conciliation and Arbitration in accordance with the provisions of Article 19.2 and 19.3 below.

19.2 Conciliation

- a) Disputes between the parties shall first be submitted to Conciliation. The procedure outlined in the Arbitration and Conciliation Act, 1996 shall be followed.
- b) For the appointment of Conciliator the Government of Maharashtra shall propose 3 names of the Conciliator out of which one name will be selected by the Concessionaire. The procedure to be followed for conciliation shall be as follow.
- c) The party initiating conciliation shall send to the other party a written invitation to conciliate. Conciliation proceedings shall commence when the other party accepts in writing the invitation to conciliate. If the other party rejects the invitation, or does not reply within thirty days from the date of invitation, there will be no Conciliation Proceedings.
- d) There shall be one Conciliator, unless the parties agree that there shall be two or three Conciliators; Where there is more than one Conciliator, they ought, as a general rule, to act jointly.
- e) When it appears to the Conciliator that there exists elements of a settlement which may be acceptable to the parties, he shall submit them to parties for



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their observation. He may reformulate the terms of a possible settlement in the light of their observation.

- f) If the parties reach agreement of the dispute, they may draw up and sign a written settlement agreement. They may request the Conciliator to draw up or assist them in drawing up the settlement agreement.
- g) If settlement agreement shall have the same status and effect as if it is an arbitral award on agreed terms on the substance of the dispute rendered by an arbitral tribunal under section 30 of the Act.
- h) If a settlement does not appear possible, the Conciliator, after consultation with the parties, will give a written declaration that further efforts at Conciliation are no longer justified and the Conciliation Proceedings are terminated.
- i) The fee payable to the Conciliator shall be borne equally by both the parties.

19.3 Arbitration

a) Arbitrators

- i) Any Dispute which is not resolved amicably through conciliation as provided in Article 19.1 and 19.2 shall be finally settled by arbitration under the Arbitration and Conciliation Act, 1996. The arbitration shall be by a panel of three arbitrators, one to be appointed by each Party and the third to be appointed by the two arbitrators appointed by the Parties. A Party requesting arbitration shall appoint an arbitrator in writing, inform the other Party about such appointment and call upon the other Party to appoint its arbitrator. If the other Party fails to appoint its arbitrator, the Party appointing arbitrator shall take steps in accordance with Arbitration and Conciliation Act, 1996.

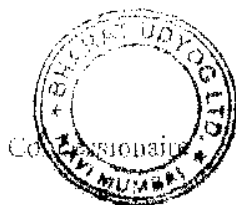
- ii) The person to be appointed as an arbitrator shall not be below the rank of chief Engineer / Rtd. Chief Engineer.

b) Place of Arbitration

The place of arbitration shall be Regional Headquarter of Concerned Chief Engineer Public works Department but by agreement of the Parties, the arbitration hearings, if required, can be held elsewhere from time to time.

c) English Language

The request for arbitration, the answer to the request, the terms of reference, any written submissions, any orders and rulings shall be in English and, if oral hearings take place, English shall be the language to be used in the hearings.



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d) Procedure

The procedure to be followed within the arbitration, including appointment of arbitrator / arbitral tribunal, the rules of evidence which are to apply shall be in accordance with the Arbitration and Conciliation Act, 1996.

e) Enforcement of Award

Any decision or award resulting from arbitration shall be final and binding upon both the Parties and Subject to the provisions of Arbitration Act, 1996.

f) Fees and Expenses

The fees and expenses of the arbitrators and all other expenses of the arbitration shall be initially borne and paid by respective Parties subject to determination by the arbitrators. The arbitrators may provide in the arbitral award for the reimbursement to the prevailing party of its costs and expenses in bringing or defending the arbitration claim, including legal fees and expenses incurred by Party.

g) Performance during Arbitration

Pending the submission of and/or decision on a Dispute, difference or claim or until the arbitral award is published, the Parties shall continue to perform all of their obligations under this Agreement without prejudice to a final adjustment in accordance with such award.

h) The rate of interest in the award shall not be more than "SBI-PLR".

i) The Arbitrator/s shall declare award within one year from the date of reference of disputes to the Arbitrator/s.



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ARTICLE 20

REPRESENTATIONS AND WARRANTIES, DISCLAIMER

20.1 Representations and Warranties of the Concessionaire

The Concessionaire represents and warrants to the GOM that:

- (i) it is duly organised, validly existing and in good standing under the laws of India;
- (ii) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;
- (iii) it has taken all necessary corporate and other action under Applicable Laws and its constitutional documents to authorize the execution, delivery and performance of this Agreement;
- (iv) it has the financial standing and capacity to undertake the project;
- (v) this Agreement constitutes its legal, valid and binding obligation enforceable against it in accordance with the terms hereof;
- (vi) it is subject to civil and commercial laws of Maharashtra / India with respect to this Agreement and it hereby expressly and irrevocably waives any immunity in any jurisdiction in respect thereof;
- (vii) 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 the Concessionaire's Memorandum and Articles of Association or any member of the Consortium or any Applicable Laws or any contract, agreement, 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;
- (viii) there are no actions, suits, proceedings, or investigations pending or, to the Concessionaire's 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 or constitute a default of the Concessionaire under this Agreement or which individually or in the aggregate may result in any Material Adverse Effect;
- (ix) 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 the GOM Agency which may result in any material adverse effect or impairment of the Concessionaire's ability to perform its obligations and duties under this Agreement;



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- (x) it has complied with all Applicable Laws 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 Material Adverse Effect;
- (xi) the aggregate equity share holding of the members of Consortium/Sponsors in the issued and paid up equity share capital of the Concessionaire shall not be less than (a) 51% (fifty one per cent) until expiry of 3 (three) years following COD, and (b) 26% (twenty six per cent) during the remaining Operations Period;
- (xii) each member of Consortium was and is duly organised and existing under the laws of the jurisdiction of its incorporation and has full power and authority to consent to and has validly consented to and requested the GOM to enter into this Agreement with the Concessionaire and has agreed to and unconditionally accepted the terms and conditions set forth in this Agreement;
- (xiii) subject to receipt by the Concessionaire from the GOM of the Termination Payment and any other amount due under any of the provisions of this Agreement, in the manner and to the extent provided for under the applicable provisions of this Agreement all rights and interests of the Concessionaire in and to the Project Assets shall pass to and vest in the GOM on the Termination Date free and clear of all encumbrances without any further act or deed on the part of the Concessionaire or the GOM;
- (xiv) no representation or warranty by the Concessionaire contained herein or in any other document furnished by it to the GOM or to any the GOM Agency in relation to Applicable Permits contains or will contain any untrue statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading; and
- (xv) no sums, in cash or kind, have been paid or will be paid, by or on behalf of the Concessionaire, to any person by way of fees, commission or otherwise for securing the Concession or entering into of this Agreement or for influencing or attempting to influence any officer or employee of the GOM in connection therewith.

20.2 Disclaimer

- (a) Without prejudice to any express provision contained in this Agreement, the Concessionaire acknowledges that prior to the execution of this Agreement, the Concessionaire has after a complete and careful examination made an independent evaluation of the traffic volumes, Specifications and Standards, Project Site and all the information provided by the GOM, and has determined to the Concessionaire's satisfaction the nature and extent of such difficulties, risks and hazards as are likely to arise or may be faced by the Concessionaire in the course of performance of its obligations hereunder.
- (b) The Concessionaire further acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in (a)



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above and hereby confirms that the GOM shall not be liable for the same in any manner whatsoever to the Concessionaire.

20.3 Representations and Warranties of the GOM

The GOM represents and warrants to the Concessionaire that:

- (i) The GOM has full power and authority to grant the Concession;
- (ii) The GOM has taken all necessary action to authorise the execution, delivery and performance of this Agreement;
- (iii) This Agreement constitutes its legal, valid and binding obligation enforceable against it in accordance with the terms hereof.



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GOVERNMENT OF MAHARASHTRA

ARTICLE 21

MISCELLANEOUS

21.1 Assignment and Charges

- (a) Subject to sub-articles (b) and (c) here in below, this Agreement shall not be assigned by the Concessionaire save and except with prior consent in writing of the GOM, which consent the GOM shall be entitled to decline without assigning any reason whatsoever.
- (b) Subject to sub-article (c) here in below, the Concessionaire shall not create nor permit to subsist any encumbrance over or otherwise transfer or dispose of all or any of its rights and benefits under this Agreement or any Project Agreement to which Concessionaire is a party except with prior consent in writing of the GOM, which consent the GOM shall be entitled to decline without assigning any reason whatsoever.
- (c) Restraint set forth in sub-articles (a) and (b) above shall not apply to:
 - (i) encumbrances arising by operation of law (or by an agreement evidencing the same) in the ordinary course of business of the Project;
 - (ii) mortgages/pledges/hypothecation of goods/assets other than Project Site, as security for indebtedness, in favor of the Lenders and working capital providers for the Project;
 - (iii) assignment of Concessionaire's rights, title and interest under this Agreement to or in favor of the Lenders pursuant to and in accordance with the Substitution Agreement as security for their financial assistance.
- (d) Upon occurrence of the Concessionaire Event of Default the Lenders shall have the right of substitution as provided in the Substitution Agreement.



indemnifying Party (which consent shall not be unreasonably withheld or delayed).

- (iii) If the Indemnifying Party exercises its rights under Article 21.2(d) above, then 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 such Indemnified Party, when and as incurred, unless:
- (1) the employment of counsel by such party has been authorized in writing by the Indemnifying Party; or
 - (2) 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 defense of such action; or
 - (3) the indemnifying Party shall not in fact have employed independent counsel reasonably satisfactory to the Indemnified Party to assume the defense of such action and shall have been so notified by the Indemnified Party; or
 - (4) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:
 - (a) that there may be specific defenses available to it which are different from or additional to those available to the Indemnifying Party; or
 - (b) 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 articles (2), (3) or (4) of Article 21.2(e)(ii) shall be applicable, counsel for the Indemnified Party shall have the right to direct the defense of such claim, 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.



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21.3 Governing Law and Jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India and the Courts in Maharashtra shall have jurisdiction over all matters arising out of or relating to this Agreement.

21.4 Waiver

- (a) Waiver by either Party of any default by the other Party in the observance and performance of any provision of or obligations or under this Agreement:
 - (i) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions or obligations under this Agreement;
 - (ii) shall not be effective unless it is in writing and accepted by a duly authorized representative of such Party; and
 - (iii) shall not affect the validity or enforceability of this Agreement in any manner
- (b) 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.

21.5 Survival

Termination of this Agreement (a) shall not relieve the Concessionaire or the GOM of any obligations hereunder which expressly or by implication survives Termination hereof, and (b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, shall 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.

21.6 Amendments

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 agreed to by all the Parties hereto and evidenced in writing.



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21.7 Notices

Unless otherwise stated, notices to be given under this Agreement including but not limited to a notice of waiver of any term, breach of any term of this Agreement and termination of this Agreement, shall be in writing and shall be given by hand delivery, recognised international courier, mail, telex or facsimile transmission and delivered or transmitted to the Parties at their respective addresses set forth below :

If to the Government of Maharashtra, Public works Department,

Executive Engineer, Thane (P.W.) Division,
Station Road, Thane Pin - 400 601.
Phone - 022-25369293
Fax No. 022-25377240 (As per Contract Data)

If to the Concessionaire

The Managing Director,
..... Limited,
.....
.....
Fax No. (As per contract Data)

On such address, telex number, or facsimile number as may be duly notified by the respective Party from time to time and shall be deemed to have been made or delivered (i) in the case of any communication made by letter, when delivered by hand, by recognised international courier or by mail (registered, return receipt requested) at that address and (ii) in the case of any communication made by telex or facsimile, when transmitted properly addressed to such telex number or facsimile number.

21.8 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 upon one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable. Provided failure to agree upon any such provisions shall not be subject to dispute resolution under this Agreement or otherwise.



Engineer-in-Charge,

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21.9 No Partnership

Nothing contained in this Agreement shall be construed or interpreted as constituting a partnership between the Parties. Neither Party shall have any authority to bind the other in any manner whatsoever.

21.10 Language

All notices required to be given under this Agreement and all communications, documentation and proceedings which are in any way relevant to this Agreement shall be in writing and in English language.

21.11 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 any Party not contained in a binding legal agreement executed by the Parties.

21.12 Counterparts

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

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

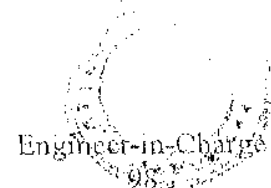
SIGNED SEALED AND DELIVERED

For and on behalf of Governor of Maharashtra by

(Signature)

(Name)

(Designation)





SIGNED, SEALED AND DELIVERED

For and on behalf of CONCESSIONAIRE by:

In the presence of.

1)

2)

(As per bidding data volume II)



Engineer-in-Charge
by

SECTION III

SCHEDULES



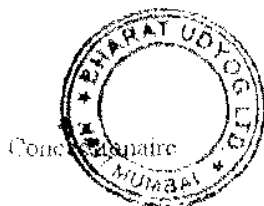
SCHEDULE - A

SCOPE OF WORK

(as per Bid Data -- Volume II)

(Following minimum appropriate information will be furnished in Volume- II)

- 1) Introduction
- 2) Need for the Project
- 3) Project Location including index map
- 4) Site related information
- 5) Brief description of the existing road
- 6) Brief Description of existing facilities if any
- 7) Site Location & Meteorological Data
- 8) Brief Description of Work
- 9) Drainage
- 10) Salient features of Proposed Work including obligatory conditions if any.
- 11) Problems related with utility services.
- 12) Clearances from statutory authorities.
- 13) Specific condition of maintenance.



Engineer-in-Charge

GOVERNMENT OF MAHARASHTRA

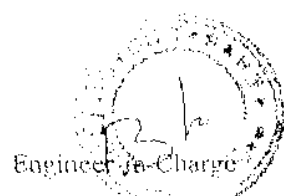
SCHEDULE- B

PROJECT SITE

(Description and particulars of the land on which the project is to be implemented would need to be set out.)

Schedule of handing over of site to the Concessionaire.

(As per Bid Data -- Volume II.)



GOVERNMENT OF MAHARASHTRA

SCHEDULE- C

PROJECT FACILITY

(The facilities to be constructed, built, installed, erected or provided by the Concessionaire in the Project Site are to be set out, with brief description/ specification.)

(as per Bid Data – Volume II)



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GOVERNMENT OF MAHARASHTRA

SCHEDULE- D

PROJECT COMPLETION SCHEDULE

(The Project Completion Schedule as agreed to with the Concessionaire would need to be set out.)

(as per Contract Data -- Volume II)



12/1/10
Engineer in Charge

Sample Form

SCHEDULE- E

FORMS FOR SUBMISSION OF BID

Note:- This form in Volume-III to be filled up, signed and sealed as per CL 174 of IIB

Bid Letter

Name of the project:-.....

To,
The Superintending Engineer,

1. Having examined the Conditions of Contract, Specifications, Drawings and Addenda for the execution of the above named work within the time specified, we, the undersigned, offer to execute and complete such Works and remedy any defects there in conformity with the Conditions of Contract, Specifications, Design Drawings, Scope of work and Addenda for the
- (i) Total project cost (in figures and in words)
(Rupees..... only)
- (ii) Concession period..... months
2. We acknowledge that the Volume I, Volume II, Volume III and Volume IV together with any addendum and common set of documents thereto form part of Bid.
3. We undertake, if our bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Notice to commence (Work Order), and to complete the whole of the Works comprised in the contract within the time stipulated.
4. We agree to abide by this bid for the validity period stipulated in the bidding documents and the bid shall remain binding upon us and may be accepted at any time before the expiry of validity period as per bidding data in volume II.
5. Unless and until a formal Agreement is prepared and executed, this bid, together with your written acceptance thereof, shall constitute a binding contract between us.
6. We understand that data given by the Department is only for guidance purpose and detailed site investigation regarding subsoil condition, water table, soil strata, present traffic, present state of existing roads/ structures, surroundings, diversions, networks, local problems, etc. are undertaken by me and my bid is based on the investigations made by me and not data supplied by the Department.



Commissionaire

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7. We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this200

Signaturein the capacity of

Duly authorised to sign bids for and on behalf of

Address

Occupation

(To be filled in by the Bidder together with his particulars and date of submission at the bottom of the form of Bid)



Engineer-In-Charge



SCHEDULE E

Bill of quantities

[illegible]

Note - Bill of quantities shall be worked out for actual cost of project



Engineer in Charge

SCHEDULE- E

Form-2

Details of the total Project Cost

Sr. No.	Item	Estimated Cost	
		In figure	In words
1)	Construction cost (as per form-1)		
2)	Measurement/line layout		
3)	Administrative & Supervision charges		
4)	Preliminary & preoperational Expenses		
5)	Cost of construction of Toll Plaza		
6)	Project specific preliminary expenses		
	a) Land acquisition		
	b) Shifting of utility Services		
	c) Pole Shifting		
	d) Arboriculture		
	e) Encroachment removal & rehabilitation		
	Any other expenses		
	Total Project		

Note : Total Project cost shall mean the cost required for construction of the road / bridge etc. including survey, investigation, studies, design and construction, reconstruction, improvement, strengthening and repairs, including maintenance of road, bridges, C.D. works culverts, and / or such other works including temporary works, road furniture, Arboriculture, landscaping, fulfilling and maintaining environmental requirements, toll collection arrangements and all other works connected with the same and it shall be inclusive of all taxes, reasonable returns, interest, etc.



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Sample Form

SCHEDULE- E

Form-3

Financial details of the proposal

Name of work :- Four Laning of Chincheti-Kaman Anjurphata to Maukoli Road M.S.II.
No. 4 Km. 0/000 - 26/425 Taluka Bhiwnadi Dist. Thane.

1)	Total estimated Project cost of work (in figure and in words)		
2)	a) Assumed Rate of Interest on Debt		
	b) Rate of Interest on Equity (If any)		
3)	Estimated construction period		
4)	Estimated Yearly Maintenance cost		
5)	Concession period offered by the Concessionaire (in figure and in words)		
6)	Estimated cost of Management and overheads, etc. per year		
7)	Estimated cost of Renewals and special Repairs, etc., at specified intervals		
8)	Assumed Debt / Equity Ratio		
9)	Any other Details		

Note : 1) The cost shall be based on price level at the time of submission of Bids.

2) Breakup of this cost shall be given in form No 2.



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SCHEDULE - R

Form-4

Statement Showing Estimated Yearly Toll Collection
(Refer Schedule 'B' of Volume - I)

Name of Work :-

S. No.	VEHICLE CATEGORY	Average Daily Traffic
1.	Can carry up to 10 passengers including driver (e.g. Van, School Bus, Fire, Ambulance, Six-wheeler motor vehicle, Pushcart)	
2.	Van, Bus or motor vehicle (Passenger capacity more than 10 but up to 20 including driver) and goods carrying vehicles not covered under 1 & 4.	
3.	Beats & Trucks	
4.	Multi-Axle vehicles including vehicle measured in Six Tons per Motor Vehicle Act 1930 e.g. Trailer vehicle with more than two axle	
TOTAL		

TRAFFIC GROWTH -

No. of Years	TOLL RATE IN RS.				TRAFFIC PER DAY				TOTAL TOLL INCOME YEAR		DEDUCT FOR FREQUENT TRAVELLERS ETC.	NET TOLL INCOME
	CAR	LOW TRUCK	TRAILORS	CAB	LOW TRUCK	TRAILORS	CAB	LOW TRUCK	TRAILORS	BUS		
0												
1												
2												
3												
4												
5												



Signature of Charge

SCHEDULE E

Statement of expected expenditure
during the concession period
[Year wise]

[illegible]

NOTE : All the figures under expenditure shall be at the current costs for respective years.



Engineer-in-Charge

Sample Form

SCHEDULE - F

TOLL NOTIFICATIONS

Form of Standard Notification:

NOTIFICATION

Public Works Department,
Maulalaya, Mumbai - 400 032.
Dated the

<p>Bombay Motor Vehicles Tax Act, 1958.</p>	<p>No. PSP...../CR...../Roads-9. : In exercise of the powers conferred by sub sections (1-A), (1-B), (1-C), (1-D) and (1-E) of section 20 of the Bombay Motor Vehicles Tax Act, 1958 (Bom. LXV of 1958), and of all other powers enabling it in that behalf the Government of Maharashtra hereby declare that the toll shall be levied on the classes of motor vehicles specified in column (2) of the Schedule appended hereto, and on the trailers drawn by such motor vehicles, passing through the section: of which is approved under "Build Operate and Transfer (BOT) Scheme" by at their own expenses, at the rates and for the periods specified against each of the said motor vehicles in column (3) of the said Schedule, with effect from the to at the toll collection centers constructed at kilometer and Kilometer at</p>
---	--



Engineer-in-Charge

Schedule of Toll Rates

Type of Vehicle	Particulars of Motor Vehicles	Rate of Toll per trip (in rupees)				
		Period				
		From--- --to---	From--- --to---	From--- --to---	From--- --to---	From--- --to---
1	Motor Cycle, Scooter, Moped, Tractor and Tractor with unladen trolley, Three seater Auto Rickshaw.	Nil	Nil	Nil	Nil	Nil
2	Light Motor Vehicles as defined in the Motor Vehicles Act, 1988 (59 of 1988) -					
	(A) six seater Auto Rickshaw (Tum Turn), Motor Car, Jeep (having carriage capacity upto twelve passengers excluding driver) such as Tata Sumo, Tenz, Compador, etc.,					
	(B) Mini Bus (having carriage capacity of more than twelve and upto twenty passengers, excluding driver) and vehicles carrying goods except those mentioned in entries at serial numbers 3 and 4					
3	Trucks, Buses.					
4	Heavy Motor Vehicles as defined in the Motor Vehicles Act, 1988 (59 of 1988) such as Trucks, Multi-Axle vehicles, etc., except vehicles covered by the entries at serial number 3					



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GOVERNMENT OF MAHARASHTRA

Note.- (1) Concession are as below :-

- (a) 10 per cent. rebate will be given to the purchaser of a booklet containing 50 coupons in advance.
- (b) 20 per cent. rebate will be given to the purchaser of a booklet containing 100 coupons in advance.
- (c) Passes for frequently traveling vehicles -
 - i) Return and daily pass will be 1.5 times and 2.5 times of one side toll respectively. The pass will be valid upto 12.00 hours midnight of the day on which the pass is drawn.
 - ii) Monthly pass will be 50 times of one side toll.
- (2) Toll shall be levied at the toll stations as prescribed in the tender document.
- (3) The following types of motor vehicles are exempted from payment of toll, namely:-
 - 1. VVIP vehicles carrying President of India, Vice-President of India, Governor of State, Public Representatives entitled for red lamp on vehicle.
 - 2. Central and State Government Vehicles.
 - 3. Police Vehicles.
 - 4. Defense Vehicles.
 - 5. Vehicles of Post and Telegraphs Department.
 - 6. Ambulances.
 - 7. Hearse.
 - 8. Fire Fighting Vehicles.
 - 9. Vehicles in which sitting members of Parliament, Maharashtra Legislative Assembly and Maharashtra Legislative Council are travelling.



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Government g.r pwd. no pr- 2002 f.n. 279 (ii) road-9
dated 09/01/2003

Toll Rates for (Project costing upto Rs 20 Crores)

YEAR	Vehicle Type-2A Toll Rate Total Rate	Vehicle Type-2B Toll Rate Total Rate	Vehicle Type-3 Toll Rate Total Rate	Vehicle Type-4 Toll Rate Total Rate
1 July, 1998 To 30 June 2001	8.00	12.00	25.00	40.00
1 July, 2001 To 31 March 2004	10.00	15.00	30.00	50.00
1 April, 2004 To 31 March 2007	10.00	20.00	40.00	60.00
1 April, 2007 To 31 March 2010	13.00	20.00	45.00	70.00
1 April, 2010 To 31 March 2013	15.00	25.00	55.00	85.00
1 April, 2013 To 31 March 2016	20.00	30.00	65.00	100.00
1 April, 2016 To 31 March 2019	25.00	35.00	75.00	120.00
1 April, 2019 To 31 March 2022	30.00	45.00	90.00	145.00
1 April, 2022 To 31 March 2025	35.00	50.00	105.00	170.00
1 April, 2025 To 31 March 2028	40.00	60.00	130.00	200.00
1 April, 2028 To 31 March 2031	50.00	70.00	150.00	240.00
1 April, 2031 To 31 March 2034	60.00	90.00	180.00	290.00



- (4) For the purpose of this notification,
....., is authorized to collect and retain the amount of toll
at the toll collection centers constructed at kilometers at
..... and in kilometers; at as
mentioned in note (2) above.

By order and in the name of the
Governor of Maharashtra,

(.....)
Deputy Secretary to Government.



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To 31 March 2019	35.00	55.00	105.00	180.00
1 April, 2019 To 31 March 2022	45.00	65.00	125.00	315.00
1 April, 2022 To 31 March 2025	50.00	75.00	150.00	260.00
1 April, 2025 To 31 March 2028	60.00	90.00	180.00	310.00
1 April, 2028 To 31 March 2031	70.00	110.00	210.00	370.00
1 April, 2031 To 31 March 2034	90.00	130.00	230.00	440.00
1 April, 2034 To 31 March 2037	100.00	150.00	250.00	520.00
1 April, 2037 To 31 March 2040	120.00	190.00	310.00	620.00
1 April, 2040 To 31 March 2043	150.00	220.00	370.00	740.00
1 April, 2043 To 31 March 2046	180.00	260.00	440.00	880.00
1 April, 2046 To 31 March 2049	210.00	310.00	510.00	1040.00
1 April, 2049 To 31 March 2052	250.00	370.00	620.00	1240.00

Note : For projects above 75 crores toll rates shall be as mentioned in Bid data
Volume II



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1 April, 2034 To 31 March 2037	70.00	100.00	220.00	350.00
1 April, 2037 To 31 March 2040	80.00	120.00	260.00	410.00
1 April, 2040 To 31 March 2043	100.00	150.00	310.00	490.00
1 April, 2043 To 31 March 2046	120.00	180.00	370.00	580.00
1 April, 2046 To 31 March 2049	140.00	210.00	430.00	700.00
1 April, 2049 To 31 March 2052	170.00	250.00	520.00	830.00

Toll Rates for project costing in between Rs.20 crores to Rs.75 crores.

YEAR	Vehicle Type - 2A Toll Rate	Vehicle Type - 2B Toll Rate	Vehicle Type - 3 Toll Rate	Vehicle Type - 4 Toll Rate
	2	3	4	5
	Total Rate	Total Rate	Total Rate	Total Rate
1 July, 1998 To 30 June 2001	12.00	18.00	33.00	50.00
1 July, 2001 To 31 March 2004	15.00	25.00	45.00	75.00
1 April, 2004 To 31 March 2007	20.00	35.00	55.00	90.00
1 April, 2007 To 31 March 2010	20.00	30.00	65.00	110.00
1 April, 2010 To 31 March 2013	35.00	40.00	75.00	130.00
1 April, 2013 To 31 March 2016	30.00	45.00	90.00	155.00
1 April, 2016				



Engineer-in-Charge

SCHEDULE - C
Form 6
CASH - FLOW PROJECTION STATEMENT (YEARLY)
(Refer Schedule 'G' of Volume - I)

[illegible]

- | | | |
|------------------------------------|----|-------------------|
| 1) Project Cost - | 40 | Percentage of 40% |
| 2) Cost of Paper and Maintenance - | 50 | Percentage of 50% |
| 3) Toll collection Charges - | | |

[illegible]

Notes: (i) "Yearly Cash Flow Statement" shall be worked out from the proposed date of commencement of the project till the end of commission period. This statement shall also indicate the calculated "Financial Internal Rate of Return (F.I.R.R.)" for the aforesaid commission period.

- (c) The columns showing details of income shall show full details itemwise such as self income, income from other sources, Subsidy (if any), etc., and against the column of expenditure itemwise details such as initial investment, interest, maintenance cost etc. shall be given.
- (d) The order and give the cost data and item in order of items. These cost formats for each column in the format prescribed at above by the Department. If the cash flow is not obtained in the format prescribed by the Department the order will be rejected.
- (e) When the equity contribution from Government is to be considered a new contract Data in volume II it should be reflected explicitly in the cash flow.



1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

SCHEDULE - H

ENVIRONMENTAL CLEARANCES

Details of the Environmental Clearances obtained/issued by the GOM for the Project and the conditions to be fulfilled for the same to be effective are to be listed and the environmental clearance letters shall be attached in Volume II.

The Concessionaire have to take required permissions from Environmental Deptt. & Forest Deptt. before commencement of work. The Necessary guidance and letters shall be provided by Deptt. in this regard.



SCHEDULE - I

DESIGN APPROVING ENGINEER

The "Design Approving Engineer" shall mean the superintending Engineer Public Works Department, Design circle (Bridges) or any other proof consultant nominated by the Chief Engineer for scrutiny and approval of the design calculation and structural drawings prepared and submitted by the concessionaire pursuant to the prescriptions in Schedule 'K'.

The concessionaire shall deposit the fee of Design Approving Engineer as prescribed in bidding data in volume II.



SCHEDULE - J

SUPERVISION CONSULTANT

TERMS OF REFERENCE

1. OBJECTIVES

The Supervision Consultant shall be required to:

- (i) Act on behalf of the Engineer in Charge and the Concessionaire to review and monitor all activities associated with construction, operation and maintenance to ensure compliance with provisions of the Concession Agreement.
- (ii) Visit, inspect, and report to Engineer in Charge on various aspects of the project and carry out all such activities as are provided in the Concession Agreement. Without prejudice to this, the scope of services of the Supervision Consultant shall be as specified in Para 2 to 4.

2. SCOPE OF SERVICES

- (i) Review the Project Report prepared by the Concessionaire.
- (ii) Review the Implementation Schedule submitted by the Concessionaire.
- (iii) Review the adequacy of the geo-technical studies, sub-soil investigations, hydrological investigation and the topographical survey if any, carried out by the Concessionaire.
- (iv) Review the environmental management plan for the Project during Implementation Period and Operations Period.
- (v) Review the proposed quality assurance and quality control procedures during the Implementation Period and Operations Period.
- (vi) Review the safety measures proposed during Implementation Period and Operations Period.
- (vii) Monitor quality assurance and quality control during Implementation period.
- (viii) Review the material testing results, mix designs and order special tests of materials and/or completed works, and/or order removal and substitution of substandard materials and/or works as required.
- (ix) Ensure that the construction work is carried out in accordance with the Specifications and Standards and Good Industry Practice.



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- (x) Maintain the photographic record of the hidden measurements, reinforcements etc. in the form of compact disc and hard copies in duplicate as per the instructions of the Engineer in charge.
- (xi) Identify delays in completion and recommend to the Engineer in Charge/ Concessionaire the remedial measures to expedite the progress.
- (xii) Review "As Built" drawings for each component of the works prepared by the Concessionaire.
- (xiii) Supervise and monitor various Completion Tests as provided in the Concession Agreement.
- (xiv) Recommend the Provisional Completion Certificate or the Completion Certificate, as the case may be.
- (xv) Review the Maintenance Manual prepared by the Concessionaire.
- (xvi) Develop a Management Information System (MIS) for monitoring of the Project by the GOM.

3. REPORTING REQUIREMENTS

The Supervision Consultant shall prepare and submit to the Engineer in Charge three copies and to the Concessionaire two copies of the monthly report during the construction of the project and the quarterly report during the operations period.

4. PERIOD OF SERVICES

The period of services shall be the Implementation Period.

5. AUTHORISED REPRESENTATIVE

In absence or appointment of a person in consultation with the project all the matters to be dealt by the supervision consultant will stand to be dealt by the Engineer in charge or his authorised representative.



SCHEDULE - K

DRAWINGS

ANNEXURE-A

**LIST OF DRAWINGS TO BE SUBMITTED BY CONCESSIONAIRE
SHOULD INCLUDE BUT NOT LIMITED TO:**

- a) Drawings of horizontal alignment, vertical profile and cross sections.
- b) Drawings of interchanges, major intersections and grade separators.
- c) General arrangement drawings of toll plaza layout, toll collection system and roadway near toll plaza.
- d) Drawings of Control Center.
- e) Drawings of a bus bay and shelters with furniture and drainage system.
- f) Drawings of road furniture items including traffic signs, markings, safety barriers etc.
- g) Drawings of traffic diversion plan and traffic control measures.
- h) Drawings of road drainage measures.
- i) Drawings of typical details of slope protection measures.
- j) Conceptual drawing of landscaping and beautification.
- k) Conceptual drawing of Pedestrian Crossings.
- l) Conceptual drawing of Street Lighting including Area lighting at Toll Plaza.
- m) Preliminary drawings of general arrangement of cross drainage works.
- n) Drawing showing General Arrangement of Base Camp and Administrative Block.



