FOUR LANING OF BAREILLY-SITAPUR SECTION ON NH-24, FROM KM 262.000 TO KM 413.200 IN THE STATE OF UTTAR PRADESH UNDER NHDP-III ON DESIGN, BUILD, FINANCE, OPERATE AND TRANSFER (THE "DBFOT") BASIS

CONCESSION AGREEMENT

between

National Highways Authority of India
G-5 & 6, Sector-10, Dwarka, New Delhi-110075

and

BAREILLY HIGHWAYS PROJECT LIMITED
153, Okhla Industries Estate, Phase-III, New Delhi-110020

VOLUME-I

(CONCESSION AGREEMENT, SCHEDULES & MANUALS OF SPECIFICATIONS & STANDARDS FOR FOUR LANING OF HIGHWAYS)

JUNE 2010
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4-laning of a particular section of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate, and Transfer (DBFOT) basis.
रियावत करार

यह करार 29 जुलाई, 2010 को निर्मित गया है।

1. भारतीय राज्य प्राधिकरण अधिनियम, 1988 के अधीन स्थापित भारतीय राज्य प्राधिकरण जिसका प्रतिनिधित्व इसके अध्यक्ष करते हैं और जिसका प्रधान कार्यालय जी-5 और 6, सेकेट-10, दार्का, नई दिल्ली-110075 में है (जिसे इसके पश्चात "प्राधिकरण" संदर्भित किया गया है और जिसकी अभियोजन में जब तक इसके संदर्भ अथवा अर्थ से असंगत न हो इसके प्रशासक, उत्तराधिकारी और समदृढ़तावाली शामिल होंगे), एक पदः

और

2. बरेली हार्डवेयर प्रोजेक्ट सिनिटेड, जो कंपनी अधिनियम, 1956 के प्रावधानों के अधीन निगमित एक कंपनी है और जिसका पंजीकृत कार्यालय 153, ओवला सिटिट्राइजर इस्टेट, फेस-III, नई दिल्ली-110020, भारत में है (जिसे इसके पश्चात "रियावतप्राप्त" संदर्भित किया गया है जिसमें जब तक इसके संदर्भ अथवा अर्थ से असंगत न हो इसके उत्तराधिकारी और अनुमत समदृढ़तावाली और उनके एजजी शामिल होंगे), दूसरा पदः

यतः

(क) भारत सरकार ने राज्य प्राधिकरण संख्या 24 जिसमें 262.00 कि.कि. से 413.200 कि.कि. (अनुमानित 151.200 कि.कि.) का खंड शामिल है, को प्राधिकरण को विकास, अनुसंधान और प्रबंधन के लिए सौंपा है।
CONCESSION AGREEMENT

THIS AGREEMENT is entered into on this the 22nd day of June, 2010

BETWEEN

1. THE NATIONAL HIGHWAYS AUTHORITY OF INDIA, established under the National Highways Authority of India Act 1988, represented by its Chairman and having its principal offices at G-5 & 6, Sector 10, Dwarka, New Delhi-110075 (hereinafter referred to as the “Authority” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of One Part;

AND

2. BAREILLY HIGHWAYS PROJECT LIMITED, a company incorporated under the provisions of the Companies Act, 1956 and having its registered office at 153, Okhla Industrial Estate, Phase-III, New Delhi-110020, (hereinafter referred to as the “Concessionaire” which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes) of the Other Part.

WHEREAS:

(A) The Government of India had entrusted to the Authority the development, maintenance and management of National Highway No. 24 including the section from km 262.000 to km 413.200 (approx. 151.200 km).
6/25/10  Rarely Highways Project AB
B41 PL
1500 Oliva - Ill
ARPM
(B) The Authority had resolved to augment the existing road from km 262.00 to km 413.200 (approximately 151.200 km) on the Bareilly - Sitapur section of National Highway No.24 (hereinafter called the “NH -24”) in the State of Uttar Pradesh by Four-Laning on design, build, finance, operate and transfer (“DBFOT”) basis in accordance with the terms and conditions to be set forth in a concession agreement to be entered into.

(C) The Authority had accordingly invited proposals by its Request for Qualification No. Nil dated 20-02-2009 (the “Request for Qualification” or “RFQ”) for short listing of bidders for construction, operation and maintenance of the above referred section of NH -24 on DBFOT basis and had shortlisted certain bidders including, inter alia, the consortium comprising Era Infra Engineering Limited and Open Joint Stock Company “SIBMOST” (collectively the “Consortium”) with Era Infra Engineering Limited as its lead member (the “Lead Member”).

(D) The Authority had prescribed the technical and commercial terms and conditions, and invited bids (the “Request for Proposals” or “RFP”) from the bidders shortlisted pursuant to the RFQ for undertaking the Project.

(E) After evaluation of the bids received, the Authority had accepted the bid of the Consortium and issued its Letter of Award No. NHA/BOT/11019/15/2008/UP/11372 dated 30-04-2010 (hereinafter called the “LOA”) to the Consortium requiring, inter alia, the execution of this Concession Agreement within 45 (forty-five) days of the date of issue thereof.

(F) The Consortium has since promoted and incorporated the Concessionaire as a limited liability company under the Companies Act 1956, and has requested the Authority to accept the Concessionaire as the entity which shall undertake and perform the obligations and exercise the rights of the Consortium under the LOA, including the obligation to enter into this Concession Agreement pursuant to the LOA for executing the Project.

(G) By its letter dated 04-06-2010, the Concessionaire has also joined in the said request of the Consortium to the Authority to accept it as the entity which shall undertake and perform the obligations and exercise the rights of the Consortium including the obligation to enter into this Concession Agreement pursuant to the LOA. The Concessionaire has further represented to the effect that it has been promoted by the Consortium for the purposes hereof.

(H) The Authority has agreed to the said request of the Consortium and the Concessionaire, and has accordingly agreed to enter into this Concession Agreement with the Concessionaire for execution of the Project on DBFOT basis, subject to and on the terms and conditions set forth hereinafter.
NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Concession Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:
ARTICLE 1
DEFINITIONS AND INTERPRETATION

1.1 Definitions
The words and expressions beginning with capital letters and defined in this Agreement (including those in Article 48) shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,
(a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;
(b) references to laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;
(c) references to a “person” and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;
(d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;
(e) the words “include” and “including” are to be construed without limitation and shall be deemed to be followed by “without limitation” or “but not limited to” whether or not they are followed by such phrases;
(f) references to “construction” or “building” include, unless the context otherwise requires, investigation, design, developing, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction, and “construct” or “build” shall be construed accordingly;
(g) references to "development" include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, upgradation and other activities incidental thereto, and "develop" shall be construed accordingly;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.4 Priority of agreements, clauses and schedules

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

(a) this Agreement; and

(b) all other agreements and documents forming part hereof or referred to herein;

i.e. the Agreement at (a) above shall prevail over the agreements and documents at (b) above.

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

(a) between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;

(b) between the Clauses of this Agreement and the Schedules, the Clauses shall prevail and between Schedules and Annexes, the Schedules shall prevail;

(c) between any two Schedules, the Schedule relevant to the issue shall prevail;

(d) between the written description on the Drawings and the Specifications and Standards, the latter shall prevail;

(e) between the dimension scaled from the Drawing and its specific written dimension, the latter shall prevail; and
between any value written in numerals and that in words, the latter shall prevail.
Part II

The Concession
ARTICLE 2

SCOPE OF THE PROJECT

2.1 Scope of the Project

The scope of the Project (the "Scope of the Project") shall mean and include, during the Concession Period:

(a) construction of the Project Highway on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of Project Facilities as specified in Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-D;

(b) operation and maintenance of the Project Highway in accordance with the provisions of this Agreement; and

(c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

4-laning of Bareilly-Sitapur section of NH-7 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate and Transfer (DBFOT) basis.
ARTICLE 3
GRANT OF CONCESSION

3.1 The Concession

3.1.1 Subject to and in accordance with the provisions of this Agreement, the Applicable Laws and the Applicable Permits, the Authority hereby grants to the Concessionaire the concession set forth herein including the exclusive right, licence and authority to construct, operate and maintain the Project (the "Concession") for a period of 20 (twenty) years commencing from the Appointed Date, and the Concessionaire hereby accepts the Concession and agrees to implement the Project subject to and in accordance with the terms and conditions set forth herein:

3.1.2 Subject to and in accordance with the provisions of this Agreement, the Concession hereby granted shall oblige or entitle (as the case may be) the Concessionaire to:

(a) Right of Way, access and licence to the Site for the purpose of and to the extent conferred by the provisions of this Agreement;
(b) finance and construct the Project Highway;
(c) manage, operate and maintain the Project Highway and regulate the use thereof by third parties;
(d) demand, collect and appropriate Fee from vehicles and Users liable for payment of Fee for using the Project Highway or any part thereof and refuse entry of any vehicle if the Fee due is not paid;
(e) perform and fulfil all of the Concessionaire's obligations under and in accordance with this Agreement;
(f) bear and pay all costs, expenses and charges in connection with or incidental to the performance of the obligations of the Concessionaire under this Agreement; and
(g) neither assign, transfer or sublet or create any lien or Encumbrance on this Agreement, or the Concession hereby granted or on the whole or any part of the Project Highway nor transfer, lease or part possession thereof, save and except as expressly permitted by this Agreement or the Substitution Agreement.

3.2 Waiver of Six-Laning

4-laning of Bareilly-Sitapur section of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate and Transfer (DBOT) basis.
ARTICLE 4

CONDITIONS PRECEDENT

4.1 Conditions Precedent

4.1.1 Save and except as expressly provided in Articles 4, 9, 10, 24, 34, 44 and 47, or unless the context otherwise requires, the respective rights and obligations of the Parties under this Agreement shall be subject to the satisfaction in full of the conditions precedent specified in this Clause 4.1 (the "Conditions Precedent").

4.1.2 The Concessionaire may, upon providing the Performance Security to the Authority in accordance with Article 9, at any time after 90 (ninety) days from the date of this Agreement or on an earlier day acceptable to the Authority, by notice require the Authority to satisfy any or all of the Conditions Precedent set forth in this Clause 4.1.2 within a period of 30 (thirty) days of the notice, or such longer period not exceeding 60 (sixty) days as may be specified therein, and the Conditions Precedent required to be satisfied by the Authority shall be deemed to have been fulfilled when the Authority shall have:

(a) procured for the Concessionaire the Right of Way to the Site in accordance with the provisions of Clause 10.3.1;

(b) issued the Fee Notification;

(c) Deleted

(d) procured approval of the Railway authorities in the form of a general arrangement drawing that would enable the Concessionaire to construct road overbridges/underbridges at level crossings on the Project Highway in accordance with the Specifications and Standards and subject to the terms and conditions specified in such approval; and

(e) procured all Applicable Permits relating to environmental protection and conservation of the Site:

Provided that the Authority may from time to time by notice extend, for up to an aggregate of 6 (six) months, the period for procuring the approval set forth in Sub-clause (d) and/or Sub-clause (e) above and in that event the land to be covered by overbridges or the affected sections of the Project Highway, as the case may be, shall be included in the Appendix referred to in Clause 10.3 and dealt with in accordance with the provisions thereof; and provided further that upon procurement of such approval, the Concessionaire shall be entitled to a period of 12 (twelve) months therefrom for completion of the overbridges. For the avoidance of doubt, the approval specified in Sub-clause (d) and (e) above shall cease to be a Condition Precedent upon the expiration of time under this Proviso.
4.1.3 The Conditions Precedent required to be satisfied by the Concessionaire prior to the Appointed Date shall be deemed to have been fulfilled when the Concessionaire shall have:

(a) provided Performance Security to the Authority;
(b) executed and procured execution of the Escrow Agreement;
(c) executed and procured execution of the Substitution Agreement;
(d) procured all the Applicable Permits specified in Schedule-E unconditionally or if subject to conditions, then all such conditions required to be fulfilled by the date specified therein shall have been satisfied in full and such Applicable Permits are in full force and effect;
(e) executed the Financing Agreements and delivered to the Authority 3 (three) true copies thereof, duly attested by a Director of the Concessionaire;
(f) delivered to the Authority 3 (three) true copies of the Financial Package and the Financial Model, duly attested by a Director of the Concessionaire, along with 3 (three) soft copies of the Financial Model in MS Excel version or any substitute thereof, which is acceptable to the Senior Lenders;
(g) delivered to the Authority from the Consortium Members, their respective confirmation, in original, of the correctness of their representations and warranties set forth in Sub clauses (k), (l) and (m) of clause 7.1 of this Agreement; and
(h) delivered to the Authority a legal opinion from the legal counsel of the Concessionaire with respect to the authority of the Concessionaire to enter into this Agreement and the enforceability of the provisions thereof:

Provided that upon request in writing by the Concessionaire, the Authority may, in its discretion, waive any of the Conditions Precedent set forth in this Clause 4.1.3. For the avoidance of doubt, the Authority may, in its sole discretion, grant any waiver hereunder with such conditions as it may deem fit.

4.1.4 Each Party shall make all reasonable endeavours to satisfy the Conditions Precedent within the time stipulated and shall provide the other Party with such reasonable cooperation as may be required to assist that Party in satisfying the Conditions Precedent for which that Party is responsible.

4.1.5 The Parties shall notify each other in writing at least once a month on the progress made in satisfying the Conditions Precedent. Each Party shall promptly inform the other Party when any Condition Precedent for which it is responsible has been satisfied.
4.2 Damages for delay by the Authority

In the event that (i) the Authority does not procure fulfilment of any or all of the Conditions Precedent set forth in Clause 4.1.2 within the period specified in respect thereof, and (ii) the delay has not occurred as a result of breach of this Agreement by the Concessionaire or due to Force Majeure, the Authority shall pay to the Concessionaire Damages in an amount calculated at the rate of 0.1% (zero point one per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum of 20% (twenty percent) of the Performance Security.

4.3 Damages for delay by the Concessionaire

In the event that (i) the Concessionaire does not procure fulfilment of any or all of the Conditions Precedent set forth in Clause 4.1.3 within a period of 180 (one hundred and eighty) days from the date of this Agreement, and (ii) the delay has not occurred as a result of failure to fulfil the obligations under Clause 4.1.2 or other breach of this Agreement by the Authority, or due to Force Majeure, the Concessionaire shall pay to the Authority Damages in an amount calculated at the rate of 0.2% (zero point two per cent) of the Performance Security for each day's delay until the fulfilment of such Conditions Precedent, subject to a maximum of 20% (twenty percent) of the Performance Security.
ARTICLE 5

OBLIGATIONS OF THE CONCESSIONAIRE

5.1 Obligations of the Concessionaire

5.1.1 Subject to and on the terms and conditions of this Agreement, the Concessionaire shall, at its own cost and expense, procure finance for and undertake the design, engineering, procurement, construction, operation and maintenance of the Project Highway and observe, fulfil, comply with and perform all its obligations set out in this Agreement or arising hereunder.

5.1.2 The Concessionaire shall comply with all Applicable Laws and Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

5.1.3 Subject to the provisions of Clauses 5.1.1 and 5.1.2, the Concessionaire shall discharge its obligations in accordance with Good Industry Practice and as a reasonable and prudent person.

5.1.4 The Concessionaire shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:

(a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars and details as may be required for obtaining Applicable Permits (other than those set forth in Clause 4.1.2), and obtain and keep in force and effect such Applicable Permits in conformity with the Applicable Laws;

(b) procure, as required, the appropriate proprietary rights, licences, agreements and permissions for materials, methods, processes and systems used or incorporated into the Project Highway;

(c) perform and fulfil its obligations under the Financing Agreements;

(d) make reasonable efforts to maintain harmony and good industrial relations among the personnel employed by it or its Contractors in connection with the performance of its obligations under this Agreement;

(e) make reasonable efforts to facilitate the acquisition of land required for the purposes of the Agreement;

(f) ensure and procure that its Contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Concessionaire's obligations under this Agreement;

(g) not do or omit to do any act, deed or thing which may in any manner be repugnant of any of the provisions of this Agreement;
(h) support, cooperate with and facilitate the Authority in the implementation and operation of the Project in accordance with the provisions of this Agreement; and

(i) transfer the Project Highway to the Authority upon Termination of this Agreement, in accordance with the provisions thereof.

5.2 Obligations relating to Project Agreements

5.2.1 It is expressly agreed that the Concessionaire shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the Project Agreements or any other agreement, and no default under any Project Agreement or agreement shall excuse the Concessionaire from its obligations or liability hereunder.

5.2.2 The Concessionaire shall submit to the Authority the drafts of all Project Agreements, or any amendments or replacements thereto, for its review and comments, and the Authority shall have the right but not the obligation to undertake such review and provide its comments, if any, to the Concessionaire within 15 (fifteen) days of the receipt of such drafts. Within 7 (seven) days of execution of any Project Agreement or amendment thereto, the Concessionaire shall submit to the Authority a true copy thereof, duly attested by a Director of the Concessionaire, for its record. For the avoidance of doubt, it is agreed that the review and comments hereunder shall be limited to ensuring compliance with the terms of this Agreement. It is further agreed that no review and/or observation of the Authority and/or its failure to review and/or convey its observations on any document shall relieve the Concessionaire of its obligations and liabilities under this Agreement in any manner nor shall the Authority be liable for the same in any manner whatsoever.

5.2.3 The Concessionaire shall not make any addition, replacement or amendments to any of the Financing Agreements without the prior written consent of the Authority if such addition, replacement or amendment has, or may have, the effect of imposing or increasing any financial liability or obligation on the Authority, and in the event that any replacement or amendment is made without such consent, the Concessionaire shall not enforce such replacement or amendment nor permit enforcement thereof against the Authority. For the avoidance of doubt, the Authority acknowledges and agrees that it shall not unreasonably withhold its consent for restructuring or rescheduling of the debt of the Concessionaire.

5.2.4 The Concessionaire shall procure that each of the Project Agreements contains provisions that entitle the Authority to step into such agreement, in its sole discretion, in substitution of the Concessionaire in the event of Termination or Suspension (the "Covenant"). For the avoidance of doubt, it is expressly agreed that in the event the Authority does not exercise such rights of substitution within a period not exceeding 90 (ninety) days from the Transfer Date, the Project Agreements shall be deemed to cease to be in force and effect on the Transfer Date without any liability whatsoever on the Authority and the Covenant shall expressly provide for such eventuality. The
Concessionaire expressly agrees to include the Covenant in all its Project Agreements and undertakes that it shall, in respect of each of the Project Agreements, procure and deliver to the Authority an acknowledgment and undertaking, in a form acceptable to the Authority, from the counter party(ies) of each of the Project Agreements, whereunder such counter party(ies) shall acknowledge and accept the Covenant and undertake to be bound by the same and not to seek any relief or remedy whatsoever from the Authority in the event of Termination or Suspension.

5.2.5 Notwithstanding anything to the contrary contained in this Agreement, the Concessionaire agrees and acknowledges that selection or replacement of an O&M Contractor and execution of the O&M Contract shall be subject to the prior approval of the Authority from national security and public interest perspective, the decision of the Authority in this behalf being final, conclusive and binding on the Concessionaire, and undertakes that it shall not give effect to any such selection or contract without prior approval of the Authority. For the avoidance of doubt, it is expressly agreed that approval of the Authority hereunder shall be limited to national security and public interest perspective, and the Authority shall endeavour to convey its decision thereon expeditiously. It is also agreed that the Authority shall not be liable in any manner on account of grant or otherwise of such approval and that such approval or denial thereof shall not in any manner absolve the Concessionaire or its Contractors from any liability or obligation under this Agreement.

5.3 Obligations relating to Change in Ownership

5.3.1 The Concessionaire shall not undertake or permit any Change in Ownership, except with the prior approval of the Authority.

5.3.2 Notwithstanding anything to the contrary contained in this Agreement, the Concessionaire agrees and acknowledges that:

(i) all acquisitions of Equity by an acquirer, either by himself or with any person acting in concert, directly or indirectly, including by transfer of the direct or indirect legal or beneficial ownership or control of any Equity, in aggregate of not less than 15% (fifteen per cent) of the total Equity of the Concessionaire; or

(ii) acquisition of any control directly or indirectly of the Board of Directors of the Concessionaire by any person either by himself or together with any person or persons acting in concert with him shall constitute a Change in Ownership requiring prior approval of the Authority from national security and public interest perspective, the decision of the Authority in this behalf being final, conclusive and binding on the Concessionaire, and undertakes that it shall not give effect to any such acquisition of Equity or control of the Board of Directors of the Concessionaire without such prior approval of the Authority. For the avoidance of doubt, it is expressly agreed that approval of the Authority
hereunder shall be limited to national security and public interest perspective, and the Authority shall endeavour to convey its decision thereon expeditiously. It is also agreed that the Authority shall not be liable in any manner on account of grant or otherwise of such approval and that such approval or denial thereof shall not in any manner absolve the Concessionaire from any liability or obligation under this Agreement.