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SCHEDULE - K

ANNEXURE-B

DESIGN CRITERIA

INDEX

Sr. No.	Description of Item
1	General Requirements
2	Restrictions on types of structures
3	Specifications for design and codes to be followed
4	Road Level on the Bridge, Soffit R.L. and Road way particulars
5	Design Loads
6	Foundations
7	Substructure
8	Superstructure
9	Submersible Bridges
10	Bearings
11	Expansion joints
12	Railings, parapets
13	Water spouts
14	Wearing coat
15	Anticorrosive treatment to concrete and reinforcement
16	Load test - As per MOK PM. & IPC - SP:51
17	Documentation, Instrumentation
18	Procedure for checking detailed calculations and working drawings
19	Annexure - 1
20	Fig - 1
21	Fig - 2
22	Fig - 3
23	Fig - 4



Name of work:- Four Laning of Chinchoti-Kaman Anjurphata to Mankoli Road M.S.H. No. 4 Km. 0/000 - 26/425 Taluka Bhivnadi Dist. Thane (Kharbay Creek Bridge at Ch.17/400).

Design Criteria for Construction of Major Bridges for B.O.T. Works (Other than on National Highways)

1. GENERAL REQUIREMENTS:

In order that the concessionaire's proposal qualifies for acceptance it shall generally fulfill the following requirements: -

- 1.1 It shall ensure soundness of the structure, durability and architectural beauty as a whole in harmony with the surroundings.
- 1.2 It shall ensure speedy construction and lead to appreciable economy.
- 1.3 It shall be accompanied by preliminary but fairly detailed drawings and detailed description of work and specifications of materials and items. If called upon, concessionaire shall furnish any additional information necessary for appreciation and comparison with other alternative proposals received from other concessionaires.
- 1.4 At the time of detailed design, normally the concessionaire shall not deviate from the basic scheme proposed by him for the purpose of tender.

2. RESTRICTIONS ON TYPES OF STRUCTURES:

The following types of structural arrangements shall not be permitted:

- 2.1 Structures sensitive to unequal settlement of foundations, intermediate structures like continuous beams, portal frames, etc. on yielding type of foundations.
- 2.2 Abutments resting on approach embankments.
- 2.3 Superstructures with joints at the tip of the long cantilevers with hinges, gap slab and short suspended spans.
- 2.4 R.C.C. superstructures with spans more than 20m etc of piers.
- 2.5 Piers in form of multiple columns not connected with continuous diaphragms.

3. SPECIFICATIONS FOR DESIGN AND CODES TO BE FOLLOWED :

The design of structural components shall conform to the criteria laid down in the latest editions of the following Codes of Practice and Standard

Concessionaire



Specifications published up to the last date of receipt of tender form subject to the departures stipulated.

(A) Standard Specifications and Codes of Practice for Road Bridges:

Section - I I.R.C. 5 (1998)	General Features of Design. (Reprint April-2002)
Section -II I.R.C. 6 (2000)	Loads and Stresses. (August-2004)
Section -III I.R.C. 21 (2000)	Cement Concrete (Plain and Reinforced) (Third Revision). (Reprint November -2002)
Section -VI I.R.C. 22 (1986)	Composite Construction. (Reprint November -2002)
Section -V I.R.C. 24 (2001)	Steel Road Bridges. (Second revision) (Reprint October - 2003)
Section -VII I.R.C. 78 (2000)	Foundations and Substructure (Second Revision) (Reprint April-2002)
Section -IX I.R.C. 83 (1999)	Metallic Bearings (Part I) (First revision December-1999) (Reprint May-2003)
Section -IX I.R.C. 84 (1997)	Elastomeric Bearings (Part-II) (Reprint June 2003) with amendments.
Section-IX I.R.C. 83-84 (2002)	POT, POT-cum-P.T.F.B, P.B and Metallic guide bearings. (Part III)
I.R.C. 18-2000	Design Criteria for Prestressed Concrete Road Bridges (Pretensioned Concrete) (Reprint Sept 2002)
I.R.C. 38-1988	Guidelines for Design of Horizontal Curves for Highways and Design Tables (First revision - Sept. 1989)
I.R.C. 87-1984	Guidelines for the design and erection of false work for Road Bridges.



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GOVERNMENT OF MAHARASHTRA

I.R.C. - 89 - 1997	Guidelines for Design and Construction of River Training and Control Works for Road Bridges. (First revision)
I.R.C. SP - 23 - 1983	Vertical Curves for Highways (Reprint Sept. 1989)
I.R.C. SP - 37 - 1991	Guidelines for Evaluation of Load Carrying Capacity of Bridges. (Year- 1991)
I.R.C.SP - 51 - 1999	Guidelines for Load Testing of Bridges
I.S.-1893 - 1984	Criteria for Earthquake Resistant Design of Structures.(First Reprint - July-1999)
I.S. 13920-1993	Ductile Detailing of Reinforced (Reaffirmed 1998) Concrete Structures subjected to
Edition 1.2 (2002-03)	Seismic Forces-Code of practice.
(B)	Any I.R.C. Standard Specifications and Codes of Practice or Criteria for Road Bridges other than "A" above.
(C)	For any item not covered by A, and B above, Specifications for Road and Bridge Works published by I.R.C. for Ministry of Road Transport & Highways.
(D)	For items not covered by any of A, B and C above, Standards and Specifications Provisions of I.S. Codes of Practice.
(E)	For Precast Segmental Construction B.S.15400.
(F)	For Prestensioned Construction B.S.15400.
(G)	For any item not covered by any of the above Codes and Specifications, the relevant Provisions from B.S./A.A.S.H.T.O. (I.R.P.D.) Codes.
(H)	For items not covered by any of the above Standards and Specifications, Sound Engineering Practice and Provisions of relevant Codes of other Nation shall be referred.

Concessionaire



Engineer in Charge

4. ROAD LEVEL ON THE BRIDGE, SOFFIT R.L. AND ROADWAY PARTICULARS :

- 4.1.1 Soffit R.L. shall not be lower than that shown on the Departmental Drawings.
- 4.1.2 The Road Level on the Bridge at abutments shall as far as possible be the same as that shown in the Departmental Drawing.
- 4.2 Roadway Particulars and Carriageway Width shall be as per relevant Departmental Drawings

5. DESIGN LOADS :

5.1 Live Loads :

The Bridge shall be designed for Loading as per IRC:6-2000. While checking for one span off condition live load of IRC Class -- A one lane per two lanes without impact shall be taken into account and this will not be considered in conjunction with seismic/wind force/ Barge Impact. The design of centering shall be done as per IRC 83-1984. The Bridge shall also be designed for Service Loads as specified in Annexure-1.

5.2 Wind Forces:

Wind forces shall be considered in the following two ways. The design shall be governed by the one producing the worst effect.

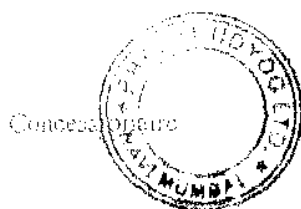
- (1) Full Wind Forces at right angles to the cap structure.
- (2) 65% of the Wind Forces acting perpendicular to the superstructure and 35% acting in traffic direction.

5.3 Temperature Forces :

For calculation of Thermal Forces effect of 'E' value of concrete should be taken as 50 % of the instantaneous value so as to account for effects of creep on thermal strains

5.4 Earth Pressure :

In addition to actual properties of back fill, the abutment shall also be designed to be safe for a backfill with dry density of soil 1.8 t/cum, saturated density 2.00 t/cum, $\phi = 30$ degree and $C = 0$.



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6. FOUNDATIONS :

6.1 Piers/Abutments:

- 6.1.1 The concessionaire shall have to take bores by double tube boring machine at the final location of each pier and abutment prior to the commencement of the work to ascertain the rock levels and quality at the location of the foundations and this shall form part of the contract and shall work out S.B.C. and proposed founding level and got approved from Engineer-in-Charge. The cost of these test and interpretation of the test results shall be included in the tendered amount. No payment will be made separately for boring and testing of soil or rock.
- 6.1.2 For bidding and for the purpose of tender drawing, general foundation levels proposed for the piers & abutments, shall not be higher than those proposed in the Departmental Drawings. Where pier positions differ from the Departmental Drawings, the foundation levels shall be interpolated for the purpose of this clause.
- 6.1.3 The temporary works such as cofferdams, sand islands, temporary bridges and centering etc. shall be completely removed immediately after completion of the concerned part of the work. The cofferdam shall be removed up to L.T.L./L.W.L. and the space between pier and cofferdam shall be filled with rubble. Top 0.3m portion shall be filled with M-15 cement concrete.

6.2 Returns / Wings / Retaining Walls:

The lengths of returns/wings of Bridge shall not be less than those worked out as follows. If Road Level and Ground Level are different than those shown in Department's Drawing, the length of return shall be 1.0 m. more than that needed to satisfy the requirement of 1:5:1 spilling earth slope for returns (2:1 for wings) from the point where lowest Ground Level in the end spans meets the front face of the abutments.

The foundation of the independent returns shall be rested at least 2m. below the Ground Level subject to the provision that the S. B. C. at that level is adequate for the proposed design. However where rock is met at, or very close to ground surface the return must be rested at least 0.15 m into that rock.

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6.3 Pile Foundations:

6.3.1 Minimum embedment into rock and S.B.C. of the strata shall be considered as follows:

Type of strata	Min. Embedment in rock	S.B.C. of rock
Hard rock	1.5 x diameter of pile	400 t/m ²
	1.0 x diameter of pile	300 t/m ²
Soft rock	3.0 x diameter of pile	250 t/m ²
	2.0 x diameter of pile	200 t/m ²
	1.5 x diameter of pile	150 t/m ²

The values of S. B. C. given above consider the effect of embedment in rock and global behavior of the pile and hence friction resistance of pile shall not be further added.

6.3.2 Only end bearing bored cast in situ piles drilled with rotary rig will be accepted. Design with single row of piles per Substructure shall not be accepted. Annular piles filled or not filled shall not be accepted.

6.4 Raft Foundations:

6.4.1 The raft shall be designed either with attached cutoff wall or with detached cutoff wall. The construction shall be as designed.

6.4.2 The raft foundation shall rest fully on flexible bed.

6.4.3 Minimum thickness of raft and attached cut off shall be 375 mm.

6.4.4 Raft and cut off shall be cast in dry condition.

6.4.5 75mm thick layer of bed concrete shall be provided below cutoffs.

6.4.6 Top of the raft shall be 30 cm below the lowest bed level or that specified in N.I.T.

6.4.7 Pressure relief pipes shall be provided in the raft at one number per 10 sq. meters with 100 mm diameter A.C. pipes. Pressure relief pipes shall be taken through M-15 bed concrete and raft with properly designed filter below the pipe.

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- 6.4.8 In case of P.C.C. piers and abutments, anchor bars shall be provided at piers and abutment locations to achieve perfect bond between the raft and the pier/abutment. Anchor bars shall be 25mm diameter H.Y.S.D. bars at 2 No. per sq. m. of the contact area.
- 6.4.9 Sand / Gravel shall be filled for a depth of 900 mm below raft. Any local rigid obstacles / intrusion shall be removed such that the flexibility of founding strata is ensured.
- 6.4.10 U/s and D/s aprons are important features of raft foundations. The same shall be designed as per I.R.C :-89. The minimum weight of stone to be used for apron shall be 40kg.
- 6.4.11 Top of the apron shall be same as the top of raft. Toe wall shall be provided at the end of the aprons. The toe wall shall be embedded sufficiently.

7. SUBSTRUCTURE:

- 7.1 For continuous spans, Pier with fixed Bearings shall be designed to take all the horizontal forces.
- 7.2 The thickness of counter-fort shall not be less than 400mm and that of any other element shall not be less than 300mm.
- 7.3 Dead man anchors or friction slabs shall not be accepted behind abutment for relieving moments.
- 7.4 Scope for accessibility for inspection and arrangement for lifting of the Superstructure for future replacement of Bearings shall be provided for in the design of Substructure. The positions of jacks shall be distinctly marked on the drawing and also on the structure.
- 7.5 The height of pedestal shall not be more than 500mm.

8. SUPERSTRUCTURE:

- 8.1 Deck slab thickness shall not be less than 300 mm and not less than 200 mm at tip of cantilever in transverse direction, irrespective of the provisions elsewhere. The slab shall be checked for punching shear. The cantilever projection of slab in transverse direction shall not be more than 1.8m.
- 8.2 In case of voided slab structure, analysis & design shall be based on the provisions of B.S.-5400. The minimum thickness of concrete around the void for deck shall be 300 mm.
- 8.3 Minimum thickness of intermediate diaphragm where provided shall be 300 mm and that of end diaphragm shall be 500mm for the cast in situ work.

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Manholes shall be kept at a spacing not more than 150 with arrangement for access inside the box.

- 8.4 In the absence of rigorous analysis for torsional and distorsional moments and forces due to warping torsion at ends, the design live load moments and shear force in the longitudinal direction shall be increased by 20% and transverse reinforcement by 5%.
- 8.5 For pre-stressed Superstructure with box girders, the cross diaphragms shall be minimum one each at supports and at each abrupt change in soffit geometry.
- 8.6 The provision for imparting-20% of design prestress at a future date shall be made in the deck and suitable anchorages, bulkheads, deviator blocks etc. shall be constructed for the purpose. Arrangement for external prestressing shall be got approved.
- 8.7 In addition to post tensioning as per I.R.C. codes, precast segmental construction as well as pre-tensioned construction are also permitted as per B.S. 5400
9. SUBMERSIBLE BRIDGES :
- 9.1 Suitably designed stoppers shall be provided for preventing the Bridge deck from sliding due to water current.
- 9.2 In case of ribbed slab, girder slab and box type superstructures, sufficient vent holes shall be provided to prevent entrapping of air inside as below:
- (1) Vent holes at 1 no. 150 mm dia per 3sq.m in deck slab and webs.
- (2) Opening in soffit in each cell of box girder at each end of size 0.6m X 0.8m.
- 9.3 All hydraulic calculations while the floods are at O.F.L., M.H.F.L., L.H.F.L., Road Top R.L. observed H.F.L. shall be done and stability of entire structure checked for worst condition.
- 9.4 The box girder shall be designed for additional silt load of 150 mm earth with density equal to 1.5 t/m³ spread over the entire soffit slab.
10. BEARINGS :
- 10.1 Following type of Bearings shall be permitted, for the spans mentioned against each type.



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- | | | |
|-----|--------------------------|---|
| (1) | Tar paper Bearings | For solid slabs simply supported with spans less than or equal to 10 m. |
| (2) | Elastomeric Bearings. | As per I.R.C. |
| (3) | Rocker & Roller Bearings | As per I.R.C. |
| (4) | POT Bearings | As per I.R.C. |
| (5) | POT - PTFE Bearings. | As per I.R.C. |

10.2 Cut/segmental roller Bearings shall not be permitted. Use of different metals setting electrolytic actions inducing corrosion shall not be permitted.

10.3 The Bearings shall be easily accessible for inspection.

10.4 Scope for lifting the Superstructure for future replacement of Bearings shall be provided for in the design.

11. EXPANSION JOINTS :

The expansion joints shall conform to MORT & H. Specifications. The detailed working drawing for the joint shall be in conformity with overall geometry of deck. Geometrical profile shall be achieved by adjusting the dimensions of Superstructure.

12. RAILINGS / PARAPETS :

12.1 For high level bridge with footpath the railing shall be provided as shown in fig.1. For high level bridge without footpath the railing shall be provided as shown in fig.2.

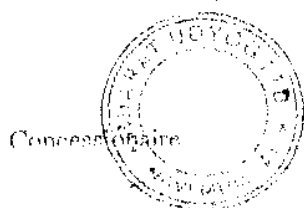
12.2 In case of Submersible Bridges, removable angle iron post & G. I. pipe railings shall be provided as indicated in Figure 4.

13. WATER SPOUTS :

Waterspouts shall be as indicated in Figure 3.

14. WEARING COAT :

A wearing coat of uniform thickness shall be provided for riding surface as prescribed in bid data in volume II.



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15. ANTICORROSIVE TREATMENT TO CONCRETE AND REINFORCEMENT:

(Applicable in case of marine and severe environment.)

- 15.1 Entire structure shall be given anticorrosive protection, which shall be got tested from approved laboratory and shall be of approved quality, colour and shade.
- 15.2 The protection shall consist of:
- 15.2.1 Mild steel liner to piles: One coat of Zinc-rich Epoxy primer and two coats of Coal Tar Epoxy. (Total dry film thickness $50 + 80 + 80 = 210$ microns) to outside surface.
- 15.2.2 Part of Substructure in contact with earth and up to (H.T.L.+0.9m) / H.F.L. (whichever is higher) - One coat of primer and two coats of Coal Tar Epoxy. Part of Substructure exposed to atmosphere - water proof cement paint.
- 15.2.3 (i) Parapets:
Waterproof cement based paint in three coats of approved quality and colour.
- 15.2.4 (ii) Deck/Girder/Box:
All outside faces - Epoxy based paint with one primer and further two coats.
- 15.2.5 (i) Anti-Corrosive treatment to reinforcing steel shall be C.P.C.C. developed by C.E.C.R.I. KARAIKUDI as specified in Annexure-1.
- OR
- 15.2.5 (j) Anticorrosive treatment to reinforcing steel shall be of Fusion Bonded Epoxy Coating (F.B.E.C.) type as specified in Annexure-1. Specifications shall be as per IS-13620-1994. The anchorage/ bond length in case of F.B.E.C. bars shall be increased by 50% of normal values specified in I.R.C. codes.
- OR
- 15.2.5 (f) Hot dip Galvanized steel as specified in Annexure-1.

16. LOAD TEST: As per M.O.R.T.H. & I.R.C.-S.P.: 51

- 16.1 In case a structure or a component of structures proposed by the concessionaire in the opinion of the Design Approving Engineer is of unusual nature, then the Design Approving Engineer shall have the right to call upon the Concessionaire to carryout model and/or load testing of the structure or component to prove its suitability. The cost of such test shall be borne by the Department if the test results are satisfactory. In case the test results are not satisfactory, the cost of testing shall be entirely borne by the Concessionaire.

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- 16.2 Any defect noticed in the structure or any damage done to the Bridge at the time of testing which affects or is likely to affect the strength of the Bridge shall be rectified by Concessionaire at his own cost by remedial measures or replacement as approved by the Engineer-in-charge.

17. DOCUMENTATION, INSTRUMENTATION:

The following items are deemed to be included in the tender cost.

- 17.1 All final drawings and Compact Disc of all approved drawings and tracing films of "as built" drawings and calculations shall be supplied by the Concessionaire in triplicate.
- 17.2 Three DVD of 180 minute duration each of the Bridge covering the different phases of construction from start to finish shall be supplied by the Concessionaire.
- 17.3 A "Maintenance Manual" describing access arrangements, important obligatory precautions from the point of view of structural safety, and procedure for minor and major repairs of each component of the Bridge, renewals of finishes and periodical treatments shall be supplied in ten copies and on Compact Disc / DVD by the Concessionaire.
- 17.4 A "Quality Assurance Manual" covering designs and drawings, mix-designs, materials, testing, soil and rock properties, statistical quality control, etc. shall be prepared by the Concessionaire well before starting the work.
- 17.5 A "Construction Manual" covering various aspects of construction methods, difficulties faced and how they are overcome during execution etc. shall be supplied by the concessionaire at the time of finalization of work.
- 17.6 The Concessionaire shall install fixtures and fastenings provided by the department for housing any instrumentation that may be useful for the Department at his cost.
- 17.7 Wiring and fixing arrangement for internal lighting and ventilation shall be got approved from competent authority and executed.
- 17.8 The fixing arrangement for suitable fenders to be provided to the navigational piers to reduce the barge impact shall be provided if required. The details of fixtures shall be provided by the Department.

18. PROCEDURE FOR CHECKING DETAILED CALCULATIONS AND WORKING DRAWINGS:

- 18.1 Within one month of the receipt of work order, the Concessionaire shall submit a program of submission of designs. The program of submission of

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designs of various components should be consistent with the program of work prepared by the Concessionaire and approved by the Department.

- 18.2 The Consultant of the concessionaire shall have the latest official version of the software being used for design and the same shall be made available for scrutiny of design to the Designs Approving Engineer if demanded.
- 18.3 Detailed design calculations and working drawings of all the component parts of the Bridge shall be submitted well in advance of the execution, in accordance with the above program. Two sets of such design calculations and Three sets of drawings accompanied by complete information and sufficient data shall be submitted to the Designs Approving Engineer for checking the design calculations. The designs and drawings for various component parts shall be submitted progressively.

If computer is used for design or analysis, the Concessionaire shall submit with design, the detailed description of method of analysis with explanatory notes and manually done sample calculations for adequate number of typical cases & soft copy. The Computer Program as submitted will be further tested by comparison with solutions of worked examples. The Concessionaire should submit along with his tender a note giving his design approach and construction scheme conforming to the basic requirements which should be approved by the authorities while awarding the work so as to avoid the possibility of major changes being required in the design at a later date.

- 18.4 Drawings and designs shall be in metric units. Calculations shall be neat and clear and supplemented by full explanatory notes and sketches wherever required. The drawings of initial submissions and final approval shall be stenciled and in 420 mm x 297 mm size only. It is entirely the responsibility of the Concessionaire to submit the design in good time to enable the Designs Approving Engineer to approve them in time. No claims shall be granted on account of late approval to the design and consequent delay in the execution. Schedule of reinforcement and rate of reinforcement Per Cubic of Concrete quantity (and also percentage with respect to gross cross sectional area of the component) should also be shown on each drawing.
- 18.5 Nine sets of approved working drawings along with one soft copy in the form of Compact Disk and four sets of approved design calculations shall then be supplied by the Concessionaire which will be formally authenticated by the Designs Approving Engineer (Five copies of drawings and one set of design calculations for field officers, one set to be returned to the Concessionaire and three to be retained by the Designs Approving Engineer. These drawings shall be submitted in plastic folders for each set and calculations in plastic files & bag.
- 18.6 After completion of each stage of work, three sets of record plans based on the work as actually executed on site, shall be supplied by the Concessionaire, to the Engineer-in-Charge.

Concessionaire



Engineer-in-Charge

- 18.7 Approval to drawings and designs and design calculations by the Designs Approving Engineer shall not in any way relieve the Concessionaire of his responsibility for the correctness, soundness and structural stability and safety of the structure.
- 18.8 The approved drawings and the design calculations of the Bridge shall be the property of the Department.
- 18.9 The Concessionaire's designer or Consultant shall attend all the design review meetings conducted by Designs Approving Engineer from time to time, without any extra cost.

Concessionaire



Engineer in Charge

Sample Form

ANNEXURE-I

SUPPLEMENTARY DATA : (FOR KHARBAV CREEK BRIDGE AT
CH.17/400).

1.0 OBLIGATORY PROVISIONS:

- | | | |
|--------|--|--------|
| (i) | Length of Bridge as measured between inner faces of dirt wall | M |
| (ii) | Soffit R.L. shall not be lower than | M |
| (iii) | Clear Carriage way width | M |
| (iv) | Footpath width | M |
| (v) | Overall width of Bridge (between outer edges of deck slab) | M |
| (vi) | Vertical clearance for Navigational spans above H.T.L./ H.F.L. | M |
| (vii) | Horizontal clearance for Navigational spans.
(Between cn. --- m to cl. --- m) | M |
| (viii) | Clear linear waterway (Minimum required) Clear linear water way
is the length of water way between the inner face of abutment @
HFL for high level and O.F.L. for submersible bridge after deducting
widths of piers at H.F.L. and O.F.L. respectively. | M |
| (ix) | Design speed | Km/hr. |

2.0 HYDRAULICS DATA :

- | | | |
|-------|--|------------|
| (i) | L.W.L. R.L. | M |
| (ii) | O.F.L. R.L. | M |
| (iii) | H.F.L. (Design) R.L. | M |
| (iv) | Maximum Mean Compartmental velocity at Design H.F.L. | --- M/Sec. |
| (v) | Catchment area | Sq.m |
| (vi) | Calculated afflux at Design H.F.L. | M
M |
| (vii) | Scour level R.L. Pier
Abutment | |

Cons.



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(viii) Additional data for Coastal area

(a) L.T.L. R.L.

M

(b) H.T.L. R.L.

3.0 DESIGN LOADS:

3.1 Footpath Loads :

3.2 Service Loads :

3.3 Temperature effects :

3.4 Barge Impact :

Navigational Piers

..... T

Other Piers

..... T

3.5 Seismic Force:

Seismic Zone

Importance Factor

4.0 EXPOSURE :

Severe / Moderate

5.0 (1) For High Level Bridge with footpath : Sanchi Type Railing/
Barrier.

(2) For high level Bridge without footpath - Crash Barrier.

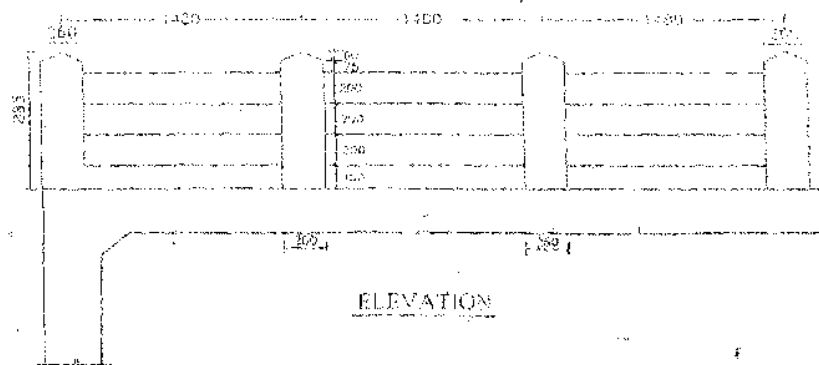
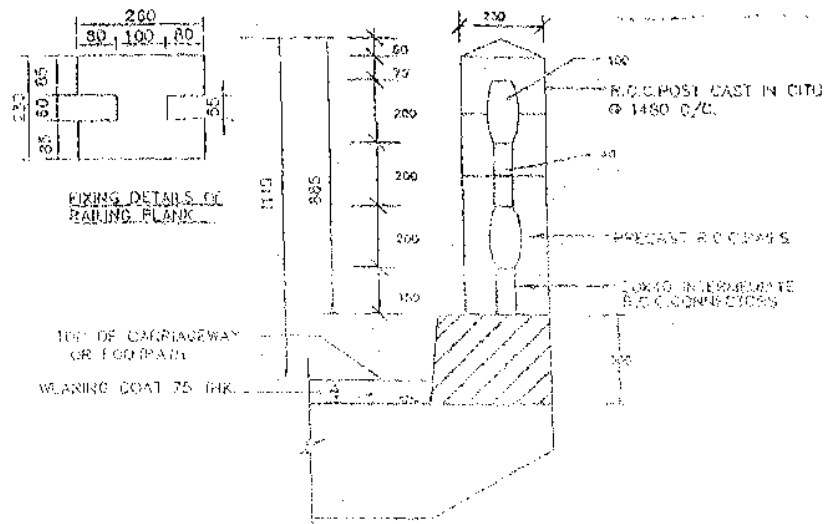
(3) For Submersible Bridge : Angle Iron Posts & GI Pipe Railing

6.0 Type of Anticorrosive Treatment to be provided to reinforcing bars : CPCC / FBEC / Hot dip
Galvanizing type

7.0 Expansion Joints (Max.) --- Nos.

8.0 Wearing coat



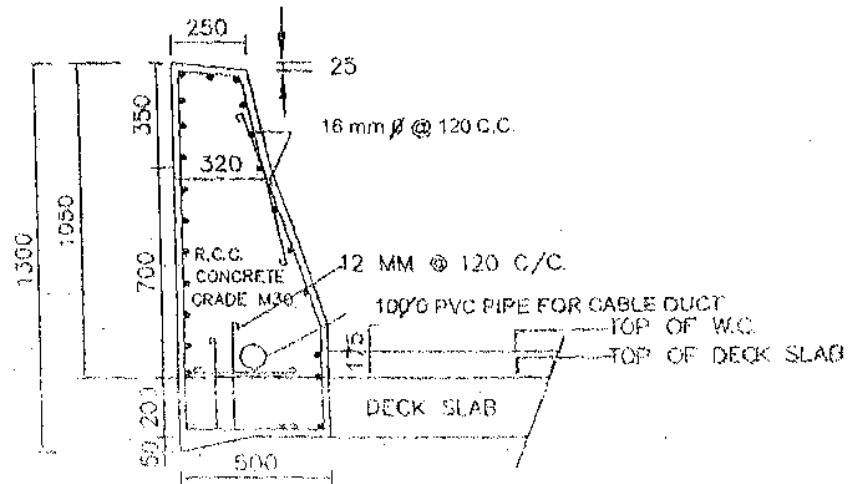
FIGURE - 1**R.C.C. RAILING**

Concessionaire

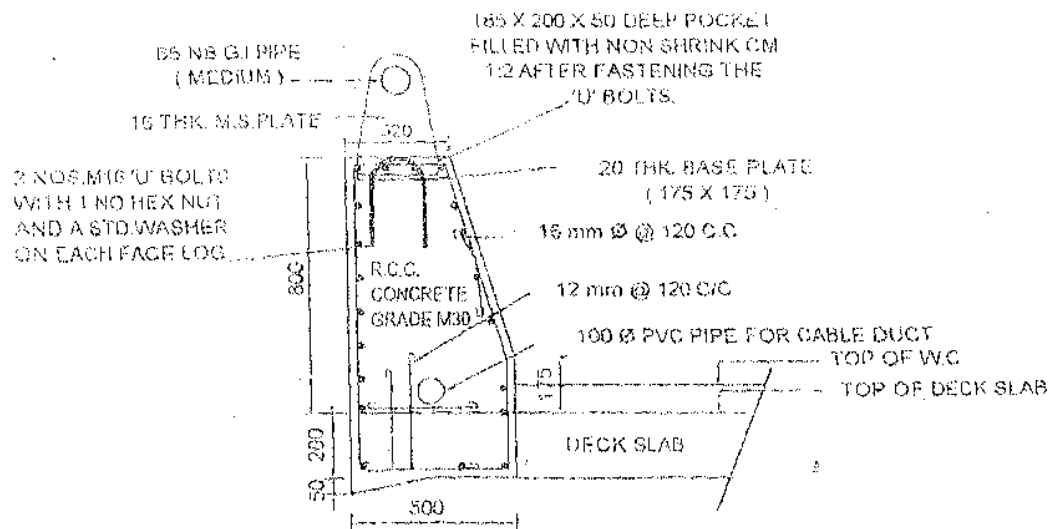


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FIGURE - 2
CRASH BARRIER



A) FOR RURAL ROADS
(NOT TO SCALE)



B) FOR URBAN ROADS
(NOT TO SCALE)

NOTE:-

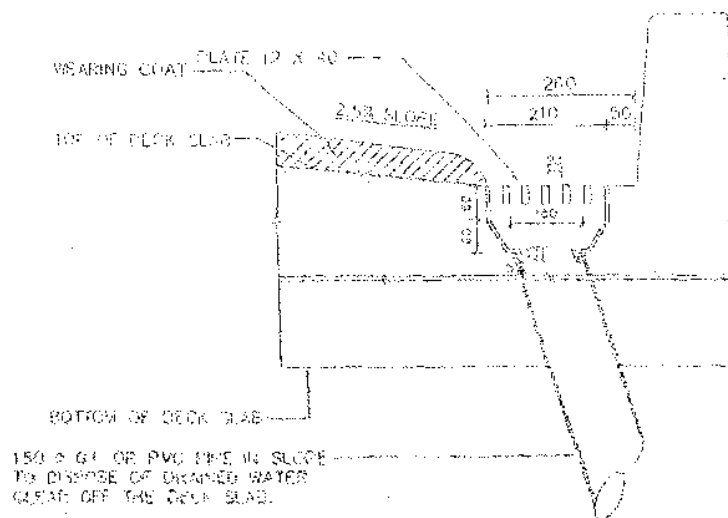
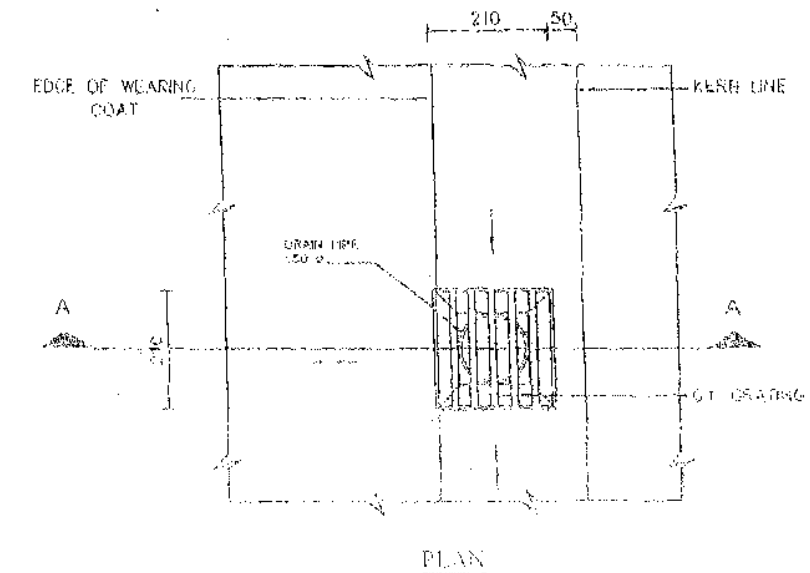
THE IMPACT TO BE CONSIDERED FOR THE DESIGN SHALL BE OF 20T VEHICLE AT 64 kmph AND 20 DEGREE ANGLE OF IMPACT AT TOP OF CRASH BARRIER.



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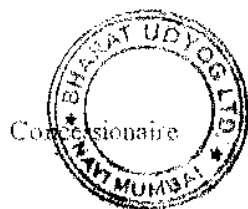
(42)

FIGURE - 3
DETAILS OF WATER SPOUT AND COLLECTION PIT



NOTES:

- 1) ALL DIMENSIONS ARE IN MILLIMETRES
- 2) DRAINAGE SPOUT SHALL BE GALVANISED AFTER WELDING THE PLATES AND FLATS TOGETHER.
- 3) SPACING OF DRAINAGE SPOUTS
 - i) HEAVY RAINFALL REGION-3.0 m c/c
 - ii) OTHER REGIONS-7.0 m c/c.



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REMOVABLE ANGLE IRON POST & G.I. PIPE RAILING FOR SUBMERSIBLE BRIDGE



37.5 mm DIA NOMINAL
BORE PIPE

5000 mm OF 37.5 mm
OUTSIDE DIA BOILER
TUBE 200 mm LONG

75 mm X 75 mm X 10 mm
1 @ 2m c/c

6 mm DIA CSK
RIVETS OR BOLTS

200 mm

DETAILS OF PIPE JOINTS



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SCHEDULE - K

ANNEXURE - C

INDEX

Sr. No.	Description of Item
1	General Requirements
2	Restrictions on types of structures
3	Specifications for design and codes to be followed
4	Road Level on the Bridge, Soffit R.L. and Road way particulars
5	Design Loads
6	Foundations
7	Substructure
8	Superstructure
9	Bearings
10	Expansion joints
11	Railings/ parapets/ Crash barriers
12	Water spouts
13	Wearing coat
14	Anticorrosive treatment to concrete and reinforcement
15	Load test - As per M.O.R.T.H. & I.R.C.-S.P :51
16	Documentation, Instrumentation
17	Procedure for checking detailed calculations and working drawings
18	Annexure - 1
19	Fig - 1
20	Fig - 2
21	Fig - 3

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**Design Criteria for Construction of Flyover / Rail over Bridges for B.O.T. Works.
(Other than on National Highways)**

1. GENERAL REQUIREMENTS:

In order that the concessionaire's proposal qualifies for acceptance it shall generally fulfill the following requirements: -

- 1.1 It shall ensure soundness of the structure, durability and architectural beauty as a whole in harmony with the surroundings.
- 1.2 It shall ensure speedy construction and lead to appreciable economy.
- 1.3 It shall be accompanied by preliminary but fairly detailed drawings and detailed description of work and specifications of materials and items. If called upon, concessionaire shall furnish any additional information necessary for appreciation and comparison with other alternative proposals received from other concessionaires.
- 1.4 At the time of detailed design, normally the concessionaire shall not deviate from the basic scheme proposed by him for the purpose of tender.

2. RESTRICTIONS ON TYPES OF STRUCTURES:

The following types of structural arrangements shall not be permitted:

- 2.1 Structures sensitive to unequal settlement of foundations, indeterminate structures like continuous beams, portal frames, etc. on yielding type of foundations.
- 2.2 Abutments resting on approach embankments.
- 2.3 Superstructures with joints at the tip of the long cantilevers with hinges, gap slab and short suspended spans R.C.C. superstructures with spans more than 20m c/c of piers.
- 2.4 R.C.C. superstructures with spans more than 20m c/c of piers.
- 2.5 Piers in form of multiple columns not connected with continuous diaphragms.

3. SPECIFICATIONS FOR DESIGN AND CODES TO BE FOLLOWED :

The design of structural components shall conform to the criteria laid down in the latest editions of the following Codes of Practice and Standard Specifications published up to the last date of receipt of tender form subject to the departures stipulated.



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(A) Standard Specifications and Codes of Practice for Road Bridges:

Section - I I.R.C. 5 (1998)	General Features of Design. (Reprint April-2002)
Section -II I.R.C. 6 (2000)	Loads and Stresses. (Reprint April-2002)
Section -III I.R.C. 21 (2000)	Cement Concrete (Plain and Reinforced) (Third Revision). (Reprint November-2002)
Section -VI I.R.C. 22 (1986)	Composite Construction. (Reprint November-2002)
Section -V I.R.C. 24 (2001)	Steel Road Bridges. (Second revision) (Reprint October-2003)
Section -VII I.R.C. 78 (2000)	Foundations and Substructure. (Second Revision) (Reprint April-2002)
Section -IX I.R.C. 83 (1999)	Metallic Bearings (Part-I). (First revision December-1999) (Reprint May-2003)
Section -IX I.R.C. 83 (1987)	Elastomeric Bearings.(Part-II) (Reprint June 2003) with amendments.
Section-IX I.R.C. : 83 (2002)	POT, POT-cum-P.TFE, PIN and Metallic guide bearings (Part-III)
I.R.C. : 18-2000	Design Criteria for Prestressed Concrete Road Bridges (Post Tensioned Concrete) (Reprint Sept.2007)
I.R.C. -38- 1988	Guidelines for Design of Horizontal Curves for Highways and Design Tables (First revision - Sept. 1989)
I.R.C. -69-1977	Space Standards for Roads in Urban Areas.
I.R.C. -86-1983	Geometric Design Standards for Urban Roads in Plains.

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- | | |
|-----------------------|--|
| L.R.C. - 89 - 1997 | Guidelines for Design and Construction of River Training and Control Works for Road Bridges.
(First revision) |
| L.R.C. - 106 - 1990 | Guidelines for Capacity of Urban Roads in Plain Areas. |
| L.R.C:SP-23-1983 | Vertical Curves for Highways
(Reprint Sept. 1989) |
| L.R.C.: SP-37-1991 | Guidelines for Evaluation of Load Carrying Capacity of Bridges.
(Year- 1991) |
| L.R.C:SP -41 -1994 | Guidelines on Design of At- Grade Intersections in Rural & Urban Areas. |
| L.R.C:SP -51 -1999 | Guidelines for Load Testing of Bridges. |
| L.S.-1893 - 1984 | Criteria for Earthquake Resistant Design of Structures.(First Reprint July-1999) |
| L.S. 13920-1993 | Ductile Detailing of Reinforced
(Reaffirmed 1998) Concrete Structures subjected |
| Edition 1.2 (2002-03) | to Seismic Forces-Code of practice. |
- (B) Any L.R.C. Standard Specifications and Codes of Practice or Criteria for Road Bridges other than "A" above.
- (C) For any item not covered by A & B above, Specifications for Road and Bridge Works published by L.R.C. for Ministry of Road Transport & Highways.
- (D) For items not covered by any of A, B and C above, Standards and Specifications Provisions of I. S. Codes of Practice.
- (E) For Precast Segmental Construction B.S.:5400.
- (F) For Pretension Construction B.S.:5400.
- (G) For any item not covered by any of the above Codes and Specifications, the relevant Provisions from B.S./A.A.S.H.T.O. (L.R.F.D.) Codes.



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- (H) For items not covered by any of the above Standards and Specifications, Sound Engineering Practice and Provisions of relevant Codes of other Nation shall be referred.

4. ROAD LEVEL ON THE FLYOVER, SOFFIT R.L. AND ROADWAY PARTICULARS :

- 4.1 The length of viaduct portion, minimum vertical and horizontal clearance at obligatory span(s) shall not be less than shown in Departmental Drawings.
- 4.2 Longitudinal gradient shall not be steeper than that shown in the Departmental Drawings.
- 4.3 Soffit R.L. shall not be lower than that shown on the Departmental Drawings.
- 4.4 The Road Level on the Bridge at abutments shall as far as possible be the same as that shown in the Departmental Drawing.
- 4.5 Roadway Particulars and Carriageway Widths shall be as per relevant Departmental Drawings.
- 4.6 The vertical geometry of the finished surface of deck slab and wearing course shall be in the form of a smooth curve. The design of curves(vertical / horizontal) shall be got approved from the Department. The design speed on curve shall be as stipulated in Annexure-I. Superelevation, camber and widening on curves shall be suitably provided.

5. DESIGN LOADS :

5.1 Live Loads :

The bridge shall be designed for Loading as per IRC:6-2000. During construction a construction load of 300 kg/m^2 shall be considered. The Bridge shall also be designed for Service Loads as specified in Annexure-I

5.2 Wind Forces:

Wind forces shall be considered in the following two ways. The design shall be governed by the one producing the worst effect.

- (1) Full Wind Forces at right angles to the superstructure.
- (2) 65% of the Wind Forces acting perpendicular to the superstructure and 35% acting in traffic direction.

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5.3 Temperature Forces :-

For calculation of Thermal Forces effect of 'E' value of concrete should be taken as 50 % of the instantaneous value so as to account for effects of creep on thermal strains.

5.4 Earth Pressure :

The abutment shall also be designed to be safe for a backfill with dry density of soil 1.8 t/cum, saturated density 2.00 t/cum, $\phi = 30$ degree and $C = 0$.

5.5 Centrifugal force:

Centrifugal force shall be considered for the design speed.

5.6 Miscellaneous :

For structural elements like staircase, terrace slabs which are not subjected to vehicular live load, I.S. Codes may be followed.

6. FOUNDATIONS :

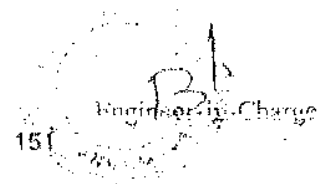
6.1 Piers/Abutments:

6.1.1 The concessionaire shall have to take bores by double tube boring machine at the final location of each pier and abutment prior to the commencement of the work to ascertain the rock levels and quality at the location of the foundations and this shall form part of the contract. The cost of these test and interpretation of the test results shall be included in the tendered amount. No payment will be made separately for boring and testing of soil or rock.

6.1.2 For bidding and for the purpose of tender drawing, general foundation levels proposed for the piers & abutments, shall not be higher than those proposed in the Departmental Drawings. Where pier positions differ from the Departmental Drawings, the foundation levels shall be interpolated for the purpose of this clause.

6.1.3 The temporary works such as cofferdams, sand islands, temporary bridges and centering etc. shall be completely removed immediately after completion of the concerned part of the work.

6.1.4 For the piers located in the crossing area of low level roads, protective island of a minimum height of 1.2 m. and having a clear distance of 750 mm from the face of pier shall be provided. The gap between pier and the island wall shall be filled with sand. Suitably designed fencing made out of steel members and painted with protective paint shall be fitted on top of the wall of the island.



The island wall shall be in M30 R.C.C. with a thickness of 250 mm and buried below adjacent ground level by 750 mm.

6.2 Ramp / Returns / Retaining Walls:

- 6.2.1 The solid ramp portion of the flyover shall be constructed with reinforced earth retaining structure. Foundation levels of retaining walls shall not be higher than those specified in the Departmental drawing. The foundation of retaining structure shall be rested at least 1.00 m below the ground level on strata other than rock.
- 6.2.2 Suitably designed reinforced soil embankment can be provided for approaches.
- 6.2.3 Suitable corrosion protection to reinforcing steel as specified in Annexure-1 shall be provided for steel components in reinforced embankment.
- 6.2.4 M30 P.C.C. kerb stones having dimension of 600 x 300 x 1200 (LxBxD) shall be provided at a spacing of 1200 mm c/c. The stones shall be buried below road level by 600 mm and shall be located at a distance of 1000 mm from the face of retaining wall.
- 6.3 Pile Foundations.
- 6.3.1 Minimum embedment into rock and S. B. C. of the strata shall be considered as follows:

Type of strata	Min. Embedment in rock	S.B.C. of rock
Hard rock	1.5 x diameter of pile	400 t/m ²
	1.0 x diameter of pile	300 t/m ²
Soft rock	3.0 x diameter of pile	250 t/m ²
	2.0 x diameter of pile	200 t/m ²
	1.5 x diameter of pile	150 t/m ²

The values of S. B. C. given above consider the effect of embedment in rock and global behavior of the pile and hence friction resistance of pile shall not be further added.

- 6.3.2 Only end bearing bored cast in situ piles drilled with rotary rig will be accepted. Design with single row of piles per Substructure shall not be accepted. Annular piles filled or not filled shall not be accepted.

Concurrence



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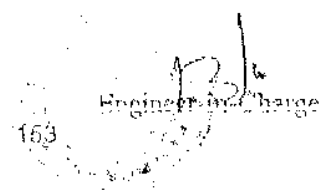
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6.4 Raft Foundations:

- 6.4.1 The raft shall be designed either with attached cutoff wall or with detached cutoff wall. The construction shall be as designed.
- 6.4.2 The raft foundation shall rest fully on flexible bed.
- 6.4.3 Minimum dimensions of raft and attached cut off shall be 375 mm.
- 6.4.4 Raft and cut off shall be cast in dry condition.
- 6.4.5 75mm thick layer of bed concrete shall be provided below cutoffs.
- 6.4.6 Top of the raft shall be 30 cm below the lowest bed level or that specified in N.I.T.
- 6.4.7 Pressure relief pipes shall be provided in the raft at one number per 3 sq. meters with 100 mm diameter A.C. pipes. Pressure relief pipes shall be taken through M-15 bed concrete and raft with properly designed filter below the pipe.
- 6.4.8 In case of P.C.C. piers and abutments, anchor bars shall be provided at piers and abutment locations to achieve perfect bond between the raft and the pier/abutment. Anchor bars shall be 25mm diameter H.Y.S.D. bars at 2 No. per sq. m. of the contact area.
- 6.4.9 Sand / Gravel shall be filled for a depth of 900 mm below raft. Any local rigid obstacles / intrusion shall be removed such that the flexibility of founding strata is ensured.
- 6.4.10 U/s and D/s aprons are important features of raft foundations. The same shall be designed as per L.R.C. -89. The minimum weight of stone to be used for apron shall be 40kg.
- 6.4.11 Top of the apron shall be same as the top of raft. Toe wall shall be provided at the end of the aprons. The toe wall shall be embedded sufficiently.

7. SUBSTRUCTURE :

- 7.1 For continuous spans, Pier with fixed Bearings shall be designed to take all the horizontal forces.
- 7.2 The thickness of counter-fort shall not be less than 400mm and that of any other element shall not be less than 300mm.
- 7.3 Dead man anchors or friction slabs shall not be accepted behind abutment for relieving moments.



- 7.4 Scope for accessibility for inspection and arrangement for lifting of the superstructure for future replacement of bearings shall be provided for in the design of substructure. The positions of jacks shall be distinctly marked on the drawing and also on the structure.
- 7.5 The height of pedestal shall not be more than 500mm.
8. **SUPERSTRUCTURE:**
- 8.1 Deck slab thickness shall not be less than 300 mm and not less than 200 mm at tip of cantilever, irrespective of the provisions elsewhere. The slab shall be checked for punching shear. The cantilever projection of slab in transverse direction shall not be more than 1.8m.
- 8.2 In case of voided slab structure, analysis & design shall be based on the provisions of B.S. 5400. The minimum thickness of concrete around the void for deck shall be 300 mm.
- 8.3 Minimum thickness of intermediate diaphragm where provided shall be 300 mm and that of end diaphragm shall be 500mm for the cast in situ work. Manholes shall kept at a spacing not more than 150m with arrangement for access inside the box.
- 8.4 In the absence of rigorous analysis for torsional and distortional moments and forces due to warping torsion at ends design live load moments and shear force in the longitudinal direction shall be increased by 20% and transverse reinforcement by 5%.
- 8.5 For pre stressed superstructure with box girders, the cross diaphragms shall be minimum one each at supports and at each abrupt change in soffit geometry.
- 8.6 The provision for imparting 20% of design prestress at a future date shall be made in the deck and suitable anchorages, bulkheads, deviator blocks etc. shall be constructed for the purpose. Arrangement for external prestressing shall be got approved.
- 8.7 In addition to post tensioning as per I.R.C. codes, precast segmental construction as well as pre-tensioned construction are also permitted as per B.S. 5400
9. **BEARINGS :**
- 9.1 Following type of Bearings shall be permitted, for the spans mentioned against each type.



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- | | | |
|-----|--------------------------|---|
| (1) | Tar paper Bearings | For solid slabs simply supported with spans less than or equal to 10 m. |
| (2) | Elastomeric Bearings. | As per I.R.C. |
| (3) | Rocker & Roller Bearings | As per I.R.C. |
| (4) | PCRF Bearings | As per I.R.C. |
| (5) | POT - PTFE Bearings | As per I.R.C. |

9.2 Cut/segmental roller Bearings shall not be permitted. Use of different metals setting electrolytic actions inducing corrosion shall not be permitted.

9.3 The Bearings shall be easily accessible for inspection.

9.4 Scope for lifting the Superstructure for future replacement of bearings shall be provided in the design.

10. EXPANSION JOINTS :

The expansion joints shall conform to MORT & H Specifications. The detailed working drawing for the joint shall be in conformity with overall geometry of deck. Geometrical profile shall be achieved by adjusting the dimensions of Superstructure.

11. RAILINGS / PARAPETS / CRASH BARRIERS :

Crash barriers having a typical cross section as shown in Figure - 2 shall be provided for rail over bridge/ flyover. In case of bridge with footpath, crash barrier shown in Figure - 2 shall be provided at the end of carriageway and railing shown in Figure - 4 shall be provided at the end of footpath.

12. WATER SPOUTS :

12.1 Waterspouts shall be as indicated in Figure - 3.

12.2 Water spouts shall be connected to runner pipe of suitable diameter (Min. 150 mm) on either side of roadway & taken down by downtake pipes of suitable diameter at approved locations.

13. WEARING COAT :

A wearing coat of uniform thickness shall be provided for riding surface. It shall consist of 25mm thick mastic asphalt laid over waterproofing layer of 12mm thick mastic asphalt.



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14. ANTICORROSIVE TREATMENT TO CONCRETE AND REINFORCEMENT:

(Applicable in case of marine and severe environment.)

14.1 Entire structure shall be given anticorrosive protection, which shall be got tested from approved laboratory and shall be of approved quality, colour and shade.

14.2 The protection shall consist of:

14.2.1 Over mild steel liner to piles: One coat of Zinc-rich Epoxy primer and two coats of Coal Tar Epoxy. (Total dry film thickness $50 + 80 + 80 = 210$ microns) to outside surface.

14.2.2 Part of Substructure in contact with earth - One coat of primer and two coats of Coal Tar Epoxy. Part of Substructure exposed to atmosphere - water proof cement paint.

14.2.3 (i) Parapets:

Waterproof cement based paint in three coats of approved quality and colour.

14.2.3 (ii) Deck/Girder/Box:

All outside faces - Epoxy based paint with one primer and further two coats.

14.2.4 (i) Anti-Corrosive treatment to reinforcing steel shall be C.P.C.C. developed by C.E.C.R.I. KARAUKUDI as specified in Annexure-1.

OR

14.2.4 (ii) Anticorrosive treatment to reinforcing steel shall be of Fusion Bonded Epoxy Coating (F.B.E.C.) type as specified in Annexure-1. Specifications shall be as per I.S. 13620-1994. The anchorage/bond length in case of F.B.E.C. bars shall be increased by 50% of normal values specified in I.R.C. codes.

OR

14.2.4 (iii) Hot dip Galvanized steel as specified in Annexure-1

15. LOAD TEST: As per M.O.R.T.H. & I.R.C.-S.P.: 51

15.1 In case a structure or a component of structures proposed by the Concessionaire, in the opinion of the Superintending Engineer, Designs Circle, is of unusual nature, then the Superintending Engineer, Designs Circle shall have the right to call upon the Concessionaire to carryout model and/or load testing of the structure or component to prove its suitability. The cost of such test shall be borne by the Department if the test results are satisfactory. In case



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the test results are not satisfactory, the cost of testing shall be entirely borne by the Concessionaire.

- 15.2 Any defect noticed in the structure or any damage done to the Bridge at the time of testing which affects or is likely to affect the strength of the Bridge shall be rectified by Concessionaire at his own cost by remedial measures or replacement as approved by the Engineer-in-charge.

16. DOCUMENTATION, INSTRUMENTATION:

The following items are deemed to be included in the tender cost.

- 16.1 All final drawings and Compact Disc of all approved drawings and tracing films of "as built" drawings and calculations shall be supplied by the Concessionaire in triplicate.
- 16.2 Three DVD of 180 minute duration each of the Bridge covering the different phases of construction from start to finish shall be supplied by the Concessionaire.
- 16.3 A "Maintenance Manual" describing access arrangements, important obligatory precautions from the point of view of structural safety, and procedure for minor and major repairs of each component of the Bridge, renewals of finishes and periodical treatments shall be supplied in ten copies and on Compact Disc / DVD by the Concessionaire.
- 16.4 A "Quality Assurance Manual" covering designs and drawings, mix-designs, materials, testing, soil and rock properties, statistical quality control, etc. shall be prepared by the Concessionaire well before starting the work.
- 16.5 A "Construction Manual" covering various aspects of construction methods, difficulties faced and how they are overcome during execution etc. shall be supplied by the concessionaire at the time of finalization of work.
- 16.6 The Concessionaire shall install fixtures and fastenings provided by the department for housing any instrumentation that may be useful for the Department at his cost.
- 16.7 Wiring and fixing arrangement for internal lighting and ventilation shall be got approved from competent authority and executed.

17. PROCEDURE FOR CHECKING DETAILED CALCULATIONS AND WORKING DRAWINGS:

- 17.1 Within one month of the receipt of work order, the Concessionaire shall submit a program of submission of designs. The program of submission of designs of various components should be consistent with the program of work prepared by the Concessionaire and approved by the Department.



17.2 The Consultant of the concessionaire shall have the latest official version of the software being used for design and the same shall be made available for scrutiny of design to the Designs Approving Engineer if demanded.

17.3 Detailed design calculations and working drawings of all the component parts of the Bridge shall be submitted well in advance of the execution, in accordance with the above program. Two sets of such design calculations and Three sets of drawings accompanied by complete information and sufficient data shall be submitted to the Designs Approving Engineer for checking the design calculations. The designs and drawings for various component parts shall be submitted progressively.

If computer is used for design or analysis, the Concessionaire shall submit with design, the detailed description of method of analysis with explanatory notes and manually done sample calculations for adequate number of typical cases & soft copy. The Computer Program as submitted will be further tested by comparison with solutions of worked examples. The Concessionaire should submit along with his tender a note giving his design approach and construction scheme conforming to the basic requirements which should be approved by the authorities while awarding the work so as to avoid the possibility of major changes being required in the design at a later date.

17.4 Drawings and designs shall be in metric units. Calculations shall be neat and clear and supplemented by full explanatory notes and sketches wherever required. The drawings of initial submissions and final approval shall be stenciled and in 420 mm x 297 mm size only. It is entirely the responsibility of the Concessionaire to submit the design in good time to enable the Designs Approving Engineer to approve them in time. No claims shall be granted on account of late approval to the design and consequent delay in the execution. Schedule of reinforcement and rate of reinforcement Per Cum. of Concrete quantity (and also percentage with respect to gross cross sectional area of the component) should also be shown on each drawing.

17.5 Nine sets of approved working drawings along with one soft copy in the form of Compact Disk and four sets of approved design calculations shall then be supplied by the Concessionaire which will be formally authenticated by the Designs Approving Engineer (Five copies of drawings and one set of design calculations for field officers, one set to be returned to the Concessionaire and three to be retained by the Designs Approving Engineer. These drawings shall be submitted in plastic folders for each set and calculations in plastic files & bag.

17.6 After completion of each stage of work, three sets of record plans based on the work as actually executed on site, shall be supplied by the Concessionaire, to the Engineer-in-Charge.

17.7 Approval to drawings and designs and design calculations by the Designs Approving Engineer shall not in any way relieve the Concessionaire of his

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responsibility for the correctness, soundness and structural stability and safety of the structure.

- 17.8 The approved drawings and the design calculations of the Bridge shall be the property of the Department.
- 17.9 The Concessionaire's designer or Consultant shall attend all the design review meetings conducted by Designs Approving Engineer from time to time, without any extra cost.



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Sample Form

ANNEXURE-1

SUPPLEMENTARY DATA

1. OBLIGATORY PROVISIONS:

- | | | |
|-------|---|-----------|
| (i) | Length of Bridge as measured between inner faces of dirt wall | m |
| (ii) | Soffit R.L. shall not be lower than | m |
| (iii) | Clear Carriage way width | m |
| (iv) | Footpath width | m |
| (v) | Overall width of Bridge (between outer edges of deck slab) | m |
| (vi) | Expansion joints (Max) | ----- Nos |
| (vii) | Wearing coat | ----- |
2. Seismic force
- (a) Basic Seismic Zone
- (b) Importance Factor
3. Design speed of vehicles
4. Longitudinal Gradient
5. Exposure Condition
(Moderate or Severe)
6. Footpath loading
7. Service load
8. Temperature effects
9. Type of anticorrosive treatment to be provided to reinforcement bars.
C.P.C.C. / FBEC / Hot dip Galvanizing

kg/m²

kg/m of service fir

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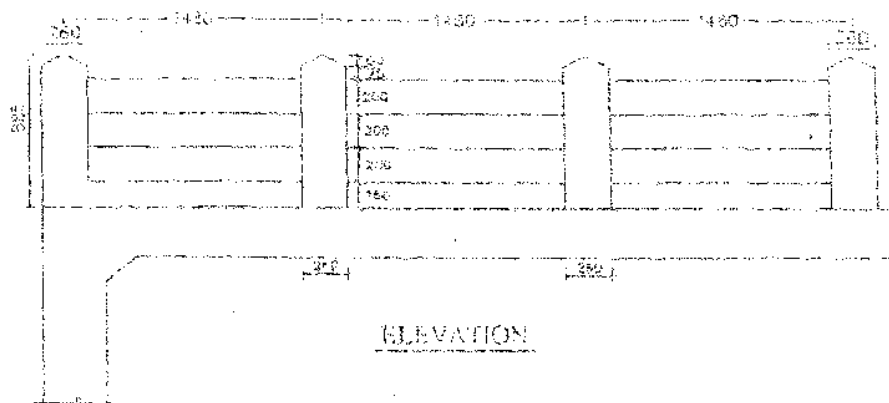
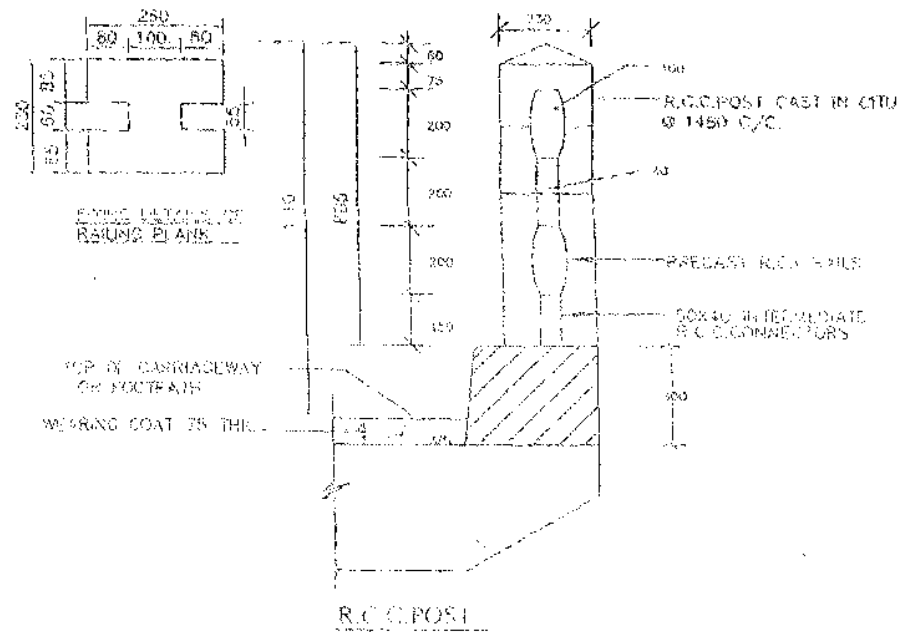


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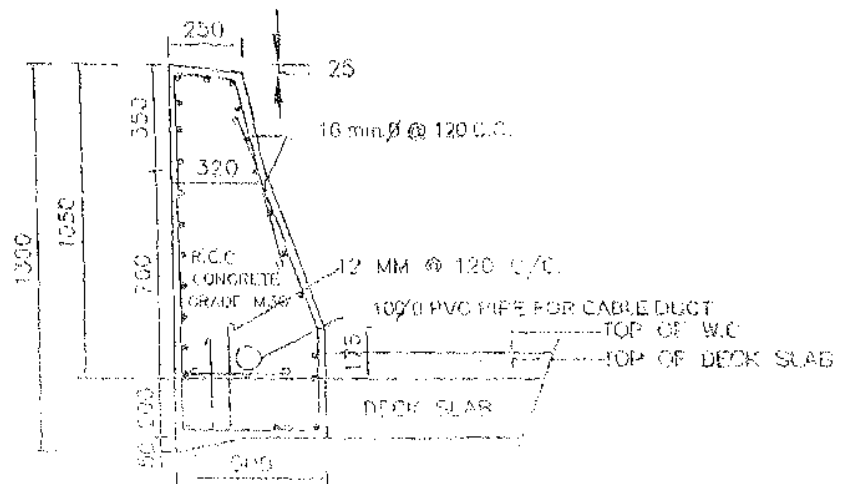
183

FIGURE - 1

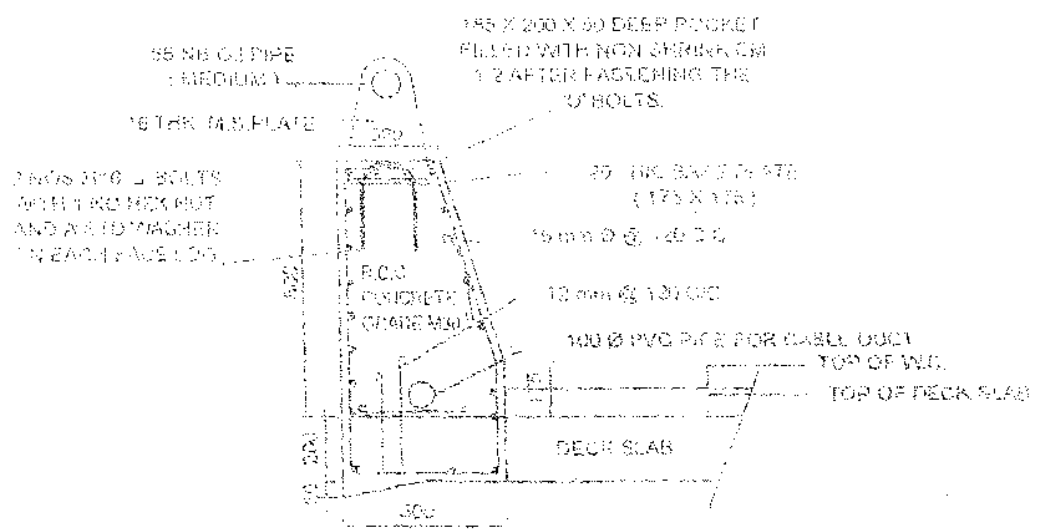
R.C.C. RAILING



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FIGURE - 2**CRASH BARRIER****A) FOR RURAL ROADS**

(NOT TO SCALE)

**B) FOR URBAN ROADS**

(NOT TO SCALE)

NOTE:-

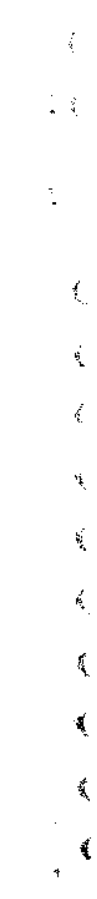
THE IMPACT TO BE CONSIDERED FOR THE DESIGN SHALL BE OF 70% VEHICLE AT 54 kmph AND 20 DEGREE ANGLE OF IMPACT AT TOP OF CRASH BARRIER



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- 



Phylogenetic Analysis

SCHEDULE - L

SPECIFICATIONS AND STANDARDS FOR ROADS

1. GENERAL REQUIREMENTS :

- 1.1 The proposal shall generally fulfill the following requirements. It shall ensure soundness of design, strength and durability of the structures. It should also be in harmony with the surroundings and possess architectural beauty. It shall follow all relevant codes of practice such as those of I.R.C., B.I.S., B.S., A.S.H.O, D.I.N. and other Standards, and sound engineering practice, in that order.

It shall be accompanied by an approach note and a schematic drawing.