For the purposes of this Clause 5.3.2:

(a) the expression “acquirer”, “control” and “person acting in concert” shall have the meaning ascribed thereto in the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeover) Regulations, 1997 or any statutory re-enactment thereof as in force as on the date of acquisition of Equity, or the control of the Board of Directors, as the case may be, of the Concessionaire;

(b) the indirect transfer or control of legal or beneficial ownership of Equity shall mean transfer of the direct or indirect beneficial ownership or control of any company or companies whether in India or abroad which results in the acquirer acquiring control over the shares or voting rights of shares of the Concessionaire; and

(c) power to appoint, whether by contract or by virtue of control or acquisition of shares of any company holding directly or through one or more companies (whether situate in India or abroad) the Equity of the Concessionaire, not less than half of the directors on the Board of Directors of the Concessionaire or of any company, directly or indirectly whether situate in India or abroad, having ultimate control of not less than 15% (fifteen per cent) of the Equity of the Concessionaire shall constitute acquisition of control, directly or indirectly, of the Board of Directors of the Concessionaire.

5.4 Employment of foreign nationals

The Concessionaire acknowledges, agrees and undertakes that employment of foreign personnel by the Concessionaire and/or its contractors and their sub-contractors shall be subject to grant of requisite regulatory permits and approvals including employment/residential visas and work permits, if any required, and the obligation to apply for and obtain the same shall and will always be of the Concessionaire and, notwithstanding anything to the contrary contained in this Agreement, refusal of or inability to obtain any such permits and approvals by the Concessionaire or any of its contractors or sub-contractors shall not constitute Force Majeure Event, and shall not in any manner excuse the Concessionaire from the performance and discharge of its obligations and liabilities under this Agreement.

5.5 Employment of trained personnel

The Concessionaire shall ensure that the personnel engaged by it in the performance of its obligations under this Agreement are at all times properly trained for their respective functions.
5.6 Sole purpose of the Concessionaire

The Concessionaire having been set up for the sole purpose of exercising the rights and observing and performing its obligations and liabilities under this Agreement, the Concessionaire or any of its subsidiaries shall not, except with the previous written consent of the Authority, be or become directly or indirectly engaged, concerned or interested in any business other than as envisaged herein.

5.7 Branding of Project Highway

The Project Highway or any part thereof shall not be branded in any manner to advertise, display or reflect the name or identity of the Concessionaire or its shareholders. The Concessionaire undertakes that it shall not, in any manner, use the name or entity of the Project Highway to advertise or display its own identity, brand equity or business interests, including those of its shareholders, save and except as may be necessary in the normal course of business. For the avoidance of doubt, it is agreed that the Concessionaire may display its own name at a spot where other public notices are displayed for the Users. It is further agreed that the Project Highway shall be known, promoted, displayed and advertised by the name of Bareilly - Sitapur Highway.

5.8 Facilities for physically challenged and elderly persons

The Concessionaire shall, in conformity with the guidelines issued from time to time by the Ministry of Social Justice and Empowerment, or a substitute thereof, procure a barrier free environment for the physically or visually challenged and for elderly persons using the Project Highway.
ARTICLE 6
OBLIGATIONS OF THE AUTHORITY

6.1 Obligations of the Authority

6.1.1 The Authority shall, at its own cost and expense undertake, comply with and perform all its obligations set out in this Agreement or arising hereunder.

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

(a) upon written request from the Concessionaire, and subject to the Concessionaire complying with Applicable Laws, provide reasonable support and assistance to the Concessionaire in procuring Applicable Permits required from any Government Instrumentality for implementation and operation of the Project;

(b) upon written request from the Concessionaire, provide reasonable assistance to the Concessionaire in obtaining access to all necessary infrastructure facilities and utilities, including water and electricity at rates and on terms no less favourable to the Concessionaire than those generally available to commercial customers receiving substantially equivalent services;

(c) procure that no barriers are erected or placed on or about the Project Highway by any Government Instrumentality or persons claiming through or under it, except for reasons of Emergency, national security, law and order or collection of inter-state taxes;

(d) make best endeavours to procure that no local Tax, toll or charge is levied or imposed on the use of whole or any part of the Project Highway;

(e) subject to and in accordance with the Applicable Laws, grant to the Concessionaire the authority to regulate traffic on the Project Highway;

(f) assist the Concessionaire in procuring police assistance for regulation of traffic, removal of trespassers and security on or at the Project Highway;

(g) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;

(h) support, cooperate with and facilitate the Concessionaire in the implementation and operation of the Project in accordance with the provisions of this Agreement; and
(i) upon written request from the Concessionaire and subject to the provisions of Clause 5.4, provide reasonable assistance to the Concessionaire and any expatriate personnel of the Concessionaire or its Contractors to obtain applicable visas and work permits for the purposes of discharge by the Concessionaire or its Contractors their obligations under this Agreement and the Project Agreements.

6.2 Maintenance obligations prior to Appointed Date

During the Development Period, the Authority shall maintain the Project Highway, at its own cost and expense, so that its traffic worthiness and safety are at no time materially inferior as compared to its condition 7 (seven) days prior to the last date for submission of the Bid, and in the event of any material deterioration or damage other than normal wear and tear, undertake repair thereof, or pay to the Concessionaire the cost and expense, as determined by the Independent Engineer, for undertaking such repair after the Appointed Date. For the avoidance of doubt, the Authority shall undertake only routine maintenance during the Development Period, and it shall undertake special repairs only for ensuring safe operation of the Project Highway, or in the event of excessive deterioration or damage caused due to unforeseen events such as floods or torrential rain.

6.3 Obligations relating to Competing Roads

The Authority shall procure that during the subsistence of this Agreement, neither the Authority nor any Government Instrumentality shall, at any time before the 10th (tenth) anniversary of the Appointed Date, construct or cause to be constructed any Competing Road; provided that the restriction herein shall not apply if the average traffic on the Project Highway in any year exceeds 90% (ninety percent) of its designed capacity specified in Clause 29.2.3. Upon breach of its obligations hereunder, the Authority shall be liable to payment of compensation to the Concessionaire under and in accordance with Clause 35.4, and such compensation shall be the sole remedy of the Concessionaire.
ARTICLE 7

REPRESENTATIONS AND WARRANTIES

7.1 Representations and warranties of the Concessionaire

The Concessionaire represents and warrants to the Authority that:

(a) it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;

(b) it has taken all necessary corporate and other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;

(c) it has the financial standing and capacity to undertake the Project in accordance with the terms of this Agreement;

(d) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof;

(e) it is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder;

(f) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date of this Agreement;

(g) the execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its Memorandum and Articles of Association or those of any member of the Consortium or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;

(h) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material
imimpairment of its ability to perform any of its obligations under this Agreement;

(i) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on its ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

(j) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a material adverse effect on its ability to perform its obligations under this Agreement;

(k) it shall at no time undertake or permit any Change in Ownership except in accordance with the provisions of Clause 5.3 and that the Consortium Members, together with their Associates, hold not less than 51% (fifty-one percent) of its issued and paid up Equity as on the date of this Agreement; and that each member of the Consortium whose technical and financial capacity was evaluated for the purposes of pre-qualification and short-listing in response to the Request for Qualification shall hold at least 26% (twenty six per cent) of Equity during the Construction Period and two years thereafter along with its Associates.

Provided further that any such request made under Clause 7.1(k) and/or Art 48, at the option of the Authority, may be required to be accompanied by a suitable no objection letter from lenders.

(l) the Consortium Members and their Associates have the financial standing and resources to handle the required Equity and to raise the debt necessary for undertaking and implementing the Project in accordance with this Agreement;

(m) each Consortium Member is duly organised and validly existing under the laws of the jurisdiction of its incorporation, and has requested the Authority to enter into this Agreement with the Concessionaire pursuant to the Letter of Award, and has agreed to and unconditionally accepted the terms and conditions set forth in this Agreement;

(n) all its rights and interests in the Project Highway shall pass to and vest in the Authority on the Transfer Date free and clear of all liens, claims and Encumbrances, without any further act or deed on its part or that of the Authority, and that none of the Project Assets shall be acquired by it, subject to any agreement under which a security interest or other lien or Encumbrance is retained by any person, save as expressly provided in this Agreement.
(o) no representation or warranty by it contained herein or in any other
document furnished by it to the Authority or to any Government
Instrumentality in relation to Applicable Permits contains or will
contain any untrue or misleading statement of material fact or omits
or will omit to state a material fact necessary to make such
representation or warranty not misleading;

(p) no sums, in cash or kind, have been paid or will be paid, by it or on
its behalf, to any person by way of fees, commission or otherwise for
securing the Concession or entering into this Agreement or for
influencing or attempting to influence any officer or employee of the
Authority in connection therewith; and

(q) all information provided by the Consortium Members in response to
the Request for Qualification and Request for Proposals or otherwise,
is to the best of its knowledge and belief, true and accurate in all
material respects.

7.2 Representations and warranties of the Authority

The Authority represents and warrants to the Concessionaire that:

(a) it has full power and authority to execute, deliver and perform its
obligations under this Agreement and to carry out the transactions
contemplated herein and that it has taken all actions necessary to
execute this Agreement, exercise its rights and perform its
obligations, under this Agreement;

(b) it has taken all necessary actions under the Applicable Laws to
authorise the execution, delivery and performance of this Agreement;

(c) it has the financial standing and capacity to perform its obligations
under this Agreement;

(d) this Agreement constitutes a legal, valid and binding obligation
enforceable against it in accordance with the terms hereof;

(e) it has no knowledge of any violation or default with respect to any
order, writ, injunction or any decree of any court or any legally
binding order of any Government Instrumentality which may result in
any material adverse effect on the Authority’s ability to perform its
obligations under this Agreement;

(f) it has complied with Applicable Laws in all material respects;

(g) it has the right, power and authority to manage and operate the
Project Highway up to the Appointed Date; and

(h) it has good and valid right to the Site, and has power and authority to
grant a licence in respect thereto to the Concessionaire.
7.3 Disclosure

In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any right, remedy or obligation of either Party under this Agreement.
ARTICLE 8

DISCLAIMER

8.1 Disclaimer

8.1.1 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 Request for Qualification, Request for Proposals, Scope of the Project, Specifications and Standards, Site, existing structures, local conditions, physical qualities of ground, subsoil and geology, traffic volumes and all information provided by the Authority or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. The Authority makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/or completeness of any assessment, assumptions, statement or information provided by it and the Concessionaire confirms that it shall have no claim whatsoever against the Authority in this regard.

8.1.2 The Concessionaire acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above and hereby acknowledges and agrees that the Authority shall not be liable for the same in any manner whatsoever to the Concessionaire, the Consortium Members and their Associates or any person claiming through or under any of them.

8.1.3 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above shall not vitiate this Agreement, or render it voidable.

8.1.4 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 8.1.1 above, that Party shall immediately notify the other Party, specifying the mistake or error; provided, however, that a failure on part of the Authority to give any notice pursuant to this Clause 8.1.4 shall not prejudice the disclaimer of the Authority contained in Clause 8.1.1 and shall not in any manner shift to the Authority any risks assumed by the Concessionaire pursuant to this Agreement.
8.1.5 Except as otherwise provided in this Agreement, all risks relating to the Project shall be borne by the Concessionaire and the Authority shall not be liable in any manner for such risks or the consequences thereof.
Part III
Development and Operations
ARTICLE 9

PERFORMANCE SECURITY

9.1 Performance Security

9.1.1 The Concessionaire shall, for the performance of its obligations hereunder during the Construction Period, provide to the Authority no later than 180 (one hundred and eighty) days from the date of this Agreement, an irrevocable and unconditional guarantee from a Bank for a sum equivalent to Rs. 52.30 Crores (Rupees Fifty Two Crores Thirty Lakh Only) in the form set forth in Schedule-F (the "Performance Security"). Until such time the Performance Security is provided by the Concessionaire and the same comes into effect, the Bid Security shall remain in force and effect, and upon such provision of the Performance Security pursuant hereto, the Authority shall release the Bid Security to the Concessionaire.

9.1.2 Notwithstanding anything to the contrary contained in this Agreement, in the event Performance Security is not provided by the Concessionaire within a period of 180 (one hundred and eighty) days from the date of this Agreement, the Authority may encash the Bid Security and appropriate the proceeds thereof as Damages, and thereupon all rights, privileges, claims and entitlements of the Concessionaire under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Concessionaire, and this Agreement shall be deemed to have been terminated by mutual agreement of the Parties.

9.2 Appropriation of Performance Security

Upon occurrence of a Concessionaire Default or failure to meet any Condition Precedent, the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate the relevant amounts from the Performance Security as Damages for such Concessionaire Default. Upon such encashment and appropriation from the Performance Security, the Concessionaire shall, within 30 (thirty) days thereof, replenish, in case of partial appropriation, to its original level the Performance Security, and in case of appropriation of the entire Performance Security provide a fresh Performance Security, as the case may be, and the Concessionaire shall, within the time so granted, replenish or furnish fresh Performance Security as aforesaid failing which the Authority shall be entitled to terminate this Agreement in accordance with Article 37. Upon replenishment or furnishing of a fresh Performance Security, as the case may be, as aforesaid, the Concessionaire shall be entitled to an additional Cure Period of 90 (ninety) days for remedying the Concessionaire Default, and in the event of the Concessionaire not curing its default within such Cure Period, the Authority shall be entitled to encash and appropriate such Performance Security as Damages, and to terminate this Agreement in accordance with Article 37.
structures erected on the Site by the Concessionaire or its sub-licensees, the licence in respect of the Site shall automatically terminate, without any further act of the Parties, upon Termination of this Agreement.

10.2.5 The Concessionaire hereby irrevocably appoints the Authority (or its nominee) to be its true and lawful attorney, to execute and sign in the name of the Concessionaire a transfer or surrender of the licence granted hereunder at any time after the Concession Period has expired or has been terminated earlier in terms hereof, a sufficient proof of which will be the declaration of any duly authorised officer of the Authority, and the Concessionaire consents to it being registered for this purpose.

10.2.6 It is expressly agreed that trees on the Site are property of the Authority except that the Concessionaire shall be entitled to exercise usufructory rights thereon during the Concession Period.

10.3 Procurement of the Site

10.3.1 Pursuant to the notice specified in Clause 4.1.2, the Authority Representative and the Concessionaire shall, on a mutually agreed date and time, inspect the Site and prepare a memorandum containing an inventory of the Site including the vacant and unencumbered land, buildings, structures, road works, trees and any other immovable property on or attached to the Site. Such memorandum shall have appended thereto an appendix (the “Appendix”) specifying in reasonable detail those parts of the Site to which vacant access and Right of Way has not been granted to the Concessionaire. Signing of the memorandum, in two counterparts (each of which shall constitute an original), by the authorised representatives of the Parties shall, subject to the provisions of Clause 10.2.2, be deemed to constitute a valid licence and Right of Way to the Concessionaire for free and unrestricted use and development of the vacant and unencumbered Site during the Concession Period under and in accordance with the provisions of this Agreement and for no other purpose whatsoever. For the avoidance of doubt, it is agreed that valid licence and Right of Way with respect to the parts of the Site as set forth in the Appendix shall be deemed to have been granted to the Concessionaire upon vacant access thereto being provided by the Authority to the Concessionaire.

10.3.2 Without prejudice to the provisions of Clause 10.3.1, the Parties hereto agree that on or prior to the Appointed Date, the Authority shall have granted vacant access and Right of Way such that the Appendix shall not include more than 20% (twenty per cent) of the total area of the Site required and necessary for the Four-Lane Project Highway, and in the event Financial Close is delayed solely on account of delay in grant of such vacant access and Right of Way, the Authority shall be liable to payment of Damages under and in accordance with the provisions of Clause 4.2.

10.3.3 On and after signing the memorandum referred to in Clause 10.3.1, and until the Transfer Date, the Concessionaire shall maintain a round-the-clock vigil over the Site and shall ensure and procure that no encroachment thereon takes place, and in the event of any encroachment or occupation on any part
thereof, the Concessionaire shall report such encroachment or occupation forthwith to the Authority and undertake its removal at its cost and expenses.

10.3.4 The Authority shall make best efforts to procure and grant, no later than 90 (ninety) days from the Appointed Date, the Right of Way to the Concessionaire in respect of all land included in the Appendix, and in the event of delay for any reason other than Force Majeure or breach of this Agreement by the Concessionaire, it shall pay to the Concessionaire Damages in a sum calculated at the rate of Rs. 50 (Rupees fifty) per day for every 1,000 (one thousand) square metres or part thereof, commencing from the 91st (ninety first) day of the Appointed Date and until such Right of Way is procured.

10.3.5 Upon receiving Right of Way in respect of any land included in the Appendix, the Concessionaire shall complete the Construction Works thereon within a reasonable period to be determined by the Independent Engineer in accordance with Good Industry Practice; provided that the issue of Provisional Certificate shall not be affected or delayed on account of vacant access to any part of the Site not being granted to the Concessionaire or any construction on such part of the Site remaining incomplete on the date of Tests on account of the delay or denial of such access thereto. For the avoidance of doubt, it is expressly agreed that Construction Works on all lands for which Right of Way is granted within 90 (ninety) days of the Appointed Date shall be completed before the Project Completion Date. It is further agreed that the obligation of the Concessionaire to complete the affected Construction Works shall subsist so long as the Authority continues to pay the Damages specified herein, and upon the Authority ceasing to pay such Damages after giving 60 (sixty) days’ notice thereof to the Concessionaire, the obligation of the Concessionaire to complete such works on such part of the Site shall cease forthwith. It is also expressly agreed that completion of the respective Construction Works within the time determined by the Independent Engineer hereunder shall be deemed to be Project Milestones for the purposes of levy and recovery of Damages under and in accordance with the provisions of Clause 12.4.2.

10.3.6 The Concessionaire shall, if so required by the Authority, procure on behalf of the Authority, on the terms and to the extent specified by the Authority, the additional land required for Toll Plazas, Traffic Aid Posts, Medical Aid Posts, under passes and over passes or for construction of works specified in Change of Scope Order issued under Article 16, in accordance with this Agreement and upon procurement, such land shall form part of the Site and vest in the Authority; provided that the Concessionaire may, by notice given to the Authority no later than 60 (sixty) days from the Appointed Date or the date of Change of Scope Order, as the case may be, require the Authority to initiate and undertake proceedings for acquisition of such land under the provisions of the National Highways Act, 1956 and the Authority shall take all such steps as may be reasonably necessary for such land acquisition forthwith; provided further that the cost of land acquired under this Clause 10.3.6 shall be borne by the Authority in accordance with the Act; provided that the land to be acquired by the Authority hereunder as a part of the
Site shall be deemed to be included in the Appendix referred to in this Clause 10.3 and dealt with in accordance with the provisions thereof. For the avoidance of doubt, it is agreed that the minimum area of land to be acquired for the Toll Plazas and approach roads thereof shall conform to the provisions of Schedule - B and Schedule - C. It is further agreed that the Authority may, at any time after the Bid Date, *suo moto* acquire the land required hereunder.

10.3.7 The Concessionaire may procure at its cost and expense and on its own the land that may be required by it for Additional Facilities and the Authority shall have no obligation or liability in respect thereof. For the avoidance of doubt, the Concessionaire shall seek prior consent of the Authority to connect any Additional Facility to the Project Highway and such consent shall not be unreasonably withheld.

10.4 Site to be free from Encumbrances

Subject to the provisions of Clause 10.3, the Site shall be made available by the Authority to the Concessionaire pursuant hereto free from all Encumbrances and occupations and without the Concessionaire being required to make any payment to the Authority on account of any costs, compensation, expenses and charges for the acquisition and use of such Site for the duration of the Concession Period, except insofar as otherwise expressly provided in this Agreement. For the avoidance of doubt, it is agreed that existing rights of way, easements, privileges, liberties and appurtenances to the Licensed Premises shall not be deemed to be Encumbrances. It is further agreed that the Concessionaire accepts and undertakes to bear any and all risks arising out of the inadequacy or physical condition of the Site.