2. OBLIGATORY PROVISIONS :

- 2.1 Alignment and Location : The proposal shall be in conformity with the index plan and general details of the projects facility given in the tender document. It shall fulfill the I.R.C. guidelines about geometrics.
- 2.2 Grade, Camber, roadway width, I-section etc. shall be as per the typical cross section supplied in Volume IV. Junctions should be properly designed using standard type plans wherever available.
- 2.3 Cross Drainage Works comprising Pipe Drains, Slab Drains, Culverts and Minor Bridges having linear waterway between abutments less than 30 meters, shall have width equal to the formation or roadway width shown on typical road cross sections supplied. Sufficient waterway shall be provided for these works, so that the afflux is acceptable to the Engineer and flooding or stagnation is not caused due to the construction.
- 2.4 The main carriage way width shall be as shown in the typical cross section supplied in volume II. The pavement shall be designed as per I.R.C. guidelines.
- 2.5 Kilometer stones, 5th Kilometer stones, 200 meter stones, guard stones, sign boards, road markings and other road furniture shall be as per relevant I.R.C. guidelines.

Specifications

1. The whole work shall be generally carried out in accordance with the approved detailed drawings, provisions in the documents and detailed specifications in latest edition of the specification for road and bridge works of the Ministry of Surface Transport, Government of India. In case of inconsistency in the specifications given in the design criteria and other Sections, the stipulation in the design criteria shall govern. For sorting out



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discrepancies in specifications given elsewhere and in this chapter, the decision of Chief Engineer shall be final. The Concessionaire shall arrange to get the specified tests carried out on all constructions materials as well as different components of the work at specified frequency, as per the specifications of the Ministry of Surface Transport and IRC and other relevant codal provisions.

2. Design and erection of formwork shall conform to the guidelines in I.R.C.87-1984 or it's latest edition.
3. In case of dispute in the specifications to be followed for an item of work, the following order of precedence shall be adopted.
 - a) Specifications for Road and Bridge Works—Latest edition of the Ministry of Road Transport and Highways G.O.I.
 - b) Standard specifications of the Indian Roads Congress
 - c) P.W.D. hand book of standard Specifications of Government of Maharashtra.
 - d) Codes of Bureau of Indian Standards.
 - e) British Standard Specifications.
 - f) A. A. S. H. O. Specifications.
 - g) D.I.N. Specifications.
 - h) Any other Standard Specifications approved by the Chief Engineer.
 - i) Sound Engineering Practice.
4. All codes and hand books mentioned herewith shall be of latest edition.

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SCHEDULE - I.

LIST OF SPECIFICATIONS AND STANDARDS

List of Specifications and Standards to be followed is given below: In addition to the specification and standard mentioned below any other relevant specification and standard shall be applicable

Sr. No.	TITLE	CODE NO.
Survey and Investigations		
1	Standard Procedure for Evaluation and condition Surveys of Stabilized soil roads	IRC: 33-1969
2	Performa for Record of Test Values of Locally Available Pavement Construction Material	IRC: 42-1972
3	Recommended Practice for Tools, Equipment and Appliances for Concrete Pavement Construction.	IRC: 43-1972
4	Recommendation about the Alignment survey and Geomatic Design of Hill Roads (First Revision)	IRC: 52-1981
5	Manual for survey, investigation and Preparation of Road Projects	IRC: SP: 19-1977
Geometrical Design		
6	Recommended practice for Location and Layout of Roadside Motor -Fuel Filling and Motor - Fuel Filling-cum-Service station (Second Revision)	IRC: 12-1983
7	Standard for Vertical and Horizontal Clearances of Overhead Electric Power and Telecommunication Lines as related to roads.	IRC: 32-1969
8	Guidelines for Design of Horizontal Curves for Highways and Design Tables (First Revision)	IRC: 38-1988
9	Standard for Road-Rail Level Crossings (First Revision)	IRC: 39-1986
10	Recommendation about the Alignment Survey and Geometric Design of Hill Roads (First Revision)	IRC: 52-1981
11	Lateral and Vertical Clearances at Underpasses for vehicular Traffic	IRC: 54-1974
12	Guidelines for Control of Access on Highways	IRC: 62-1976
13	Recommended practice for Traffic Rotaries	IRC: 65-1976
14	Recommended practice for Sight Distance on Rural Highways	IRC: 66-1976
15	Space Standards for Roads in Urban Areas	IRC: 69-1977
16	Guidelines on Regulation and control of mixed Traffic in Urban Areas	IRC: 70-1977

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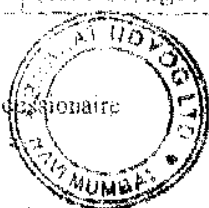
17	Geometric Design Standards for Rural (Non-Urban) Highways	IRC: 73-1980
18	Type Designs for Pick-up Bus Stops on Rural (i.e. Non-Urban) Highways	IRC: 80-1981
19	Geometric design standards for Urban Roads in Plains.	IRC: 86-1983
20	Guidelines for the Design of interchanges in urban areas	IRC: 92-1986
21	Guidelines for Pedestrian facilities	IRC: 103-1988
22	Tentative Recommendations on the Provision of Parking spaces for Urban Areas	IRC: SP: 12-1973
23	Vertical curves for highways.	IRC: SP: 23-1983
24	Guidelines on design of at-grade intersections in rural and urban areas.	IRC: SP: 41-1994
25	Guidelines on Road Drainage.	IRC: SP: 42-1994
26	Tentative Specification for Bituminous Macadam (Base and Binder Course)	IRC: 27-1967
27	Tentative Specification for the Construction of stabilized soil Roads with Soft Aggregate in Areas of Moderate and High Rainfall	IRC: 28-1967
28	Specification for Bituminous concrete (Asphaltic Concrete) for Road Pavement (First Revision)	IRC: 29-1988
29	Guidelines for the Design of Flexible pavements (First Revision)	IRC: 37-1984
30	Recommended practice for sand-Bitumen Base courses	IRC: 55-1974
31	Tentative Guidelines for Strengthening of Flexible Road Pavements Using Benkelman Beam Deflection Technique	IRC: 81-1981
32	Code of Practice for Maintenance of Bituminous Surfaces of Highways	IRC: 82-1982
33	Specification for dense Bituminous Macadam	IRC: 94-1986
34	Specification for Semi-dense Bituminous Concrete	IRC: 95-1987
35	Tentative specification for 20mm thick Premix Carpet using Cationic Bitumen Emulsion	IRC: 97-1987
36	Tentative specification for bituminous concrete (Asphaltic Concrete) for Airfield Pavements.	IRC: 105-1988
37	Tentative specification for Bitumen Mastic Wearing Courses.	IRC: 107-1992
38	Guidelines for Wet Mix Macadam	IRC: 109-1997
39	General Guidelines about the equipment for Bituminous surface dressing.	IRC: SP: 34-1989
40	Tentative Guidelines on Use of Rubber and Polymer Modified Bitumen in Road Construction.	IRC: SP: 53-1999
41	Dimensions and Weights of Road Design Vehicles.	IRC: 3-1983



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42	Standard Specifications and code of Practice for Construction of concrete Roads (Second Revision)	IRC: 15-1981
43	Tentative Guidelines for Cement Concrete Mix Design for Pavements (For Non-air Entrained and continuously Graded Concrete) (First Revision)	IRC: 44-1976
44	Recommended practice for Sealing of Joints in Concrete Pavements.	IRC: 57-1974
45	Guidelines for the design of Rigid Pavements for Highways (First Revision)	IRC: 58-1988
46	Tentative Guidelines for the Design of Gap Graded Cement Concrete Mixes for Road Pavements	IRC: 59-1976
47	Tentative Guidelines for the use of Lime-Fly Ash Concrete as Pavement Base or Sub-Base	IRC: 60-1976
48	Tentative Guidelines for the Construction of Cement Concrete Pavements in Hot Weather	IRC: 61-1976
49	Tentative Guidelines on Cement-Fly Ash Concrete for Rigid Pavement Construction	IRC: 68-1976
50	Tentative Guidelines for Lean-Cement concrete and lean Cement-Fly Ash Concrete as a Pavement Base or Sub-Base	IRC: 74-1979
51	Tentative Guidelines for Structural Strength Evaluation of Rigid Airfield Pavements	IRC: 76-1979
52	Tentative Guidelines for Repair of Concrete Pavements Using Synthetic Resins.	IRC: 77-1979
53	Code of Practice for Curing of Cement concrete Pavements	IRC: 84-1983
54	Tentative Guidelines for Construction of cement concrete Pavements in cold weather	IRC: 91-1985
55	Guidelines for the Design of continuously Reinforced concrete Pavement with Elastic joints.	IRC: 101-1988
56	Recommendations about overlays on Cement Concrete Pavements	IRC: SP. 17-1977
57	Steel Fiber Reinforced Concrete For Pavements	IRC: SP: 46-1997
58	Guidelines for the Use of Dry lean Concrete as Sub-base for Rigid Pavements	IRC: SP: 49-1999
	CD Works and Bridges	
59	Standard Specifications and code of Practice for Road Bridges, Section I -- General Features of Design (Sixth Revision)	IRC:5-1985
60	Standard Specifications and code of Practice for Road Bridges, Section II -- Loads and Stresses (Third Revision)	IRC:6-1966
61	Recommended Practice for Numbering Bridges and Culverts (First Revision)	IRC:7-1971
62	Road Bridges (Post - Tensioned Concrete) (Second Revision)	IRC:18-1985

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63	Standard Specifications and code of Practice for Road Bridges, Section III (Second Revision)	IRC:21-1987
64	Standard Specifications and code of practice for Road Bridges, Section VI completion Construction (First Revision)	IRC : 22-1986
65	Standard Specifications and code of Practice for Road Bridges, Section V Steel Road Bridges	IRC : 24-1967
66	Standard Specifications and code of Practice for Road Bridges, Section IV - Brick, Stone and Masonry	IRC:40-1970
67	Recommendation for Estimating the Resistance of Soil below the Maximum scour Level in the Design of Well foundation of Bridges	IRC:45-1972
68	Standard Specifications and code of Practice for Road Bridges, Section VII - Foundations and Substructure (First Revision)	IRC:78-1983
69	Standard Specifications and code of Practice for Road Bridges, Section IX -Bearings, Part I : Metallic Bearings.	IRC : 83-1982
70	Standard Specifications and code of Practice for Road Bridges, Section IX - Bearings, Part II : Elastomeric Bearings	IRC:83-1987
71	Guidelines for the Design and Erection of False work for Road Bridges.	IRC:87-1984
72	Guidelines for the Design and construction of River Training and control works for Road bridges.	IRC:89-1985
73	Bridge Loading Round the World	IRC:SP:4-1966
74	Guidelines for the Design of Small Bridges and Culverts	IRC:SP:13-1973
75	Manual for Highway Bridge Maintenance Inspection.	IRC:SP:18-1978
76	Guidelines on Supplemental Measures for Design, Detailing and Durability of important bridge structures	IRC:SP:33-1989
77	Guidelines for Inspection and maintenance of bridges	IRC:SP:35-1990
78	Guidelines for evaluation of load carrying capacity of bridges	IRC:SP:37-1991
79	Guidelines on techniques for strengthening and rehabilitation of bridges.	IRC:SP:40-1993
80	Guidelines on Quality Systems for Road Bridges (Plain, Reinforced, Prestressed and Composite Concrete)	IRC:SP:47-1998
81	Guidelines for Load Testing of Bridges	IRC:SP:51-1999
82	Bridge Inspection's Reference Manual	IRC:SP:52 - 1999
83	Project preparation Manual for Bridges	IRC:SP:54-2000
84	Guidelines for Steel Pedestrian Bridges	IRC:SP:56-2000
85	Pocket book for Bridges Engineer	MORT&H - 1994
86	Standard plans for 3.0 m to 10.0 m Span Reinforced Cement concrete soiled slab superstructure with and without Footpaths for Highways.	MORT&H - 1991

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87	Standard plans for Highway Bridges R.C.C. T - Beam and Slab Superstructure - Span from 10m to 24m with 12 m width	MORT&H - 1991
88	Standard Plans for Highway Bridges PSC Girder and RC slab Composite Superstructure for 30 m Span with and without Footpaths, 35m Span with footpaths and 40m Span without footpaths.	MORT&H - 1991
89	Standard drawing for road Bridges - R.C.C. Solid Slab Superstructure (15 and 30 SKEW) Span 4.0m to 10.0 m (with and without Footpaths)	MORT&H - 1992
90	Standard drawing for road Bridges - R.C.C. Solid Slab Superstructure (22.5 SKEW) R.E. Span 4.0m to 10.0m (with and without Footpaths).	MORT&H - 1996
91	Standard Plans for Highway Bridges - Pre stressed Plans for Highway Bridges - Pre stressed Concrete Beam and RCC Slab Type Superstructure, Volume - II.	MORT&H
92	MORT&H Standard Plans for Single, Double and Triple Cell Box Culverts with and without Earth Cushions	MORT&H
93	State of the Art : Non Destructive Testing Techniques of Concrete Bridges.	HRB Special Report No.17, - 1996
94	State of the Art : Corrosion and Corosion Protection of Pre stressed Concrete Bridges in Marine Environment	HRB Special Report No.18, - 1996
95	State of the Art: Behavior of Concrete under sea-water and in marine environment.	HRB Special Report No.10 1989
Planning And Analysis		
96	Traffic Census on Non-Urban Roads (First Revision)	IRC:9-1972
97	Guidelines for Capacity of Roads in Rural Areas (First Revision)	IRC:64-1990
98	Guidelines on accommodation of underground Utility Services along and across roads in Urban Areas	IRC:98-1988
99	Traffic studies for Planning By-passes around towns.	IRC:102-1988
100	Guidelines for environmental impact Assessment of highway Projects	IRC:104-1983
101	Guidelines for capacity of Urban Roads in plain Areas	IRC:106-1990
102	Guidelines for Traffic Prediction on Rural Highways	IRC:108-1996
103	A Manual for the Application of the Critical Path method to Highway Projects in India	IRC:SP:14-1973
104	Ribbon Development along Highways and its Prevention	IRC:SP:15-1996
105	Road Transport and Energy	IRC:SP:28-1984

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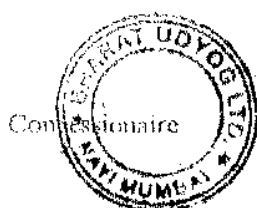
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106	New Traffic Signs.	IRC:SP:31-1992
107	Road safety for Children (5-12 years old)	IRC:SP:32-1988
108	Guidelines on format for IRC standards	IRC:SP:36-1991
109	Manual for road investment decision model (with floppy disk)	IRC:SP:38-1992
110	Guidelines on Low-cost Traffic Management Techniques for urban areas	IRC:SP:43-1994
111	Highways Safety Code	IRC:SP:44-1994
Supporting		
112	Route Marker Signs for National Highways (First Revision)	IRC:2-1968
113	Type design for High Kilometer Stones (Second Revision)	IRC:8-1980
114	Type Design for Boundary Stones	IRC:25-1967
115	Type Design for 200 Meter Stones	IRC:26-1967
116	Standard Letters and Numerals of different heights for use on Highway signs	IRC:30-1968
117	Route Marker Signs for State Routes	IRC:31-1969
118	Code of practice for Road Markings (with paints)	IRC:35-1970
119	Type design for Check Barriers	IRB:41-1972
120	Code of Practice for road signs	IRC:67-1977
121	Recommended practice for Road Delineators	IRC:79-1981
122	Guidelines for the Design and Installation of Road Traffic Signals	IRC:93-1985
123	Tentative Guidelines on the provision of speed breakers for control of vehicular Speeds on Minor Roads	IRC:99-1988
124	New Traffic Signs	IRC:SP:31-1992
Miscellaneous		
125	Road Accident Forms A-1 and 4 (First Revision)	IRC:53-1982
126	Recommended practice for Preparation of Notations	IRC:71-1977
127	Recommended practice for use and Upkeep of Equipment, Tools and Appliances for Bituminous Pavement Construction	IRC:72-1978
128	Guidelines of selection, Operation and Maintenance of Bituminous Hot Mix Plant	IRC:90-1985
129	Recommendations for the sizes for each type of road making machinery to cater to the general demand of Road Works.	IRC:SP:22-1980
130	Gopi and his road roller guidelines on Maintenance of road rollers	IRC:SP:25-1984
131	Directory of Indigenous Manufacturers of Road / Bridge Construction Machinery and important bridge components (First Revision)	IRC:SP:29-1994



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132	Guidelines on bulk Bitumen transportation and Storage equipment	IRC:SP:39-1992
133	Handbook on Road Construction Machinery	MORT&H-1985
134	State of the Art Application of Geotextiles in High Engineering	HRB Special Report No.12:1994
Common		
135	Recommendations for Road Construction in Waterlogged Areas	IRC:34-1970
136	Tentative Guidelines for the use of Low grade Aggregates and soil Aggregate Mixtures in Road Pavement construction	IRC:63-1976
137	Manual on route location, design, construction and maintenance of Rural Roads (Other District Roads and Village Roads.)	IRC:SP:20-1979
138	Hill Road Manual	IRC:SP:48-1988
139	Manual for maintenance of Roads	MORT&H - 1983
140	Road development plan for India (1981-2001)	MOP and H-1984
141	Pocketbook for Highway Engineers	MORT&H
142	Specifications for Road and Bridges works, (Third Revision)	MORT&H-1995
143	Addendum to Technical circulars and Directive on National Highways and centrally sponsored Road and Bridge work	MORT&H-1989
144	Standard Bidding Document Procurement of Civil Works, Part-I: Complete Bidding Document, Part - II: Forms	MORT&H
145	Standard of Data Book for Analysis of Rates	MORT&H - 1993
146	Addendum to Ministry's Technical Circulars and Directives on National Highways and Centrally Sponsored Road and Bridge Projects (Aug.88 to Dec. 92)	MORT&H - 1993
147	Addendum to Ministry's Technical Circulars and Directives on National Highways and Centrally sponsored Road and Bridge Projects (Jan.93 to Dec.94)	MORT&H-1996



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148	Addendum to Ministry's Technical Circulars and Directives on National Highways and Centrally sponsored Road and Bridge Projects (Jan.95 to Dec.97)	MORT&H - 1998
149	Model Concession Agreement for Small Road Projects	MORT&H

Note : a) Recent or modified Amendments if any shall be considered.

b) If any code / Standard is not mentioned / wrongly mentioned, then refer to the latest list/Correct list of code / standards.



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SCHEDULE - M

TESTS

Following tests are required to be carried out as per standard procedures. Indicative frequency and required results are also tabulated below. In addition to standard mentioned below any other relevant standard of tests shall be applicable.

These tests and quality audit shall include but not be limited to the following

Item of Work and Name of Test	Test Method / Codes	Frequency, results and remarks
Earthwork		
Gradation / Sand Contents	IS:2720 (Part-IV)	One to Two Tests per 8000 cum of soil
Plasticity Index	IS:2720 (Part-V)	One to Two Tests per 8000 cum of soil
Standard Proctor Test	IS:2720 (Part-VII)	One to Two Tests per 8000 cum of soil
C.B.R. (soaked and un-soaked) Test on set of 3 specimens	IS:2720 (Part-XVI)	One to Two Tests per 3000 cum of soil
Deleterious material content	IS:2720 (Part-XXVII)	As per need
Natural Moisture Content	IS:2720 (Part-II)	One Test per 250 cum of soil
Moisture content just before compaction	IS:2720 (Part-II)	2 to 3 Tests per 250 cum of loose soil
Dry density of compacted layer	IS:2720 (Part-XXVIII)	Generally One Test per 1000 sqm of compacted layer
Granular Sub-base		
Gradation	IS:2720 (Part-IV)	One Test per 200 cum
Plasticity	IS:2720 (Part-V)	One Test per 200 cum
Natural moisture content	IS:2720 (Part-II)	One Test per 250 cum
Deleterious material content	IS:2720 (Part-XXVII)	As required
Moisture content prior to compaction	IS:2720 (Part-II)	One Test per 200 cum
Density of compacted layer	IS:2720 (Part-XXVIII)	One Test per 500 sqm
C.B.R. (soaked and un-soaked) Test	IS:2720 (Part-VI)	As required
Water Bound Macadam		

Concrete

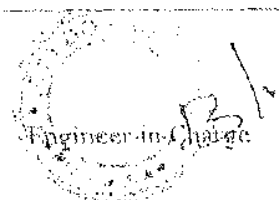


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Los Angles Abrasion Value OR Aggregate Impact Value	IS:2386 (Part-IV)	One Test per 200 cum. 30% max.
Flakiness Index of Aggregate	IS:2386 (Part-I)	One Test per 200 cum. 15% max.
Grading of Aggregate 90mm to 45 mm	IS:2386 (Part-I)	One Test per 100 cum. Max. 15% passing thr. 45mm
ii. 63mm to 45mm	IS:2386 (Part-I)	One Test per 100 cum Max. 15% passing thr. 45mm
iii. 53mm to 22.4mm	IS :2386 (Part-I)	One Test per 100 Cum. Max 10% passing thr.40mm
Plasticity Index of binding material	IS:2720 (Part-V)	One Test per 25 Cum. 4 to 6
Control of surface finish as grade, camber, thk. Etc.		Regularly
Wet Mix Macadam		
Los Angles Abrasion value OR Aggregate Impact Value	IS:2386 (Part-IV)	One Test per 250 cum 30% max.
Flakiness and Elongation Index of Aggregate	IS:2386 (Part-I)	One Test per 250 cum. 30% max.
Grading of Aggregate i. 4.75 mm sieve	IS:2386 (Part-I)	One Test per 200 cum. 10% max. passing by wt.
Water absorption		One Test per 250 cum 2% max.
Soundness	IS:2386 (Part-V)	One Test per 50-100 cum.
Plasticity Index (for material finer than 425 micron)	IS:2720 (Part-V)	One Test per 200 cum. 6 max.
Moisture Content prior to compaction	IS:2720 (Part VIII)	One Test per 250 sqm.
+Density of compacted layer	IS:2720 (Part VIII)	One Test per 500 sqm. 98% of max. dry density
Control of surface finish as grade, camber, thk. Etc.		Regularly
Bituminous Macadam		
Los angel's Abrasion value	IS:2386 (Part-IV)	One Test per 50-100 cum
Aggregate Impact Value	IS:2386-1963 (Part - IV)	1 Test per 50-100 cum.
Aggregate gradation	IS:2386 (Part-I)	One test per 100 cum OR two test per day.
Flakiness Index	IS:2386 (Part-I)	One test per 50-100 cum



Striping Value	IS:6241	One test per 50-100 cum
Water Absorption of aggregate	IS:2386-1963 (Part-III)	One test per 50-100 cum
Quality of binder	IS:73/297/454	As required
Temperature of binder / aggregate at the time of mixing / laying / rolling	IS:73/297/455	Regularly
Mix grading	IS:2386 (Part-I)	two tests per day on both constituents
Control of binder content	Appendix - 6	Min. two per day per plant
Control of Grade, camber, thickness and surface finish	Appendix - 7	Regularly
Dense Bituminous Macadam		
Aggregate Impact Value	IS:2386-1963 (Part - IV)	1 Test per 50-100 cum
Flakiness Index	IS:2386 - 1963 (Part-I)	One test per 50-100 cum
Striping Value	IS:6241-1971	One test per 50-100 cum
Water Absorption of aggregate	IS:2386-1963 (Part-III)	One test per 50-100 cum
Sieve Analysis for filler	IS:2386-1963 (Part-III)	One Test for each consignment subject to a min. of one test per 5 cum of filler
Quality of Bitumen	IS: 73-1961	As required
Grading of Aggregates before mixing with Bitumen	IS:2386 - 1963 (Part-I)	2 tests on constituents and mixed aggregates from the dryer for the 100 tonnes of Mix.
Control of Temperature of Bitumen in the boiler, aggregate in the dryer and mix at the time of laying and rolling		Regularly
Stability of Mix	ASTM D 1559-1976 (Appendix - 4)	For each 100 Tonnes of mix produced, a set of three Marshall test specimens to be prepared and tested for stability flow, density and voids content subject to a min. of two sets being tested per plant per day.
Bitumen content and grading of aggregates in the mix	Appendix-6	1 test for each 100 tonnes of mix subject to a min. of two tests per plant per day.
Thickness and density of compacted layer	Appendix - 6	1 test per 500 sqm of area laid



Control of grade, camber and surface finish	Appendix - 7	Regularly
Bituminous Concrete		
Los Angeles Abrasion value OR Aggregate Impact Value	IS:2386 (Part-IV)	One Test per 50-100 cum 30% max.
Flakiness Index	IS:2386 (Part-I)	One Test per 50-100 cum. 25% max.
Stripping Value	IS:6241	One Test per 50-100 cum. 25% max.
Water absorption	IS: 2386 (Part-III)	One Test per 50-100 cum 1% max.
Soundness		
Loss with sodium sulfate 5 cycles	IS: 2386 (Part V)	IS: 2386 (Part V) 12% max.
Loss with magnesium sulfate 5 cycles	IS: 2386 (Part V)	IS: 2386 (Part V) 18% max.
Density of compacted layer	Appendix - 6	One test per 500 sqm. Area
Rate of spread of mixed material		Regular control through checks on the weight of mixed material and layer thickness
Stability of mix.	ASTM D-1559	For each 100 tones of mix produced a set of three Marshall specimens to be prepared and tested for stability, flow value density and void content, subject to a minimum of two sets being tested per plant per day.
Binder content and gradation in the mix	ATM D-2172	One test for each 100 tones of mix subject to a minimum of two test per day per plant.
Control of grade, camber and surface finish	Appendix - 7	Regularly



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Concrete		
Strength of concrete	IS: 516	Two cubes and two beams per 150cum or part thereof (one for 7 days and other for 28 days strength) or minimum 6 cubes and 6 beams per day's work whichever is more.
Core strength on hardened concrete	IS: 516	As per requirement of the Engineer
Workability of fresh concrete - Slump Test	IS: 1199	One test per dumper load and both batching plant site and paving site initially when work starts. Subsequently sampling may be done from alternate dumper.
Thickness determination		From the level data of concrete pavement surface and sub-base at grid points of 5/6 25m x 3.5 m.
Thickness measurements for trial length		3 cores per trial length.
Verification of level of string line in the case of slip from paving and steel forms in the case of fixed form paving		String line or steel forms shall be checked for level at an interval of 5.0m or 6.25m. The level tolerance allowed shall be ± 2 mm. These shall be got approved 1-2 hours before the commencement of the concreting activity.
Density		3 density holes for each 2000 sqm. For part thereof laid each day.
Cement		
Physical and chemical Tests	IS: 269 IS: 455 IS: 1489 IS: 8112 IS: 12269 IS: 12240	Once for each source of supply and occasionally when called for in case of long / improper storage. Besides the Contractor also will submit daily test data on cement released by the manufacturer.

Concrete



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Coarse and fine aggregates		
Gradation	IS: 2386 (Part -I)	One test for every days work of each fraction of coarse aggregate, initially : may be relaxed later at the discretion of the Engineer.
Deleterious Constituents	IS: 2386 (Part II)	One test for every days work of each fraction of coarse aggregate, initially : may be relaxed later at the discretion of the Engineer.
Water Absorption	IS: 2386 (Part III)	Regularly as required subject to a minimum of one test a day for coarse aggregate and two tests a day for fine aggregates. This data shall be used for correcting the water demand of the mix on daily basis.
Coarse Aggregates		
Los Angeles Abrasion value or aggregate impact value	IS: 2386 (Part - IV)	Once for each source of supply and subsequently on monthly basis.
Soundness	IS: 2386 (Part - V)	Before approving the aggregates and every month subsequently.
Alkali Aggregate reactivity	IS: 2386 (Part - VII)	Before approving the aggregates and every month subsequently.
Water		
Chemical Test	IS: 456	Once for approval of source of supply and subsequently.
Steel		
Characteristic strength for S 240 grade Mild Steel Bar	IS: 432 (Part -I)	As per requirement of the Engineer 240 Mpa.
Characteristic strength for S 415 grade HYSD Bars	IS: 1786	As per requirement of the Engineer 415 Mpa.
Cold bend test		As per requirement of the Engineer
Ultimate tensile strength		As per requirement of the Engineer



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Percentage Elongation		As per requirement of the Engineer
Diameter of bar		As per requirement of the Engineer
Weight of bar per running meter		As per requirement of the Engineer

Note : Out of total test to be carried out as mentioned above minimum 20% of the test are to be carried out from Regional Laboratory, Q.C. & Vig. Circle, of the Department.

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Sample Form

SCHEDULE-N

COMPLETION CERTIFICATE

A) "Provisional Completion Certificate"

(To be issued by concerned Engineer-in-Charge and countersigned by S. E.)

This is to certify that the work of "Four Laning of Chinchoti-Kaman Anjurphata to Mankoli Road M.S.H. No. 4 Km. 0/000 - 26/425 Taluka Bhiwandi Dist. Thane" is nearly completed by M/s "-----" and all parts of the project can be legally, safely and reliably opened for commercial operation.

This provisional completion certificate is issued as per clause No. ----- of the contract and the toll can be levied from Dt -----

No. -----

Engineer-in-Charge,
Executive Engineer,
Thane (P.W.) Division,
Station Road, Thane.
Pin - 400 601.

Countersigned
The Superintending Engineer,
Thane (P.W.) Circle, Station Road,
Thane - Pin-400 601.



B) "Completion Certificate".

(To be issued by concerned Engineer-in-Charge within 60 days
after issue of provisional completion certificate)

This is to certify that the work of "Four Laning of Chinchoti-Kaman
Anjurphata to Mankoli Road M.S.H. No. 4 Km. 0/000 - 26/425 Taluka Bhivnadi
Dist. Thane" is completed in all respects as per the terms, conditions & scope of
work as stipulated in contract No. ----- by "M/s. -----"

The date of completion of work in all respect is -----

No. -----

Engineer-in-Charge,
Executive Engineer,
Thane (P.W.) Division,
Station Road, Thane.
Pin - 400 601.

Countersigned
The Superintending Engineer,
Thane (P.W.) Circle, Station Road,
Thane - Pin-400 601.



Engineer-in-Charge

SCHEDULE- O

MINIMUM MAINTENANCE REQUIREMENTS

1. The Concessionaire shall repair and maintain the Project facility roads, Bridges, Bridge approaches, C.D. Works, tunnels, other structures etc. till it is finally handed over to the Government at the end of the concession period. He shall keep it in the same condition and standard as contracted, with necessary repairs and maintenance at his own cost. The Engineer in charge shall be at the liberty to direct Concessionaire to measure the roughness index on any of the day in the presence of representative of the Engineer in charge or he may measure the roughness index departmentally by informing the Concessionaire. In addition to this intermittent checking of roughness index will have to be carried out as per instruction of the Engineer in charge. The roughness index for the road surface shall not be more than 2000 mm and shall not be allowed to deteriorate beyond 2000 mm per km. during the entire concession period. If the roughness index goes beyond 2000 mm per km. renewal coat of minimum 25 mm thick open graded carpet with liquid seal coat / SDBC or the treatment stipulated in the tender condition as per Bidding Data Volume II (with pothole/ patch repairing work if required). will have to be laid for such stretch along with thermoplastic painting as directed by the Engineer in charge.

2. The Concessionaire shall not with standing whether he has only taken up part length of the road for improvement carry out the maintenance and safety measures from the day of Work Order till the end of Concession period for the complete length as per scope of bid. The Concessionaire shall carryout 100% pot holes filing and shoulder dressing with 5% Camber before monsoon (Pre monsoon) i.e. in the month of April and May and after monsoon (Post Monsoon) i.e. in the month of October and November in every year.

The Concessionaire shall carry out pothole filing patch work repairs and other protective works promptly for full length of the work as and when the need arises so. The Concessionaire shall also maintain the embankment, shoulders, road side drains, river training works, protection works, etc. in best workman like manner so as not to cause inconvenience to the traffic.

3. The renewal coat of minimum 25 mm thick open graded carpet with liquid seal coat / SDBC as stipulated in the volume II should be provided for full length of the project once in every 7 years or as stipulated in the volume II throughout the concession period. Apart from this periodical renewal, the stretches in which roughness index goes beyond 2500 mm per kilometer, shall be renewed.

The provision of renewal coat shall be minimum 25 mm thick open graded premix carpet with liquid seal coat or 25 mm thick SDBC or as stipulated in the bid data in volume II. However the Concessionaire may provide higher treatment to keep the roughness index below 2000mm/km without any extra charge with prior approval of the Engineer in charge.



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Engineer in Charge

4. After the roughness index is measured by the Concessionaire as per instruction of the Engineer in charge and if in opinion of the Engineer-in-Charge the road surface is deteriorated beyond roughness index 2000 mm per km. the Engineer in Charge shall notify the Concessionaire in writing directing Concessionaire to carry out the renewal coat (with pothole filling/patches repairing works) stipulated in BID within the stipulated time period mentioned in the notice. If the Concessionaire fails to carry out the work or the progress of the work being carried by the Concessionaire is slow in the opinion of the Engineer-in-Charge as mentioned in the notice as above within the stipulated period the Engineer in Charge shall take any or combination of the following action.

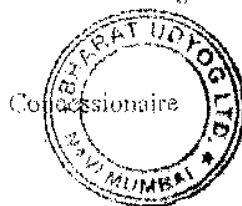
i) Engineer-in Charge shall carry out the work as mentioned in the notice by employing any other agency/contractor and deduct twice the cost (as penalty) of such work from the performance security available with the department. He shall further notify the Concessionaire to deposit the amount equal to the amount deducted from his performance security. The Concessionaire shall have to deposit such amount within a period of 7 days, with the department to recoup the original performance security. If required the Engineer in charge shall direct the Concessionaire to deposit the amount in installment daily from the toll Collection and recoup his performance security. The Government also reserves the right to recover this amount from Concessionaire's arrears of land revenue.

ii) The Engineer-in-Charge may carry out the work departmentally and twice the cost (as penalty) of the work carried out shall be recovered from the Concessionaire from the performance security or from the arrears of land revenue.

The Engineer-in-Charge may partially or fully stop the toll collection from any of the toll collection booth for period during which repairs are being carried out. If necessary the Engineer-in Charge may take over the toll collection for such a period and the amount of toll shall be collected by the Engineer-in-Charge using the toll collecting establishment of the Concessionaire. The amount equal to twice the amount of actual repairs and cost of toll collection shall be recovered from the total toll collection and the balance amount shall be refunded to the Concessionaire.

The Engineer-in-Charge shall have right to direct to reduce the of recovery of toll for period of repairs till the roughness index is brought to the level of 2500mm per km. The Concessionaire shall not be entitled for any extension in the concession period due to loss of toll collection in this period.

iii) In case of any dispute regarding the action taken by the Engineer-in-Charge under the above clauses the Concessionaire may notify the dispute in writing within ten days to the superintending Engineer. The superintending engineer shall give his decision within 30 days of Concessionaires notice. The interim orders/final orders given by Superintending Engineer in this regard shall be binding on the Concessionaire. No claims on this account shall be entertained



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by the Government and if in such case it is observed by the Government that the Concessionaire is pressing for unreasonable claims in this regard the Government may order prohibiting the Concessionaire in any of the further bids for any other works for a reasonable period.

- iv) The Concessionaire shall not be absolved from the responsibility of the contract during such period of action and the cost of any legal expenditure required to be done by the Government due to such action either by Concessionaire or by public representative/ road user shall be recovered from the Concessionaire from his performance Security /toll collection /Arrears of land revenue.

- 5) The Concessionaire shall take suitable corrective measures for rectification of road profile, camber and superelevation. The condition of the pavement shall be judged and rated as per the serviceability scale in the AASHO Road Test. The acceptance rating as judged by the Engineer shall not fall below '4'.

If the pavement, wearing surface, any part of structures like bridges, C.D. works, ancillary structures, protective works, embankments, retaining walls, gutters, drainage system, road furniture or appurtenances and fixtures, etc. show deterioration such as to require strengthening or renewal the same shall be done by the Concessionaire at his own cost. At the time of handing over the facility back to the Government at the end of the concession period, the same serviceability criteria shall apply and if needed, necessary renewal/ strengthening shall have to be carried out by the Concessionaire at his own cost, in view of roughness index not more than 2000 mm per km.

- 6) The Concessionaire shall provide the road furniture as per accepted tender condition and shall renew/replace the same as and when required for safety of road at his cost as may be approved if so ordered by the Engineer in Charge. While handing over the facilities all such road furniture shall be in good condition.

- 7) The Specifications for items of repairs and maintenance shall be those adopted for construction mentioned earlier and shall generally conform to latest version of manual of maintenance of roads published by IRC.

- 8) The Concessionaire shall carryout painting of km stones, boundary stones, 200m. stones, sign and caution boards, information boards, bridge railings and white washing to bridge parapets, H.P. Culverts, RCW facewalls and guard stones and white colour bands to roadside trees every years after monsoon. Painting shall be clearly visible at all times during entire concession period.

- 9) The Concessionaire shall maintain tree plantation and lawn / beautification works/ garden during entire concession period, as mentioned in the scope of tender.



- 10) The maintenance and repairs shall also include maintenance and repairs of electrical and other installations and payment of electricity bills.
- 11) Concessionaire in consultation with the Engineer in Charge shall prepare the maintenance manual, and supply ten copies to the Engineer in charge and Steering Group. The maintenance manual shall clearly indicate the periodicity both for routine and special inspection, it shall also include the systematic and elaborate arrangement and organisation to be maintained by the Concessionaire during concession period. It shall give the periodicity of renewal/strengthening as per the contract condition. It shall also specify the annual timetable of Routine Inspection by the Engineer in Charge and the Concessionaire and the format of the output of the inspection by the Engineer in charge. The maintenance manual shall be approved by the Superintending Engineer. The completion certificate for toll Notification and commencement certificate for start of the toll shall not be given by the Engineer in Charge unless maintenance manual is approved by the Superintending Engineer.
- 12) If in the opinion of the Engineer in Charge that the Concessionaire is not carrying out the duties of maintenance as mentioned in the above paras. and duties as mentioned in the Maintenance Manual, the Engineer in Charge shall notify in writing to the Concessionaire regarding failure of the Concessionaire to carry out such duties, within stipulated period. The Engineer in Charge shall be at liberty to take any of the action as mentioned above and the Concessionaire shall not be entitled for any claims/extension in concession period.

Concessionaire



Engineer in Charge

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SCHEDULE - P

SAFETY STANDARDS

1. Definitions

1.1 Construction zone

A construction zone is defined as an area of the highway which involves the conflict of the right of use between the road users and authority responsible for the maintenance /improvement of the highway. From traffic safety point of view, a construction zone comprises four sub-zones (shown in Figure-1) as described here in under:

1.2 Advance Warning Sub-Zone

The advance warning sub-zone is meant to prepare the driver for an alert behavior and is an essential part of any traffic control system. The warning system shall prepare the driver well in advance by providing information regarding distance, extent and type of hazard ahead so that he can gradually reduce the speed of his vehicle. The information in this sub-zone is conveyed mostly through a series of traffic signs along its length.

1.3 Transition Sub-Zone

The transition sub-zone is the area in which the traffic is steered and guided into and out of the diverted path around the work sub-zone. This is the most crucial sub-zone from safety point of view since most of the movements are turning movements. The traffic in this sub-zone is mostly taken across with the help of barricades and channelizers.

1.4 Work, Sub-Zone

This is the actual area where construction or maintenance activity is taking place.

1.5 Termination, sub-Zone

This is the actual area where construction zone end.

1.6 Safety Provisions

- a. The concessionaire shall make all additional arrangements at his own expense for safety of his machinery and staff working on the project as directed by the Engineer in Charge. In case the Concessionaire fails to make such arrangements, the Engineer in Charge shall be entitled to cause them to be



Engineer in Charge

provided and to recover the cost thereof from the concessionaire along with penalty as per details given in Clause 2.9.

- b. The concessionaire shall ensure that no safety aspect are being overlooked during design, construction and maintenance of the road. Adequate safety measures shall be provided as per Manual for safety in Road Design (Ministry of Surface Transport, Roads wings Publication- Sept.1998) and other relevant I.R.C. publications in this regard. He should submit the checklist in enclosed proforma for each km. of road to the Engineer in Charge. In case it is found that adequate safety measures are not taken action as per Clause 2.9.1 & 2.9.2 will be taken back.

2. SAFETY REQUIRMENTS

2.1 Safety Provisions

Precautions for safety of traffic during construction / concession period shall conform to IRC : SP: 55:2001 & IRC:67-2001 and Manual for safety in Road Design, Government of India , Ministry of Surface Transport (Road Wings) Publication, September 1998.

2.2 Safety Standards

2.2.1 This Schedule delineates the safety standards in terms of construction zones, signs and safety measures in work zones and during normal operations.

2.2.2 The safety measures shall include

- (i) warning to the drivers unambiguously and sufficiently in advance of the situation on the highway;
- (ii) providing clear demarcation for movement of vehicles;
- (iii) providing devices to guide the drivers and their movements through construction zones/lane closures/traffic diversions etc.
- (iv) protection to Project workers on work site.

2.2.3 The path of the traffic must, be very clearly delineated to avoid intrusion of vehicles moving into the work area. 'The work sub zone' shall not be close to each other and the distance between the two work sub-zones shall be such that the flow of traffic can return to normal stream by permitting fast moving traffic to overtake slow moving vehicles. These distances shall be Minimum 1 km on urban sections and 5 km on rural sections of the highway. The length of work sub- zones will be decided by Independent Engineer considering the guidelines given in Table. The length of warning and transition sub-zones shall be regulated as shown in table below:

Concessionaire



Engineer in Charge

Length of Construction Zones

Carriage way Width	Average Speed (Km per hr) of approaching Vehicles	Length of Advance warning Sub-Zone(m)	Length of Transition Sub- Zone (m)	Length of work Sub-Zone(m)
Up to 7 m.	51-80	100-300	50-100	Not more than 300 m.
more than 7 m	81-100	300-500	100-200	Not more than 1000 m

The traffic across these sub-zones shall be guided and taken with the help of various traffic control devices (mentioned in 2.3 below) erected at the site.

2.2.4 Termination Sub-Zone.- An information sign board shall be erected to inform road users of the end of Construction Zone

2.3 Traffic Control Devices

Traffic control devices in the construction zones perform the crucial task of warning, informing and alerting the driver apart from guiding the vehicle movements so that the driver of the vehicle as well as the workers on site are protected and safe passage to the traffic is possible.

The primary traffic control devices such as signs, delineators, barricades, cones, pylons, pavement markings, flashing lights etc shall be used. They shall be such that they are easily understood without any confusion, are clearly visible during day and night, conform to the prevailing speeds in immediate vicinity, stable against sudden adverse weather conditions and are easy in installation, removal and maintenance

2.3.1 Signs -

The construction and maintenance signs viz. regulatory signs, warning signs and, guide signs shall be as per IRC: 67-2001 (Code of Practice for Road Signs). These signs shall be placed normally on the left hand side of the road. Some of the common type of signs which shall be provided in construction zones shown in Fig 2. Wordings on Sign Boards shall be in English as well as in Marathi.

2.3.1.1 Regulatory signs -

2.3.1.2 Warning Signs -

The warning signs to alert the drivers of the possible dangers ahead in construction zones are "Lane Closed", "Diversion to other Carriageway",



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"Divided Carriageway Starts", "Divided Carriageway Ends" and "Two Way Traffic" etc. These signs shall be explained with the help of rectangular definition plate of size appropriate to the size of warning triangle and placed 0.15 m below, from the bottom of the triangle.

2.3.1.3 Guide Signs -

Guide signs in construction zones shall have different background colour than the normal informative signs of IRC: 67-2001. These signs shall have black messages and arrows on yellow (Traffic Yellow of IS: 5-1978) background. The commonly used guide signs are : "Diversion", "Road Ahead Closed" and "Sharp Deviation of route" etc.

2.3.2 Delineators -

These channelling devices such as cones, traffic cylinders, tapes, drums shall be placed in or adjacent to the roadway to guide the drivers along a safe path and to control the flow of traffic. These shall be retro-reflectorised for night visibility and shall be as per IRC: 79-1981 (Recommended Practice for Road Delineators). In addition the other delineators shall be provided as detailed below.

2.3.2.1 Traffic Cones and Cylinders -

Traffic cones shall normally be 0.5m to 0.75 m high and 0.3m to 0.4m in diameter or in square shape at the base. These shall be made of plastic or rubber with retro reflectorised red and white band and should have suitable anchoring so that they are not easily blown over or displaced, it is preferable to use double cones, one over the other. The cones shall be placed close enough together to give an impression of the continuity. The spacing shall be 3m (close) to 9m (normal). Larger size cones shall be used for high speeds or where more conspicuous guidance is required.

2.3.2.2 Drums -

Empty bumen drums (made of metal) cut to the required height and painted distinctly can be used as Channelising devices. These drums can also be of plastic. As delineators these drums shall be about 0.80 to 1.0 m high and 0.30m in diameter. They shall be painted in circumferential strips 0.10 m to 0.15 m wide, alternatively in black and white colours.



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2.3.3 Barricades -

Whenever the traffic has to be restricted from entering the work areas, such as excavations or material storage sites so that protection to workers is provided or there is a need for separating the two way traffic, barricades shall be used. The barricades can be portable or permanent / Semi-permanent/Temporary type and shall be made of wooden planks, metal or other suitable material. The horizontal component facing the traffic shall be made of 0.30 m wide wooden/steel planks joined together and painted in alternate yellow and white strips of 0.15 m width and sloping down at an angle of 45 degree in the direction of the traffic. Fig. 11 shows three types of barricades. Types I and II are portable type and shall be used for small works and Type III is permanent type, suitable for major work areas. Suitable support or ballasting shall be provided so that they do not over turn or are not blown away in strong winds. In case of a permanent type barricade, a gate or movable section shall be separately provided to allow the movement of construction/supervision vehicles.

2.3.4 Flagmen -

Flagmen with flags and sign paddles shall be used to guide the safe movements of traffic. The flags for signalling shall be 0.60 m x 0.60 m size, made of a good red cloth and securely fastened to a staff of approximately 1m in length. The sign paddles shall conform to IRC: 67-2001 and provided with a rigid handle.

2.4 Safety & Management Practices

Measures for providing safe movement of traffic in work zones on highways shall be as follows:

2.4.1 Detour or Temporary Diversion

In the cases of repairs or reconstruction of cross drainage structures on a highway section, the traffic may have to pass on a diversion moving parallel to the highway.

2.4.1.1 A temporary diversion road shall satisfy the following requirements :

- i) It shall have smooth horizontal and vertical profile with smooth vertical and horizontal curves.
- ii) It shall not get overtopped by flood or drainage discharge under any conditions.
- iii) It shall have adequate capacity to cater for the diverted traffic;

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- iv) It shall be dust free and shall ensure clear visibility at all times of day and night;
- v) It shall be provided with the required safety standards ; and
- vi) shall be provided with suitable guard stones, barricades to prevent intrusion affecting the movement of the traffic.

2.4.1.2 The warning for the construction ahead shall be provided by the sign "Men at Work" about 1 km earlier to the work zone. In addition, a supplementary plate indicating "Diversion 1 km ahead" and a sign "Road Closed Ahead" shall be placed. "Compulsory Turn Right/Left Sign" shall follow it. The "Detour" and "Sharp Deviation" sign shall be used to guide the traffic onto the diversion. Hazard markers shall be placed just where the railings for the cross drainage structures on the diversion starts. Figure 5 illustrates a typical arrangement according to the above plan.

2.4.2 Partial Closure of existing two lane Carriageway

2.4.2.1 Such an eventuality will arise in a situation where the existing two lanes in use for the main traffic need emergency repairs and the new lanes under construction are not available for diversion of the traffic. It will become necessary to carryout special repairs through partial closure of the existing two lane facility.

2.4.2.2 In the said situation, the traffic shall be guided from the closed lane onto the operating lane without conflicting with the traffic from opposite direction.

2.4.2.3 The warning sign for "Men at Work" shall be the first sign to be seen by the drivers of the approaching vehicles. This sign shall have supplementary plate also showing the distance of work zone. The next warning sign shall be for the "Road Narrowing" (depending upon the lane closure). Compulsory "Keep Right" or "Keep Left" sign depending upon the situation shall be provided at the beginning of the transition zone and taper. The point from where the traffic is to deviate from its normal path, the channel for traffic shall be clearly marked with the aid of painted drums or traffic cones.

The spacing of these cones and/or drums shall be about 9m or closer as per site requirement.

The traffic lane or carriageway closed" sign shall be provided at barricades along with "Keep Right/Left" sign. A typical layout of signs for a two lane carriageway having one lane closure is shown in Figure 2.

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2.4.3 Closure for Work on one side Carriageway of a 4 lane divided carriageway

The first sign shall be for the "Men at Work" alongwith distance plate for construction zone. Thereafter the sign for "Road Narrowing" shall be provided, followed by the signs for lane closure one after another. This shall be followed by sign for compulsory "Keep right/Left (depending upon site situation). The sign for the "Closure of carriageway" along with that for "keep Left/Right" shall be provided at the point from where the vehicle is expected to change the lane for the diversion. The sign for the "Diversion to the other carriageway" shall be provided between the "Carriageway Closure" sign and the median gap. The sign for "Sharp Diversion of Route" along with compulsory "Turn right/Left" shall be provided at the location where the gap in median opening starts and traffic is expected to get diverted to the other carriageway. The warning signs for "Two way traffic" alongwith the plate indicating the distance upto which the Two way traffic is allowed, shall be placed at the median which shall be to the left of the moving traffic. Cones or painted drums shall be placed for delineation, starting from the sign location for "Carriageway Closed". A Typical arrangement is shown in Figure 7.

2.4.4 Carriageway Repairs

When the work is of small magnitude, to be done in the middle of the carriageway, such as minor repairs of potholes, cracks and patches, then the traffic control measures shall mainly consist of providing cautionary signs of "Men at Work", about 500m before the work zone for the approaching vehicle and other cautionary sign of "Road Narrows", shall be placed at 100m ahead of work area. Regulatory sign of "Keep Left/Right" shall be placed at the commencement point of the work zone and next to the barriers for the approaching vehicles. Movable type of barriers shall also be placed on both sides of the work area. Cones or drums shall be placed at suitable interval to demarcate the work area. The "Work Zone Ends" sign shall be installed 120m beyond the work area. If the operation is to continue during night time, necessary lighting arrangements with flashing lights shall be provided. A Typical arrangement is shown in Figure 8.

2.4.5 Construction Of New Four Lane Carriageway

2.4.5.1 Project Highway Passing through populated places

- a) The service roads on either side together with side drains shall be constructed initially.

During this period the main traffic shall use the existing two lane carriageway. The construction traffic in the work zone shall be safely brought out from the main stream traffic by erecting appropriate signs at the beginning of the work site. Also on return it shall be amalgamated with the mainstream traffic by erecting appropriate signs at the end of the work site. It shall be ensured that



there shall be identified entry and exit points duly designed so that haphazard entry or exit of construction traffic is avoided. Conflicting turning movements shall be avoided. Fig. 9 illustrates the 'safety measures to be taken during construction stage-1 in urban sections.

- b) On completion of the Stage-1, the main traffic shall be diverted on their respective directions on to the newly constructed service roads and the additional four lanes shall be constructed (2 lanes on each side) of the existing carriageway duly including the 1.5m-wide central median. During this stage, position of different signs/ delineators/barricades to ensure safety of workers and road uses shall be as illustrated in fig.9.
- c) On completion of the divided 4 lane carriageway of the project highway, the main traffic from the service roads shall be restored on them and informatory signs shall be installed.

2.4.5.2 Rural Section of the Project Highway,

In rural section the new 2 lane carriageway and the central median shall be constructed eccentric to the Centre line of the existing carriageway, provided necessary land is available for this construction. During this construction phase, the existing two lane carriageway shall be used for the main traffic. The construction traffic using the existing highway shall be guided on to the work zone and allowed to return to the main traffic stream safely. For this purpose identified exit and entry points duly designed shall be provided. It shall ensure against haphazard entry of the Construction Traffic to/from the existing highway. Conflicting turning movements of the Construction traffic shall be avoided. During this phase, sign/barricading shall be as shown in Fig.7 on the construction side of the road.

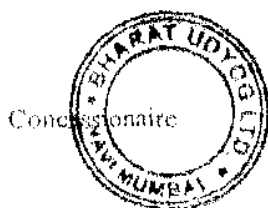
On completion of the new 2 lane carriageway and the median throughout, the traffic on the existing highway shall be diverted on it and the strengthening of the existing 2 lanes and adding paved shoulder to it shall be taken up. Layout of signs and safety measures for this construction phase shall be as illustrated in fig.7.

2.4.6 Widening of Road of Carriage way width upto 7.0 m

2.4.6.1 Not more than 300m shall be tackled for excavation on one side for widening of Carriageway at a stretch.

2.4.6.2 The length of advance warning sub zone, Transition subzone etc. shall be as per clause.

- a) In Case both the sides of the Carriage way is to be widened, the work of widening on one side of a particular work zone shall be completed in all



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respect including side shoulder before starting of excavation or the widening of the other side on a particular work zone.

- b) After the excavation for widening on one side is complete the secretary guard stone barricades etc. shall be placed at the edge of BT surface. White paint shall be distinctly marked on the guard stone/ the barricades so as to guide the traffic specially dweip night. The sign boards at both the end shall be placed.
- c) In case the Traffic is needed to ply on the shoulders in a particular work zone the shoulders shall be maintained properly and if necessary shall be strengthened adequately to cater for the load of vehicles. The shoulders shall be flush with the surface of blacktopped road throughout the length.
- d) Adequate Regulatory Signs and Guide signs shall be installed on both the ends of work zone and overtaking of vehicles shall be prohibited in the work sub zone.

2.5 General Precautions :-

- 2.5.1 All signs and delineators shall be maintained in a clean and brightly painted conditions at all times.
- 2.5.2 Adequate lighting arrangements shall be made for proper visibility during the negotiation of work area.
- 2.5.3 Adequate arrangements like frequent sprinkling of water shall be made to keep the area dust free.
- 2.5.4 The material, equipment and machinery should be installed/Parked in places sufficiently away from the berms in the available road land.
- 2.5.5 During night time and non working period the machineries should be parked at least one metre away from carriageway, with red flags and red lights on.
- 2.5.6 Minimum quantity of material required for one operation should be collected.
- 2.5.7 At all spots where side road or approaches meet the main road in a rising slope, a horizontal waiting platform shall be provided for at least one vehicle to stop and then enter the main road. So that the vehicles entering the main road along such rising approach roads do not come on the main road fast in a single uninterrupted motion and meet with accidents.
- 2.5.8 In case there is level difference in the up and down carriageways, till the time of the erection of dividers, the edge of the carriageway near the dividers shall be given white paint so that the vehicle drivers are aware of the drop. Red flags shall be provided and the cones shall be placed along the edge and at night red lights shall be provided. Wherever there are trenches dug for



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widening work, the edge of the trench must be well marked by G.I. sheets enclosure and red light etc.

- 2.5.9 If it is proposed to plant vegetation in the central divider, it should be ensured that the height of such vegetation is kept not more than about 0.75m above the road surface for a length of about 20m from the end of divider at the following places a) At all junction b) At all cuts in the divider provided for U Turns. c) At all pedestrian crossings d) At similar such places e) Any curve portion. At other places the vegetation should be sufficiently tall to cut off the glare of head lights.
- 2.5.10 At every end of a central divider a pseudo divider along with adequate numbers of delineators shall be provided.
- 2.5.11 In case of unsafe conditions, vehicle break downs and accidents, the concessionaire shall follow the relevant operating procedures, which shall include the setting up of temporary traffic cones and lights as well the removal of obstruction & debris expeditiously. Such procedures shall be in accordance with applicable Laws, Applicable provisions of this agreement.

2.6 Safety Measures During Concession Period

- 2.6.1 During the Concession Period or extension thereof as per the Concession Agreement many activities are involved at different stages and at various periods in respect of construction, operation and maintenance of the Project Highway. Safety of the road users and the project workmen at site is of paramount importance and obligatory for the Concessionaire throughout the said period.
- 2.6.2 In Emergency arising on account of Force Majeure due to nature or administrative reasons special safety measures may be called for the traffic and/or the workmen at site to be taken by the Concessionaire, as stated below.

The following principles shall be kept in view in Emergency situations from safety considerations.

- Where part width of the existing 2 lane carriageway is envisaged to be used for passage of two way traffic, paved shoulders shall be used on the side on which work is not proposed. A maximum of one lane (3.5 m wide) closure shall be allowed for a short duration depending on the extent on Emergency.
- At the points where traffic is to deviate from its normal path the channel for traffic shall be clearly marked with the aid of pavement markings or other similar device as directed by the Independent Consultant. At night the passage shall be delineated with lamps or lanterns or any suitable light source.
- On the approach of any type of closure suitable regulatory/warning signs as approved by the Independent Engineer shall be installed for guidance of road

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users. At least two signs shall be put up one close to the carriageway where transition of carriageway begins and the other 120m m ahead. The signs shall be of approved design and of reflectory type as directed by Independent Engineer.

- d) The Concessionaire shall ensure that safety standards specified in this schedule are strictly complied with in the event of any lane closure or diversion of traffic.

2.7 Safety of Project workmen at Site

2.7.1 Safety of the Project Workers at site during duty hours is the responsibility of the Concessionaire. It shall be ensured by him that safety measures appropriate for the job a workman performs shall be provided.

2.7.2 Also, safety measures against accidents of the workers by the traffic using the highway and/or diversions shall be taken. The Concessionaire shall provide helmets and protective chest vests to its workmen, supervisory staff, inspecting officers at site and make it compulsory for them to wear the same

2.7.3 Workers field staff required on site during night hours must be provided with fluorescent yellow jacket with reflective tapes.

2.7.4 The Concessionaire shall insure all the Project Workers against accident.

2.7.5 Labour Laws in force shall be followed

2.8 Safety Requirements

2.8.1 Safety of Road users and workers on the Project Highway during its Construction, Operation and Maintenance is obligatory and the Concessionaire shall be fully responsible to discharge it in terms of the Concession Agreement including its Schedules.

2.8.2 In case of emergency situations the concessionaire shall take action(s) for the safety of the road users and the workers as required by the site conditions immediately.

2.9 Penalty

2.9.1 In case of a breach by the Concessionaire of its obligations in respect of the safety standards the safety measures will be carried out by the department through appropriate agency at the risk and cost of Concessionaire. The damages equal to 25% of the amount spent by the department in addition to the expenditure incurred by the department on safety as measures aforesaid shall be recovered from the security deposit of the Concessionaire or alternatively the concession period will be reduced suitably at the discretion of Engineer in charge and no claims shall be allowed on this account.



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- 2.9.2 In case it is found that the Performance Security deposit is inadequate, the department may collect the toll to the extent of the amount spent including penalty before allowing the Concessionaire to start the Collection of toll, and no claims shall be allowed on this account. The concession period would thus get reduced to that extent.
- 2.9.3 The facilities to be provided for safety standards are to be set out with descriptions/specifications as per Volume II.

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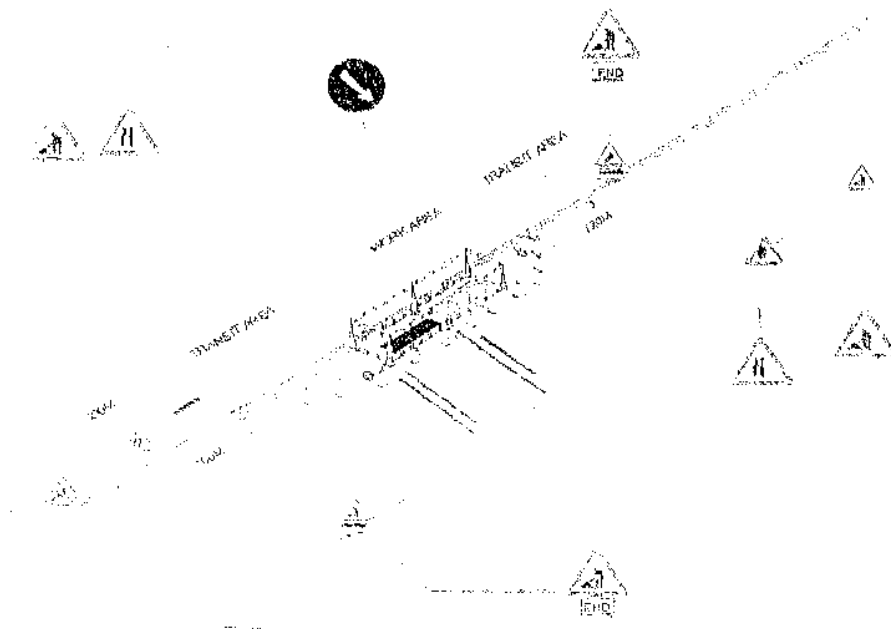
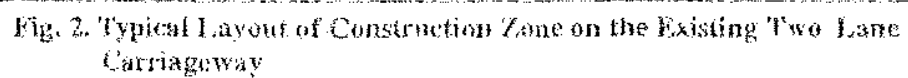


Fig : 1 Components of Construction zone



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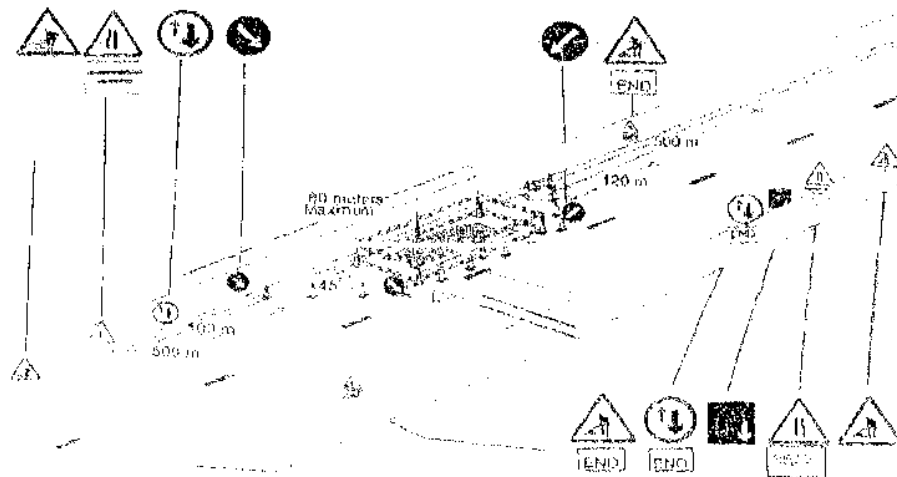
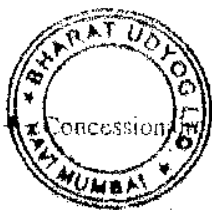
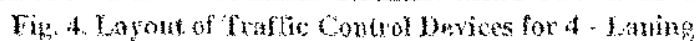


Fig.3. Layout of Signs for Work Zone in One Lane of 4 Lane Dual Carriageway.

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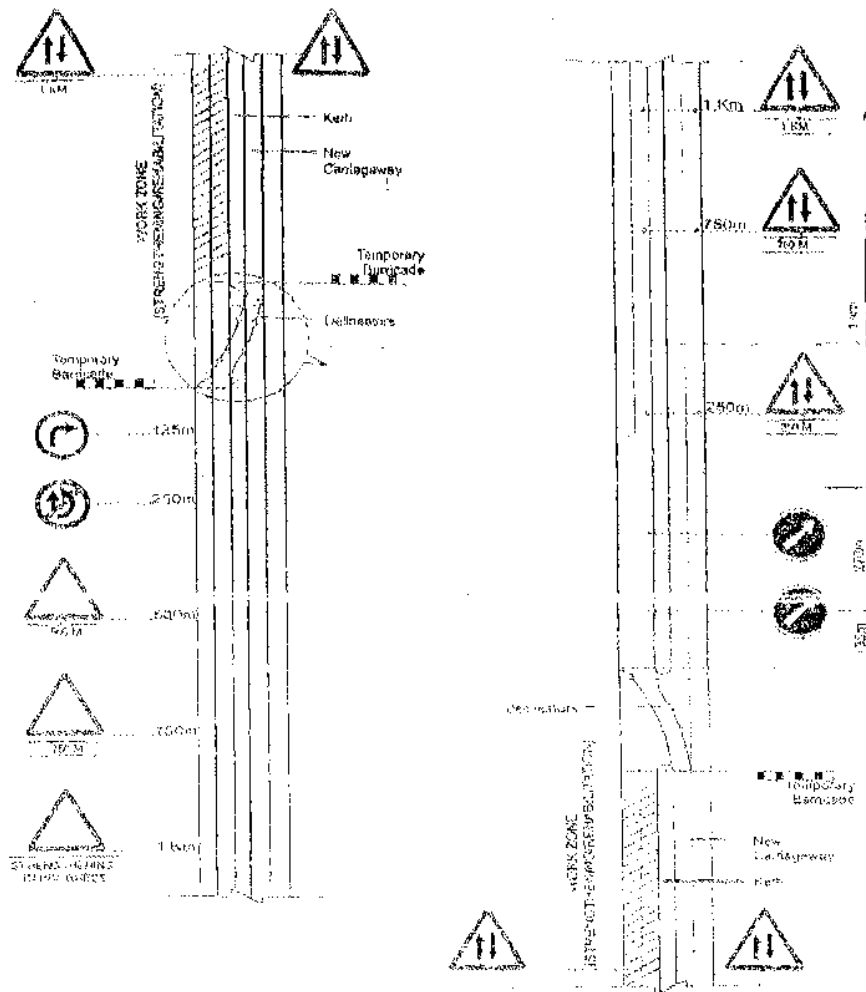


Fig. 5. Layout of signs for Traffic Division From Existing Carriageway New Carriageway for Strengthening / reconstruction From One Medium to other Medium.