10.5 Protection of Site from encroachments

During the Concession Period, the Concessionaire shall protect the Site from any and all occupations, encroachments or Encumbrances, and shall not place or create nor permit any Contractor or other person claiming through or under the Concessionaire to place or create any Encumbrance or security interest over all or any part of the Site or the Project Assets, or on any rights of the Concessionaire therein or under this Agreement, save and except as otherwise expressly set forth in this Agreement.

10.6 Special/temporary right of way

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

The licence, right of way and right to the Site granted to the Concessionaire hereunder shall always be subject to the right of access of the Authority and the Independent Engineer and their employees and agents for inspection, viewing and exercise of their rights and performance of their obligations under this Agreement.

10.8 Geological and archaeological finds

It is expressly agreed that mining, geological or archaeological rights do not form part of the licence granted to the Concessionaire under this Agreement and the Concessionaire hereby acknowledges that it shall not have any mining rights or interest in the underlying minerals, fossils, antiquities, structures or other remnants or things either of particular geological or archaeological interest and that such rights, interest and property on or under the Site shall vest in and belong to the Authority or the concerned Government Instrumentality. The Concessionaire shall take all reasonable precautions to prevent its workmen or any other person from removing or damaging such interest or property and shall inform the Authority forthwith of the discovery thereof and comply with such instructions as the concerned Government Instrumentality may reasonably give for the removal of such property. For the avoidance of doubt, it is agreed that any reasonable expenses incurred by the Concessionaire hereunder shall be reimbursed by the Authority. It is also agreed that the Government shall procure that the instructions hereunder are issued by the concerned Government Instrumentality within a reasonable period.

10.9 Additional land for Six-Laning
ARTICLE 11

UTILITIES, ASSOCIATED ROADS AND TREES

11.1 Existing utilities and roads

Notwithstanding anything to the contrary contained herein, the Concessionaire shall ensure that the respective entities owning the existing roads, right of way or utilities on, under or above the Site are enabled by it to keep such utilities in continuous satisfactory use, if necessary, by providing suitable temporary or permanent diversions with the authority of the controlling body of that road, right of way or utility, and the Authority shall, upon written request from the Concessionaire, initiate and undertake at the Concessionaire's cost, legal proceedings for acquisition of any right of way necessary for such diversion.

11.2 Shifting of obstructing utilities

The Concessionaire shall, subject to Applicable Laws and with assistance of the Authority, undertake shifting of any utility including electric lines, water pipes and telephone cables, to an appropriate location or alignment within or outside the Site if and only if such utility causes or shall cause a material adverse effect on the construction, operation or maintenance of the Project Highway. The cost of such shifting shall be borne by the Authority or by the entity owning such utility, if the Authority so directs, and in the event of any delay in shifting thereof, the Concessionaire shall be excused for failure to perform any of its obligations hereunder if such failure is a direct consequence of delay on the part of the entity owning such electric lines, water pipes or telephone cables, as the case may be.

11.3 New utilities and roads

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

11.3.2 The Authority may, by notice require the Concessionaire to connect any adjoining road to the Project Highway. Upon receipt of a notice hereunder, the connecting portion thereof falling within the Site shall be constructed by the Concessionaire at the Authority's cost in accordance with Article 16, and the maintenance thereof shall be undertaken by the Concessionaire in accordance with the provisions of Clause 17.1.3.

11.3.3 The Authority may by notice require the Concessionaire to connect, through a paved road, any adjoining service station, hotel, motel or any other public
facility or amenity to the Project Highway, whereupon the connecting portion thereof that falls within the Site shall be constructed and maintained by the Concessionaire upon advance payment of the cost to be made by the beneficiary entity in accordance with the amount and period as determined by the Independent Engineer. For the avoidance of doubt, any connecting road constructed prior to the Appointed Date and falling within the Site shall be maintained by the Concessionaire upon advance payment to be made by the beneficiary entity in accordance with the provisions of this Clause.

11.4 Felling of trees

The Authority shall assist the Concessionaire in obtaining the Applicable Permits for felling of trees to be identified by the Authority for this purpose if and only if such trees cause a material adverse effect on the construction, operation or maintenance of the Project Highway. The cost of such felling shall be borne by the Authority, and in the event of any delay in felling thereof for reasons beyond the control of the Concessionaire, it shall be excused for failure to perform any of its obligations hereunder if such failure is a direct consequence of delay in the felling of trees. For the avoidance of doubt, the Parties hereto agree that the felled trees shall be deemed to be owned by the Authority and shall be disposed in such manner and subject to such conditions as the Authority may in its sole discretion deem appropriate.
ARTICLE 12

CONSTRUCTION OF THE PROJECT HIGHWAY

12.1 Obligations prior to commencement of construction

Prior to commencement of Construction Works, the Concessionaire shall:

(a) submit to the Authority and the Independent Engineer its detailed design, construction methodology, quality assurance procedures, and the procurement, engineering and construction time schedule for completion of the Project in accordance with the Project Completion Schedule as set forth in Schedule-G;

(b) appoint its representative duly authorised to deal with the Authority in respect of all matters under or arising out of or relating to this Agreement;

(c) undertake, do and perform all such acts, deeds and things as may be necessary or required before Commencement of construction under and in accordance with this Agreement, the Applicable Laws and Applicable Permits; and

(d) make its own arrangements for quarrying of materials needed for the Project Highway under and in accordance with the Applicable Laws and Applicable Permits.

12.2 Maintenance during Construction Period

During the Construction Period, the Concessionaire shall maintain, at its cost, the existing lane(s) of the Project Highway so that the traffic worthiness and safety thereof are at no time materially inferior as compared to their condition 7 (seven) days prior to the date of this Agreement, and shall undertake the necessary repair and maintenance works for this purpose; provided that the Concessionaire may, at its cost, interrupt and divert the flow of traffic if such interruption and diversion is necessary for the efficient progress of Construction Works and conforms to Good Industry Practice; provided further that such interruption and diversion shall be undertaken by the Concessionaire only with the prior written approval of the Independent Engineer which approval shall not be unreasonably withheld. For the avoidance of doubt, it is agreed that the Concessionaire shall at all times be responsible for ensuring safe operation of the Project Highway.

12.3 Drawings

In respect of the Concessionaire’s obligations relating to the Drawings of the Project Highway as set forth in Schedule-H, the following shall apply:

The Concessionaire shall prepare and submit, with reasonable promptness and in such sequence as is consistent with the Project...
Completion Schedule, three copies each of all Drawings to the Independent Engineer for review;

(b) By submitting the Drawings for review to the Independent Engineer, the Concessionaire shall be deemed to have represented that it has determined and verified that the design and engineering, including field construction criteria related thereto, are in conformity with the Scope of the Project and the Specifications and Standards;

(c) Within 15 (fifteen) days of the receipt of the Drawings, the Independent Engineer shall review the same and convey its observations to the Concessionaire with particular reference to their conformity or otherwise with the Scope of the Project and the Specifications and Standards. The Concessionaire shall not be obliged to await the observations of the Independent Engineer on the Drawings submitted pursuant hereto beyond the said 15 (fifteen) days period and may begin or continue Construction Works at its own discretion and risk;

(d) If the aforesaid observations of the Independent Engineer indicate that the Drawings are not in conformity with the Scope of the Project or the Specifications and Standards, such Drawings shall be revised by the Concessionaire and resubmitted to the Independent Engineer for review. The Independent Engineer shall give its observations, if any, within 7 (seven) days of receipt of the revised Drawings;

(e) No review and/or observation of the Independent Engineer and/or its failure to review and/or convey its observations on any Drawings shall relieve the Concessionaire of its obligations and liabilities under this Agreement in any manner nor shall the Independent Engineer or the Authority be liable for the same in any manner;

(f) Without prejudice to the foregoing provisions of this Clause 12.3, the Concessionaire shall submit to the Authority for review and comments, its Drawings relating to alignment of the Project Highway, finished road level, location and layout of the Toll Plazas and general arrangement drawings of major bridges, flyovers and grade separators, and the Authority shall have the right but not the obligation to undertake such review and provide its comments, if any, within 30 (thirty) days of the receipt of such Drawings. The provisions of this Clause 12.3 shall apply mutatis mutandis to the review and comments hereunder; and

(g) Within 90 (ninety) days of the Project Completion Date, the Concessionaire shall furnish to the Authority and the Independent Engineer a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities.
12.4 Four-Laning of the Project Highway

12.4.1 On or after the Appointed Date, the Concessionaire shall undertake construction of Four-Laning as specified in Schedule-B and Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-D. The 910th (Nine hundred and Tenth) day from the Appointed Date shall be the scheduled date for completion of Four-Laning (the “Scheduled Four-Laning Date”) and the Concessionaire agrees and undertakes that Four-Laning shall be completed on or before the Scheduled Four-Laning Date.

12.4.2 The Concessionaire shall construct the Project Highway in accordance with the Project Completion Schedule set forth in Schedule-G. In the event that the Concessionaire fails to achieve any Project Milestone within a period of 90 (ninety) days from the date set forth for such Milestone in Schedule-G, unless such failure has occurred due to Force Majeure or for reasons solely attributable to the Authority, it shall pay Damages to the Authority in a sum calculated at the rate of 0.1% (zero point one per cent) of the amount of Performance Security for delay of each day until such Milestone is achieved; provided that if any or all Project Milestones or the Scheduled Four-Laning Date are extended in accordance with the provisions of this Agreement, the dates set forth in Schedule-G shall be deemed to be modified accordingly and the provisions of this Agreement shall apply as if Schedule-G has been amended as above; provided further that in the event Project Completion Date is achieved on or before the Scheduled Four-Laning Date, the Damages paid under this Clause 12.4.2 shall be refunded by the Authority to the Concessionaire, but without any interest thereon. For the avoidance of doubt, it is agreed that recovery of Damages under this Clause 12.4.2 shall be without prejudice to the rights of the Authority under this Agreement, including the right of Termination thereof.

12.4.3 In the event that Four-Laning is not completed within 270 (two hundred and seventy) days from the Scheduled Four-Laning Date, unless the delay is on account of reasons solely attributable to the Authority or due to Force Majeure, the Authority shall be entitled to terminate this Agreement.

12.5 Six-Laning of the Project Highway

Deleted

12.6 Termination due to failure to complete Six-Laning

Deleted

12.7 Construction of service roads by the Authority

The Authority shall, at any time after the 8th (eighth) anniversary of the Appointed Date, be entitled in its discretion to undertake at its cost, construction of service roads on the Project Highway in accordance with the specifications and standards applicable to other district roads (ODRs) in the State. Such construction shall be undertaken without causing undue disruption to traffic and upon its completion, the Concessionaire shall have
the obligation to maintain the service roads in accordance with Good Industry Practice and regulate the use thereof in accordance with the provisions of this Agreement.
ARTICLE 13
MONITORING OF CONSTRUCTION

13.1 Monthly progress reports

During the Construction Period, the Concessionaire shall, no later than 7 (seven) days after the close of each month, furnish to the Authority and the Independent Engineer a monthly report on progress of the Construction Works and shall promptly give such other relevant information as may be required by the Independent Engineer.

13.2 Inspection

During the Construction Period, the Independent Engineer shall inspect the Project Highway at least once a month and make a report of such inspection (the “Inspection Report”) stating in reasonable detail the defects or deficiencies, if any, with particular reference to the Scope of the Project and Specifications and Standards. It shall send a copy of the Inspection Report to the Authority and the Concessionaire within 7 (seven) days of such inspection and upon receipt thereof, the Concessionaire shall rectify and remedy the defects or deficiencies, if any, stated in the Inspection Report. Such inspection or submission of Inspection Report by the Independent Engineer shall not relieve or absolve the Concessionaire of its obligations and liabilities hereunder in any manner whatsoever.

13.3 Tests

13.3.1 For determining that the Construction Works conform to the Specifications and Standards, the Independent Engineer shall require the Concessionaire to carry out or cause to be carried out tests, at such time and frequency and in such manner as may be specified by the Independent Engineer from time to time, in accordance with Good Industry Practice for quality assurance. The size of sample for such tests shall, to the extent possible, not exceed 10% (ten per cent) of the quantity and/or number of tests prescribed by IRC and/or MORTH for the construction works undertaken by the Authority through their contractors. The Concessionaire shall, with due diligence, carry out or cause to be carried out all the tests in accordance with the instructions of the Independent Engineer and furnish the results thereof to the Independent Engineer. One half of the costs incurred on such tests, and to the extent certified by the Independent Engineer as reasonable, shall be reimbursed by the Authority to the Concessionaire. For the avoidance of doubt, the costs to be incurred on any Test which is undertaken for determining the rectification of any defect or deficiency in construction shall be borne solely by the Concessionaire.

13.3.2 In the event that results of any tests conducted under this Clause 13.3 establish any defects or deficiencies in the Construction Works, the Concessionaire shall carry out remedial measures and furnish a report to the Independent Engineer in this behalf. The Independent Engineer shall require the Concessionaire to carry out or cause to be carried out tests to determine
that such remedial measures have brought the Construction Works into compliance with the Specifications and Standards, and the procedure set forth in this Clause 13.3 shall be repeated until such Construction Works conform to the Specifications and Standards. For the avoidance of doubt, it is agreed that tests pursuant to this Clause 13.3 shall be undertaken in addition to and independent of the tests that shall be carried out by the Concessionaire for its own quality assurance in accordance with Good Industry Practice. It is also agreed that a copy of the results of such tests shall be sent by the Concessionaire to the Independent Engineer forthwith.

13.4 Delays during construction

Without prejudice to the provisions of Clause 12.4.2, if the Concessionaire does not achieve any of the Project Milestones or the Independent Engineer shall have reasonably determined that the rate of progress of Construction Works is such that Four-Laning is not likely to be achieved by the Scheduled Four-Laning Date, it shall notify the Concessionaire to this effect, and the Concessionaire shall, within 15 (fifteen) days of such notice, by a communication inform the Independent Engineer in reasonable detail about the steps it proposes to take to expedite progress and the period within which it shall achieve the Project Completion Date.

13.5 Suspension of unsafe Construction Works

13.5.1 Upon recommendation of the Independent Engineer to this effect, the Authority may by notice require the Concessionaire to suspend forthwith the whole or any part of the Construction Works if, in the reasonable opinion of the Authority, such work threatens the safety of the Users and pedestrians.

13.5.2 The Concessionaire shall, pursuant to the notice under Clause 13.5.1, suspend the Construction Works or any part thereof for such time and in such manner as may be specified by the Authority and thereupon carry out remedial measures to secure the safety of suspended works and the Users. The Concessionaire may by notice require the Independent Engineer to inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked. Upon receiving the recommendations of the Independent Engineer, the Authority shall either revoke such suspension or instruct the Concessionaire to carry out such other and further remedial measures as may be necessary in the reasonable opinion of the Authority, and the procedure set forth in this Clause 13.5 shall be repeated until the suspension hereunder is revoked.

13.5.3 Subject to the provisions of Clause 34.7, all reasonable costs incurred for maintaining and protecting the Construction Works or part thereof during the period of suspension (the "Preservation Costs"), shall be borne by the Concessionaire; provided that if the suspension has occurred as a result of any breach of this Agreement by the Authority, the Preservation Costs shall be borne by the Authority.

13.5.4 If suspension of Construction Works is for reasons not attributable to the Concessionaire, the Independent Engineer shall determine any extension of
the dates set forth in the Project Completion Schedule to which the Concessionaire is reasonably entitled, and shall notify the Authority accordingly whereupon the Authority shall extend such Project Completion Schedule dates in accordance with the recommendations of the Independent Engineer. In the event that the Scheduled Four-Laning Date is extended pursuant hereto, the Concession Period shall be deemed to be extended by a period equal in length to the period of extension of the Scheduled Four-Laning Date.

13.6 **Video recording**

During the Construction Period, the Concessionaire shall provide to the Authority for every calendar quarter, a video recording, which will be compiled into a 3 (three)-hour compact disc or digital video disc, as the case may be, covering the status and progress of Construction Works in that quarter. The first such video recording shall be provided to the Authority within 7 (seven) days of the Appointed Date and thereafter, no later than 15 (fifteen) days after the close of each quarter.
ARTICLE 14

COMPLETION CERTIFICATE

14.1 Tests

14.1.1 At least 30 (thirty) days prior to the likely completion of the Project Highway, the Concessionaire shall notify the Independent Engineer of its intent to subject the Project Highway to Tests. The date and time of each of the Tests shall be determined by the Independent Engineer in consultation with the Concessionaire, and notified to the Authority who may designate its representative to witness the Tests. The Concessionaire shall provide such assistance as the Independent Engineer may reasonably require for conducting the Tests. In the event of the Concessionaire and the Independent Engineer failing to mutually agree on the dates for conducting the Tests, the Concessionaire shall fix the dates by not less than 10 (ten) days notice to the Independent Engineer.

14.1.2 All Tests shall be conducted in accordance with Schedule-I. The Independent Engineer shall observe, monitor and review the results of the Tests to determine compliance of the Project Highway with Specifications and Standards and if it is reasonably anticipated or determined by the Independent Engineer during the course of any Test that the performance of the Project Highway or any part thereof does not meet the Specifications and Standards, it shall have the right to suspend or delay such Test and require the Concessionaire to remedy and rectify the defects or deficiencies. Upon completion of each Test, the Independent Engineer shall provide to the Concessionaire and the Authority copies of all Test data including detailed Test results. For the avoidance of doubt, it is expressly agreed that the Independent Engineer may require the Concessionaire to carry out or cause to be carried out additional Tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.

14.2 Completion Certificate

Upon completion of Construction Works and the Independent Engineer determining the Tests to be successful, it shall forthwith issue to the Concessionaire and the Authority a certificate substantially in the form set forth in Schedule-J (the “Completion Certificate”).

14.3 Provisional Certificate

14.3.1 The Independent Engineer may, at the request of the Concessionaire, issue a provisional certificate of completion substantially in the form set forth in Schedule-J (the “Provisional Certificate”) if the Tests are successful and the Project Highway can be safely and reliably placed in commercial operation although certain works or things forming part thereof are outstanding and not complete. In such an event, the Provisional Certificate shall have appended thereto a list of outstanding items signed jointly by the Independent Engineer and the Concessionaire (the “Punch List”), provided...
that the Independent Engineer shall not withhold the Provisional Certificate for reason of any work remaining incomplete if the delay in completion thereof is attributable to the Authority.

14.3.2 The Parties hereto expressly agree that a Provisional Certificate under this Clause 14.3 may, upon request of the Concessionaire to this effect, be issued for operating part of the Project Highway, if at least 75% (seventy five per cent) of the total length of the Project Highway has been completed. Upon issue of such Provisional Certificate, the provisions of Article 15 shall apply to such completed part.

14.4 Completion of Punch List items

14.4.1 All items in the Punch List shall be completed by the Concessionaire within 90 (ninety) days of the date of issue of the Provisional Certificate and for any delay thereafter, other than for reasons solely attributable to the Authority or due to Force Majeure, the Authority shall be entitled to recover Damages from the Concessionaire to be calculated and paid for each day of delay until all items are completed, at the lower of (a) 0.1% (zero point one per cent) of the Performance Security, and (b) 0.2% (zero point two per cent) of the cost of completing such items as estimated by the Independent Engineer. Subject to payment of such Damages, the Concessionaire shall be entitled to a further period not exceeding 120 (one hundred and twenty) days for completion of the Punch List items. For the avoidance of doubt, it is agreed that if completion of any item is delayed for reasons solely attributable to the Authority or due to Force Majeure, the completion date thereof shall be determined by the Independent Engineer in accordance with Good Industry Practice, and such completion date shall be deemed to be the date of issue of the Provisional Certificate for the purposes of Damages, if any, payable for such item under this Clause 14.4.1.

14.4.2 Upon completion of all Punch List items, the Independent Engineer shall issue the Completion Certificate. Failure of the Concessionaire to complete all the Punch List items within the time set forth in Clause 14.4.1 for any reason, other than conditions constituting Force Majeure or for reasons solely attributable to the Authority, shall entitle the Authority to terminate this Agreement.

14.5 Withholding of Provisional Certificate

14.5.1 If the Independent Engineer determines that the Project Highway or any part thereof does not conform to the provisions of this Agreement and cannot be safely and reliably placed in commercial operation, it shall forthwith make a report in this behalf and send copies thereof to the Authority and the Concessionaire. Upon receipt of such a report from the Independent Engineer and after conducting its own inspection, if the Authority is of the opinion that the Project Highway is not fit and safe for commercial service, it shall, within 7 (seven) days of receiving the aforesaid report, notify the Concessionaire of the defects and deficiencies in the Project Highway and direct the Independent Engineer to withhold issuance of the Provisional Certificate. Upon receipt of such notice, the Concessionaire shall remedy and
rectify such defects or deficiencies and thereupon Tests shall be undertaken in accordance with this Article 14. Such procedure shall be repeated as necessary until the defects or deficiencies are rectified.

14.5.2 Notwithstanding anything to the contrary contained in Clause 14.5.1, the Authority may, at any time after receiving a report from the Independent Engineer under that Clause, direct the Independent Engineer to issue a Provisional Certificate under Clause 14.3, and such direction shall be complied forthwith.

14.6 Rescheduling of Tests

If the Independent Engineer certifies to the Authority and the Concessionaire that it is unable to issue the Completion Certificate or Provisional Certificate, as the case may be, because of events or circumstances on account of which the Tests could not be held or had to be suspended, the Concessionaire shall be entitled to re-schedule the Tests and hold the same as soon as reasonably practicable.
ARTICLE 15
ENTRY INTO COMMERCIAL SERVICE

15.1 Commercial Operation Date (COD)

Four-Laning shall be deemed to be complete when the Completion Certificate or the Provisional Certificate, as the case may be, is issued under the provisions of Article 14, and accordingly the commercial operation date of the Project shall be the date on which such Completion Certificate or the Provisional Certificate is issued (the “COD”). The Project Highway shall enter into commercial service on COD whereupon the Concessionaire shall be entitled to demand and collect Fee in accordance with the provisions of Article 27.

15.2 Damages for delay

Subject to the provisions of Clause 12.4, if COD does not occur prior to the 91st (ninety first) day after the Scheduled Four-Laning Date, unless the delay is on account of reasons solely attributable to the Authority or due to Force Majeure, the Concessionaire shall pay Damages to the Authority in a sum calculated at the rate of 0.1% (zero point one per cent) of the amount of Performance Security for delay of each day untilCOD is achieved.
ARTICLE 16

CHANGE OF SCOPE

16.1 Change of Scope

16.1.1 The Authority may, notwithstanding anything to the contrary contained in this Agreement, require the provision of additional works and services which are not included in the Scope of the Project as contemplated by this Agreement (the "Change of Scope"). Any such Change of Scope shall be made in accordance with the provisions of this Article 16 and the costs thereof shall be expended by the Concessionaire and reimbursed to it by the Authority in accordance with Clause 16.3.

16.1.2 If the Concessionaire determines at any time that a Change of Scope is necessary for providing safer and improved services to the Users, it shall by notice in writing require the Authority to consider such Change of Scope. The Authority shall, within 15 (fifteen) days of receipt of such notice, either accept such Change of Scope with modifications, if any, and initiate proceedings therefor in accordance with this Article 16 or inform the Concessionaire in writing of its reasons for not accepting such Change of Scope.

16.1.3 Any works or services which are provided under and in accordance with this Article 16 shall form part of the Project Highway and the provisions of this Agreement shall apply mutatis mutandis to such works or services.

16.2 Procedure for Change of Scope

16.2.1 In the event of the Authority determining that a Change of Scope is necessary, it shall issue to the Concessionaire a notice specifying in reasonable detail the works and services contemplated thereunder (the "Change of Scope Notice").

16.2.2 Upon receipt of a Change of Scope Notice, the Concessionaire shall, with due diligence, provide to the Authority such information as is necessary, together with preliminary Documentation in support of:

(a) the impact, if any, which the Change of Scope is likely to have on the Project Completion Schedule if the works or services are required to be carried out during the Construction Period; and

(b) the options for implementing the proposed Change of Scope and the effect, if any, each such option would have on the costs and time thereof, including a detailed breakdown by work classifications specifying the material and labour costs calculated in accordance with the schedule of rates applicable to the works assigned by the Authority to its contractors, along with the proposed commutation discount on such rates; provided that the cost incurred by the Concessionaire in providing such information shall be reimbursed
by the Authority to the extent such cost is certified by the
Independent Engineer as reasonable.

16.2.3 Upon receipt of information set forth in Clause 16.2.2, if the Authority
decides to proceed with the Change of Scope, it shall convey its preferred
option to the Concessionaire, and the Parties shall, with assistance of the
Independent Engineer, thereupon make good faith efforts to agree upon the
time and costs for implementation thereof. Upon reaching an agreement, the
Authority shall issue an order (the "Change of Scope Order") requiring the
Concessionaire to proceed with the performance thereof. In the event that the
Parties are unable to agree, the Authority may, by issuing a Change of Scope
Order, require the Concessionaire to proceed with the performance thereof
pending resolution of the Dispute, or carry out the works in accordance with
Clause 16.5.

16.2.4 The provisions of this Agreement, insofar as they relate to Construction
Works and Tests, shall apply mutatis mutandis to the works undertaken by
the Concessionaire under this Article 16.

16.3 Payment for Change of Scope

16.3.1 Within 7 (seven) days of issuing a Change of Scope Order, the Authority
shall make an advance payment to the Concessionaire in a sum equal to 20% (twenty per cent) of the cost of Change of Scope as agreed hereunder, and in
the event of a Dispute, 20% (twenty per cent) of the cost assessed by the
Independent Engineer. The Concessionaire shall, after commencement of
work, present to the Authority bills for payment in respect of the works in
progress or completed works, as the case may be, supported by such
Documentation as is reasonably sufficient for the Authority to determine the
accuracy thereof. Within 30 (thirty) days of receipt of such bills, the
Authority shall disburse to the Concessionaire such amounts as are certified
by the Independent Engineer as reasonable and after making a proportionate
deduction for the advance payment made hereunder, and in the event of any
Dispute, final adjustments thereto shall be made under and in accordance
with the Dispute Resolution Procedure.

16.3.2 Notwithstanding anything to the contrary contained in Clause 16.3.1, all
costs arising out of any Change of Scope Order issued during the
Construction Period shall be borne by the Concessionaire, subject to an
aggregate ceiling of 0.25% (zero point two five per cent) of the Total Project
Cost. Any costs in excess of the ceiling shall be reimbursed by the Authority
in accordance with Clause 16.3.1. In the event that the total cost arising out
of Change of Scope Orders (if any) issued prior to the Project Completion
Date is less than 0.25% (zero point two five per cent) of the Total Project
Cost, the difference thereof shall be credited to the Concessionaire to the
Safety Fund within a period of 180 (one hundred and eighty) days of the
Project Completion Date. For the avoidance of doubt, it is agreed that the
aforesaid 0.25% (zero point two five per cent) of the Total Project Cost shall,
to the extent borne by the Concessionaire, be deemed to form part of the
actual capital cost of the Project.
16.4 Restrictions on certain works

16.4.1 Notwithstanding anything to the contrary contained in this Article 16, but subject to the provisions of Clause 16.4.2, the Authority shall not require the Concessionaire to undertake any works or services if such works or services are likely to delay completion of Four-Laning; provided that in the event that the Authority considers such works or services to be essential, it may issue a Change of Scope Order, subject to the condition that the works forming part of or affected by such Order shall not be reckoned for purposes of determining completion of Four-Laning and issuing the Provisional Certificate.

16.4.2 Notwithstanding anything to the contrary contained in this Article 16, the Concessionaire shall be entitled to nullify any Change of Scope Order if it causes the cumulative costs relating to all the Change of Scope Orders to exceed 5% (five per cent) of the Total Project Cost in any continuous period of 3 (three) years immediately preceding the date of such Change of Scope Order or if such cumulative costs exceed 20% (twenty per cent) of the Total Project Cost at any time during the Concession Period.

16.5 Power of the Authority to undertake works

16.5.1 Notwithstanding anything to the contrary contained in Clauses 16.1.1, 16.2 and 16.3, the Authority may, after giving notice to the Concessionaire and considering its reply thereto, award any works or services, contemplated under Clause 16.1.1, to any person on the basis of open competitive bidding; provided that the Concessionaire shall have the option of matching the first ranked bid in terms of the selection criteria, subject to payment of 2% (two per cent) of the bid amount to the Authority, and thereupon securing the award of such works or services. For the avoidance of doubt, it is agreed that the Concessionaire shall be entitled to exercise such option only if it has participated in the bidding process and its bid does not exceed the first ranked bid by more than 10% (ten percent) thereof. It is also agreed that the Concessionaire shall provide access, assistance and cooperation to the person who undertakes the works or services hereunder.

16.5.2 The works undertaken in accordance with this Clause 16.5 shall conform to the Specifications and Standards and shall be carried out in a manner that minimises the disruption in operation of the Project Highway. The provisions of this Agreement, insofar as they relate to Construction Works and Tests, shall apply mutatis mutandis to the works carried out under this Clause 16.5.

16.6 Reduction in Scope of the Project

16.6.1 If the Concessionaire shall have failed to complete any Construction Works on account of Force Majeure or for reasons solely attributable to the Authority, the Authority may, in its discretion, require the Concessionaire to pay 80% (eighty percent) of the sum saved therefrom, and upon such
payment to the Authority, the obligations of the Concessionaire in respect of such works shall be deemed to have been fulfilled. For the avoidance of doubt, it is agreed that in the event such reduction in Scope of the Project causes or will cause a reduction in net after-tax return of the Concessionaire, the Parties shall meet, as soon as reasonably practical, and agree on a full or partial waiver of the aforesaid payment of 80% (eighty per cent) so as to place the Concessionaire in the same financial position as it would have enjoyed had there been no reduction in Scope of the Project. It is further agreed that the liability of the Authority under this Clause 16.6 shall not extend beyond waiver of the aforesaid 80% (eighty per cent). It is also agreed that in the event of a dispute, the Dispute Resolution Procedure shall apply.

16.6.2 For determining the obligations of the Concessionaire under this Clause 16.6, the provisions of Clauses 16.1, 16.2 and 16.4 shall apply mutatis mutandis, and upon issue of Change of Scope Order by the Authority hereunder, the Concessionaire shall pay forthwith the sum specified therein.
ARTICLE 17

OPERATION AND MAINTENANCE

17.1 O&M obligations of the Concessionaire

17.1.1 During the Operation Period, the Concessionaire shall operate and maintain the Project Highway in accordance with this Agreement either by itself, or through the O&M Contractor and if required, modify, repair or otherwise make improvements to the Project Highway to comply with the provisions of this Agreement, Applicable Laws and Applicable Permits, and conform to Specifications and Standards and Good Industry Practice. The obligations of the Concessionaire hereunder shall include:

(a) permitting safe, smooth and uninterrupted flow of traffic on the Project Highway during normal operating conditions;

(b) collecting and appropriating the Fee;

(c) minimising disruption to traffic in the event of accidents or other incidents affecting the safety and use of the Project Highway by providing a rapid and effective response and maintaining liaison with emergency services of the State;

(d) carrying out periodic preventive maintenance of the Project Highway;

(e) undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices;

(f) undertaking major maintenance such as resurfacing of pavements, repairs to structures, and repairs and refurbishment of tolling system and other equipment;

(g) preventing, with the assistance of concerned law enforcement agencies, any unauthorised use of the Project Highway;

(h) preventing, with the assistance of the concerned law enforcement agencies, any encroachments on the Project Highway;

(i) protection of the environment and provision of equipment and materials therefore;

(j) operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project Highway;

(k) maintaining a public relations unit to interface with and attend to suggestions from the Users, government agencies, media and other agencies; and

(l) complying with Safety Requirements in accordance with Article 18.
17.1.2 The Concessionaire shall remove promptly from the Project Highway all surplus construction machinery and materials, waste materials (including hazardous materials and waste water), rubbish and other debris (including, without limitation, accident debris) and keep the Project Highway in a clean, tidy and orderly condition, and in conformity with the Applicable Laws, Applicable Permits and Good Industry Practice. For the avoidance of doubt, it is agreed that the debris and material excavated shall be carried to and deposited at ______ (to be decided in consultation with the Independent Engineer).

17.1.3 The Concessionaire shall maintain, in conformity with Good Industry Practice, all stretches of approach roads, over-passes, under-passes or other structures situated on the Site but not forming part of the carriageway.

17.2 Maintenance Requirements

The Concessionaire shall procure that at all times during the Operation Period, the Project Highway conforms to the maintenance requirements set forth in Schedule-K (the “Maintenance Requirements”).

17.3 Maintenance Manual

17.3.1 No later than 180 (one hundred and eighty) days prior to the Scheduled Four-Laning Date, the Concessionaire shall, in consultation with the Independent Engineer, evolve a repair and maintenance manual (the “Maintenance Manual”) for the regular and preventive maintenance of the Project Highway in conformity with the Specifications and Standards, Maintenance Requirements, Safety Requirements and Good Industry Practice, and shall provide 5 (five) copies thereof to the Authority and 2 (two) copies to the Independent Engineer. The Maintenance Manual shall be revised and updated once every 3 (three) years and the provisions of this Clause 17.3 shall apply, mutatis mutandis, to such revision.

17.3.2 Without prejudice to the provision of Clause 17.3.1, the Maintenance Manual shall, in particular, include provisions for maintenance of Project Assets and shall provide for life cycle maintenance, routine maintenance and reactive maintenance which may be reasonably necessary for maintenance and repair of the Project Assets, including replacement thereof, such that their overall condition conforms to Good Industry Practice.

17.4 Maintenance Programme

17.4.1 On or before COD and no later than 45 (forty five) days prior to the beginning of each Accounting Year during the Operation Period, as the case may be, the Concessionaire shall provide to the Authority and the Independent Engineer, its proposed annual programme of preventive, urgent and other scheduled maintenance (the “Maintenance Programme”) to comply with the Maintenance Requirements, Maintenance Manual and Safety Requirements. Such Maintenance Programme shall include:

(a) preventer maintenance schedule;
(b) arrangements and procedures for carrying out urgent repairs;
(c) criteria to be adopted for deciding maintenance needs;
(d) intervals and procedures for carrying out inspection of all elements of the Project Highway;
(e) intervals at which the Concessionaire shall carry out periodic maintenance;
(f) arrangements and procedures for carrying out safety related measures; and
(g) intervals for major maintenance works and the scope thereof.

17.4.2 Within 15 (fifteen) days of receipt of the Maintenance Programme, the Independent Engineer shall review the same and convey its comments to the Concessionaire with particular reference to its conformity with the Maintenance Requirements, Maintenance Manual and Safety Requirements.

17.4.3 The Concessionaire may modify the Maintenance Programme as may be reasonable in the circumstances, and the procedure specified in Clauses 17.4.1 and 17.4.2 shall apply mutatis mutandis to such modifications.

17.5 Safety, vehicle breakdowns and accidents

17.5.1 The Concessionaire shall ensure safe conditions for the Users, and in the event of unsafe conditions, lane closures, diversions, vehicle breakdowns and accidents, it shall follow the relevant operating procedures including the setting up of temporary traffic cones and lights, and removal of obstruction and debris without delay. Such procedures shall conform to the provisions of this Agreement, Applicable Laws, Applicable Permits and Good Industry Practice.

17.5.2 The Concessionaire’s responsibility for rescue operations on the Project Highway shall be limited to an initial response to any particular incident until such time that the competent authority takes charge and shall include prompt removal of vehicles or debris or any other obstruction, which may endanger or interrupt the smooth flow of traffic. For this purpose, it shall maintain and operate a round-the-clock vehicle rescue post with one mobile crane having the capacity to lift a truck with a Gross Vehicle Weight of 30,000 (thirty thousand) kilograms, and such posts shall be located at each of the Toll Plaza(s).

17.6 De-commissioning due to Emergency

17.6.1 If, in the reasonable opinion of the Concessionaire, there exists an Emergency which warrants de-commissioning and closure to traffic of the whole or any part of the Project Highway, the Concessionaire shall be entitled to de-commission and close the whole or any part of the Project Highway to traffic for so long as such Emergency and the consequences thereof warrant; provided that such decommissioning and particulars thereof.
shall be notified by the Concessionaire to the Authority without any delay, and the Concessionaire shall diligently carry out and abide by any reasonable directions that the Authority may give for dealing with such Emergency.

17.6.2 The Concessionaire shall re-commission the Project Highway or the affected part thereof as quickly as practicable after the circumstances leading to its decommissioning and closure have ceased to exist or have so abated as to enable the Concessionaire to re-commission the Project Highway and shall notify the Authority of the same without any delay.

17.6.3 Any decommissioning or closure of any part of the Project Highway and the re-commissioning thereof shall, as soon as practicable, be brought to the notice of affected persons by means of public announcements/notice.

17.7 Lane closure

17.7.1 The Concessionaire shall not close any lane of the Project Highway for undertaking maintenance or repair works except with the prior written approval of the Independent Engineer. Such approval shall be sought by the Concessionaire through a written request to be made to the Independent Engineer, and a copy thereof furnished to the Authority, at least 7 (seven) days before the proposed closure of such lane and shall be accompanied by particulars thereof. Within 3 (three) days of receiving such request, the Independent Engineer shall grant permission with such modifications as it may deem necessary and a copy of such permission shall be sent to the Authority.

17.7.2 The provisions of Clause 17.7.1 shall not apply to de-commissioning under Clause 17.6.1 or to closure of any lane for a period not exceeding 2 (two) hours in a day at any time of the day and 6 (six) hours in a day at a time specified by the Independent Engineer as off-peak hours when the flow of traffic is comparatively lower.

17.7.3 Upon receiving the permission pursuant to Clause 17.7.1, the Concessionaire shall be entitled to close the designated lane for the period specified therein, and in the event of any delay in re-opening such lane, the Concessionaire shall pay Damages to the Authority calculated at the rate of 0.1% (zero point one per cent) of the Average Daily Fee for every stretch of 250 (two hundred and fifty) metres, or part thereof, for each day of delay until the lane has been re-opened for traffic.

17.8 Damages for breach of maintenance obligations

17.8.1 In the event that the Concessionaire fails to repair or rectify any defect or deficiency set forth in the Maintenance Requirements within the period specified therein, it shall be deemed to be in breach of this Agreement and the Authority shall be entitled to recover Damages, to be calculated and paid for each day of delay until the breach is cured, at the higher of (a) 0.5% (zero point five per cent) of Average Daily Fee, and (b) 0.1% (zero point one per cent) of the cost of such repair or rectification as estimated by the Independent Engineer.
Notwithstanding anything contained in this Agreement, should the actual traffic exceed the design capacity, during any year or part thereof and the Concessionaire fails to repair or rectify any defect or deficiency set forth in the Maintenance Requirements within the period specified therein, it shall be deemed to be in breach of this Agreement and the Authority shall be entitled, from such date, to recover Damages, to be calculated and paid for each day of delay until the breach is cured, at the higher of (a) 5% (five per cent) of Average Daily Fee, and (b) 1% (one per cent) of the cost of such repair or rectification as estimated by the Independent Engineer, for the balance period of the concession.

Recovery of such Damages shall be without prejudice to the rights of the Authority under this Agreement, including the right of Termination thereof.

17.8.2 The Damages set forth in Clause 17.8.1 may be assessed and specified forthwith by the Independent Engineer; provided that the Authority may, in its discretion, demand a smaller sum as Damages, if in its opinion, the breach has been cured promptly and the Concessionaire is otherwise in compliance with its obligations hereunder. The Concessionaire shall pay such Damages forthwith and in the event that it contests such Damages, the Dispute Resolution Procedure shall apply.

17.9 Authority’s right to take remedial measures

17.9.1 In the event the Concessionaire does not maintain and/or repair the Project Highway or any part thereof in conformity with the Maintenance Requirements, the Maintenance Manual or the Maintenance Programme, as the case may be, and fails to commence remedial works within 15 (fifteen) days of receipt of the O&M Inspection Report or a notice in this behalf from the Authority or the Independent Engineer, as the case may be, the Authority shall, without prejudice to its rights under this Agreement including Termination thereof, be entitled to undertake such remedial measures at the risk and cost of the Concessionaire, and to recover its cost from the Concessionaire. In addition to recovery of the aforesaid cost, a sum equal to 20% (twenty per cent) of such cost shall be paid by the Concessionaire to the Authority as Damages. For the avoidance of doubt, the right of the Authority under this Clause 17.9.1 shall be without prejudice to its rights and remedies provided under Clause 17.8.