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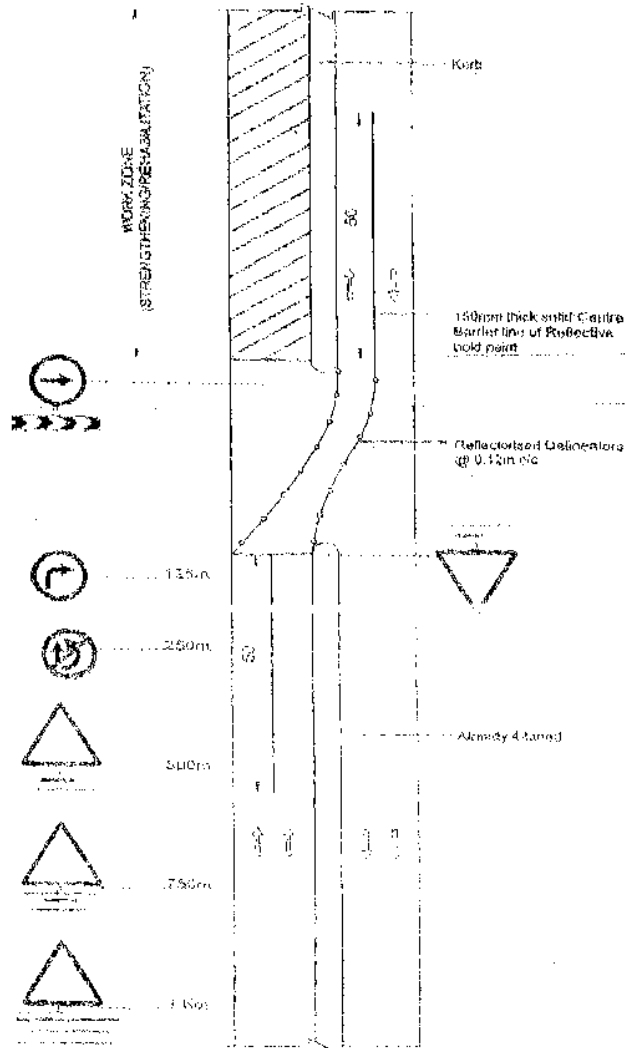


Fig. 6. Layout of Traffic Control Devices For Change to New Carriageway For Strengthening / Reconstruction of Existing Carriageway.



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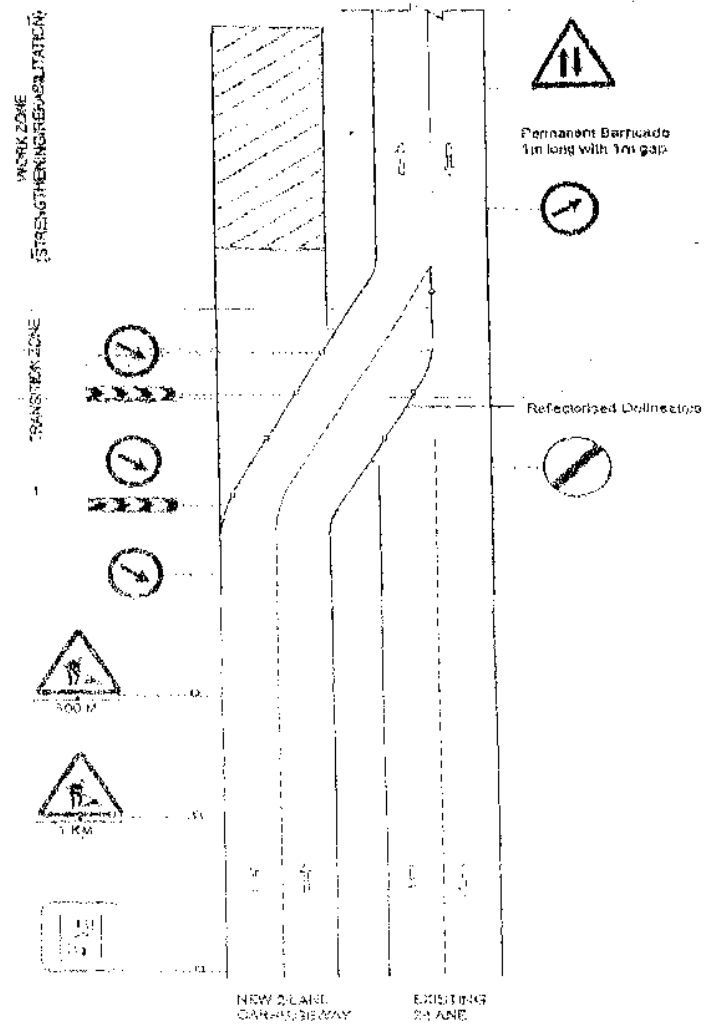
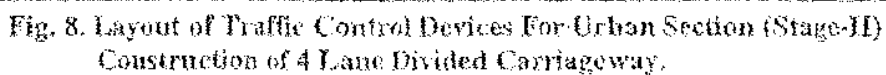


Fig.7. Typical 4 - Laning Construction and crossover to Existing Road
Detail in Rural Area



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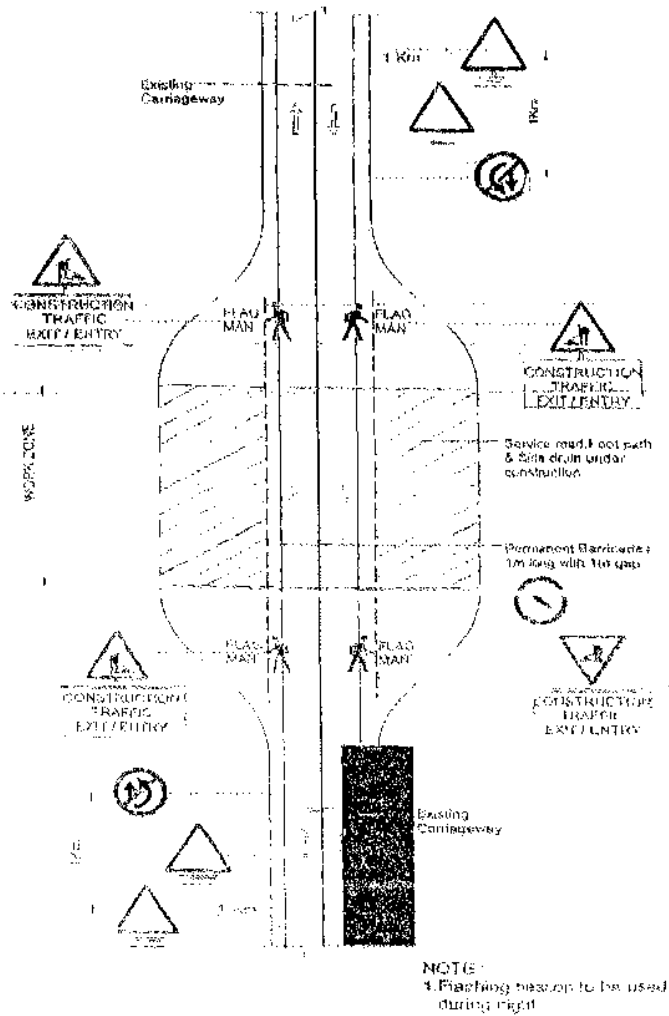


Fig. 9. Layout of Traffic Control Devices For Urban Section (Stage-I)
Construction of Service Road, Foot Path and Side Drain.



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Road Closed



Do not enter



Give way to Pedestrians

(b) Warning Signs



Lane closed
(Two Lane road)



Conversion to
other carriageway



Closed for Traffic



Dual carriageway Starts



Dual carriageway Ends



Two way Traffic

(c) Guide Signs



Distance to
Diversion



Indication of
Diversion Road



Route for
Pedestrians



Crossover in
Dual carriageway



Road ahead
closed



Sharp deviation of route



Restriction End

Fig 10.10

Fig. 10. Regulatory Warnings and Guide Signs For A Construction Zone.



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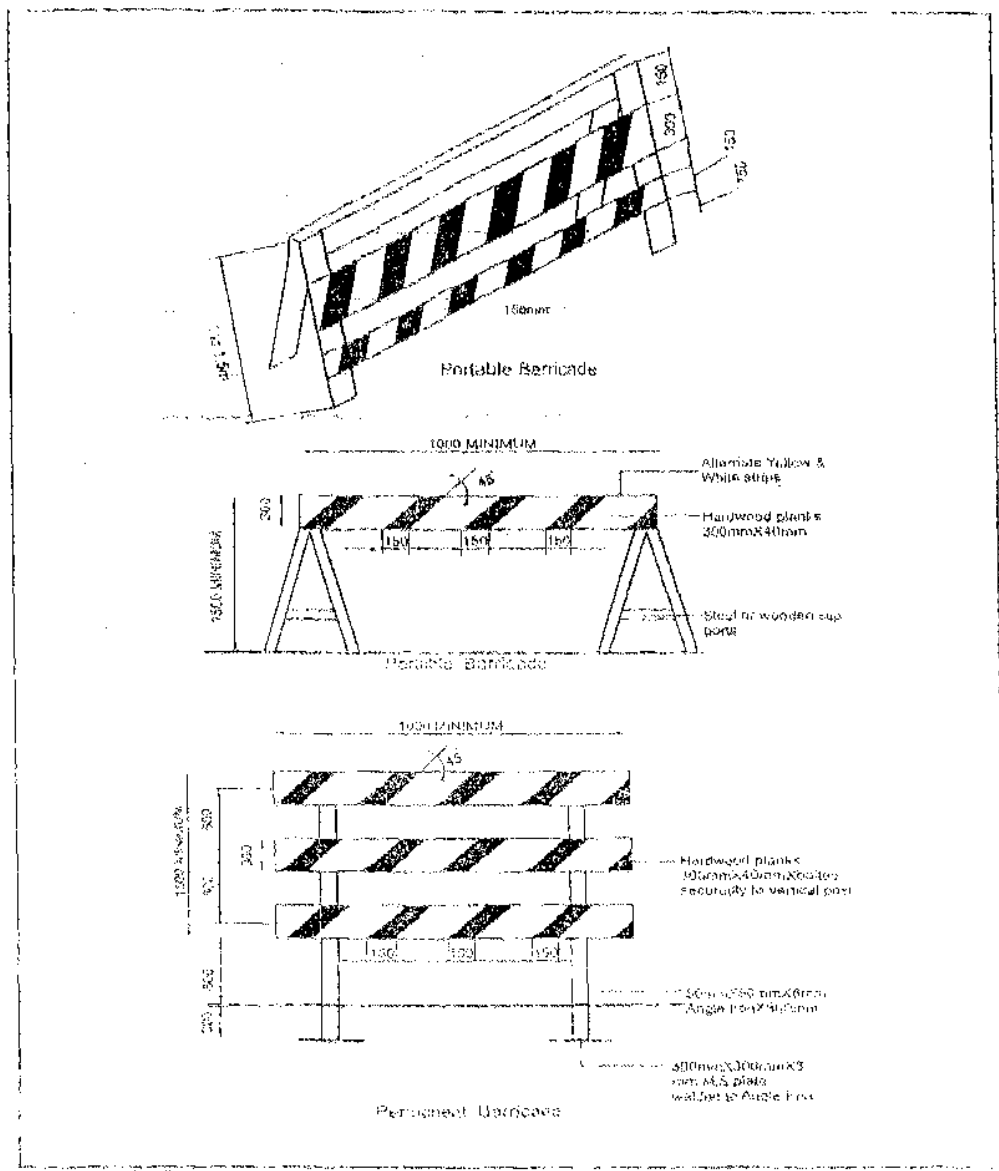


Fig. 11. Portable and Permanent Barricades.



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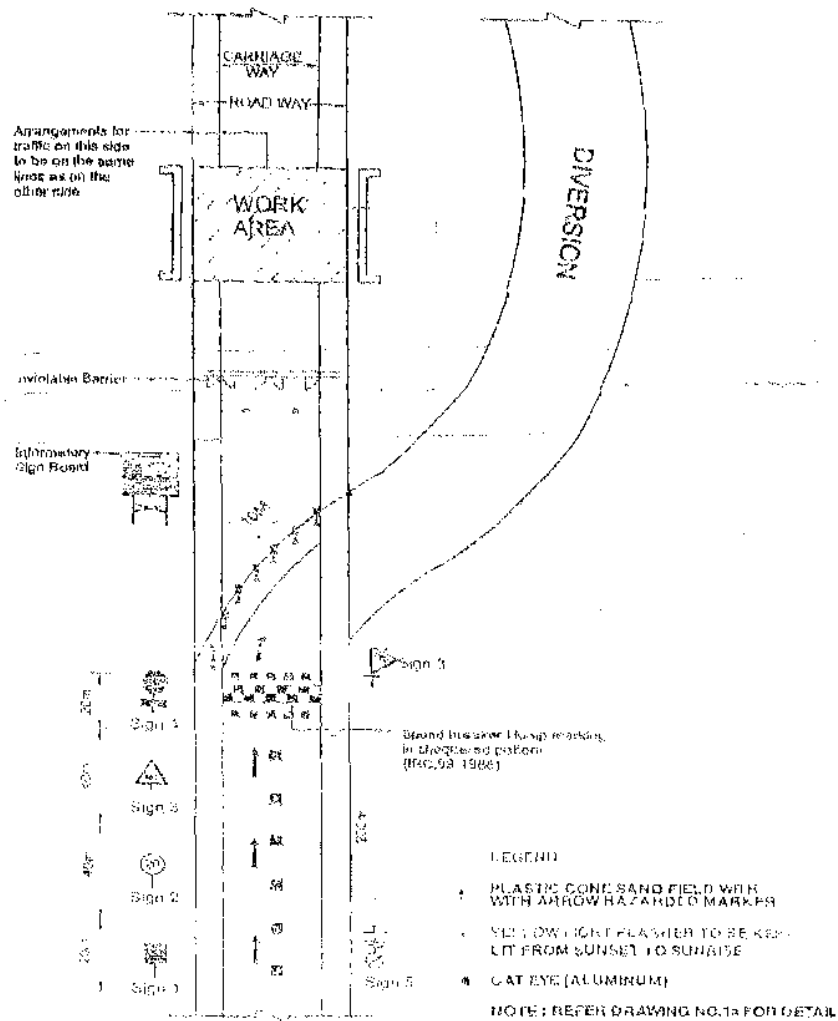


Fig. 12. Arrangements During Construction / Reconstruction of Roads & Bridges where Traffic is to be Passed Over a Diversion



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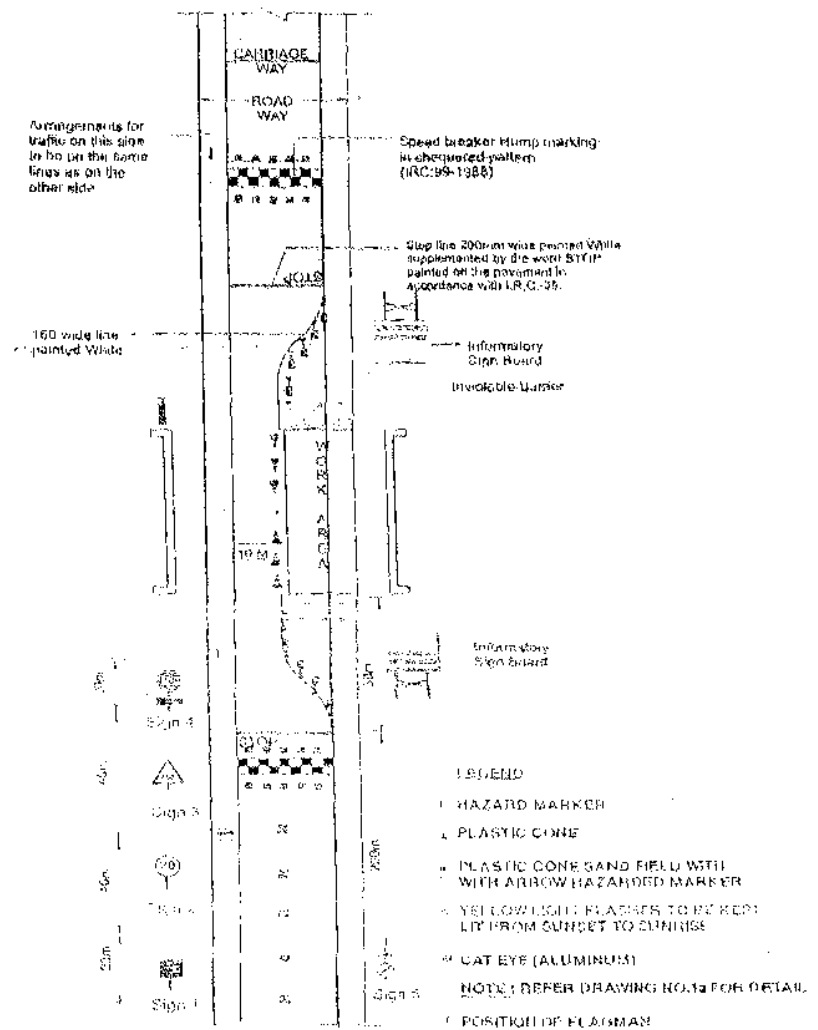


Fig. 13. Arrangement During Reconstruction of Cross Drainage Structures where Traffics can be Passed Over Part Width



Sample Form

SCHEDULE- Q

PROFORMA OF BANK GUARANTEE - I

(FOR CONSTRUCTION PERIOD)

(To be issued by a Branch located in Maharashtra of Nationalised/ Scheduled Bank)

THIS DEED OF GUARANTEE executed on this the --- day of --- at --- by ---
 --- (Name of the Bank) having its Head/Registered office at ---
 hereinafter referred to as "the
 Guarantor" which expression shall unless it be repugnant to the subject or context
 thereof include successors and assigns;

In favour of

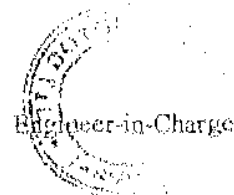
The Governor of Maharashtra in his executive capacity for the GOM, represented by
 the Public Works Department, the GOM hereinafter called the "GOM" (which
 expression shall include its successors and assigns);

WHEREAS

- A. By the Concession Agreement dated --- entered into between
 the GOM and M/s. XXXX Limited, a company incorporated under the
 Companies Act, 1956 having its registered office at ---
 hereinafter called "the Company", ("the Concession Agreement") the
 Company has been granted the Concession to implement the project
 envisaging construction, operation and maintenance of --- on
 build, operate and transfer basis.
- B. In terms of Article 3.1(a) of the Concession Agreement, the Company is
 required to furnish to the GOM, an unconditional and irrevocable bank
 guarantee for an amount of Rs. --- (Rupees --- only) as
 security for due and punctual performance/discharge of its obligations under
 the Concession Agreement during the Implementation Period, substantially in
 the format annexed as Schedule 'Q' to the Concession Agreement.
- C. At the request of the Company, the Guarantor has agreed to provide guarantee,
 being these presents guaranteeing the due and punctual performance/discharge
 by the Company of its obligations under the Concession Agreement during the
 Implementation Period.

NOW THEREFORE THIS DEED WITNESSETH AS FOLLOWS :

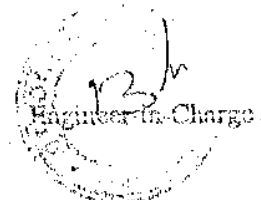
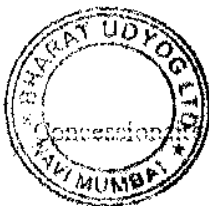
- I. Capitalised terms used herein but not defined shall have the meaning assigned
 to them respectively in the Concession Agreement.



2. The Guarantor hereby guarantees the due and punctual performance by the Company of all its obligations under the Concession Agreement during the Implementation Period.
3. The Guarantor shall, without demur, pay to the GOM sums not exceeding in aggregate Rs. ----- (Rupees ----- only), within five (5) days of receipt of a written demand therefor from the GOM stating that the Company has failed to meet its performance obligations under the Concession Agreement during the Implementation Period. The Guarantor shall have no obligation to go into the veracity of any demand so made by the GOM and shall pay the amount specified in the demand notwithstanding any direction to the contrary given or any dispute whatsoever raised by the Company or any other Person.
4. In order to give effect to this Guarantee the GOM shall be entitled to treat the Guarantor as the principal debtor. The obligations of the Guarantor shall not be affected by any variations in the terms and conditions of the Concession Agreement or other documents or by the extension of time for performance granted to the Company or postponement/non exercise/ delayed exercise of any of its rights by the GOM or any indulgence shown by the GOM to the Concessionaire and the Guarantor shall not be relieved from its obligations under this Guarantee on account of any such variation, extension, postponement, non exercise, delayed exercise of any of its rights by the GOM or any change in the constitution of Guarantor or any indulgence shown by the GOM provided nothing contained herein shall enlarge the Guarantor's obligation hereunder or any other conditions or circumstances under which in law, a surety would be discharged.
5. This Guarantee shall be irrevocable and shall remain in full force and effect until discharge by the Guarantor of all its obligations hereunder.
6. This Guarantee shall not be affected by any change in the constitution or winding up of the Company/the Guarantor or any absorption, merger or amalgamation of the Company/the Guarantor with any other Person.
7. The Guarantor has power to issue this guarantee and discharge the obligations contemplated herein, and the undersigned is duly authorised to execute this Guarantee pursuant to the power granted under -----

IN WITNESS WHEREOF THE GUARANTOR HAS SET ITS HANDS
HEREUNTO ON THE DAY, MONTH AND YEAR FIRST HEREINABOVE
WRITTEN.

SIGNED AND DELIVERED by ----- Bank by the
hand of Sbrt -----
its ----- and authorised official.



SCHEDULE- R

**PROFORMA OF BANK GUARANTEE - II
(FOR OPERATIONS AND MAINTENANCE PERIOD)**

(To be issued by a Branch located in Maharashtra of a Nationalised/ Scheduled Bank)

THIS DEED OF GUARANTEE executed on this the ----- day of ----- at ----- by -----
----- (Name of the Bank) having its Head/ Registered office
at ----- hereinafter referred to as "the
Guarantor," which expression shall unless it be repugnant to the subject or context
thereof include its successors and assigns;

In favour of

The Government of Maharashtra in his executive capacity for the GOM, represented by
the Public Works Department GOM, hereinafter called "GOM" (which expression
shall include its successors and assigns);

WHEREAS

- A. By the Concession Agreement dated ----- entered into between the
GOM and M/s. XXXX Limited, a company incorporated under the Companies
Act, 1956 having its registered office at ----- hereinafter called
"the Company", ("the Concession Agreement") the Company has been
granted the Concession to implement the project envisaging construction,
operation and maintenance of ----- on build, operate and transfer
basis.
- B. In terms of Article 3.1(b) of the Concession Agreement, the Company is
required to furnish to the GOM, an unconditional and irrevocable bank
guarantee for an amount of Rs. ----- (Rupees ----- only) as
security for due and punctual performance/discharge of its obligation under
the Concession Agreement during the Operations Period substantially in the
format annexed as Schedule 'R' to the Concession Agreement.
- C. At the request of the Company, the Guarantor has agreed to provide guarantee,
being these presents guaranteeing the due and punctual performance/discharge
by the Company of its obligations under the Concession Agreement during the
- D. Operations Period.

NOW THEREFORE THIS DEED WITNESSETH AS FOLLOWS :

1. Capitalised terms used herein but not defined shall have the meaning assigned
to them respectively in the Concession Agreement.



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2. The Guarantor hereby guarantees the due and punctual performance by the Company of all its obligations under the Concession Agreement during the Operations Period.
 3. The Guarantor shall, without demur, pay to the GOM sums not exceeding in aggregate Rs. ----- (Rupees ----- only), within five (5) days of receipt of a written demand therefor from the GOM stating that the Company has failed to meet its performance obligations under the Concession Agreement during the Operations Period. The Guarantor shall have no obligation to go into the veracity of any demand made by the GOM and shall pay the amounts specified in the demand notwithstanding any direction to the contrary given or any dispute whatsoever raised by the Company or any other Person.
 4. In order to give effect to this Guarantee the GOM shall be entitled to treat the Guarantor as the principal debtor. The obligations of the Guarantor shall not be affected by any variations in the terms and conditions of the Concession Agreement or other documents or by the extension of time for performance granted to the Company or postponement/non exercise/ delayed exercise of any of its rights by the GOM or any indulgence shown by the GOM to the Concessionaire and the Guarantor shall not be relieved from its obligations under this Guarantee on account of any such variation, extension, postponement, non exercise, delayed exercise of any of its rights by the GOM or any change in the constitution of Guarantor or any indulgence shown by the GOM provided nothing contained herein shall enlarge the Guarantor's obligation hereunder, or any other conditions or circumstances under which in law, a guaranty would be discharged.
 5. This Guarantee shall be irrevocable and shall remain in full force and effect until discharged by the Guarantor of all its obligations hereunder.
 6. This Guarantee shall not be affected by any change in the constitution or winding up of the Company/the Guarantor or any absorption, merger or amalgamation of the Company/the Guarantor with any other Person.
 7. The Guarantor has power to issue this guarantee and discharge the obligations contemplated herein, and the undersigned is duly authorised to execute this Guarantee pursuant to the power granted under -----.

IN WITNESS WHEREOF THE GUARANTOR HAS SET ITS HANDS
HEREUNTO ON THE DAY, MONTH AND YEAR FIRST HEREINABOVE
WRITTEN.

SIGNED AND DELIVERED by ----- Bank by the
hand of Shri -----
its ----- and authorised official.



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SCHEDULE-8

PROFORMA OF AGREEMENT WITH MINISTRY OF RAILWAYS.

(This is a sample form some of the clauses/ charges are likely to be modified by Ministry of Railways as per the requirement of the work)

Name of the work : Construction of R.O.B. on -----
----- at Km. ----- Level Crossing No. ---

AGREEMENT

This Agreement has been made at ----- on ----- day of -----
----- between the Governor of Maharashtra, exercising the Executive powers of the State of Maharashtra, hereinafter referred to as "Government" (which expression shall be deemed to include its executors, administrators and assignees).

AND

The President, Union of India, exercising the Executive powers of the Union of India, hereinafter referred to as "Railway" (which expression shall be deemed to include its executors, administrators and assignees).

WHEREAS the Government of Maharashtra has decided to construct ROB / RUB on ----- road in the State of Maharashtra.

Both parties hereby agree on the following terms and conditions to start the construction of ROB / RUB

The Government of Maharashtra agrees :

1. To give an undertaking to Railways before commencement of the work that the level crossing shall be closed permanently on commissioning of the Road Over Bridge. Railway will not permit commissioning of the Road Over Bridge unless the level crossing is closed.
2. To execute a regular agreement and to pay the charges for preparation thereof on an Established reciprocal basis of Rs100/- whichever is more and stamping charges subjects to recovery being as per Stamp Duty Act as may be force at the time of execution.
3. To submit drawings / designs and specifications, including temporary arrangements, if any, by State Govt. for approval of the Railway Administration prior to inclusion in the bid document for Concessionaire appointed for



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SCHEDULE- S

PROFORMA OF AGREEMENT WITH MINISTRY OF RAILWAYS.

(This is a sample form some of the clauses/ charges are likely to be modified by Ministry of Railways as per the requirement of the work)

Name of the work : Construction of R.O.B. on -----
----- at Km. ----- Level Crossing No. -----

AGREEMENT

This Agreement has been made at ----- on ----- day of -----
----- between the Governor of Maharashtra, exercising the Executive powers of the State of Maharashtra, hereinafter referred to as "Government" (which expression shall be deemed to include its executors, administrators and assignees).

AND

The President, Union of India, exercising the Executive powers of the Union of India, hereinafter referred to as "Railway" (which expression shall be deemed to include its executors, administrators and assignees).

WHEREAS the Government of Maharashtra has decided to construct ROB / RUB on ----- road in the State of Maharashtra.

Both parties hereby agree on the following terms and conditions to start the construction of ROB / RUB

The Government of Maharashtra agrees :

1. To give an undertaking to Railways before commencement of the work that the level crossing shall be closed permanently on commissioning of the Road Over Bridge. Railway will not permit commissioning of the Road Over Bridge unless the level crossing is closed.
2. To execute a regular agreement and to pay the charges for preparation thereof on an Established reciprocal basis or Rs100/- whichever is more and stamping charges subjects to recovery being as per Stamp Duty Act as may be force at the time of execution.
3. To submit drawings / designs and specifications, including temporary arrangements, if any, by State Govt. for approval of the Railway Administration prior to inclusion in the bid document for Concessionaire appointed for



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execution. No addition/ alternation/ modification in the approved plans/ drawings, etc., shall be made without prior approval of Railway Administration.

4. To supervision/ construction by Railway of all construction work of bridge proper across existing/ future Railway tracks and payment of plan and Estimate charges supervision charges as per codal provision to the Railway in advance so that necessary work charged organisation can be created in time for supervision of actual construction.
 - 4.a. The plan and estimate charges shall be 2% and D&G (Direction & General) charges shall be 6.25% of the estimated cost of the bridge proper, if the bridge is constructed by State Govt./ Private Concessionaire.
 - 4.b. If the bridge is constructed by Railways on behalf of the State Govt./ Private Concessionaire, the charges shall be 2% of plan and estimate charges and 12.5% D&G (Direction & General) charges of the estimated cost of the bridge.
 - 4.c. Cost of bridge as estimated by Railways itself or as approved by Railways if estimated by State Govt./ Private Concessionaire shall not be a matter of dispute. The D&G charges shall be subsequently applicable on final cost of construction of bridge proper. A suitable clause for the purpose of depositing of D&G charges, plan & estimate charges, with Railway shall be included in the agreement to be executed between the State Govt. and the Concessionaire.
 - 4.d. No work shall be allowed to be started in Railway land unless the necessary payments as indicated above, are deposited with Railways.
5. To ensure advance payment of the entire cost of preliminary and incidental works that may require to be executed by Railway for the purpose of clearing the site for construction of ROB. These may include shifting of signalling and electrical installations or Permanent way or any other structures which the Railway may consider necessary either in the beginning or subsequently during the construction of ROB. The charges would include cost of such works, the freight charges, D&G charges etc., as per codal provision. The D&G charges shall be payable at the rates indicated in Para 4 (b) above, i.e. 12.5% of the estimated cost of the bridge if the work is done by the Railway.
6. To award work of road over bridges to only such contractors, technically capable of carrying out bridge works under train running conditions. In case, where the contractor has not carried out the bridge work under, train running conditions, he will be asked to employ engineer having adequate experience to supervise the bridge work under such conditions.
7. To carry out the work under train running conditions with or without speed restrictions/ traffic blocks. Railway will make efforts to arrange speed restrictions/ traffic blocks as per requirements subject to the availability of engineering time allowance for that route and also prevailing traffic conditions. However, in case of delay on this account due to some speed restrictions/ traffic



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conditions prevailing, Railway will not be responsible for any loss whatever to the State Govt/ Private Concessionaire. No claims shall be entertained by the Railways on this account. Decision of the Railway regarding requirement of speed restrictions/ traffic blocks will be final.

8. To ensure compliance, during the construction of ROB, of all safety norms that may be specified by Railway from time to time for safe running of trains.
9. To pay on demand the cost of all such works including D&G charges out the rate of 12.5% estimated cost of work in case the work need to be executed by Railway from safety consideration.
10. That lease / licence period shall be 99 (Ninety-Nine) years and will not be changed by State govt. without prior consultation and with the approval of the South Central Railway.
11. During the lease / licence period bridge proper (over the track) shall be maintained by the State Govt./ Private Concessionaire at their cost under the supervision and inspection of the Railways. The State Govt./ Private Concessionaire shall pay to the Railways 6.25% of the maintenance cost as supervision and inspection charges per annum. For the purpose of levy of these charges the maintenance cost shall be taken as not less than 3% of the completion cost of the bridge proper which may be revised by Railways as per laid down norms. These charges shall be deposited by the State Govt./ Private Concessionaire every year in advance. In case State Govt. wants Railways to carry out the maintenance during lease period, they shall pay 3% of the completion cost as maintenance charges and 12.5% of the maintenance cost as supervision and inspection charges. By maintenance it will be understood that it involves ordinary day-to-day maintenance. However, in case any major repairs are required, the cost of the same and the supervision charges shall be borne by the State Govt./Private Concessionaire. Decision of the Railways regarding maintenance works required shall be final and will not be a matter of dispute.
12. That Railways liability for maintenance of bridge proper, after lease/ licence period is over, will be limited to 2 lane wide ROB only. The Railways will maintain the entire bridge proper and state Govt. will pay or the Railways maintenance charges attributable to additional width. These charges shall be 3% per annum (increased by 12.5%) of the completed cost of additional width of ROB, liable to be revised without further notice. Railway may demand payment of these charges on capitalized basis as per rules.
- 12.a. To ensure maintenance of bridge proper the road surface including sanitation, lighting, drainage, dewatering drainage lease/ license period by the State Govt./ Private Concessionaire to the satisfaction of the Railway Administration.
13. To indemnify the Railway against all claims for compensation under the Workman's Compensation Act, 1983 and any statutory modifications thereto during construction maintenance repairs renewals etc.