17.9.2 The Authority shall have the right, and the Concessionaire hereby expressly grants to the Authority the right, to recover the costs and Damages specified in Clause 17.9.1 directly from the Escrow Account as if such costs and Damages were O&M Expenses, and for that purpose, the Concessionaire hereby agrees to give irrevocable instructions to the Escrow Bank to make payment from the Escrow Account in accordance with the instructions of the Authority under this Clause 17.9.2 and debit the same to O&M Expenses.

17.10 Overriding powers of the Authority

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

17.10.2 In the event that the Concessionaire, upon notice under Clause 17.10.1, fails to rectify or remove any hardship or danger within a reasonable period, the Authority may exercise overriding powers under this Clause 17.10.2 and take over the performance of any or all the obligations of the Concessionaire to the extent deemed necessary by it for rectifying or removing such hardship or danger; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required hereunder; provided further that any costs and expenses incurred by the Authority in discharge of its obligations hereunder shall be deemed to be O&M Expenses, and the Authority shall be entitled to recover them from the Concessionaire in accordance with the provisions of Clause 17.9 along with the Damages specified therein.

17.10.3 In the event of a national emergency, civil commotion or any other act specified in Clause 34.3, the Authority may take over the performance of any or all the obligations of the Concessionaire to the extent deemed necessary by it or as directed by the Government, and exercise such control over the Project Highway or give such directions to the Concessionaire as may be deemed necessary; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required in the circumstances which caused the exercise of such overriding power by the Authority. For the avoidance of doubt, it is agreed that the consequences of such action shall be dealt in accordance with the provisions of Article 34. It is also agreed that the Concessionaire shall comply with such instructions as the Authority may issue in pursuance of the provisions of this Clause 17.10, and shall provide assistance and cooperation to the Authority, on a best effort basis, for performance of its obligations hereunder.

17.11 Restoration of loss or damage to Project Highway

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

17.12 Modifications to the Project Highway

The Concessionaire shall not carry out any material modifications to the Project Highway save and except where such modifications are necessary for the Project Highway to operate in conformity with the Specifications and Standards, Maintenance Requirements, Good Industry Practice and
Applicable Laws; provided that the Concessionaire shall notify the Independent Engineer of the proposed modifications along with particulars thereof at least 15 (fifteen) days before commencing work on such modifications and shall reasonably consider any suggestions that the Independent Engineer may make within 15 (fifteen) days of receiving the Concessionaire's proposal. For the avoidance of doubt, all modifications made hereunder shall comply with the Specifications and Standards, Applicable Laws and the provisions of this Agreement.

17.13 Excuse from performance of obligations

The Concessionaire shall not be considered in breach of its obligations under this Agreement if any part of the Project Highway is not available to traffic on account of any of the following for the duration thereof:

(a) an event of Force Majeure;

(b) measures taken to ensure the safe use of the Project Highway except when unsafe conditions occurred because of failure of the Concessionaire to perform its obligations under this Agreement; or

(c) compliance with a request from the Authority or the directions of any Government Instrumentality, the effect of which is to close all or any part of the Project Highway.

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

17.14 Barriers and diversions

The Authority shall procure that during the Operation Period, no barriers are erected or placed by any Government Instrumentality on the Project Highway except for reasons of Emergency, national security, law and order or collection of inter-state taxes. The Authority shall also make best endeavours to procure that no Government Instrumentality shall undertake or cause to be undertaken, except for reasons of Emergency, national security or law and order, any diversions of traffic from, or closing down of approach roads to the Project Highway that may cause a material adverse effect on the flow of traffic to and from the Project Highway.

17.15 Advertising on the Site

The Concessionaire shall not undertake or permit any form of commercial advertising, display or hoarding at any place on the Site if such advertising, display or hoarding shall be visible to the Users while driving on such Highway; provided that this restriction shall not apply to the Toll Plazas, rest areas, bus shelters and telephone booths located on the Project Highway if the advertising thereon does not, in the opinion of the Authority, distract the Users or violates extant guidelines of MoRTH. All advertising on the Project Highway shall also conform to Good Industry Practice.
doubt, it is agreed that the rights of the Concessionaire hereunder shall be subject to Applicable Laws, as in force and effect from time to time, and no compensation shall be claimed on account thereof.
ARTICLE 18

SAFETY REQUIREMENTS

18.1 Safety Requirements

18.1.1 The Concessionaire shall comply with the provisions of this Agreement, Applicable Laws and Applicable Permits and conform to Good Industry Practice for securing the safety of the Users. In particular, the Concessionaire shall develop, implement and administer a surveillance and safety programme for providing a safe environment on or about the Project Highway, and shall comply with the safety requirements set forth in Schedule-L (the "Safety Requirements").

18.1.2 The Authority shall appoint an experienced and qualified firm or organisation (the "Safety Consultant") for carrying out safety audit of the Project Highway in accordance with the Safety Requirements, and shall take all other actions necessary for securing compliance with the Safety Requirements.

18.2 Expenditure on Safety Requirements

All costs and expenses arising out of or relating to Safety Requirements shall be borne by the Concessionaire to the extent such costs and expenses form part of the works and services included in the Scope of the Project, and works and services, if any, not forming part of the Scope of the Project shall be undertaken in accordance with the provisions of Article 16. Costs and expenses on works and services not covered hitherto before and arising out of Safety Requirements shall, subject to the provisions of Clause 16.3.2, be borne from out of a dedicated safety fund (the "Safety Fund") to be funded, owned and operated by the Authority or a substitute thereof.
ARTICLE 19

MONITORING OF OPERATION AND MAINTENANCE

19.1 Monthly status reports

During Operation Period, the Concessionaire shall, no later than 7 (seven) days after the close of each month, furnish to the Authority and the Independent Engineer a monthly report stating in reasonable detail the condition of the Project Highway including its compliance or otherwise with the Maintenance Requirements, Maintenance Manual, Maintenance Programme and Safety Requirements, and shall promptly give such other relevant information as may be required by the Independent Engineer. In particular, such report shall separately identify and state in reasonable detail the defects and deficiencies that require rectification.

19.2 Inspection

The Independent Engineer shall inspect the Project Highway at least once a month. It shall make a report of such inspection (the "O&M Inspection Report") stating in reasonable detail the defects or deficiencies, if any, with particular reference to the Maintenance Requirements, Maintenance Manual, the Maintenance Programme and Safety Requirements, and send a copy thereof to the Authority and the Concessionaire within 7 (seven) days of such inspection.

19.3 Tests

For determining that the Project Highway conforms to the Maintenance Requirements, the Independent Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests specified by it in accordance with Good Industry Practice. The Concessionaire shall, with due diligence, carry out or cause to be carried out all such tests in accordance with the instructions of the Independent Engineer and furnish the results of such tests forthwith to the Independent Engineer. One half of the costs incurred on such tests, and to the extent certified by the Independent Engineer as reasonable, shall be reimbursed by the Authority to the Concessionaire.

19.4 Remedial measures

19.4.1 The Concessionaire shall repair or rectify the defects or deficiencies, if any, set forth in the O&M Inspection Report or in the test results referred to in Clause 19.3 and furnish a report in respect thereof to the Independent Engineer and the Authority within 15 (fifteen) days of receiving the O&M Inspection Report or the test results, as the case may be; provided that where the remedying of such defects or deficiencies is likely to take more than 15 (fifteen) days, the Concessionaire shall submit progress reports of the repair works once every week until such works are completed in conformity with this Article.
19.4.2 The Independent Engineer shall require the Concessionaire to carry out or cause to be carried out tests, at its own cost, to determine that such remedial measures have brought the Project Highway into compliance with the Maintenance Requirements and the procedure set forth in this Clause 19.4 shall be repeated until the Project Highway conforms to the Maintenance Requirements. In the event that remedial measures are not completed by the Concessionaire in conformity with the provisions of this Agreement, the Authority shall be entitled to recover Damages from the Concessionaire under and in accordance with the provisions of Clause 17.8.

19.5 Monthly Fee Statement

During the Operation Period, the Concessionaire shall furnish to the Authority, within 7 (seven) days of completion of each month, a statement of Fee substantially in the form set forth in Schedule-M (the "Monthly Fee Statement"). The Concessionaire shall also furnish to the Authority such other information as the Authority may reasonably require, at specified intervals, in discharge of its statutory functions.

19.6 Reports of unusual occurrence

The Concessionaire shall, prior to the close of each day, send to the Authority and the Independent Engineer, by facsimile or e-mail, a report stating accidents and unusual occurrences on the Project Highway relating to the safety and security of the Users and Project Highway. A weekly and monthly summary of such reports shall also be sent within 3 (three) days of the closing of each week and month, as the case may be. For the purposes of this Clause 19.6, accidents and unusual occurrences on the Project Highway shall include:

(a) death or injury to any person;
(b) damaged or dislodged fixed equipment;
(c) any obstruction on the Project Highway, which results in slow down of the services being provided by the Concessionaire;
(d) disablement of any equipment during operation;
(e) communication failure affecting the operation of Project Highway;
(f) smoke or fire;
(g) flooding of Project Highway; and
(h) such other relevant information as may be required by the Authority or the Independent Engineer.
ARTICLE 20

TRAFFIC REGULATION

20.1 Traffic regulation by the Concessionaire

The Concessionaire shall regulate traffic on the Project Highway in accordance with the Applicable Laws, and subject to the supervision and control of the State authorities or a substitute thereof empowered in this behalf under the Applicable Laws.

20.2 Police assistance

For regulating the use of Project Highway in accordance with the Applicable Laws and this Agreement, the Authority shall assist the Concessionaire in procuring police assistance from the State Police Department or a substitute thereof. The police assistance shall include setting up of a traffic aid post (the "Traffic Aid Post") at each of the Toll Plazas with a mobile Police squad for round-the-clock patrolling of the Project Highway.

20.3 Buildings for Traffic Aid Posts

The Concessionaire shall, in accordance with the type designs prescribed for such police outpost buildings by the State Government or a substitute thereof, construct buildings not exceeding 25 (twenty five) square metres of plinth area, for each of the Traffic Aid Posts, and hand them over to the Authority no later than 60 (sixty) days prior to the Scheduled Four-Laning Date. The Traffic Aid Posts shall be deemed to be part of the Site and shall vest in the Authority.

20.4 Recurring expenditure on Police assistance

On or before the Scheduled Four-Laning Date, the Concessionaire shall provide to the State Police Department or a substitute thereof one Jeep or similar vehicle in good working condition along with chauffeurs for round-the-clock patrolling as set forth in Clause 20.2 and shall meet the operating costs of such vehicle including the salaries and allowances of the chauffeurs. For the avoidance of doubt, it is agreed that the Concessionaire shall not be liable for any other expenditure incurred by the State Police Department or a substitute thereof.
ARTICLE 21

EMERGENCY MEDICAL AID

21.1 Medical Aid Posts

For providing emergency medical aid during the Operation Period, as set forth in this Agreement, the Concessionaire shall assist the State Government or a substitute thereof to be designated by the Authority in setting up and operating a medical aid post (the "Medical Aid Post") at each of the Toll Plazas with round-the-clock ambulance services for victims of accidents on the Project Highway.

21.2 Buildings for Medical Aid Posts

The Concessionaire shall, at its cost and in accordance with the type designs prescribed for such buildings by the State Medical Department (or a substitute thereof to be designated by the Authority), construct an aid post building and 2 (two) residential quarters, and hand them over to the Authority, no later than 30 (thirty) days prior to Scheduled Four-Laning Date. The Medical Aid Post(s) shall be deemed to be part of the Site and shall vest in the Authority.

21.3 Recurring expenditure on Medical Aid Posts

On or before COD, the Concessionaire shall provide to the State Medical Department or a substitute thereof to be designated by the Authority one ambulance in good working condition along with chauffeurs for round-the-clock ambulance services as set forth in Clause 21.1 and meet the operating costs of such ambulance including the salaries and allowances of the chauffeurs. The Concessionaire shall also reimburse to the State Medical Department (or a substitute thereof to be designated by the Authority) the actual expenditure incurred by it in each Accounting Year on the medical equipment, and the pay and allowances of up to 2 (two) medical personnel deployed exclusively for the Medical Aid Posts and ambulance, and shall maintain the Medical Aid Post buildings in accordance with Good Industry Practice. For the avoidance of doubt, it is agreed that the Concessionaire shall not be liable for any other expenditure incurred by the State Medical Department or a substitute thereof to be designated by the Authority.
ARTICLE 22

TRAFFIC CENSUS AND SAMPLING

22.1 Traffic census

The Concessionaire shall install, maintain and operate electronic/computerised traffic counters at each of the Toll Plazas and collect data relating to the number and types of vehicles using the Project Highway. The Concessionaire shall also install, maintain and operate weighing platforms (weigh-in-motion type) for recording, on a sample basis, the weight of commercial goods vehicles using the Project Highway. A weekly statement of such data shall be compiled and furnished forthwith by the Concessionaire to the Authority substantially in the form specified in Schedule-N.

22.2 Traffic survey

The Authority may require the Concessionaire to conduct, during each year of the Concession Period, a detailed traffic survey at such frequency and on such days as the Authority may specify, provided that the cumulative period of such survey shall not exceed 14 (fourteen) days in a year. The Concessionaire shall, at its own cost, carry out or cause to be carried out, the survey in the form and manner reasonably specified by the Authority and furnish a detailed report thereof within 15(fifteen) days of the completion of each survey. For the avoidance of doubt, the Authority may also conduct traffic surveys, in such manner as it deems fit and at its own cost, through any agency designated by it for this purpose.

22.3 Traffic sampling

22.3.1 For determining the actual traffic on the Project Highway, the Authority shall be entitled to inspect the relevant records of the Concessionaire, and may, at its own cost, undertake traffic sampling substantially in the manner set forth in Schedule-O at such frequency as it may deem appropriate, but in no case for less than a continuous period of 7 (seven) days. The Concessionaire shall provide such assistance as the Authority may reasonably require for such traffic sampling.

22.3.2 If the traffic sampling pursuant to this Clause 22.3 demonstrates that the actual traffic is more than the traffic reported by the Concessionaire, the traffic determined by the traffic sampling shall be deemed to be the traffic for purposes of this Agreement and in the event of any Dispute relating to the traffic sampling, the Dispute Resolution Procedure shall apply. For the avoidance of doubt, Realisable Fee for any comparable period shall be calculated with reference to the traffic determined hereunder.

22.4 Computer systems and network

The Concessionaire shall install, operate and maintain a computer system with round-the-clock connections to the networks of the Authority and other...
related entities for exchange of data and information useful or necessary for efficient and transparent regulation and management of traffic. For this purpose, it shall follow such protocol for Electronic Data Interchange (the "EDI") as the Authority may specify. For the avoidance of doubt, it is agreed that the form specified in Schedule-N may be modified by the Authority from time to time for conforming to the requirements and output of EDI.
ARTICLE 23

INDEPENDENT ENGINEER

23.1 Appointment of Independent Engineer

The Authority shall appoint a consulting engineering firm from a panel of 10 (ten) firms or bodies corporate, constituted by the Authority substantially in accordance with the selection criteria set forth in Schedule-P, to be the independent consultant under this Agreement (the "Independent Engineer"). The appointment shall be made no later than 90 (ninety) days from the date of this Agreement and shall be for a period of 3 (three) years. On expiry or termination of the aforesaid period, the Authority may in its discretion renew the appointment, or appoint another firm from a fresh panel constituted pursuant to Schedule-P to be the Independent Engineer for a term of 3 (three) years, and such procedure shall be repeated after expiry of each appointment.

23.2 Duties and functions

23.2.1 The Independent Engineer shall discharge its duties and functions substantially in accordance with the terms of reference set forth in Schedule-Q.

23.2.2 The Independent Engineer shall submit regular periodic reports (at least once every month) to the Authority in respect of its duties and functions set forth in Schedule-Q.

23.3 Remuneration

The remuneration, cost and expenses of the Independent Engineer shall be paid by the Authority and subject to the limits set forth in Schedule-P, one-half of such remuneration, cost and expenses shall be reimbursed by the Concessionaire to the Authority within 15 (fifteen) days of receiving a statement of expenditure from the Authority.

23.4 Termination of appointment

23.4.1 The Authority may, in its discretion, terminate the appointment of the Independent Engineer at any time, but only after appointment of another Independent Engineer in accordance with Clause 23.1.

23.4.2 If the Concessionaire has reason to believe that the Independent Engineer is not discharging its duties and functions in a fair, efficient and diligent manner, it may make a written representation to the Authority and seek termination of the appointment of the Independent Engineer. Upon receipt of such representation, the Authority shall hold a tripartite meeting with the Concessionaire and Independent Engineer for an amicable resolution of the Dispute, and if any difference or disagreement between the Authority and the Concessionaire remains unresolved, the Dispute shall be settled in accordance with the Dispute Resolution Procedure. In the event that the
appointment of the Independent Engineer is terminated hereunder, the Authority shall appoint forthwith another Independent Engineer in accordance with Clause 23.1.

23.5 Authorised signatories

The Authority shall require the Independent Engineer to designate and notify to the Authority and the Concessionaire up to 2 (two) persons employed in its firm to sign for and on behalf of the Independent Engineer, and any communication or document required to be signed by the Independent Engineer shall be valid and effective only if signed by any of the designated persons; provided that the Independent Engineer may, by notice in writing, substitute any of the designated persons by any of its employees.

23.6 Dispute resolution

If either Party disputes any advice, instruction, decision, direction or award of the Independent Engineer, or, as the case may be, the assertion or failure to assert jurisdiction, the Dispute shall be resolved in accordance with the Dispute Resolution Procedure.
Part IV
Financial Covenants
ARTICLE 24

FINANCIAL CLOSE

24.1 Financial Close

24.1.1 The Concessionaire hereby agrees and undertakes that it shall achieve Financial Close within 180 (one hundred and eighty) days from the date of this Agreement and in the event of delay, it shall be entitled to a further period not exceeding 120 (one hundred and twenty) days, subject to payment of Damages to the Authority in a sum calculated at the rate of 0.1% (zero point one per cent) of the Performance Security for each day of delay, or for a further period not exceeding 200 (two hundred) days, subject to payment of Damages specified in Clause 4.3; provided that the Damages specified herein shall be payable every week in advance and the period beyond the said 180 (one hundred and eighty) days shall be granted only to the extent of Damages so paid; provided further that no Damages shall be payable if such delay in Financial Close has occurred solely as a result of any default or delay by the Authority in procuring satisfaction of the Conditions Precedent specified in Clause 4.1.2 or due to Force Majeure. For the avoidance of doubt, the Damages payable hereunder by the Concessionaire shall be in addition to the Damages, if any, due and payable under the provisions of Clause 4.3.

24.1.2 The Concessionaire shall, upon occurrence of Financial Close, notify the Authority forthwith, and shall have provided to the Authority, at least 2 (two) days prior to Financial Close, 3 (three) true copies of the Financial Package and the Financial Model, duly attested by a Director of the Concessionaire, along with 3 (three) soft copies of the Financial Model in MS Excel version or any substitute thereof, which is acceptable to the Senior Lenders.

24.2 Termination due to failure to achieve Financial Close

24.2.1 Notwithstanding anything to the contrary contained in this Agreement, but subject to Clause 34.6.1, in the event that Financial Close does not occur, for any reason whatsoever, within the period set forth in Clause 24.1.1 or the extended period provided thereunder, all rights, privileges, claims and entitlements of the Concessionaire under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Concessionaire, and the Concession Agreement shall be deemed to have been terminated by mutual agreement of the Parties. For the avoidance of doubt, it is agreed that in the event the Parties hereto have, by mutual consent, determined the Appointed Date to precede the Financial Close, the provisions of this Clause 24.2.1 shall not apply.

24.2.2 Upon Termination under Clause 24.2.1, the Authority shall be entitled to encash the Bid Security and appropriate the proceeds thereof as Damages; provided, however, that if Financial Close has not occurred solely as a result of the Authority being in default of any of its obligations under Clause 4.2, it shall, upon Termination, return the Bid Security forthwith along with the Damages due and payable under Clause 4.2. For the avoidance of doubt, it is...
expressly agreed that if the Bid Security shall have been substituted by Performance Security, the Authority shall be entitled to encash therefrom an amount equal to Bid Security.
ARTICLE 25
GRANT

25.1 Grant

25.1.1 The Authority agrees to provide to the Concessionaire cash support by way of an outright grant equal to the sum set forth in the Bid, namely, Rs. 255 Crores (Rupees Two Hundred Fifty Five Crores Only), in accordance with the provisions of this Article 25 (the “Grant”).

25.1.2 The Grant shall be disbursed to the Concessionaire by way of Equity Support in accordance with the provisions of Clause 25.2.

25.2 Equity Support

25.2.1 Subject to the conditions specified in this Clause 25.2, the Grant shall be credited to the Escrow Account and shall be applied by the Concessionaire for meeting the Total Project Cost (the “Equity Support”).

25.2.2 The Equity Support shall not exceed the sum specified in the Bid and as accepted by the Authority, but shall in no case be greater than twice the Equity, and shall be further restricted to a sum not exceeding 40% (forty per cent) of the Total Project Cost. For the avoidance of doubt, the Total Project Cost to be reckoned for the purposes of this Clause 25.2.2 shall include Equity Support.

25.2.3 Equity Support shall be due and payable to the Concessionaire after it has expended the Equity, and shall be disbursed proportionately along with the loan funds thereafter remaining to be disbursed by the Senior Lenders under the Financing Agreements. The Authority shall disburse each tranche of the Equity Support as and when due, but no later than 15 (fifteen) days of receiving a request from the Concessionaire along with necessary particulars.

25.2.4 In the event of occurrence of a Concessionaire Default, disbursement of Equity Support shall be suspended till such Concessionaire Default has been cured by the Concessionaire.

25.3 O&M Support

Deleted

PREMIUM

25.4 Premium

Deleted
ARTICLE 26

CONCESSION FEE

26.1 Concession Fee

In consideration of the grant of Concession, the Concessionaire shall pay to the Authority by way of concession fee (the "Concession Fee") a sum of Re. 1 (Rupee one) per annum.

26.2 Additional Concession Fee

Deleted

26.3 Determination of Concession Fee

Deleted

26.4 Payment of Concession Fee

Deleted

26.5 Verification of Realisable Fee

Deleted
ARTICLE 27

USER FEE

27.1 Collection and appropriation of Fee

27.1.1 On and from the COD till the Transfer Date, the Concessionaire shall have the sole and exclusive right to demand, collect and appropriate Fee from the Users subject to and in accordance with this Agreement and the National Highways Fee (Determination of Rates and Collection) Rules, 2008 (the "Fee Rules"); provided that for ease of payment and collection, such Fee shall be rounded off to the nearest 5 (five) rupees in accordance with the Fee Rules; provided further that the Concessionaire may determine and collect Fee at such lower rates as it may, by public notice to the Users, specify in respect of all or any category of Users or vehicles.

27.1.2 The Parties acknowledge that a notification for levy and collection of Fee shall be issued by the Government under Section 8A of the Act read with Rule 3 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008 (the “Fee Notification”) within 90 (ninety) days hereof, substantially in the form set forth in Schedule-R.

27.1.3 The Concessionaire acknowledges and agrees that upon payment of Fee, any User shall be entitled to use the Project Highway and the Concessionaire shall not place, or cause to be placed, any restriction on such use, except to the extent specified in any Applicable Law, Applicable Permit or the provisions of this Agreement.

27.1.4 The Concessionaire acknowledges and agrees that any User who is not liable for payment of Fee shall be entitled to use the Project Highway without any restrictions, except to the extent specified in any Applicable Law, Applicable Permit or the provisions of this Agreement. For the avoidance of doubt, the Concessionaire hereby acknowledges that Exempted Vehicles are not liable to payment of Fee.

27.2 Revision of Fee

27.2.1 The Parties hereto acknowledge and agree that the Fee shall be revised annually on April 1 subject to and in accordance with the provisions of the Fee Rules; provided, however, that no revision shall be effected within a period of 6 (six) months from the date of the preceding revision of Fee.

27.2.2 Deleted

27.2.3 The Concessionaire hereby acknowledges and agrees that it is not entitled to any revision of Fee or other relief from the Authority or any Government Instrumentality except in accordance with the express provisions of this Agreement.
27.3 Exemption for Local Users

The Concessionaire shall not collect any Fee from a Local User for non-commercial use of the Project Highway, and shall issue a pass in respect thereof for commuting on a section of the Project Highway as specified in such pass and for crossing the Toll Plaza specified therein. For carrying out the provisions of this Clause 27.3, the Concessionaire shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the Authority or by Local Users from time to time; provided that for defraying its expenses on issuing of passes and handling of Local Users, the Concessionaire shall be entitled to charge a monthly fee of Rs.150 (Rupees one hundred and fifty), with reference to the base year 2007-08, to be revised annually in accordance with the Fee Rules to reflect the variation in WPI, and then rounded off to the nearest 5 (five) rupees; provided further that no passes will be required or Fee collected from a vehicle that uses part of the Project Highway and does not cross a Toll Plaza.

27.4 Free use of service road

27.4.1 The Concessionaire shall not permit entry of Local Users, Tractors, animal-drawn vehicles, three-wheelers and Motor Cycles on the carriageway of the Project Highway where a service road or alternative road is available in conformity with the provisions of Fee Rules; provided that a Motor Cycle shall be permitted to use such carriageway upon payment of Fee. For the avoidance of doubt, it is agreed that the Concessionaire shall be entitled to set up temporary or permanent Fee collection booths, entry barriers or such other restrictions on the service roads, as may reasonably be necessary for preventing evasion of Fee by vehicles which are otherwise liable to payment of Fee.

27.4.2 Any motorised vehicle, not being a Tractor, animal-drawn vehicle, three-wheeler, Motor Cycle or a vehicle of Local User, using the service road forming part of the Project Highway shall be liable to payment of Fee as if it was using the Project Highway. For the avoidance of doubt, a vehicle which is not liable to payment of Fee for use of any section of the Project Highway shall not be required to pay Fee if it is using a service road in that section of the Project Highway.

27.5 Discounted Fee for frequent Users

27.5.1 The Concessionaire shall, upon request from any person, issue a return pass on payment of a sum equal to 150% (one hundred and fifty per cent) of the Fee payable for the respective vehicle if it were to undertake a single one-way trip on the Project Highway. Such return pass shall entitle the specified vehicle to undertake a return journey within 24 (twenty four) hours from the time of payment of Fee.

27.5.2 The Concessionaire shall, upon request from any person for issue of 50 (fifty) or more one-way toll tickets, issue such tickets at a discounted rate equivalent to two-thirds of the Fee payable for the respective vehicle. Such
discounted tickets shall entitle the specified vehicle to commute on the Project Highway by using one ticket for a single one-way trip at any time during a period of one month from the date of payment of Fee.

27.6 Reappropriation of excess Fee

27.6.1 In the event that the average daily traffic of PCUs in any Accounting Year shall have reached a level equivalent to 120% (one hundred and twenty percent) of the designed capacity specified in Clause 29.2.3 (the “Traffic Cap”), the Fee levied and collected from the traffic exceeding the Traffic Cap shall, notwithstanding anything to the contrary contained in this Agreement, be deemed to be due and payable to the Authority in accordance with the provisions of Clause 27.6.2.

27.6.2 If traffic in any Accounting Year exceeds the Traffic Cap, the Concessionaire shall be entitled to collect and appropriate the Realisable Fee for traffic not exceeding the Traffic Cap and for all traffic exceeding the Traffic Cap, the Concessionaire shall collect and deposit the same into the Safety Fund within 60 (sixty) days of the close of the relevant Accounting Year; provided that the balance remaining in respect of the excess traffic of the last Accounting Year of the Concession Period shall be credited to the Safety Fund within 30 (thirty) days of the Transfer Date.

27.7 Tolling Contractor

The Concessionaire may appoint a Tolling Contractor or any other person to collect the Fee for and on behalf of the Concessionaire, provided that notwithstanding such appointment, the Concessionaire shall be and remain solely liable and responsible for the collection of Fee in accordance with this Agreement and its deposit into the Escrow Account and for compliance with the provisions of this Agreement.

27.8 Fee collection points

Fee shall ordinarily be collected at the Toll Plazas from vehicles crossing the Toll Plazas and using the whole or part of the Project Highway; provided that for preventing evasion of Fee by any vehicle circumventing one or both of the Toll Plazas and using the whole or part of the Project Highway located between such Toll Plazas, the Concessionaire shall be entitled to set up at its own risk and cost, and in consultation with the Independent Engineer, its temporary or permanent Fee collection booths, as may reasonably be necessary for preventing such evasion. For the avoidance of doubt, the Concessionaire hereby acknowledges and agrees that it shall not determine or collect Fee from Users who only use part of the Project Highway which is situated between the two Toll Plazas. It is further acknowledged and agreed that the restrictions hereunder shall not extend beyond a distance of 10 (ten) kilometers from the Toll Plazas and the provisions of this Clause 27.8 shall be so enforced as to minimise inconvenience to Users who are not liable to payment of Fee.
27.9 Additional charge for evasion of Fee

In the event that any vehicle uses the Project Highway without payment of Fee due, the Concessionaire shall be entitled to determine and collect from such vehicle the Fee due and an equivalent amount towards predetermined liquidated damages for unauthorised use of the Project Highway; provided that the determination and collection of such liquidated damages shall be at the risk and cost of the Concessionaire and the Authority shall not in any manner be liable on account thereof; provided that upon failure of the driver of such vehicle to pay Fee, the Concessionaire may prevent such vehicle from using the Project Highway and may have such vehicle removed therefrom.

27.10 Additional fee for overloaded vehicles

Without prejudice to the liability incurred under the Applicable Laws by any person driving a vehicle that is loaded in excess of the permissible limit set forth in such laws, the Concessionaire may recover Fee for such overloaded vehicle at the rate applicable to the next higher category of vehicles.

Provided that such Fee shall be levied on the basis of actual Gross Vehicle Weight as measured by a standardised static weighing machine to be installed by the Concessionaire at each of the Toll Plazas and where no such weighing machine has been installed, the Concessionaire shall not be entitled to collect Fee for the next higher category of vehicles.

Provided further that upon detection of overloading, the Concessionaire shall prevent the vehicle from using the Project Highway until the excess load has been removed from such vehicle and the Authority shall not be liable for any act of omission of the Concessionaire in relation to such vehicle or person driving such vehicle.

27.11 Display of Fee rates

27.11.1 The Concessionaire shall, one kilometre before the Toll Plaza, 500 (five hundred) metres before the Toll Plaza and 50 (fifty) metres before entry to the Toll Plazas, prominently display the applicable rates of Fee for information of Users approaching the Toll Plaza and shall also publish and display such other information in such manner as may be prescribed under the Fee Rules.

27.11.2 The Concessionaire shall, from time to time, inform the Authority of the applicable Fee and the detailed calculation thereof. Such information shall be communicated at least 15 (fifteen) days prior to the revision of Fee under and in accordance with the Fee Rules.

27.11.3 The Concessionaire shall not revise, display or collect any amounts in excess of the rates of Fee payable under the Fee Rules. In the event any excess amounts are collected by or on behalf of the Concessionaire, it shall, upon receiving a notice to this effect from the Authority, refund such excess amounts to the Authority along with Damages equal to 25% (twenty-five
percent) thereof.
ARTICLE 28

REVENUE SHORTFALL LOAN

28.1 Revenue Shortfall Loan

28.1.1 If the Realisable Fee in any Accounting Year shall fall short of the Subsistence Revenue as a result of an Indirect Political Event, a Political Event or an Authority Default, as the case may be, the Authority shall, upon request of the Concessionaire, provide a loan for meeting such shortfall (the "Revenue Shortfall Loan") at an interest rate equal to 2% (two per cent) above the Bank Rate.

28.1.2 If the half-yearly results of the Concessionaire indicate that the shortfall referred to in Clause 28.1.1 and contemplated for an Accounting Year has arisen in respect of the first 6 (six) months thereof, the Concessionaire shall be entitled to a provisional Revenue Shortfall Loan; provided that, no later than 60 (sixty) days after the close of such Accounting Year, the Concessionaire shall either repay the provisional loan with interest or adjust it against the Revenue Shortfall Loan, if any, as may be due to it under this Clause 28.1.

28.1.3 The Authority shall disburse the Revenue Shortfall Loan or the provisional Revenue Shortfall Loan, as the case may be, within 30 (thirty) days of receiving a valid request from the Concessionaire along with the particulars thereof including a detailed account of the Indirect Political Event, Political Event or the Authority Default, as the case may be, and its impact on the collection of Fee.

28.2 Repayment of Revenue Shortfall Loan

A sum equal to 50% (fifty per cent) of the ‘profit before tax’ of the Concessionaire, as and when made, shall be earmarked for repayment of the Revenue Shortfall Loan and interest thereon, and paid by the Concessionaire to the Authority within 90 (ninety) days of the close of the Accounting Year in which such profits have been made; provided that the Concessionaire shall repay the entire Revenue Shortfall Loan and interest thereon no later than one year prior to the expiry of the Concession Period and in the event that any sum remains due or outstanding at any time during such period of one year, the Authority shall be entitled to terminate this Agreement forthwith. For the avoidance of doubt, it is agreed that the repayment of Revenue Shortfall Loan shall be in accordance with and subject to the provisions of Article 31.
ARTICLE 29

EFFECT OF VARIATIONS IN TRAFFIC GROWTH

29.1 Effect of variations in traffic growth

29.1.1 The Authority and the Concessionaire acknowledge that the traffic as on September 1, 2019 (the "Target Date") is estimated to be 36200 PCUs per day (the "Target Traffic"), and hereby agree that for determining the modifications to the Concession Period under this Article 29, the actual traffic on the Target Date shall be derived by computing the average of the traffic as determined by traffic sampling to be undertaken, in accordance with Clause 22.3, on the date that falls one year prior to the Target Date, on the Target Date and on the first anniversary of the Target Date (the "Actual Average Traffic"). For the avoidance of doubt, it is agreed that traffic sampling shall be undertaken for a continuous period of 7 (seven) days during anytime within 15 (fifteen) days prior to the date specified herein and the average thereof shall be deemed to be the actual traffic. It is further agreed that if the Project Highway shall have two or more Toll Plazas, the average traffic thereof shall be computed for determining the Actual Average Traffic hereunder.

29.1.2 In the event that the Actual Average Traffic shall have fallen short of the Target Traffic by more than 2.5% (two point five per cent) thereof or exceeded the Target Traffic by more than 2.5% (two point five per cent) thereof, the Concession Period shall be deemed to be modified in accordance with Clause 29.2. For the avoidance of doubt, in the event of any Dispute relating to Actual Average Traffic, the Dispute Resolution Procedure shall apply.

29.2 Modification in the Concession Period

29.2.1 Subject to the provisions of Clause 29.1.2, in the event Actual Average Traffic shall have fallen short of the Target Traffic, then for every 1% (one per cent) shortfall as compared to the Target Traffic, the Concession Period shall, subject to payment of Concession Fee in accordance with this Agreement, be increased by 1.5% (one point five per cent) thereof; provided that such increase in Concession Period shall not in any case exceed 20% (twenty per cent) of the Concession Period. For the avoidance of doubt, and by way of illustration, it is agreed that in the event of a shortfall of 10.6% (ten point six per cent) in Target Traffic, the Concession Period shall be increased by 15% (fifteen per cent) thereof.

29.2.2 Subject to the provisions of Clause 29.1.2, in the event Actual Average Traffic shall have exceeded the Target Traffic, then for every 1% (one per cent) excess as compared to the Target Traffic, the Concession Period shall be reduced by 0.75% (zero point seven five per cent) thereof; provided that such reduction in Concession Period shall not in any case exceed 10% (ten per cent) thereof. For the avoidance of doubt and by way of illustration, it is agreed that in the event of an excess of 8.7% (eight point seven per cent) in the actual traffic as determined by traffic sampling to be undertaken, in accordance with Clause 22.3, on the date that falls one year prior to the Target Date, on the Target Date and on the first anniversary of the Target Date (the "Actual Average Traffic"). For the avoidance of doubt, it is agreed that traffic sampling shall be undertaken for a continuous period of 7 (seven) days during anytime within 15 (fifteen) days prior to the date specified herein and the average thereof shall be deemed to be the actual traffic. It is further agreed that if the Project Highway shall have two or more Toll Plazas, the average traffic thereof shall be computed for determining the Actual Average Traffic hereunder.
Target Traffic, the Concession Period shall be reduced by 6% (six per cent) thereof:

Provided further that in lieu of a reduction in Concession Period under this Clause 29.2.2, the Concessionaire may elect to pay, in addition to the Concession Fee that would be due and payable if the Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five per cent) of the Realisable Fee in the respective year(s), and upon notice given to this effect by the Concessionaire no later than 2 (two) years prior to the Transfer Date contemplated under this Clause 29.2.2, the Authority shall waive the reduction in Concession Period hereunder and recover the Concession Fee and the aforesaid premium for the period waived hereunder.

29.2.3 Notwithstanding anything to the contrary contained in this agreement, if the average daily traffic of PCU's in any accounting year shall exceed the designed capacity of the project highway, the authority at its option may cause preparation of a detailed project report (DPR). The said DPR, inter-alia will assess the cost as may have to be incurred for augmenting the capacity of the project highway such that its capacity shall have increased sufficiently for carrying the then current traffic in accordance with the corresponding provisions of the Indian roads congress publication or any substitute thereof and extension of concession period, if any, that may be required to yield the concessionaire a post-tax return on equity (Equity IRR) of 16% per annum, such assessment being made at an assumed debt:equity ratio of 70:30. Such extension of Concession period shall be however limited to 5 (five) years. For avoidance of doubt it is stated that there shall be no reduction in the concession period as originally accepted. The authority may thereafter, at their sole option, issue a notice to the Concessionaire, (to be responded within a period of three months from the date of such notice), to undertake within six months of such notice, augmentation so determined by the authority. For this purpose, all realizable fees that shall accrue from three months from the date of issuance of the aforesaid notice by the Authority, requiring the Concessionaire to procure capacity augmentation under this clause, shall be included in the assessment of revenue generated against the capacity augmentation and the equity IRR calculations as aforesaid shall be so based on such revenues. On refusal or non-acceptance by the Concessionaire to undertake such augmentation, either absolutely or on such extension of concession period as assessed under the DPR, or on the failure of the Concessionaire to undertake such augmentation on the due date so intimated by the authority, an indirect political event shall be deemed to have occurred and the authority may in its discretion terminate this agreement by issuing a termination notice and making a termination payment under and in accordance with the provisions of clause 34.9.2; without the authority being liable to issue any further notice under this provision.

For the avoidance of doubt, the Parties agree that an average daily traffic of 60000 PCUs shall be deemed to be the design capacity of the Four-Lane Project Highway.

29.2.4 If the Concessionaire shall have, prior to issue of a Termination Notice under
Clause 29.2.3, completed the construction works necessary for augmenting the capacity of the Project Highway such that its capacity shall have increased sufficiently for carrying the then current traffic in accordance with the relevant provisions of the Indian Roads Congress Publication No. IRC - 64, 1990 or any substitute thereof, the Indirect Political Event specified in Clause 29.2.3 shall be deemed to have been cured.
ARTICLE 30

CONSTRUCTION OF ADDITIONAL TOLLWAY

30.1 Restriction on construction of Additional Tollway

30.1.1 Notwithstanding anything to the contrary contained in this Agreement but subject always to Clause 30.2, the Authority shall not construct, and shall procure that no Government Instrumentality shall construct or cause to be constructed, any expressway or other toll road between, inter alia, Bareilly and Sitapur i.e. km 262.00 and km 413.200 on National Highway No. 24 (collectively the "Additional Tollway") for use by traffic at any time before the 12th (twelfth) anniversary of the Appointed Date. For the avoidance of doubt, Additional Tollway does not include any expressway or other toll road connecting, inter alia, Bareilly and Sitapur i.e. km 262.00 and km 413.200 on National Highway No. 24 if the length of such expressway or toll road exceeds the length of the existing route comprising the Project Highway by 20% (twenty per cent) thereof.