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14. To follow Railways specifications, Indian Roads Congress (IRC) Codes, MORTH's specifications and other Railway instructions etc. for preparation of drawings and designs of the Bridge proper as well as for temporary works. These designs shall be prepared and checked by reputed Consultant/ Engineering Institution before the same are submitted to Railway for approval. Railways decision regarding modifications to the designs/ drawings etc. shall be final and binding on the State Govt./ Private Concessionaire/ Consultant and shall not be a matter of dispute.
15. To indemnify and hold the Railway Administration harmless against all damages, losses, costs and charges suffered or incurred by the Railway Administration on account of any injury to the person or property of any person using the road over bridge. However occasioned unless it is solely due to negligence and misconduct of Railway or its servants.
16. To pay interest at 10% per annum on all sums payable to the Railway Administration under any of the terms and conditions of these present, if not paid within a month from the date of demand in writing by the Railway Administration.
17. In metropolitan/ urban areas/ or other locations, where land is scarce and costly, bridge approaches shall be normally on sites in Railway land. All other areas where land is not a problem Railway may consider solid earth fill approaches in railway land. Decision will be taken by the Railways on case to case basis as per the prevailing site conditions and requirement of the Railways and shall be binding upon the State Govt./Private Concessionaire.
18. To obtain approval from Railway for any addition or alteration and modification during execution. Certain special works vis-a-vis shifting of cables, signaling posts, The structures including catenary/ contact wires in electrified section, shifting of gate lodges, gate, closure of level crossing, gate, for temporary diversion if any, pipeline of any other structure installation within Railway boundary shall be done by Railway themselves. Concessionaire shall deposit in advance expenditure to be incurred for such work together with departmental charges at the rate of 12.5% with the Railways.
19. That Railway shall have the absolute authority to stop the work if at any point of time it is noticed or considered that execution of work is not progressing as per approved scheme (Plan) or as per directives issued from time to time. The decision to permit commencement the work again after rectification will rest with Railways.
20. To ensure that Concessionaire shall carry out and complete the maintenance shortfalls as pointed out by Railways during schedule inspection as well as special inspection of bridge carried out from time to time, failing which Railway shall carry out such work at the cost of State Govt./Private Concessionaire.



21. To have way leave facilities as an acknowledgement of the ownership of the..... Railway of the land on which the road over bridge is constructed the Concessionaire shall pay a total of Rs. 5000/- per year upto two lane road crossing two tracks and Rs. 10000/- per year in case the bridge is wider than two lane and/or crossing more than two tracks. Railway may demand payment of these changes on capitalised base taking interest @ 10% per annum.
22. After the lease/ period /Agreement period is over, structures / facilities created for commercial exploitation of the space below approaches, if any, falling in the Railway land together with bridge proper, will revert back to the Railways free of the cost and all future earnings will accrue to the Railways and Railways reserve the right to commercially exploit or use for any other purpose, the space/structures below approaches falling in Railway land and State Government will have no claims on it.
23. To ensure that only that type of traffic for which the bridge has been designed would be permitted to move on the bridge. No unilateral change shall be carried out by the Concessionaire such as increase in the thickness of the road surface. Any such change should have the prior approval of the Railway.
24. To pay toRailway the cost of making good any damage or loss to Railway track or property due to improper drainage, use or for any other reasons attributed to the presence of the road over bridge. All necessary precautions would be taken promptly by the Concessionaire as directed by the Railway Administration from time to time in order to prevent such occurrences.
25. That it would be ensured by the Concessionaire, that the structures are in sound and well maintained condition at the time of handing over to Railway.
26. To ensure that Concessionaire shall carry out the work close to overhead equipment's in Electrified section, only during permitted/restricted period granted by Railways on nominated days and stipulated time. Granting of such shut down periods of Power/ Traffic blocks will solely depend upon train traffic and Concessionaire shall not have any right or claim for such shut down period.
27. To ensure that the Concessionaire shall carry out and maintain all relevant record including test record required for quality control carried out in the laboratories of I.I.T. or Engineering College at their own cost and such record shall be made available for inspection whenever demanded by Railways.
28. To ensure that Concessionaire shall carry out load test of PSC girder/girder in Railway portion at his own cost and under Railway's supervision.
29. To pay or ensure payment to Railway on demand all the outstanding dues as stipulated in this agreement. Payable by the Concessionaire /State Govt. within 15 days of receiving the intimation in each case. The Government of Maharashtra also agree to fulfil, on behalf of the Concessionaire,



all those liabilities towards ----- Railway which remain uncomplied by the Concessionaire.

30. That in case of doubt or difference or disputes that may arise between the State Government and the ----- Railway Administration as to the true intent or meaning of these presents or any articles, clause or thing therein mentioned, every such dispute, doubt or difference shall be referred to the Railway Board (Ministry of Railways) and their decision thereon shall be final and conclusive and binding on both parties.
31. That the term ----- Railway shall also include any successor Railway as may be decided by the Ministry of Railways, Railway Board, Government of India.
32. To incorporate in their agreement with the Concessionaire all those conditions/stipulations concerning Concessionaire as brought in this agreement.
33. Subject as otherwise provided in this agreement, all notice to be given /taken on behalf of the Govt. of India and all other actions to be taken on its behalf may be given or taken by the Chief Engineer or Chief Administrative Officer (Construction) or Divisional Railway Manager or any other officer nominated by these officers.
34. Subject, as otherwise provided in this agreement, all notices to be given / taken on behalf of the State Government of Maharashtra and all other actions to be taken will be given or taken by Chief Engineer, P.W. Region, ----- on behalf of this State Govt.

Signed by
----- Railway
For and on behalf of President,
Union of India

Signed by
For and on behalf of Governor of
Maharashtra

(Chief Bridge Engineer)
----- Railway

(Chief Engineer)
Public Works Department

Signed in the presence of

1. -----

Signed in the presence of
(Superintending Engineer)
Public Works Circle,

2. -----



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Sample Form

SCHEDULE-T

SUBSTITUTION AGREEMENT

THIS SUBSTITUTION AGREEMENT is entered into on this the _____ day of _____ (Month) _____ (Year) at _____.

AMONGST,

The Governor of Maharashtra acting in his executive capacity for the Government of Maharashtra represented by the Public Works Department GOM, hereinafter referred to as "GOM" (which expression shall unless repugnant to the context of meaning thereof include its successors and assigns);

M/s. XXXX Limited, a company incorporated under the provisions of the Companies Act, 1956 and having its Registered Office at _____ hereinafter referred to as "the Concessionaire" (which expression shall unless repugnant to the context or meaning thereof include its successors and assigns), AND

YYYY (Financial Institution/ Bank) having its Registered Office/Head Office at _____ hereinafter referred to as "the Lender".

OR

ZZZZ (Financial Institution/Bank) having its Registered Office/Head Office at _____ acting for and on behalf of the Lenders listed in Schedule I hereto (hereinafter referred to as "the Lender's Representative").

WHEREAS,

- A. The GOM is keen to implement a project envisaging construction, operation and maintenance of _____ (more particularly described in Schedule 'A' and hereinafter referred to as "the Project") with private sector participation on Build, Operate and Transfer (BOT) basis;
- B. By the Concession Agreement dated _____ entered into between the GOM and the Concessionaire (hereinafter referred to as "the Concession Agreement") the Concessionaire has been granted the Concession to implement the Project on BOT basis;
- C. With a view to facilitate financing of the Project by the Concessionaire, in pursuance of Article _____ of the Concession Agreement, the GOM and the Concessionaire have agreed to enter into Substitution Agreement being these presents with the Lender/s/Lenders' Representative.



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- D. As a condition to making any disbursement pursuant to the Financing Documents, the Lender(s) has/ have required that the Substitution Agreement being these presents be entered into, and the GOM and the Concessionaire have agreed to the same

NOW, THEREFORE, THIS AGREEMENT WITNESSETH AS FOLLOWS

ARTICLE I

DEFINITIONS AND INTERPRETATION

1.1 Definitions

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

"Agreement" means this agreement and includes any amendment or modification made to this agreement in accordance with the provisions hereof.

"Financial Assistance" means the financial assistance set forth in Schedule I hereto, agreed to be provided by the Lender(s) to the Concessionaire for financing the the Project.

"Lender(s)" means the financial institutions/banks whose name(s) and addresses are set out in Schedule I hereto.

"Residual Concession Period" means the period which shall be be aggregate remainder of the Concession Period as the Suspension Period.

"Selectee" means a Person proposed by the Lender/Lender's Representative pursuant to this Agreement and approved by GOM for substituting the Concessionaire for the residual Concession Period, in accordance with the provisions of this Agreement.

"Suspension Period" means the period commencing from the expiry of the Cure Period specified in the Preliminary Notice and ending on the date on which all formalities connected with substitution of the Concessionaire by the Selectee including handing over of Project Site/Project Facility, in accordance with this Agreement are completed and the substitution has become effective.

- 1.2 Capitalised terms used in this Agreement but not defined shall have the meaning assigned to them respectively in the Concession Agreement.



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ARTICLE 2

SUBSTITUTION OF THE CONCESSIONAIRE BY THE SELECTEE

2.1 Lenders right to Substitute

The GOM and the Concessionaire hereby irrevocably agree that upon occurrence of an Concessionaire Event of Default, the Lender(s) shall, without prejudice to any other rights or remedies available to them under law/Financing Documents and without being required to exercise or exhaust such rights or remedies, have the right to seek substitution of the Concessionaire by Selectee for the residual Concession under the Concession Agreement in accordance with the provisions of this Agreement. Provided upon substitution the Selectee shall be entitled to the extension of the remainder of the Concession Period by the Suspension Period.

2.2 Preliminary Notice of Termination

The GOM shall as soon as possible but in any case not later than 45 days of its knowledge of the occurrence of the Concessionaire Event of Default issue Preliminary Notice of Termination to the Concessionaire in terms of Article 16.2(a) of the Concession Agreement, with a copy thereof simultaneously to the Lenders. Provided if the Concessionaire Event of Default is the one set out in Article 16.1(a)(9) of the Concession Agreement, the GOM shall not be obliged to issue Preliminary Termination Notice until receipt by the GOM of the recall notice issued by the Lender(s) to the Concessionaire.

2.3 Suspension of Concession and Takeover of the Project Facility

The Concessionaire irrevocably agrees that if the Cure Period specified in the Preliminary Notice of Termination lapses without the Concessionaire Event of Default having been cured, the Concession shall effective from the expiry of such Cure Period stand suspended without any further notice or other act of the GOM being required, and that the GOM shall have the right to enter upon and takeover the Project Site/Project Facility and to take all such steps as are necessary for the continued operation and maintenance of the Project Facility, levy, collection and appropriation of Toll subject to servicing the Debt Due as per the Financing Documents, and the substitution of the Concessionaire by the Selectee in accordance with this Agreement. The Concessionaire hereby irrevocably consents to the takeover of the Project Facility/ Project Site by the GOM forthwith upon suspension becoming effective.

2.4 Substitution Notice

The GOM and the Concessionaire hereby irrevocably agree that in the event of the Concessionaire's failure to cure the Event of Default specified in the Preliminary Notice of Termination, The Lender/Lender's Representative may, within 30 (thirty) days of the expiry of the Cure Period specified therein



notify the GOM and the Concessionaire about the intention of the Lender(s) to seek substitution of the Concessionaire by the Selectee for the Residual Concession (the "Substitution Notice").

2.5 Criteria for selection of the Selectee.

The Lender/ Lenders' Representative shall in addition to any other criteria that it may deem fit and necessary, apply the following criteria in the selection of the Selectee:

- (i) the Selectee shall possess the network, experience, technical-capability and managerial ability to perform and discharge all the residual duties, obligations and liabilities of the Concessionaire in respect of the Concession, under the Concession Agreement;
- (ii) the Selectee shall have the capability and shall unconditionally consent to assume the liability for the payment and discharge of dues, if any, of the Concessionaire to the GOM under and in accordance with the Concession Agreements and also payment of Debt Due to the Lender(s) upon terms and conditions as agreed to between the Selectee and the Lenders.

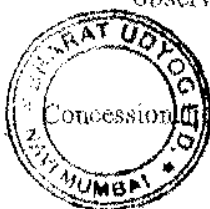
ARTICLE 3

MODALITY FOR SUBSTITUTION

3.1 Modalities for Substitution.

The following modalities shall be followed for substitution of the Concessionaire by the Selectee pursuant to this Agreement:

- (i) The Lender(s)/Lenders' Representative shall be entitled, within a period of 120 (one hundred twenty) days from the date of delivery of the Substitution Notice pursuant to the preceding Article 2.2 to invite or procure offers either through private negotiations or public auction or process of tender or otherwise from the eligible Persons, for the substitution of the Concessionaire by the Selectee and propose to the GOM for its approval the Selectee (the "Proposal") The Proposal of the Lender/Lender's Representative shall contain the particulars and information in respect of the Selectee, the terms of Substitution, particulars of the Debt Due and such data and information as would be necessary and relevant for the GOM to decide as to the acceptability of the Selectee. The Lender/ Lender's Representative shall provide to the GOM such additional information and clarification in respect of any data, particulars or information contained in the Proposal, as the GOM may promptly and reasonably require.
- (ii) The Proposal shall be accompanied by an unconditional undertaking of the Selectee to the effect that it shall upon acceptance by the GOM of the Proposal observe, comply with, perform and fulfil the residual terms, conditions and



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covenants of the Concession Agreement as if the Selectee had been the Concessionaire under the Concession Agreement and to assume, discharge and pay the Debt Due on the terms and conditions agreed to by the Selectee with the Lenders. The Selectee shall also undertake to enter into such documents and writings with the GOM and the Lender(s) as may be necessary or required to give effect to the substitution of the Concessionaire by the Selectee.

- (iii) The GOM shall convey to the Lender/ Lenders' Representative its acceptance or otherwise of the Selectee within 30(thirty) days of (a) the date of receipt of the Proposal by the GOM, or (b) the date of receipt of the additional information and clarifications in respect of any data, particulars or information comprised in the Proposal, provided by the Lender/Lender's Representative to the GOM, whichever is later.
- (iv) At any time prior to the acceptance of the Selectee by the GOM pursuant to this Agreement, the GOM may require the Lender/Lenders' Representative to satisfy it as to the eligibility of the Selectee and the decision of the GOM as to acceptance or rejection of any Selectee (which shall be reasonable), shall be final, conclusive and binding on the Lender(s). The Selectee and the Concessionaire. In the event that the GOM fails to communicate its acceptance or otherwise or the objections if any it has to the acceptance of the Proposal/ the Selectee within a period of 30 days prescribed in preceding sub-article (iii), the GOM shall be deemed to have accepted the Proposal/ the Selectee
- (v) The rejection of the Selectee if made by the GOM shall be reasoned and be made after hearing the Lender/Lenders' Representative. Following the rejection of the Proposal, the Lender/Lenders' Representative shall have the right to submit a fresh Proposal, proposing another Selectee, within 30 days of receipt of communication regarding rejection of the Selectee previously proposed. The provisions of preceding sub-article (iii) and (iv) shall apply mutatis mutandis to such fresh Proposal.
- (vi) If the GOM accepts the Proposal/fresh Proposal, the GOM shall take all necessary steps to substitute the Concessionaire by the Selectee by amendment of the Concession Agreement or by execution of fresh agreement or such other writing as may be required or necessary to give effect to the substitution of the Concessionaire by the Selectee for the Residual Concession Period.
- (vii) The substitution of the Concessionaire by the Selectee shall be deemed to be complete upon the Selectee executing all necessary documents and writings with or in favour of the GOM and the Lender(s) so as to give full effect to the terms and conditions of substitution subject to which the Selectee has been accepted by the Lender(s) and the GOM and upon the delivery by the GOM of the Project Assets to the Selectee. Upon the substitution becoming effective pursuant to this sub-article all the rights of the Concessionaire under the Concession Agreement shall cease to exist. Provided nothing contained in this sub-article shall prejudice any pending/subsisting claims of the Concessionaire against the GOM or any claim of the GOM against the Concessionaire and the



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Selectee shall incur no liability or consequence on account of any previous breach/default and shall subject to the terms and conditions of the substitution, have a period of 90 days to cure any breach/default subsisting on the date of substitution and required to be cured.

- (viii) The decision of the Lenders and the GOM in the selection of the Selectee shall be final and binding on the Concessionaire and shall be deemed to have been made with the concurrence of the Concessionaire. The Concessionaire hereby expressly waives all rights to object to or challenge such selection of the Selectee on any ground whatsoever.

3.2 Termination and Termination Payment.

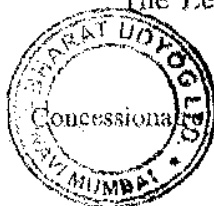
- (i) Where the Lender/Lenders' Representative (on behalf of all the Lenders) communicates in writing that (i) the Lender/ Lender's Representative does not intend to seek substitution of the Concessionaire, or (ii) that the Lender/Lenders' Representative has not been able to find suitable Selectee or (iii) that the GOM has declined to accept the Selectee proposed by the Lender/Lenders' Representative, the GOM shall proceed to terminate the Concession and to make Termination Payment, in accordance with the provisions of the Concession Agreement.
- (ii) Notwithstanding anything contained herein above, the GOM shall not upon Termination of the Concession Agreement, be required to take over, the Debt Due save and except to the extent of Termination Payment due and payable under the Concession Agreement. In such an event the the GOM's obligation shall be limited to assumption of such liabilities and payments of Debt Due as the GOM has agreed to bear under the Concession Agreement.
- (iii) Nothing contained in these presents shall mean or be interpreted as provision of any guarantee or surety by the GOM and it is expressly agreed that the GOM has not provided any surety, guarantee or counter guarantee whether directly or indirectly for the recovery of amounts advanced by the Lenders to the Concessionaire.

ARTICLE 4

MODE OF TERMINATION PAYMENTS

4.1 Mode of Payment

- (i) The GOM and Concessionaire hereby irrevocably agree, and confirm that so long as the Debt Due is outstanding the Termination Payment and any other amounts due and payable by the GOM to the Concessionaire under any of the provisions of the Concession Agreement shall be paid only by way of credit directly to a bank account designated therefor by the Lender(s)/Lenders' Representative and advised to the GOM and the Concessionaire in writing. The Lender(s) shall be entitled to receive and appropriate the same without



any further reference to or consent of the Concessionaire towards the satisfaction of the Debt Due, subject to payment by the Lender(s) of the surplus amount if any remaining after satisfaction of the Debt Due, to the Concessionaire. Any payment so made shall to the extent of such payment constitute a valid discharge to the GOM of its obligations with regard to the Termination Payment and of any other monies due to the Concessionaire under the Concession Agreement.

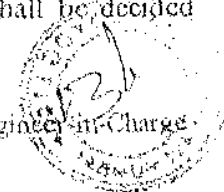
- (ii) For the purpose of giving full effect to the provisions contained in the preceding sub-article (i), the Lender(s)/the Lender's Representative shall be entitled to make a demand for payment of the Termination Payment if the Concessionaire has failed to make such demand as required under Article 16.4 of the Concession Agreement within 15 days from the Termination Date under intimation to the Lender(s)/Lender's Representative.
- (iii) The Concessionaire hereby irrevocably appoints and constitutes the Lender(s)/Lenders' Representative as its agent to make such demand for Termination Payment. Any demand made by the Lender(s)/Lenders' Representative pursuant to the power and authority conferred hereby shall for the purpose of the Article 16.4 of the Concession Agreement be deemed to be a demand for Termination Payment made by the Concessionaire.

ARTICLE 5

GENERAL

5.1 General

- (i) The Parties hereto expressly represent and warrant that they are duly empowered to sign and execute this Agreement and the Lenders Representative is duly and fully authorised by each of the Lenders to enter into this Agreement on their behalf.
- (ii) Notices under this Agreement shall be sent to the Addresses first hereinafter mentioned. Any change in the address of any Party shall be duly notified by a Registered post acknowledgement due and delivered to the other parties.
- (iii) The expressions the "GOM", the "Concessionaire", the "Lender" and the "Lenders' Representative" herein used shall unless there be anything repugnant to the subject or context include the respective successors, legal representatives, administrators and permitted assigns.
- (iv) This Agreement shall not be affected by reorganisation of any Lender, the Concessionaire or the GOM and the successor in interest of the Lender or the GOM shall have the benefit of this Agreement.
- (v) Any dispute, difference or claim arising out of or in connection with or in relation to this Agreement which is not resolved amicably shall be decided



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finally by arbitration as per the provisions of the Arbitration and Conciliation Act, 1996. The arbitrators shall issue a reasoned award. The venue of such arbitration shall be Regional Headquarter of Chief Engineer, public works Department. The Award shall be final and binding on the Parties. The Parties agree and undertake to carry out the award of the arbitrators (the "Award") without delay.

- (vi) This Agreement and rights and obligations of the Parties shall remain in full force and effect pending the Award in any arbitration proceeding hereunder. The Courts in Maharashtra alone shall have jurisdiction over all matters arising out of or relating to the arbitration agreement contained herein or proceedings arising out of or relating to the arbitration proceedings thereunder.
- (vii) The consultation, recommendation or approval of the Lenders' Representative under this Agreement shall always be taken as consultation, recommendation or approval of every concerned Lender and each such Lender shall be bound by the same.
- (viii) This Agreement shall be in addition to and shall not be in derogation of the terms of the Financing Documents.
- (ix) It shall not be necessary for the Lender(s) or the Lenders' Representative to enforce or exhaust any other remedy available to them before invoking the provisions of this Agreement.
- (x) No amendment, variation or modification to this Agreement shall be valid and effectual unless made in writing and executed by the duly authorised representatives of all the Parties hereto.
- (xi) All stamp duties or other imposts and charges as are applicable on this Agreement or on amendment of the Concession Agreement or execution of fresh Concession Agreement for the purpose of substitution as aforesaid shall be borne by and be to the account of the Concessionaire. In the event of the Lenders making such payment for the time being, it shall be deemed to be a part of the Debt Dues.
- (xii) The Parties hereby expressly agree that for the purpose of giving full and proper effect to this Agreement, the Concession Agreement and this Agreement shall be read together and construed harmoniously. The terms of this Agreement shall prevail in the event of any inconsistency with the Concession Agreement.



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SCHEDULE I

PARTICULARS OF FINANCIAL ASSISTANCE.

Name and Address of the Lender	Nature and Amount of Financing Assistance

IN WITNESS WHEREOF THE PARTIES HERETO HAVE SET THEIR HANDS
HEREUNTO ON THE DAY, MONTH AND YEAR HEREINABOVE
MENTIONED.

SIGNED AND DELIVERED ON BEHALF OF
----- LIMITED

BY : -----

Name :

Title :

SIGNED AND DELIVERED ON BEHALF OF
Government of Maharashtra

BY : -----
Name :

Title :

SIGNED AND DELIVERED ON BEHALF OF
----- ON BEHALF OF THE
LENDERS SET FORTH IN SCHEDULE I

BY : -----
Name :



Sample Form

SCHEDULE- U

MEMORANDUM OF UNDERSTANDING

Where the Project is being implemented by a Consortium, the Memorandum of Understanding entered into them for the purpose of implementing the Project shall be appended. (In Bidding Data Volume - II)



Sample Form

SCHEDULE - V

DECLARATION OF THE BIDDER.

I / We hereby declare that I / We have made myself / ourselves thoroughly conversant with the local conditions regarding all materials and labour of which I / We have based on my / our rates for this bid. The Specification and leads on this work have been carefully studied and understood before submitting this bid. I / We undertake to use only the best materials approved by Engineer in charge or his duly authorized representative during execution of the work and to abide by the decision

SIGNATURE OF BIDDER



Sample Form

SCHEDULE - W

DETAILS OF EXPERIENCE AND PERFORMANCE OF
JOINT VENTURES/ CONSORTIUM

Details of bidder - Proforma 1

General Information

All individual firms and each partner of a joint venture shall complete the information in this form. Nationality information to be provided for all owners or applicants who are partnerships or individually owned firms.

Where the bidder proposes to use named sub-contractors for critical components of the works; Or for work contents in excess of 10 percent of the value of the whole works, the following information should also be supplied for the specialist subcontractor(s).

1	Name of Firm	
2	Head Office Address :	
3	Telephone	Contact
4	Fax	Telex
5	Place of Incorporation / registration	Year of Incorporation / registration

Nationality of Owners		
	Name	Nationality
1		
2		
3		
4		
5		

To be completed by all owners of partnerships or individually - owned firms



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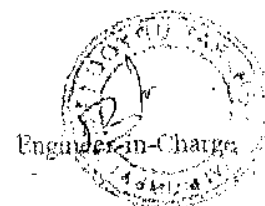
Sample Form

SCHEDULE - W

Details of bidder - Proforma 2

Structure and Organisation

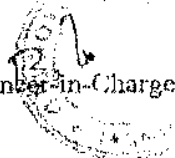
1. The bidder is
 - a. An individual
 - b. A proprietary firm
 - c. A firm in partnership
 - d. A limited Company or Corporation
 - e. A group of firms/joint venture (if yes, give complete information in respect of each partner)
2. Attach the Organisation Chart showing the structure of the organisation, including the names of the Directors and position of Officers.
3. Number of years of experience
 - a. As a Prime Contractor / Firm (contractor / firm shouldering major responsibility)
 - i. In own country
 - ii. Other countries (specify country)
 - b. In a Joint Venture
 - i. In own country
 - ii. Other countries (specify country)
 - c. As sub contractor (specify main contractor)
 - i. In own country
 - ii. Other countries (specify country)



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GOVERNMENT OF MAHARASHTRA

4. Name and address of any associates the applicant has in India who are knowledgeable in the procedures of customs, immigration, taxes and other information necessary to do the work.
5. For how many years your organisation has been in business of similar work under its present name? What are your fields of operation? And if since when?
6. Where you ever required to suspend construction for a period of more than six months continuously after you started? if so, give the name of project and reasons for not completing work).
7. Have you ever left the work awarded to you incomplete? (If so, give name of project and reasons for not completing work).
8. In which fields of civil engineering construction do you claim specialization and interest?
9. Give details of your experience in modern concrete technology for manufacture and quality control.
10. Give details of your experience in construction of Highways including Bridges and Building.
11. Give details of your experience in Infrastructure Development.
12. Give details of your experience in slum rehabilitation scheme.
13. Give details of your soil and material testing laboratory, if any.
14. Give details of your experience in executing B.O.T. projects.
15. Give details of your experience in developing town ships.
16. Give details of your experience in real estate development and marketing in India.



SCHEDULE - W

General Experience Record-Proforma 3

Name of bidder or Partner of a Joint Venture/member of consortium

All individual firms and all partners of a joint venture shall complete the information in this form. The information supplied should be the annual turnover of the Applicant (or each member of a joint venture), in terms of the amounts billed to clients for each year for work in progress or completed at the end of the period reported.

Use a separate sheet for each partner of a joint venture/member of consortium.

Bidders are requested not to enclose testimonials, certificates and publicity material with their applications, they will not be taken into account in the evaluation of qualifications.

The bidders should provide the experience details of the projects undertaken by it only. Project experience of the applicants parent company or its Subsidiary who are not members of the consortium will not be considered.

Annual turnover data (Construction works only)		
Sr. No.	Year	Turnover in Rs. Crores
1.		
2.		
3.		
4.		
5.		



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GOVERNMENT OF MAHARASHTRA

Joint Ventures Summary		
Name of all partners of a Joint Venture/member of consortium.		
1.	Lead Partner	
2.	Partner	
3.	Partner	

Total value of annual construction turnover, in terms of work billed to client at the end of the period reported :

Annual Turnover data (Construction works only)							
	Partner	Name.	Year 1	Year 2	Year 3	Year 4	Year 5
1.	Lead Partner						
2.	Partner						
3.	Partner						
	TOTAL						

Indicate responsibility in respect of planning, construction equipment and execution of the work of the lead firm of joint venture and of each of the joint venture partners.

Name and address of Bankers to the Joint Venture :

Details regarding financial responsibility and participation (percentage share in the total) of each firm in the Joint Venture. Attach a Memorandum of Understanding for the Proposed Agreement of Joint Venture, which should lay down responsibility regarding work and financial arrangements in respect of each of the firms in the Joint Venture.



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Sample Form

SCHEDULE - W

Particular Experience Record - Proforma 4

Name of Applicant or Partner of a Joint Venture

On a separate page, using the format complying the bidding data in volume II, each bidder or partner of a joint venture is requested to list all contracts of a value equivalent or more, of a similar nature and complexity to the contract for which the bidder wishes to qualify, undertaken during the last five years. The value should be based in Indian Rupees, at the date of substantial completion, or for current contracts at the time of award. The information is to be summarised, using accompanying proforma, for each contract completed or under execution. Information of S.O.T. projects of similar nature and magnitude should be specifically mentioned.

Where the bidder proposes to use named subcontractors for critical components of the works, or for work contents in excess of 10 percent of the value of the whole works, the information should also be supplied for each specialist subcontractor.



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Sample Form

SCHEDULE - W

Details of Contracts of Similar Nature and Complexity-Proforma 5

Name of bidder or Partner of a Joint Venture
--

Use a separate sheet for each contract.

1	Number of Contract
	Name of contract
	Country
2	Name of Employer
3	Employer's address
4	Nature of works and special features relevant to the contract
5	Contract role (check one). -----Sole ----- Subcontractor ----- Partner in a joint venture
6	Value of the total contract (in specified currencies at completion, or at date of award for current contracts) Currency (In Rs.)
7	Date of Award
8	Date of Completion
9	Contract Duration (Years and months) -----years ----- months
10	Specified requirements Give details of annual production record in respect of major items involved in the work and year to verify fulfillment of eligibility for this work.
11	Name and professional qualification of Bidders Engineer in charge of the work.
12	Were there any penalties/ fines/ stop- notice/ compensation/ liquidated damages imposed? (Yes or No). If yes, give amount and explanation.



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Engineer-in-Charge

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Sample Form

SCHEDULE - W

Summary Sheet : Current Contract Commitments / Works in Progress-

Proforma 6

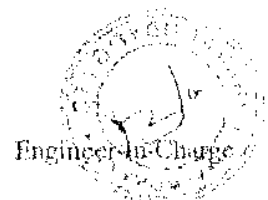
Name of bidder or Partner of a Joint Venture

Bidders and each partner to an application 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 is yet to be issued.

	Name of Contract	Name of Client	Figures in Rs. Crores			
			Contract Value	Stipulated date of completion	Value of outstanding work	Estimated date of completion
1						
2						
3						
4						
5						
6						



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Sample Form

SCHEDULE - W

Personnel Capabilities- Proforma 7

Name of bidder

For specific positions essential to contract implementation, bidders should provide the names of at least two candidates qualified to meet the specified requirements stated for each position. The data on their experience should be supplied in separate sheets using one Form for each candidate.

1	Title of Position
	Name of Prime Candidate
	Name of Alternate candidate
2	Title of Position
	Name of Prime candidate
	Name of Alternate candidate
3	Title of Position
	Name of Prime candidate
	Name of Alternate candidate
4	Title of Position
	Name of Prime candidate
	Name of Alternate candidate



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Sample Form

SCHEDULE - W

Candidate Summary- Proforma 8

Name of bidder

Position		CandidatePrimeAlternate
Candidate Information	1. Name of Candidate	2. Date of Birth
	3. Professional Qualifications	
Present Employment	4. Name of Employer	
	Address of Employer	
	Telephone	Contact (manager/personnel officer)
	Fax	Telex
	CCD title of candidate	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



SCHEDULE - W

Equipment Capabilities- Proforma 9

Name of Bidder

The bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for each and all item of equipment necessary for efficient execution of this project. A separate form shall be prepared for each item of equipment, or for alternative equipment proposed by the bidder.

Item of equipment	
Equipment information	
1. Name of manufacturer	
2. Model and power rating	
3. Capacity	
4. Year of manufacture	
Current Status	
5. Current location	
6. Details of current commitments	
Source	
7. Indicate source of the equipment	
Owned	
Rented	
Leased	
Specially manufactured	
Omit the following information for equipment owned by the applicant or partner	
Owner	
8. Name of Owner	
9. Address of Owner	
Telephone	Contact name and title
Fax	Telex
Agreements	
Details of rental / lease / manufacture agreements specific to the project.	



Sample Form

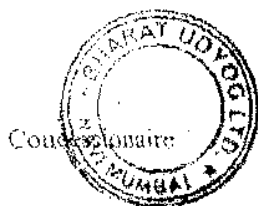
SCHEDULE - W

Financial Capability- Proforma 10

Name of bidder or partner of a joint venture
--

Bidders including each partner of a joint venture should provide financial information to demonstrate that they meet the requirements stated in the eligibility criteria and information required for pre-qualification. Each bidder or partner of a joint venture must fill in this form. If necessary, use separate sheets to provide complete banker information. A copy of the audited balance sheets should be attached.

Banker	
Name of Banker	
Address of Banker	
Telephone	Contact name and title
Fax	Telex



Consignaire

Engineer-in-Charge

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GOVERNMENT OF MAHARASHTRA

Summarise actual assets and liabilities in the previous five years. Based upon known commitments, summarise projected assets and liabilities in the next one year.

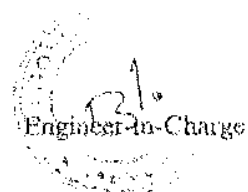
	Financial information in Rupees	Actual : Previous five years					Projected : Next one year
		1	2	3	4	5	6
1	Total Assets						
2	Current Assets						
3	Total Liabilities						
4	Current Liabilities						
5	Profit before Tax						
6	Profit after Tax						

Specify proposed sources of financing to meet the cash flow demands of the Project, net of Current commitments.

Source of Financing	Amount

Attach audited financial statements for the last five years (for the individual or each partner of a joint venture)

Firms owned by individuals, and partnerships, may submit their sheets certified by a registered Chartered Accountant, and supported by copies of tax returns.



SCHEDULE - W

Name of bidder or partner of a joint venture

[illegible]

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Sample Form

SCHEDULE - W

AVERMENTS AND AUTHORISATIONS - Proforma 12

(To be given separately by each partner of Joint Venture / Consortium)

I, undersigned, do hereby certify that all the statement made in the preceding schedules and in the required attachment are true and correct.

I/We the undersigned do hereby certify we are not associated directly or indirectly with consultants for this project or any other entity that has prepared the design, specification or other document for this project.

I /We, the undersigned, do hereby certify, that we are not associated directly or indirectly with Consultant / Engineers proposed for this project.

The undersigned hereby authorise (s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Government of Maharashtra to verify this statement or regarding my (our) competence and general reputation.

The undersigned understands and agrees to furnish any such information at the request of Government of Maharashtra.

.....
(Signed by an Authorised Signatory of the Firm)

.....
(Title of Signatory)

.....
(Name of firm and Seal)



SCHEDULE - X

GUIDELINES FOR PREPARATION OF OPERATION AND
MAINTENANCE MANUAL

1.0 General

Following Minimum Provisions shall be considered for preparation of Maintenance Manual.

- a. The Concessionaire shall comply with the O&M Requirements set out in this Schedule. In doing so, the Concessionaire shall ensure that the Project Facilities are maintained to the standards and specifications as set out in the Design Requirements and Detailed Project Report and shall also meet the other requirements, if any, set out in the Agreement.
- b. During the Implementation Period, the Concessionaire shall take appropriate measures to operate and maintain the existing Road / Bridge facilities and ensure that the same remains open for uninterrupted, smooth and safe traffic flow at all times.
- c. In the design, planning and implementation of all works and functions associated with the operation and maintenance of the Project Facilities, the Concessionaire shall take all such actions and do all such things (including without limitation, organising itself, adopting measures and standards, executing procedures including inspection procedures, highway patrols, and engaging contractors, if any, agents and employees) in such manner as will :
 - (i) Ensure the safety of personnel deployed on and users of the Project Facilities or part thereof;
 - (ii) Keep the Project Facilities free from undue deterioration and wear;
 - (iii) Permit unimpaired performance of statutory duties and functions of any party in relation to the Project;
- d. During the Concession Period, the Concessionaire shall ensure that :
 - (i) The Project Facilities are kept free from undue deterioration and undue wear;
 - (ii) Applicable and adequate safety measures are taken;
 - (iii) Minimum delay is caused to users of the Project Facilities;

Concessionaire

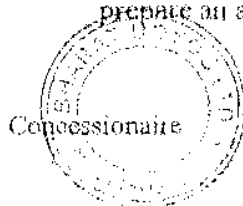


Engineer-in-Charge

- (iv) Adverse effects on the environment and to the owners and occupiers of property and/or land in the vicinity of the Project Facilities, due to any of its actions, is minimised;
- (v) Any situation which has arisen or likely to arise on account of any accident or other emergency is responded to as quickly as possible and its adverse effects controlled/minimised;
- (vi) Disturbance or damage or destruction to property of third party by operations of the Project Facilities is controlled/minimised;
- (vii) Members of the public are treated with due courtesy and consideration by its employees/ agents;
- (viii) Users are provided with adequate information and forewarned of any event or any other matter affecting the Project Facilities to enable them to control/minimise any adverse consequences by such event or matter;
- (ix) A complaint register to record grievances of any member of the public in relation to the operations and maintenance of the Project/Project Facilities is duly maintained;
- (x) Traffic data and data relating to the operation and maintenance of the Project Facilities are collected;
- (xi) All materials used in the maintenance, repair and replacement of any of the Project Facilities shall meet the Design Requirements/ standards prescribed in the DPR.
- (xii) The personnel assigned by the Concessionaire have the requisite qualifications and experience and are given the training necessary to enable the Concessionaire meet the O & M Requirements.

2.0 Operation and Maintenance Manual and O & M Plans

- a. Prior to the commencement of any construction activity, the Concessionaire, in consultation with the Engineer in Charge, shall finalise the O&M Plan - Implementation Period.
- b. As provided in this Schedule, prior to making application for the Completion certificate for the Project the Concessionaire shall finalise in consultation with the Engineer in Charge.
 - (i) the O&M Manual
 - (ii) the O&M Plan for the first year of operations.
- c. Six weeks prior to the anniversary of COD each year, the Concessionaire shall prepare an annual O&M Plan for the next year of operations.



Engineer-in-Charge

3.0 Maintenance Requirements

3.1 Road Works

A. Maintenance Standards

- a. During Implementation Period, the Concessionaire shall maintain the existing Road facilities in traffic worthy conditions as per the Intervention levels 1 and 2 provided in Table - 1;

Table - 1
Intervention Levels
(Existing Road facilities during Implementation Period)

Sr. No.	Service Factor	Level 1 (Desirable)	Level 2 (Acceptable)
1.	Potholes / km (max) i) up to 75 mm deep	Nil	5 nos. of size < 5 sq m
	ii) more than 75 mm deep	Nil	Nil
2.	Percent Cracking	Nil	No Unscaled cracks > 6mm wide on 95% Project Highway.
3.	Rut Depth not exceeding 10mm	Length not more than 10% of the Project Highway	Length up to 20% of Project Highway
4.	User Information	All road signs, Km post and road marking in good condition.	All road signs, Km post and road marking in good condition.
5.	Percentage Defective bridge Deck area and bump at approach	Nil	Nil
6.	Drainage (including shoulders)	No visible water pool within the ROW	No visible water pool within the ROW
7.	Characteristic Deflection as per IRC: 81-1997	Up to 0.50 mm	Up to 0.80 mm

- b. During Operations Period, all the road works and pavements contained in the Project Facilities (including those in the ancillary facilities) shall be maintained in traffic-worthy condition as per the intervention levels 1 & 2 as provided in the Table - 2 through the various maintenance activities set out later.



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Table - 2
Intervention Levels
Operations Period

Sr. No	Service Factor	Level 1 (Desirable)	Level 2 (Acceptable)
1.	Roughness by Bump Integrator (max. permissibility)	2000 mm/Km (Allowable Tolerance: +5%)	2500 mm/Km
2.	Potholes / km (max)		
	i) Less than 75 mm deep	Nil	2 nos. of size < 5 sq.m
	ii) more than 75 mm deep	Nil	Nil
3.	Percent Cracking	Nil	No Unsealed cracks > 6mm wide on 95% Project Highway.
4.	Rut Depth not exceeding 10mm	Length not more than 5% of Project Highway	Up to 10% of length of Project Highway
5.	User Information	All road signs, Km stones and road marking in good condition.	All road signs, Km stones and road marking in good condition.
6.	Percentage Defective bridge Deck area and bump at approach	Nil	Nil
7.	Camber		
	i) Mainline	(+ or -) 0.05% variation from the Camber as per Design Requirements	(+ or -) 0.15% variation from the Camber as per Design Requirements
	ii) Service Road	(+ or -) 0.10% variation from the Camber as per Design Requirements	(+ or -) 0.20% variation from the Camber as per Design Requirements
8.	Drainage (including shoulders)	No visible water pool within the Project Highway	No visible water pool within the Project Highway
9.	Characteristic Deflection as per IRC: 81-1997	Upto 0.50 mm	Upto 0.80 mm

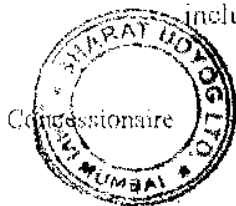


- c. The road roughness value shall be measured at least twice in a year by a properly calibrated Bump Integrator device before the monsoon and soon after the monsoon and during monsoon also. It shall be measured longitudinally or transversely along the line picking up worst surface characteristics, which include the rut areas and depressions etc. The Concessionaire shall ensure that at no point during the Operations Period the roughness in the road surface shall fall below than the prescribed acceptable roughness values given in Table - 2.
- d. The structural condition of the flexible pavement of the Project Highway shall be assessed every year by taking Benkelman Beam Deflections and working out characteristic deflections of homogeneous sections of the Project Highway as per IRC-81-1997. In the case of cement concrete pavement, joints shall be thoroughly inspected every year and the loss of sealing compounds made good.
- e. Bridges and Other Structures: The Concessionaire shall maintain and carry out required repairs of the various elements of the structures in accordance with IRC SP 35-1990.

B. Maintenance Activities

1. Routine Maintenance

- a. In order to ensure smooth and uninterrupted flow of traffic during normal operating conditions for all 24 hours of a day, routine maintenance of the Project Facilities shall include but not be limited to:
- (i) prompt repairs of potholes, concrete joints, drains, line marking, lighting and signage, patching, re-grading of granular shoulders to designed standard, making good the deficiency of material on the shoulder, drain cleaning, repairing of signs, road marking, carrying out repairs to pavement crack by sealing in case of rigid pavement if required.
 - (ii) replacement of equipment/consumables, horticultural maintenance and repairs to equipment, pavements, bridges, structures and other civil works which are part of the Project/Project Facilities;
 - (iii) maintenance of the approach roads to and underpasses, overpasses and drainages within the Project Site in accordance with Good Industry Practice.
 - (iv) keeping the Project Site/Project Facilities in a clean, tidy and orderly condition free of litter and debris and taking all practical measures to prevent damage to the Project Facilities or any other property on or near the Project Site. Removing and disposing of in accordance with all Applicable Laws and Applicable Permits, all rubbish, debris, etc. including any and all equipment, supplies, materials and wastes



Engineer-in-Charge

brought or produced by the Concessionaire/Contractor on the Project Site.

- (v) undertaking maintenance works in accordance with the O & M Plan and O&M Manual;
 - (vi) preventing, with the assistance of concerned law enforcement agencies where necessary, any unauthorised entry to and exit from and any encroachments including any encroachments on the ROW /Project Site;
 - (vii) taking all reasonable measures for the safety of all the workmen, material, supplies and equipment brought to the Project Site. Explosives, if any, shall be stored, transported and disposed of by the Concessionaire in accordance with Applicable Laws/Applicable Permits.
- b. For routine maintenance works, the Concessionaire shall generally follow the operational and performance criteria specified in the respective IRC/MOST standards and specifications for each of the performance indicators covered under pavement condition survey and roughness. The concessionaire shall carry out renewal of the damaged / deteriorated length. Where such criteria are not specified in the standards, the Concessionaire, for the purpose of routine maintenance shall set forth such criteria as to conform to good international standards and Good Industry Practice for sound pavement maintenance practices in consultation with the Engineer in Charge.
- c. The Concessionaire shall regularly carry out the necessary preventive maintenance activities for the Project Facilities to ensure adherence to the Design Requirements/ specifications set out in the DPR throughout the Concession Period.
- d. Asset Management Deliverables And Tolerance Criteria: The Concessionaire shall strictly follow and adhere to the Asset Management Project Deliverables and Tolerance Criteria as given in Table -1.

2. Periodic Maintenance - Flexible Pavement

- a. This activity shall be carried out at the end of 7th year from C.O.D. or as specified in the Bid Documents. Road markings as specified and other roadside features shall be restored to meet the relevant standards to the satisfaction of the Engineer in Charge.
- b. The periodic maintenance activities shall also include profile corrective course overlaid with periodic renewal of the wearing course of the road pavement with minimum 25 mm open graded carpet / SDBC or as specified in agreement. The same shall be undertaken on all roads and pavements in the Project Facilities including on the bus bays.



- c. The paved shoulders shall also be treated in similar manner as applicable to the mainline traffic lanes.
- d. The periodic renewal shall result in improvement of the riding quality, meeting road roughness value as at the time of COD.
- e. The earthen shoulders shall be restored to the design cross-section as per the Detailed projects Reports (DPR). This will involve application of additional granular material of same characteristics to bring it back to the required cross section.
- f. The rip-rap (stone pitching) shall be repaired wherever required.

3. **Periodic Maintenance - Rigid Pavement**

- a. This activity shall be carried out at the end of 10th year from COD. Road markings and other road side features shall be restored to meet the relevant standards to the satisfaction of the Engineer in Charge.
- b. The periodic maintenance activities shall also include (i) removal of surface defects such as polishing of stones, loss of coarse aggregates potholes, scaling, raveling etc. using Portland-cement mixes, bituminous mixes or resin mixes etc., (ii) removal of cracks and (iii) removal of deficiencies in joints

4. **Emergency Maintenance**

- a. The Emergency Response Protocol ("ERP") shall be developed by the Concessionaire in consultation with the local police, hospital/ambulance services, fire departments and other authorities/support personnel and the Engineer in Charge. This shall be a part of the O&M Manual developed by the Concessionaire.
- b. The ERP shall set out steps to be taken and measures to be adopted by the Concessionaire in responding to dealing with Emergency including those situations related to vehicle accidents involving personal injuries or fatalities, property damage and force majeure as follows:
 - (i) In the event of an Emergency, the Concessionaire shall immediately carry out an inspection of the area affected by the Emergency. Where Emergency has necessitated closure of the Project Facilities or part thereof, the Concessionaire shall promptly carry out any repair works necessary to restore the Project Facilities to safe condition and in any event shall carry out such works before the affected area of the Project Facilities is re-opened to traffic.
 - (ii) The Concessionaire shall ensure that sufficient staff, plant, equipment and materials, including without limitation medical assistance are available to respond to Emergency within reasonable period at all times during the Concession Period.



- (iii) The Concessionaire shall employ appropriate personnel as 'Duty Officers' and shall ensure that a Duty Officer is on duty at all times to respond to Emergency. A schedule of the telephone numbers of the Duty Officers shall be provided to Engineer in Charge and the police so that contact can be made with a Duty Officer at any time. The Concessionaire shall ensure that Duty Officers are empowered to mobilise the necessary staff, plant, equipment and materials in response to information or instruction from Engineer in Charge, police or other emergency services in the event of Emergency. Procedures for liaison between Duty Officers and the police and other emergency services shall be developed as part of the ERP.

c. In case of Emergency, the Concessionaire shall

- (i) carry out such emergency maintenance and repairs as may be required to repair the damages, if any, in consultation with the Engineer in Charge and where required under the supervision of the police in order to ensure that the Project Facilities are returned to normal operating standards as quickly as possible.
- (ii) follow the relevant operating procedure specified in Schedule-P of Volume I including the setting up of temporary traffic cones and lights as well as the removal of obstruction and debris expeditiously.
- (iii) Take all necessary measures to minimise pollution in accordance with the procedure specified in the O&M Plan/ Environmental Management Plan where liquid or soluble material spillage is involved.

5. Other Maintenance Works

a. Illumination: The Concessionaire shall maintain all illumination installations and related hardware in accordance with relevant clauses of IS: 1944 (Part I-V) 1981. The maintenance will normally involve cleaning of luminaries, replacement of burnt out luminaries, damaged illumination poles or brackets and repairs to transformers. Detailed maintenance procedure for the same shall be prepared in consultation with the Engineer in Charge. In case of any breakdown, illumination shall be restored within 24 hours. The following standards shall broadly apply:

- (i) Illumination shall be maintained at the designed level throughout the Concession Period.
- (ii) All faults shall be repaired instantly and lighting restored and missing and damaged items shall be replaced instantly.
- (iii) Cleaning shall be done at regular intervals as specified in the O&M Manual to ensure that lighting is not below the specified standard.



- (iv) All installations shall be safeguarded against weathering and ageing effect by repainting and other preventive measures.
- (v) The servicing of stand-by power generations units shall be carried out in accordance with the manufacturer's instructions.
- (vi) All electricity charges shall be borne by the Concessionaire.

b. Road Signs and Road Markings

- (i) All traffic signs and markings shall always be kept clean, visible and in correct alignment and position.
- (ii) Any damage to traffic signs which reduces or threatens to reduce full and clear visibility shall be rectified within twenty four (24) hours of its occurrence. If they are used as base for posters, the posters shall be removed and the signs shall be cleaned within 24 hours. Signs shall be washed using detergent solution followed by clean water to maintain their visibility and reflectivity unimpaired due to dust etc.
- (iii) Any part of traffic signs damaged due to weathering, corrosion, vandalism or any other cause shall be replaced by the Concessionaire within seven days.
- (iv) Any mandatory sign including those for traffic safety, damaged beyond repair shall be replaced within 2 days and all other signs replaced within 3 days.
- (v) Appropriate devices for measuring the luminosity and reflectivity shall be used to check visibility and reflectivity of signs, delineators and markings. These shall be replaced by similar material if the reduction in the level of these two requirements falls below 50% of the original level.
- (vi) Lane marking with thermo-plastic paint shall be carried out after two years and as soon after any overlay/renewal coat is provided.

c. Landscaping

- (i) Maintenance of highway landscape shall include attending to repairs to elements of the landscape connected services as and when necessary, and replacement of irreparable items of work.
- (ii) Trees shall be maintained as per guide lines in SP:21-1979 and no indiscriminate felling of trees shall be resorted. The felling of trees shall be undertaken in consultation with the Engineer in Charge and after obtaining permission of competent authorities, as applicable.



Engineer in Charge

- (iii) While borrowing earth from roadside land for maintenance it shall be ensured that no earth is removed from around roots of trees. All borrowing operations shall be as per IRC:10-1961.
- (iv) Maintenance operations include numbering and maintaining a register of all roadside trees with in the ROW.
- (v) The routine maintenance such as trimming and shaping shall also cover those hedges and trees within the ROW, which affect the performance of the Project Highway.
- ♦ Cutting or clearance to safeguard visibility at intersections, road bends, accesses and signs shall be carried out in such a way as to avoid permanent damage to hedges and trees. Hedges and trees overhanging carriageways shall be trimmed to provide minimum headroom of 5.5 meters at all times.
 - ♦ Turfing within the ROW shall be mowed as to achieve a visual pattern in harmony with adjacent areas. Mowing shall be done when the height of cut reaches 150 mm.
 - ♦ The O&M Manual shall include a maintenance and management plan for trees, shrubs, turfing and hedges to sustain their development in a manner pleasing in appearance.

d Safety Barriers and Pedestrian Guard Rail

- (i) The Crash Barrier (W Type) should require minimum maintenance except in case of damage due to impact.
- (ii) Concrete Posts and Steel Beam Guardrails will require repairs or replacement from low to medium impact damage caused by vehicles. Periodic painting will also be required

e. Bus Bays

Maintenance of Bus Bays shall include attending to repairs to the pavement, road signs and road marking, landscaping etc shall be done within 2 days.

f. Road Furniture

- (i) Maintenance of road furniture like KM post, Guard stones etc. and attending to repairs to various parts of the road furniture and connected services as and when necessary, and replacement of irreparable items of work in reasonable period.
- (ii) At the end of the Concession Period, all road furniture shall be handed over to GOM in useable and in working order.



4.0 Safety and Traffic Management Operations**4.1 Safety**

- a. The Concessionaire shall implement a Safety Management Programme in line with relevant MOST and IRC guidelines. This shall form a part of the O&M Manual.
- b. The Concessionaire shall nominate a traffic safety and control officer (Traffic Safety Officer) who shall be responsible for all arrangements necessary for traffic safety and control including the provision and operation of recovery vehicles for breakdown. The Traffic Safety Officer shall be available on call on a 24 hours' basis.
- c. In case of Emergency, the Concessionaire shall take prompt and effective steps to minimise the adverse effects to road users and shall act as requested or as directed by the Police and take all such safety precautions and measures to minimise the risk of personal injury.

4.2 Traffic Management**4.2.1 General**

Traffic Management shall be undertaken during scheduled and unscheduled construction work and maintenance activities and also during any Emergency. Traffic Management during Emergency shall be undertaken in consultation with the Engineer in Charge. The extent of the traffic management shall be assessed as per the site conditions.

4.2.2 Traffic Management Plan

- a. Before the commencement of construction activity, an overall traffic management plan and programme for a planned scheduled construction and/or operations and maintenance activity of the existing highway shall be prepared in consultation with the Engineer in Charge. The plan shall be based on the following operational parameters:

- (i) The existing carriageway shall be utilized to the maximum extent possible.



Engineer in Charge

- (ii) At major intersections all traffic turning movements will be allowed at all times;
- (iii) Lane closure adopted for diverting the main traffic during Construction Works shall be governed by the approved programme of construction.
- (iv) Existing width of carriageway may be reduced to a one lane one-way operation for a short duration of a maximum of 4 hours in 24 hours provided it is adequately controlled by signing and flag men as specified in Schedule-P of Volume I.
- (v) The activity of renewal or strengthening shall not be carried out in a continuous length of more than 2 km in rural section and 1.0 km in urban section and shall not be closer than 2 km and 1 km in between respectively. (Ref. Schedule-P of Volume I)
- (vi) Lane closure in short lengths less than or equal to 500 meters for carrying out routine maintenance activities shall not be more than for a continuous period of 12 hours.
- (vii) Traffic speed through the construction zone shall be reduced to 40 km/hr by designed speed bumps and warning signs as per Schedule-P of Volume I.
- (viii) For the safety of construction workers as well as the traffic, a physical separation of 1.5 m between work area and the highway traffic shall be maintained by installing orange coloured drums; (Painted rocks/stones are not permitted) as per Schedule-P of Volume I.
- (ix) All construction traffic shall enter and exit the construction site at designated and manually controlled entrances.
- (x) All short (4 months and less and during dry season) and long (more than 4 months and during monsoon season) term temporary road detours (diversions) shall be designed and submitted for approval by the Engineer in Charge prior to construction.
- (xi) Adequate advance warning and information signs shall be incorporated in the traffic management plan in accordance with IRC / PWD / MOST standards and specifications.

The Concessionaire shall provide, erect, maintain, reposition, cover, uncover and remove traffic signs as required in respect of works on the Project Site (including without limitation any diversions). Adequate safety during night time shall be ensured by providing mobile emergency lighting units with illuminated warning signs at important locations finalised in consultation with the Engineer in Charge.



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4.2.3 Corridor Control Plan

- a. Regular 24 hours patrol/surveillance of the ROW in respect of the Project/Project Facilities shall be required to monitor, report and take actions against activities, such as, encroachments, unauthorised construction of road or entrance connections, structures, interference with drainage system etc, within 150 m of the highway corridor.
- b. Surveillance shall also include traffic operation and management of accidents/ other incidents.
- c. The Corridor Control Plan shall be developed in consultation with local administrative authorities and the Engineer in Charge and shall form a part of the Maintenance Manual.

5.0 Inspections & Frequency

The Concessionaire shall plan inspection programme for the Project Facilities for its smooth operations as follows:

5.1 Visual Inspection

Visual Inspections are broad general inspections carried out frequently by Engineer in Charge or his representative having adequate knowledge of road structures. The purpose of visual inspection is to report the obstacles to traffic and fairly obvious deficiencies, which could lead to accidents or maintenance problems. Such inspections should be frequent. The visual inspection may be carried out by visual assessment with careful observation of the specific object/item of the Project Facilities for identification and for quantification of the deficiencies or damages of the Project Facilities.

5.2 Close Inspection

Close inspections may be visual and/or by standard instrumental aids for assessment of defects / deficiencies of Project with careful observation of specific element(s). The close inspection may be daily / periodic but it is more intensive and would require detailed examination of element of the Project. It should cover all the aspects of the specific element of Project against a checklist. The frequency of close inspections would depend upon the nature of structure of Project. This inspection is to be carried out by the Engineer in Charge or his representative having good knowledge of road structures with theoretical background to analysis the nature, and extent of defects/deficiencies, suggest suitable remedial measures to rectify/remedy them and quantify repair work.



5.3 Thorough Inspection

A thorough inspection is comprehensive and detailed for assessment of defects/deficiencies of the Project by visual inspection or with aid of standard equipment and non-destructive testing where necessary. Such an inspection is to be carried out on the basis of comprehensive checklist of items related to the materials, condition and situation of the structure etc. The checklist is to be prepared meticulously well in advance of inspection. The thorough inspection should be undertaken during the most critical weather condition, which is generally rainy season in India. During rainy season the Road /bridge structures are under severe condition thereby the damage and deficiencies of the Project are more pronounced. The inspection carried out during the said period offer the most critical evaluation of the performance of the structure. The thorough inspections would be of critical importance for bridges, culverts and drainage structures, as well as road pavements during adverse weather condition of monsoon period.

5.4 Frequency of Inspections

The type of inspection and related frequency of various items of Project and its facilities have been indicated in the Table 3 below. The frequency of inspection can be suitably revised in consultation with the Engineer in Charge if the situation so warrants. The objective and minimum frequency of inspections under normal circumstances shall be as under. If the exigencies arise, the interval of inspection shall be reduced.



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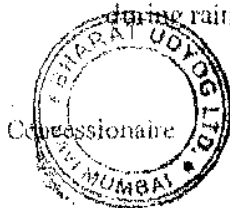
Table -3
Objective and Frequency of Inspection

Object	Item	Daily	Monthly	Quarterly	Before and after rainy season
Riding Surface	Pavement	♦	○		λ
	Expansion joints	♦	○		λ
Median	Kerb	♦	○		λ
Side Slopes	Shape	♦		○	λ
	Turfing		♦		λ
	Pitching & masonry		♦		λ
	Retaining wall		○		λ
Drainage	Side/foe drain	w	○		
	Gullies and catch pits	w	○		
Bridges	Superstructure			○	λ
	Substructure			○	λ
	Head wing walls and aprons			○	λ
	Painting				λ
	Hand rail		○	λ	
Culverts/Underpasses					λ
Safety Barrier		♦		○	λ
Traffic operation facilities	Signs		λ	○	
	Marking	♦	○	λ	
	Delineator	♦	○	λ	
	Lighting	♦		○	
Other facilities	Vegetation / landscaping	♦	○	λ	
Traffic Conditions		♦	λ	○	
Encroachments		♦	λ		

LEGEND

- ♦ Visual inspection
 ○ Close inspection
 λ Thorough inspection
 w Visual inspection during rainy season only

Note :- Whenever necessary the inspection shall be carried out as and when required during rainy season.



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6.0 Reporting Requirements

The reporting and information that generally need to be provided by the Concessionaire are given below. The Requirements given below are indicative of the type of information to be provided. The format of such reports, recording requirements, software standards and number of copies required would be finalised in consultation with the Engineer in Charge. All reports and records shall be in the English language.

6.1 Inspection Reports and Remedial Measures

The periodicity of inspections for maintenance activities by the Concessionaire shall be set out in the Maintenance Manual and regular reports on the same shall be sent to the Engineer in Charge. Where required, the Concessionaire shall carry out any maintenance, repair or rehabilitation works found necessary as a result of such inspections.

6.2 Quarterly O & M Report

During the Concession Period, the Concessionaire shall provide to the Engineer in Charge a quarterly report (Quarterly O&M Report) that shall contain the following minimum information:

- (i) Inspections undertaken by the Concessionaire during the respective quarter of the year and action taken/ proposed thereafter;
- (ii) Details of all reports submitted to the Engineer in Charge during the quarter of the year
- (iii) O & M inspection compliance report
- (iv) Maintenance activities undertaken during the quarter ended,
- (v) Details of any Emergency and action taken

The format of the O&M Report would be finalised in consultation with the Superintending Engineer.

7.0 Maintenance Manual

- a. The Maintenance Manual prepared by the Concessionaire in consultation with the Engineer in Charge shall set out the operations and maintenance standards and details of the operations and maintenance activities to be undertaken during the Concession Period, so that the Project Facilities shall at all times conform to the Design Requirements/ specifications set out in the DPR.
- b. The Maintenance Manual should have separate sections for operations and maintenance.



c. The Manual should include without limitation the following aspects:

- (i) Organisation structure with responsibilities of key personnel;
- (ii) Traffic Management Plan including the Corridor Control Plan;
- (iii) Safety Management Programme including the Emergency Response Protocol;
- (iv) Inspection Procedures;
- (v) Maintenance Intervention Levels;
- (vi) Asset Management Project Deliverables and Tolerance Criteria;
- (vii) Environment Management Plan;
- (viii) Maintenance Programme;
- (ix) Management information system;
- (x) Report Formats.

8.0 Miscellaneous

a. Inventory

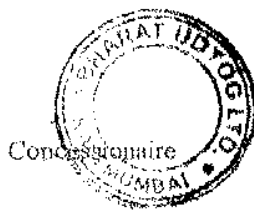
- (i) The Concessionaire shall maintain an inventory of all items comprised in the Project Facilities (the "Inventory"), in a format to be developed in consultation with the Engineer in Charge.
- (ii) Throughout the Concession Period the Concessionaire shall keep the Inventory updated to take account of works carried out on and other changes made to the Project Facilities.
- (iii) A copy of the Inventory shall be submitted by the Concessionaire to the Engineer in Charge within forty (30) days of receipt of a request for the same.

b. Abnormal Indivisible Load Routing (Oversize and Overweight)

- (i) The Concessionaire shall take all reasonable steps to facilitate the transit of Abnormal Indivisible Loads along the Project Facilities.
- (ii) The Concessionaire shall develop a procedure for handling Abnormal Indivisible Loads in consultation with local authorities and the Engineer in Charge.

c. Equipment belonging to third parties

The Concessionaire shall be responsible for the installation, operation, maintenance and removal of any equipment belonging to third parties.



Concessionaire

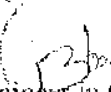
Engineer in Charge

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9.0 Enforcement Methodology

The conditions and provisions mentioned in article 9.0 and Schedule-O and Schedule-P of Volume I in this agreement shall be applicable. In case of failure or non responsiveness of the Concessionaire the Engineer in Charge shall be at liberty to take any or all steps / measures mentioned in article 9.0 Schedule-O and Schedule-P of Volume I or elsewhere mentioned in the agreement. The facilities to be provided for maintenance are to be set out with descriptions/specifications as per Volume II.




Engineer-in-Charge

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Sample Form

SCHEDULE - Y

LETTER OF ACCEPTANCE

No -

Office of the
Executive Engineer,
Thane (P.W.) Division,
Station Road, Thane.
Pin - 400 601.
Date -

To,

.....
.....
.....
.....

Subject - Four Lanning of Chincholi-Karnan Anjurphata to Mankoli Road M.S.H.
No. 4 Km. 0/000 - 26/425 Taluka Bhivnadi Dist. Thane.

Reference - Your bid Dated

Dear Sirs,

This is notify that your bid dated for construction and handing over to Government above mentioned subject work having the built up area of square meters (..... square meters) as corrected and modified in accordance with the instruction to Bidders is hereby accepted.

Development and disposal rights over the piece of land having area square meter marked for you on survey no plot no. will be assigned to in stages as per conditions of contract.

You are hereby requested to furnish performance security, for an amount equivalent to Rs. 190.00 Lakhs (Rupees One Hundred Ninety Lakhs only) within 15 days of the receipt of this letter and valid upto 28 days from the date of expiry of Defect Liability Period i.e. upto and sign the contract, failing which action as stated in Para 30.3 of ITB will be taken.

Yours Faithfully,

Executive Engineer,
Thane (P.W.) Division,
Station Road, Thane.
Pin - 400 601.



Engineer in-Charge

Sample Form

SCHEDULE - Z

WORK ORDER

No -

Office of the
Executive Engineer,
Thane (P.W.) Division,
Station Road, Thane.
Pin - 400 601.
Date -

To,

Subject - Four Laning of Chinchoti-Kaman Anjurphata to Mankoli Road
M.S.D. No. 4 Km. 0/000 - 26/425 Taluka Bhiwnadi Dist. Thane.

References -

Sir,

Please note that your offer for the work having built up area ----- square meter to be constructed and handed over to Government, is accepted by Corporation vide letter under reference no. 1.

You have submitted performance security deposit of Rs. 100.00 Lakhs (Rupees One Hundred Ninety Lakhs only) in the prescribed form vide your letter under reference no. 2.

The agreement for the work is also signed by your authorised signatory on dated. Therefore, you are requested to start the work immediately and complete it within 30 (Thirty) Calendar months including monsoon from the date of issue of this work order.

Development and disposal rights over the piece of land having area ----- square meter marked for you on survey no. -----, plot no. ----- will be assigned to in stages as per conditions of contract.

Certified copy of agreement (Agmt. No.) is enclosed herewith.

Encl. - One Agreement Copy.

Yours Faithfully,

Executive Engineer,
Thane (P.W.) Division,
Station Road, Thane.
Pin - 400 601.

Engineer-in-Charge