30.1.2 If the Authority shall be in breach of the provisions of Clause 30.1.1, the Concessionaire shall, without prejudice to its other rights and remedies under this Agreement including Termination thereof, be entitled to receive compensation from the Authority under and in accordance with the provisions of Clause 35.4.

30.2 Modification in the Concession Period

In the event of the Authority or any Government Instrumentality constructing or causing construction of any Additional Tollway, the following shall apply:

(a) Deleted

(b) Deleted

(c) if the Additional Tollway is opened to traffic between the 12th (twelfth) and 20th (twentieth) anniversary of the Appointed Date, the Concessionaire shall be entitled to an additional Concession Period, which shall be equal in duration to the period between the opening of the Additional Tollway and the 20th (twentieth) anniversary. For the avoidance of doubt, if the Additional Tollway is opened on the 17th (seventeenth) anniversary, the Concession Period shall be deemed to be 23 (twenty three) years; and

(d) if the Concession Period is to be increased in accordance with the provisions of this Clause 30.2, the same shall be added to the Concession Period due to the Concessionaire under and in accordance with all other provisions of this Agreement, save and except the provisions relating to Termination.
30.3 Minimum Fee for the Project Highway

Upon commissioning of the Additional Tollway, the Concessionaire shall continue to collect the Fee, and shall not offer any discounts or reductions in such Fee except with the prior written consent of the Authority; provided that the Concessionaire may continue, in the same form and manner, any discounts or reductions that it had offered to any general or special class of Users or vehicles for a continuous period of three years prior to the opening of the Additional Tollway to traffic.

30.4 Minimum Fee for Additional Tollway

The Authority agrees and undertakes to procure that the fee to be levied and collected during the subsistence of this Concession from any vehicle or class of vehicles using the Additional Tollway shall at no time be less than 25% (twenty five percent) higher than the Fee levied and collected from similar vehicles using the Project Highway.
ARTICLE 31

ESCROW ACCOUNT

31.1 Escrow Account

31.1.1 The Concessionaire shall, prior to the Appointed Date, open and establish an Escrow Account with a Bank (the "Escrow Bank") in accordance with this Agreement read with the Escrow Agreement.

31.1.2 The nature and scope of the Escrow Account are fully described in the agreement (the "Escrow Agreement") to be entered into amongst the Concessionaire, the Authority, the Escrow Bank and the Senior Lenders through the Lenders' Representative, which shall be substantially in the form set forth in Schedule-S.

31.2 Deposits into Escrow Account

The Concessionaire shall deposit or cause to be deposited the following inflows and receipts into the Escrow Account:

(a) all funds constituting the Financial Package;

(b) all Fee and any other revenues from or in respect of the Project Highway, including the proceeds of any rentals, deposits, capital receipts or insurance claims; and

(c) all payments by the Authority, after deduction of any outstanding Concession Fee:

Provided that the Senior Lenders may make direct disbursements to the EPC Contractor in accordance with the express provisions contained in this behalf in the Financing Agreements.

31.3 Withdrawals during Concession Period

31.3.1 The Concessionaire shall, at the time of opening the Escrow Account, give irrevocable instructions, by way of an Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in the month when due:

(a) all taxes due and payable by the Concessionaire for and in respect of the Project Highway;

(b) all payments relating to construction of the Project Highway, subject to and in accordance with the conditions, if any, set forth in the Financing Agreements;
(c) O&M Expenses, subject to the ceiling, if any, set forth in the Financing Agreements;

(d) O&M Expenses and other costs and expenses incurred by the Authority in accordance with the provisions of this Agreement, and certified by the Authority as due and payable to it;

(e) Concession Fee due and payable to the Authority;

(f) monthly proportionate provision of Debt Service due in an Accounting Year;

(g) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire, including repayment of Revenue Shortfall Loan;

(h) monthly proportionate provision of debt service payments due in an Accounting Year in respect of Subordinated Debt;

(i) any reserve requirements set forth in the Financing Agreements; and

(j) balance, if any, in accordance with the instructions of the Concessionaire.

31.3.2 The Concessionaire shall not in any manner modify the order of payment specified in Clause 31.3.1, except with the prior written approval of the Authority.

31.4 Withdrawals upon Termination

31.4.1 Notwithstanding anything to the contrary contained in this Agreement, all amounts standing to the credit of the Escrow Account shall, upon Termination, be appropriated in the following order:

(a) all taxes due and payable by the Concessionaire for and in respect of the Project Highway;

(b) 90% (ninety per cent) of Debt Due excluding Subordinated Debt;

(c) outstanding Concession Fee;

(d) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire, including repayment of Revenue Shortfall Loan;

(e) retention and payments relating to the liability for defects and deficiencies set forth in Article 39;

(f) outstanding Debt Service including the balance of Debt Due;

(g) outstanding Subordinated Debt;
(h) incurred or accrued O&M Expenses;

(i) any other payments required to be made under this Agreement; and

(j) balance, if any, in accordance with the instructions of the Concessionaire:

Provided that no appropriations shall be made under Sub-clause (j) of this Clause 31.4.1 until a Vesting Certificate has been issued by the Authority under the provisions of Article 38.

31.4.2 The provisions of this Article 31 and the instructions contained in the Escrow Agreement shall remain in full force and effect until the obligations set forth in Clause 31.4.1 have been discharged.
ARTICLE 32

INSURANCE

32.1 Insurance during Concession Period

The Concessionaire shall effect and maintain at its own cost, during the Construction Period and the Operation Period, such insurances for such maximum sums as may be required under the Financing Agreements, and the Applicable Laws, and such insurances as may be necessary or prudent in accordance with Good Industry Practice. The Concessionaire shall also effect and maintain such insurances as may be necessary for mitigating the risks that may devolve on the Authority as a consequence of any act or omission of the Concessionaire during the Construction Period. The Concessionaire shall procure that in each insurance policy, the Authority shall be a co-insured and that the insurer shall pay the proceeds of insurance into the Escrow Account. For the avoidance of doubt, the level of insurance to be maintained by the Concessionaire after repayment of Senior Lenders’ dues in full shall be determined on the same principles as applicable for determining the level of insurance prior to such repayment of Senior Lenders’ dues.

32.2 Notice to the Authority

No later than 45 (forty-five) days prior to commencement of the Construction Period or the Operation Period, as the case may be, the Concessionaire shall by notice furnish to the Authority, in reasonable detail, information in respect of the insurances that it proposes to effect and maintain in accordance with this Article 32. Within 30 (thirty) days of receipt of such notice, the Authority may require the Concessionaire to effect and maintain such other insurances as may be necessary pursuant hereto, and in the event of any difference or disagreement relating to any such insurance, the Dispute Resolution Procedure shall apply.

32.3 Evidence of Insurance Cover

All insurances obtained by the Concessionaire in accordance with this Article 32 shall be maintained with insurers on terms consistent with Good Industry Practice. Within 15 (fifteen) days of obtaining any insurance cover, the Concessionaire shall furnish to the Authority, notarised true copies of the certificate(s) of insurance, copies of insurance policies and premia payment receipts in respect of such insurance, and no such insurance shall be cancelled, modified, or allowed to expire or lapse until the expiration of at least 45 (forty five) days after notice of such proposed cancellation, modification or non-renewal has been delivered by the Concessionaire to the Authority.

32.4 Remedy for failure to insure

If the Concessionaire shall fail to effect and keep in force all insurances for which it is responsible pursuant hereto, the Authority shall have the option to
either keep in force any such insurances, and pay such premia and recover the costs thereof from the Concessionaire, or in the event of computation of a Termination Payment, treat an amount equal to the Insurance Cover as deemed to have been received by the Concessionaire.

32.5 Waiver of subrogation

All insurance policies in respect of the insurance obtained by the Concessionaire pursuant to this Article 32 shall include a waiver of any and all rights of subrogation or recovery of the insurers thereunder against, inter alia, the Authority, and its assigns, successors, undertakings and their subsidiaries, affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

32.6 Concessionaire’s waiver

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

32.7 Application of insurance proceeds

The proceeds from all insurance claims, except life and injury, shall be paid to the Concessionaire by credit to the Escrow Account and it shall, notwithstanding anything to the contrary contained in Clause 31.3, apply such proceeds for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project Highway, and the balance remaining, if any, shall be applied in accordance with the provisions contained in this behalf in the Financing Agreements.
ARTICLE 33
ACCOUNTS AND AUDIT

33.1 Audited accounts

33.1.1 The Concessionaire shall maintain books of accounts recording all its receipts (including all Realisable Fees and other revenues derived/collected by it from or on account of the Project Highway and/or its use), income, expenditure, payments (including payments from the Escrow Account), assets and liabilities, in accordance with this Agreement, Good Industry Practice, Applicable Laws and Applicable Permits. The Concessionaire shall provide 2 (two) copies of its Balance Sheet, Cash Flow Statement and Profit and Loss Account, along with a report thereon by its Statutory Auditors, within 90 (ninety) days of the close of the Accounting Year to which they pertain and such audited accounts, save and except where expressly provided to the contrary, shall form the basis of payments by either Party under this Agreement. The Authority shall have the right to inspect the records of the Concessionaire during office hours and require copies of relevant extracts of books of accounts, duly certified by the Statutory Auditors, to be provided to the Authority for verification of basis of payments, and in the event of any discrepancy or error being found, the same shall be rectified and such rectified account shall form the basis of payments by either Party under this Agreement.

33.1.2 The Concessionaire shall, within 30 (thirty) days of the close of each quarter of an Accounting Year, furnish to the Authority its unaudited financial results in respect of the preceding quarter, in the manner and form prescribed by the Securities and Exchange Board of India for publication of quarterly results by the companies listed on a stock exchange.

33.1.3 On or before the thirty-first day of May each Year, the Concessionaire shall provide to the Authority, for the preceding Accounting Year, a statement duly audited by its Statutory Auditors giving summarised information on (a) the traffic count for each category of vehicles using the Project Highway and liable for payment of Fee therefore, (b) Fee charged and received, Realisable Fee and other revenues derived from the Project Highway, and (c) such other information as the Authority may reasonably require.

33.2 Appointment of auditors

33.2.1 The Concessionaire shall appoint, and have during the subsistence of this Agreement as its Statutory Auditors, a firm chosen by it from the mutually agreed list of 10 (ten) reputable firms of chartered accountants (the “Panel of Chartered Accountants”), such list to be prepared substantially in accordance with the criteria set forth in Schedule-T. All fees and expenses of the Statutory Auditors shall be borne by the Concessionaire.

33.2.2 The Concessionaire may terminate the appointment of its Statutory Auditors after a notice of 45 (forty five) days to the Authority, subject to the
replacement Statutory Auditors being appointed from the Panel of Chartered Accountants.

33.2.3 Notwithstanding anything to the contrary contained in this Agreement, the Authority shall have the right, but not the obligation, to appoint at its cost from time to time and at anytime, another firm (the “Additional Auditors”) from the Panel of Chartered Accountants to audit and verify all those matters, expenses, costs, realisations and things which the Statutory Auditors are required to do, undertake or certify pursuant to this Agreement.

33.2.4 In the event that the Grant exceeds 20% (twenty per cent) of the Total Project Cost, the Authority shall have the right, but not the obligation, to appoint at its cost, for the duration of the Construction Period, another firm (the “Concurrent Auditors”) from the Panel of Chartered Accountants to undertake concurrent audit of the Concessionaire’s accounts.

33.3 Certification of claims by Statutory Auditors

Any claim or document provided by the Concessionaire to the Authority in connection with or relating to receipts, income, payments, costs, expenses, accounts or audit, and any matter incidental thereto shall be valid and effective only if certified by its Statutory Auditors. For the avoidance of doubt, such certification shall not be required for exchange of information in the normal course of business including the submission of Monthly Fee Statements under Clause 19.5.

33.4 Set-off

In the event any amount is due and payable by the Authority to the Concessionaire, it may set-off any sums payable to it by the Concessionaire and pay the balance remaining. Any exercise by the Authority of its rights under this Clause shall be without prejudice to any other rights or remedies available to it under this Agreement or otherwise.

33.5 Dispute resolution

In the event of there being any difference between the findings of the Additional Auditors or the Concurrent Auditors, as the case may be, and the certification provided by the Statutory Auditors, such Auditors shall meet to resolve the differences and if they are unable to resolve the same, such Dispute shall be resolved by the Authority by recourse to the Dispute Resolution Procedure.
Part V

Force Majeure and Termination

archaeological remains on the Site that could not reasonably have been expected to be discovered through a site inspection; or

(f) any event or circumstances of a nature analogous to any of the foregoing.

34.3 Indirect Political Event

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

(a) an act of war (whether declared or undeclared), invasion, armed
ARTICLE 34

FORCE MAJEURE

34.1 Force Majeure

As used in this Agreement, the expression “Force Majeure” or “Force Majeure Event” shall mean occurrence in India of any or all of Non-Political Event, Indirect Political Event and Political Event, as defined in Clauses 34.2, 34.3 and 34.4 respectively, if it affects the performance by the Party claiming the benefit of Force Majeure (the “Affected Party”) of its obligations under this Agreement and which act or event (i) is beyond the reasonable control of the Affected Party, and (ii) the Affected Party could not have prevented or overcome by exercise of due diligence and following Good Industry Practice, and (iii) has Material Adverse Effect on the Affected Party.

34.2 Non-Political Event

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

(a) act of God, epidemic, extremely adverse weather conditions, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionising radiation, fire or explosion (to the extent of contamination or radiation or fire or explosion originating from a source external to the Site);

(b) strikes or boycotts (other than those involving the 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 Highway for a continuous period of 24 (twenty four) hours and an aggregate period exceeding 7 (seven) days in an Accounting Year, and not being an Indirect Political Event set forth in Clause 34.3:

(c) any failure or delay of a Contractor but only to the extent caused by another Non-Political Event and which does not result in any offsetting compensation being payable to the Concessionaire by or on behalf of such Contractor;

(d) any judgement or order of any court of competent jurisdiction or statutory authority made against the Concessionaire in any proceedings for reasons other than (i) failure of the Concessionaire to comply with any Applicable Law or Applicable Permit, or (ii) on account of breach of any Applicable Law or Applicable Permit or of any contract, or (iii) enforcement of this Agreement, or (iv) exercise of any of its rights under this Agreement by the Authority;

(e) the discovery of geological conditions, toxic contamination or...
archaeological remains on the Site that could not reasonably have been expected to be discovered through a site inspection; or

(f) any event or circumstances of a nature analogous to any of the foregoing.

34.3 Indirect Political Event

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

(a) an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage;

(b) industry-wide or State-wide strikes or industrial action for a continuous period of 24 (twenty four) hours and exceeding an aggregate period of 7 (seven) days in an Accounting Year;

(c) any civil commotion, boycott or political agitation which prevents collection of Fee by the Concessionaire for an aggregate period exceeding 7 (seven) days in an Accounting Year;

(d) any failure or delay of a Contractor to the extent caused by any Indirect Political Event and which does not result in any offsetting compensation being payable to the Concessionaire by or on behalf of such Contractor;

(e) any Indirect Political Event that causes a Non-Political Event; or

(f) any event or circumstances of a nature analogous to any of the foregoing.

34.4 Political Event

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

(a) Change in Law, only if consequences thereof cannot be dealt with under and in accordance with the provisions of Article 41 and its effect, in financial terms, exceeds the sum specified in Clause 41.1;

(b) compulsory acquisition in national interest or expropriation of any Project Assets or rights of the Concessionaire or of the Contractors;

(c) unlawful or unauthorised or without jurisdiction revocation of, or refusal to renew or grant without valid cause, any clearance, licence, permit, authorisation, no objection certificate, consent, approval or exemption required by the Concessionaire or any of the Contractors to perform their respective obligations under this Agreement and the Project Agreements, provided that such delay, modification, denial,
refusal or revocation did not result from the Concessionaire’s or any Contractor’s inability or failure to comply with any condition relating to grant, maintenance or renewal of such clearance, licence, authorisation, no objection certificate, exemption, consent, approval or permit;

(d) any failure or delay of a Contractor but only to the extent caused by another Political Event and which does not result in any offsetting compensation being payable to the Concessionaire by or on behalf of such Contractor; or

(e) any event or circumstance of a nature analogous to any of the foregoing.

34.5 Duty to report Force Majeure Event

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

(a) the nature and extent of each Force Majeure Event which is the subject of any claim for relief under this Article 34 with evidence in support thereof;

(b) the estimated duration and the effect or probable effect which such Force Majeure Event is having or will have on the Affected Party’s performance of its obligations under this Agreement;

(c) the measures which the Affected Party is taking or proposes to take for alleviating the impact of such Force Majeure Event; and

(d) any other information relevant to the Affected Party’s claim.

34.5.2 The Affected Party shall not be entitled to any relief for or in respect of a Force Majeure Event unless it shall have notified the other Party of the occurrence of the Force Majeure Event as soon as reasonably practicable, and in any event no later than 7 (seven) days after the Affected Party knew, or ought reasonably to have known, of its occurrence, and shall have given particulars of the probable material effect that the Force Majeure Event is likely to have on the performance of its obligations under this Agreement.

34.5.3 For so long as the Affected Party continues to claim to be materially affected by such Force Majeure Event, it shall provide the other Party with regular (and not less than weekly) reports containing information as required by Clause 34.5.1, and such other information as the other Party may reasonably request the Affected Party to provide.

34.6 Effect of Force Majeure Event on the Concession

34.6.1 Upon the occurrence of any Force Majeure Event prior to the Appointed Date, the period set forth in Clause 24.1.1 for achieving Financial Close shall be extended by a period equal in length to the duration of the Force Majeure
Event.

34.6.2 At any time after the Appointed Date, if any Force Majeure Event occurs:

(a) before COD, the Concession Period and the dates set forth in the Project Completion Schedule shall be extended by a period equal in length to the duration for which such Force Majeure Event subsists; or

(b) after COD, whereupon the Concessionaire is unable to collect Fee despite making best efforts or it is directed by the Authority to suspend the collection thereof during the subsistence of such Force Majeure Event, the Concession Period shall be extended by a period, equal in length to the period during which the Concessionaire was prevented from collection of Fee on account thereof; provided that in the event of partial collection of Fee where the daily collection is less than 90% (ninety per cent) of the Average Daily Fee, the Authority shall extend the Concession Period in proportion to the loss of Fee on a daily basis. For the avoidance of doubt, loss of 25% (twenty-five per cent) in collection of Fee as compared to the Average Daily Fee for four days shall entitle the Concessionaire to extension of one day in the Concession Period.

34.7 Allocation of costs arising out of Force Majeure

34.7.1 Upon occurrence of any Force Majeure Event prior to the Appointed Date, the Parties shall bear their respective costs and no Party shall be required to pay to the other Party any costs thereof.

34.7.2 Upon occurrence of a Force Majeure Event after the Appointed Date, the costs incurred and attributable to such event and directly relating to the Project (the "Force Majeure Costs") shall be allocated and paid as follows:

(a) upon occurrence of a Non-Political Event, the Parties shall bear their respective Force Majeure Costs and neither Party shall be required to pay to the other Party any costs thereof;

(b) upon occurrence of an Indirect Political Event, all Force Majeure Costs attributable to such Indirect Political Event, and not exceeding the Insurance Cover for such Indirect Political Event, shall be borne by the Concessionaire, and to the extent Force Majeure Costs exceed such Insurance Cover, one half of such excess amount shall be reimbursed by the Authority to the Concessionaire; and

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

For the avoidance of doubt, Force Majeure Costs may include interest payments on the O&M Expenses, any increase in the cost of Construction Works on account of inflation and all other costs directly attributable to the
Force Majeure Event, but shall not include loss of Fee revenues or debt repayment obligations, and for determining such costs, information contained in the Financial Package may be relied upon to the extent that such information is relevant.

34.7.3 Save and except as expressly provided in this Article 34, neither Party shall be liable in any manner whatsoever to the other Party in respect of any loss, damage, cost, expense, claims, demands and proceedings relating to or arising out of occurrence or existence of any Force Majeure Event or exercise of any right pursuant hereto.

34.8 Termination Notice for Force Majeure Event

If a Force Majeure Event subsists for a period of 180 (one hundred and eighty) days or more within a continuous period of 365 (three hundred and sixty five) days, either Party may in its discretion terminate this Agreement by issuing a Termination Notice to the other Party without being liable in any manner whatsoever, save as provided in this Article 34, and upon issue of such Termination Notice, this Agreement shall, notwithstanding anything to the contrary contained herein, stand terminated forthwith; provided that before issuing such Termination Notice, the Party intending to issue the Termination Notice shall inform the other Party of such intention and grant 15 (fifteen) days time to make a representation, and may after the expiry of such 15 (fifteen) days period, whether or not it is in receipt of such representation, in its sole discretion issue the Termination Notice.

34.9 Termination Payment for Force Majeure Event

34.9.1 If Termination is on account of a Non-Political Event, the Authority shall make a Termination Payment to the Concessionaire in an amount equal to 90% (ninety per cent) of the Debt Due less Insurance Cover.

34.9.2 If Termination is on account of an Indirect Political Event, the Authority shall make a Termination Payment to the Concessionaire in an amount equal to:

(a) Debt Due less Insurance Cover; provided that if any insurance claims forming part of the Insurance Cover are not admitted and paid, then 80% (eighty per cent) of such unpaid claims shall be included in the computation of Debt Due; and

(b) 110% (one hundred and ten per cent) of the Adjusted Equity.

34.9.3 If Termination is on account of a Political Event, the Authority shall make a Termination Payment to the Concessionaire in an amount that would be payable under Clause 37.3.2 as if it were an Authority Default.

34.10 Dispute resolution

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

34.11 Excuse from performance of obligations

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

(a) the suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure Event;

(b) the Affected Party shall make all reasonable efforts to mitigate or limit damage to the other Party arising out of or as a result of the existence or occurrence of such Force Majeure Event and to cure the same with due diligence; and

(c) when the Affected Party is able to resume performance of its obligations under this Agreement, it shall give to the other Party notice to that effect and shall promptly resume performance of its obligations hereunder.
ARTICLE 35

COMPENSATION FOR BREACH OF AGREEMENT

35.1 Compensation for default by the Concessionaire

Subject to the provisions of Clause 35.6, in the event of the Concessionaire being in material default or breach of this Agreement, it shall pay to the Authority by way of compensation, all direct costs suffered or incurred by the Authority as a consequence of such material default, within 30 (thirty) days of receipt of the demand supported by necessary particulars thereof; provided that no compensation shall be payable under this Clause 35.1 for any breach or default in respect of which Damages are expressly specified and payable under this Agreement or for any consequential losses incurred by the Authority.

35.2 Compensation for default by the Authority

Subject to the provisions of Clause 35.6, in the event of the Authority being in material default or breach of this Agreement at any time after the Appointed Date, it shall pay to the Concessionaire by way of compensation, all direct costs suffered or incurred by the Concessionaire as a consequence of such material default within 30 (thirty) days of receipt of the demand supported by necessary particulars thereof; provided that no such compensation shall be payable for any breach or default in respect of which Damages have been expressly specified in this Agreement. For the avoidance of doubt, compensation payable may include interest payments on debt, O&M Expenses, any increase in capital costs on account of inflation and all other costs directly attributable to such material default but shall not include loss of Fee revenues, debt repayment obligations or other consequential losses, and for determining such compensation, information contained in the Financial Package and the Financial Model may be relied upon to the extent it is relevant.

35.3 Extension of Concession Period

Subject to the provisions of Clause 35.6, in the event that a material default or breach of this Agreement set forth in Clause 35.2 causes delay in achieving COD or leads to suspension of or reduction in collection of Fee, as the case may be, the Authority shall, in addition to payment of compensation under Clause 35.2, extend the Concession Period, such extension being equal in duration to the period by which COD was delayed or the collection of Fee remained suspended on account thereof, as the case may be; and in the event of reduction in collection of Fee where the daily collection is less than 90% (ninety per cent) of the Average Daily Fee, the Authority shall, in addition to payment of compensation under Clause 35.2, extend the Concession Period in proportion to the loss of Fee on a daily basis. For the avoidance of doubt, loss of 25% (twenty five per cent) in collection of Fee as compared to the Average Daily Fee for four days shall entitle the Concessionaire to extension of one day in the Concession Period.
35.4 Compensation for Competing Roads

35.4.1 Subject to the provisions of Clause 35.6, in the event that an Additional Tollway or a Competing Road, as the case may be, is opened to traffic in breach of this Agreement, the Authority shall pay to the Concessionaire, for each day of breach, compensation in a sum equal to the difference between the average daily Realisable Fee and the projected daily Fee (the "Projected Fee") until the breach is cured. The Projected Fee hereunder shall be an amount equal to the Average Daily Fee, increased at the close of every month by 0.5% (zero point five per cent) thereof and revised in accordance with Clause 27.2. For the avoidance of doubt, the Average Daily Fee for the purposes of this Clause shall be the amount so determined in respect of the Accounting Year or period, as the case may be, occurring prior to such opening or operation of an Additional Tollway or a Competing Road, as the case may be.

35.4.2 Payment of compensation under this Clause 35.4 shall be deemed to cure the breach of this Agreement so long as the Authority continues to pay compensation hereunder.

35.5 Compensation to be in addition

Compensation payable under this Article 35 shall be in addition to, and not in substitution for, or derogation of, Termination Payment, if any.

35.6 Mitigation of costs and damage

The Affected Party shall make all reasonable efforts to mitigate or limit the costs and damage arising out of or as a result of breach of Agreement by the other Party.
ARTICLE 36
SUSPENSION OF CONCESSIONAIRE'S RIGHTS

36.1 Suspension upon Concessionaire Default

Upon occurrence of a Concessionaire Default, the Authority shall be entitled, without prejudice to its other rights and remedies under this Agreement including its rights of Termination hereunder, to (i) suspend all rights of the Concessionaire under this Agreement including the Concessionaire’s right to collect Fee, and other revenues pursuant hereto, and (ii) exercise such rights itself and perform the obligations hereunder or authorise any other person to exercise or perform the same on its behalf during such suspension (the “Suspension”). Suspension hereunder shall be effective forthwith upon issue of notice by the Authority to the Concessionaire and may extend up to a period not exceeding 180 (one hundred and eighty) days from the date of issue of such notice; provided that upon written request from the Concessionaire and the Lenders' Representative, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by a further period not exceeding 90 (ninety) days.

36.2 Authority to act on behalf of Concessionaire

36.2.1 During the period of Suspension, the Authority shall, on behalf of the Concessionaire, collect all Fee and revenues under and in accordance with this Agreement and deposit the same in the Escrow Account. The Authority shall be entitled to make withdrawals from the Escrow Account for meeting the costs incurred by it for remedying and rectifying the cause of Suspension, and thereafter for defraying the expenses specified in Clause 31.3.

36.2.2 During the period of Suspension hereunder, all rights and liabilities vested in the Concessionaire in accordance with the provisions of this Agreement shall continue to vest therein and all things done or actions taken, including expenditure incurred by the Authority for discharging the obligations of the Concessionaire under and in accordance with this Agreement and the Project Agreements, shall be deemed to have been done or taken for and on behalf of the Concessionaire and the Concessionaire undertakes to indemnify the Authority for all costs incurred during such period. The Concessionaire hereby licences and sub-licences respectively, the Authority or any other person authorised by it under Clause 36.1 to use during Suspension, all Intellectual Property belonging to or licenced to the Concessionaire with respect to the Project Highway and its design, engineering, construction, operation and maintenance, and which is used or created by the Concessionaire in performing its obligations under the Agreement.

36.3 Revocation of Suspension

36.3.1 In the event that the Authority shall have rectified or removed the cause of Suspension within a period not exceeding 90 (ninety) days from the date of Suspension, it shall revoke the Suspension forthwith and restore all rights of
the Concessionaire under this Agreement. For the avoidance of doubt, the Parties expressly agree that the Authority may, in its discretion, revoke the Suspension at any time, whether or not the cause of Suspension has been rectified or removed hereunder.

36.3.2 Upon the Concessionaire having cured the Concessionaire Default within a period not exceeding 90 (ninety) days from the date of Suspension, the Authority shall revoke the Suspension forthwith and restore all rights of the Concessionaire under this Agreement.

36.4 Substitution of Concessionaire

At any time during the period of Suspension, the Lenders’ Representative, on behalf of Senior Lenders, shall be entitled to substitute the Concessionaire under and in accordance with the Substitution Agreement, and upon receipt of notice thereunder from the Lenders’ Representative, the Authority shall withhold Termination for a period not exceeding 180 (one hundred and eighty) days from the date of Suspension, and any extension thereof under Clause 36.1, for enabling the Lenders’ Representative to exercise its rights of substitution on behalf of Senior Lenders.

36.5 Termination

36.5.1 At any time during the period of Suspension under this Article 36, the Concessionaire may by notice require the Authority to revoke the Suspension and issue a Termination Notice. Subject to the rights of the Lenders’ Representative to undertake substitution in accordance with the provisions of this Agreement and within the period specified in Clause 36.4, the Authority shall, within 15 (fifteen) days of receipt of such notice, terminate this Agreement under and in accordance with Article 37.

36.5.2 Notwithstanding anything to the contrary contained in this Agreement, in the event that Suspension is not revoked within 180 (one hundred and eighty) days from the date of Suspension hereunder or within the extended period, if any, set forth in Clause 36.1, the Concession Agreement shall, upon expiry of the aforesaid period, be deemed to have been terminated by mutual agreement of the Parties and all the provisions of this Agreement shall apply, mutatis mutandis, to such Termination as if a Termination Notice had been issued by the Authority upon occurrence of a Concessionaire Default.
ARTICLE 37

TERMINATION

37.1 Termination for Concessionaire Default

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

(a) the Performance Security has been encashed and appropriated in accordance with Clause 9.2 and the Concessionaire fails to replenish or provide fresh Performance Security within a Cure Period of 30 (thirty) days;

(b) subsequent to the replenishment or furnishing of fresh Performance Security in accordance with Clause 9.2, the Concessionaire fails to cure, within a Cure Period of 90 (ninety) days, the Concessionaire Default for which whole or part of the Performance Security was appropriated;

(c) the Concessionaire does not achieve the latest outstanding Project Milestone due in accordance with the provisions of Schedule-G and continues to be in default for 120 (one hundred and twenty) days;

(d) the Concessionaire abandons or manifests intention to abandon the construction or operation of the Project Highway without the prior written consent of the Authority;

(e) Project Completion Date does not occur within the period specified in Clause 12.4.3;

(f) the Punch List items have not been completed within the period set forth in Clause 14.4.1;

(g) the Concessionaire is in breach of the Maintenance Requirements or the Safety Requirements, as the case may be;

(h) the Concessionaire has failed to make any payment to the Authority within the period specified in this Agreement;

(i) an Escrow Default has occurred and the Concessionaire fails to cure the default within a Cure Period of 15 (fifteen) days;

(j) upon occurrence of a Financial Default, the Lenders’ Representative has by notice required the Authority to undertake Suspension or
Termination, as the case may be, in accordance with the Substitution Agreement and the Concessionaire fails to cure the default within the Cure Period specified hereinabove;

(k) a breach of any of the Project Agreements by the Concessionaire has caused a Material Adverse Effect;

(l) the Concessionaire creates any Encumbrance in breach of this Agreement;

(m) the Concessionaire repudiates this Agreement or otherwise takes any action or evidences an intention not to be bound by the Agreement;

(n) a Change in Ownership has occurred in breach of the provisions of Clause 5.3;

(o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of the Concessionaire under any of the Project Agreements, or of (ii) all or part of the assets or undertaking of the Concessionaire, and such transfer causes a Material Adverse Effect;

(p) an execution levied on any of the assets of the Concessionaire has caused a Material Adverse Effect;

(q) the Concessionaire is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for the Concessionaire or for the whole or material part of its assets that has a material bearing on the Project;

(r) the Concessionaire has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the Authority, a Material Adverse Effect;

(s) a resolution for winding up of the Concessionaire is passed, or any petition for winding up of the Concessionaire is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 (ninety) days of the date thereof or the 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 entire 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:

(i) the amalgamated or reconstructed entity has the 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 the Appointed Date; and

(iii) each of the Project Agreements remains in full force and effect;

(t) any representation or warranty of the Concessionaire herein contained which is, as of the date hereof, found to be materially false or the Concessionaire is at any time hereafter found to be in breach thereof;

(u) the Concessionaire submits to the Authority any statement, notice or other document, in written or electronic form, which has a material effect on the Authority’s rights, obligations or interests and which is false in material particulars;

(v) the Concessionaire has failed to fulfil any obligation, for which failure Termination has been specified in this Agreement; or

(w) the Concessionaire commits a default in complying with any other provision of this Agreement if such a default causes a Material Adverse Effect on the Authority.

37.1.2 Without prejudice to any other rights or remedies which the Authority may have under this Agreement, upon occurrence of a Concessionaire Default, the Authority shall be entitled to terminate this Agreement by issuing a Termination Notice to the Concessionaire; provided that before issuing the Termination Notice, the Authority shall by a notice inform the Concessionaire of its intention to issue such Termination Notice and grant 15 (fifteen) days to the Concessionaire to make a representation, and may after the expiry of such 15 (fifteen) days, whether or not it is in receipt of such representation, issue the Termination Notice, subject to the provisions of clause 37.1.3.

37.1.3 The Authority shall, if there be Senior Lenders, send a copy of its notice of intention to issue a Termination Notice referred to in Clause 37.1.2 to inform the Lenders’ Representative and grant 15 (fifteen) days to the Lenders’ Representative, for making a representation on behalf of the Senior Lenders stating the intention to substitute the Concessionaire in accordance with the Substitution Agreement. In the event the Authority receives such representation on behalf of Senior Lenders, it shall, in its discretion, either withhold Termination for a period not exceeding 180 (one hundred and eighty) days from the date of such representation or exercise its right of Suspension, as the case may be, for enabling the Lenders’ Representative to exercise the Senior Lenders’ right of substitution in accordance with the Substitution Agreement:

Provided that the Lenders’ Representative may, instead of exercising the
Senior Lenders’ right of substitution, procure that the default specified in the notice is cured within the aforesaid period of 180 (one hundred and eighty) days, and upon such curing thereof, the Authority shall withdraw its notice referred to above and restore all the rights of the Concessionaire:

Provided further that upon written request from the Lenders’ Representative and the Concessionaire, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by such further period not exceeding 90 (ninety) days, as the Authority may deem appropriate.

37.2 **Termination for Authority Default**

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

(a) The Authority commits a material default in complying with any of the provisions of this Agreement and such default has a Material Adverse Effect on the Concessionaire;

(b) the Authority has failed to make any payment to the Concessionaire within the period specified in this Agreement;

(c) the Authority repudiates this Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by this Agreement; or

(d) the State commits a material default in complying with the provisions of the State Support Agreement if such default has a Material Adverse Effect on the Concessionaire and the breach continues for a period of 90 (ninety) days from the date of notice given in this behalf by the Concessionaire to the Authority.

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

37.3 **Termination Payment**

37.3.1 Upon Termination on account of a Concessionaire Default during the
Operation Period, the Authority shall pay to the Concessionaire, by way of Termination Payment, an amount equal to 90% (ninety per cent) of the Debt Due less Insurance Cover; provided that if any insurance claims forming part of the Insurance Cover are not admitted and paid, then 80% (eighty per cent) of such unpaid claims shall be included in the computation of Debt Due. For the avoidance of doubt, the Concessionaire hereby acknowledges that no Termination Payment shall be due or payable on account of a Concessionaire Default occurring prior to COD.

37.3.2 Upon Termination on account of an Authority Default, the Authority shall pay to the Concessionaire, by way of Termination Payment, an amount equal to:

(a) Debt Due; and

(b) 150% (one hundred and fifty per cent) of the Adjusted Equity.

37.3.3 Termination Payment shall become due and payable to the Concessionaire within 15 (fifteen) days of a demand being made by the Concessionaire to the Authority with the necessary particulars, and in the event of any delay, the Authority shall pay interest at a rate equal to 3% (three per cent) above the Bank Rate on the amount of Termination Payment remaining unpaid; provided that such delay shall not exceed 90 (ninety) days. For the avoidance of doubt, it is expressly agreed that Termination Payment shall constitute full discharge by the Authority of its payment obligations in respect thereof hereunder.

37.3.4 The Concessionaire expressly agrees that Termination Payment under this Article 37 shall constitute a full and final settlement of all claims of the Concessionaire on account of Termination of this Agreement for any reason whatsoever and that the Concessionaire or any shareholder thereof shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

37.4 Other rights and obligations of the Authority

Upon Termination for any reason whatsoever, the Authority shall:

(a) be deemed to have taken possession and control of the Project Highway forthwith;

(b) take possession and control of all materials, stores, implements, construction plants and equipment on or about the Site;

(c) be entitled to restrain the Concessionaire and any person claiming through or under the Concessionaire from entering upon the Site or any part of the Project;

(d) require the Concessionaire to comply with the Divestment Requirements set forth in Clause 38.1; and

(e) succeed upon election by the Authority, without the necessity of any
further action by the Concessionaire, to the interests of the Concessionaire under such of the Project Agreements as the Authority may in its discretion deem appropriate, and shall upon such election be liable to the Contractors only for compensation accruing and becoming due and payable to them under the terms of their respective Project Agreements from and after the date the Authority elects to succeed to the interests of the Concessionaire. For the avoidance of doubt, the Concessionaire acknowledges and agrees that all sums claimed by such Contractors as being due and owing for works and services performed or accruing on account of any act, omission or event prior to such date shall constitute debt between the Concessionaire and such Contractors, and the Authority shall not in any manner be liable for such sums. It is further agreed that in the event the Authority elects to cure any outstanding defaults under such Project Agreements, the amount expended by the Authority for this purpose shall be deducted from the Termination Payment.

37.5 Survival of rights

Notwithstanding anything to the contrary contained in this Agreement, but subject to the provisions of Clause 37.3.4, any Termination pursuant to the provisions of this Agreement shall be without prejudice to the accrued rights of either Party including its right to claim and recover money damages, insurance proceeds, security deposits, and other rights and remedies, which it may have in law or contract. All rights and obligations of either Party under this Agreement, including Termination Payments and Divestment Requirements, shall survive the Termination to the extent such survival is necessary for giving effect to such rights and obligations.
ARTICLE 38

DIVESTMENT OF RIGHTS AND INTEREST

38.1 Divestment Requirements

38.1.1 Upon Termination, the Concessionaire shall comply with and conform to the following Divestment Requirements:

(a) notify to the Authority forthwith the location and particulars of all Project Assets;

(b) deliver forthwith the actual or constructive possession of the Project Highway, free and clear of all Encumbrances, save and except to the extent set forth in the Substitution Agreement;

(c) cure all Project Assets, including the road, bridges, structures and equipment, of all defects and deficiencies so that the Project Highway is compliant with the Maintenance Requirements; provided that in the event of Termination during the Construction Period, all Project Assets shall be handed over on 'as is where is' basis after bringing them to a safe condition;

(d) deliver and transfer relevant records, reports, Intellectual Property and other licences pertaining to the Project Highway and its design, engineering, construction, operation and maintenance, including all programmes and manuals pertaining thereto, and complete 'as built' Drawings as on the Transfer Date. For the avoidance of doubt, the Concessionaire represents and warrants that the Intellectual Property delivered hereunder shall be adequate and complete for the design, engineering, construction, operation and maintenance of the Project Highway and shall be assigned to the Authority free of any encumbrance;

(e) transfer and/or deliver all Applicable Permits to the extent permissible under Applicable Laws;

(f) execute such deeds of conveyance, documents and other writings as the Authority may reasonably require for conveying, divesting and assigning all the rights, title and interest of the Concessionaire in the Project Highway, including manufacturers’ warranties in respect of any plant or equipment and the right to receive outstanding insurance claims to the extent due and payable to the Authority, absolutely unto the Authority or its nominee; and

(g) comply with all other requirements as may be prescribed or required under Applicable Laws for completing the divestment and assignment of all rights, title and interest of the Concessionaire in the Project Highway, free from all Encumbrances, absolutely unto the Authority or its nominee.
38.1.2 Subject to the exercise by the Authority of its rights under this Agreement or under any of the Project Agreements to perform or procure the performance by a third party of any of the obligations of the Concessionaire, the Parties shall continue to perform their obligations under this Agreement, notwithstanding the giving of any Termination Notice, until the Termination of this Agreement becomes effective in accordance with its terms.

38.2 Inspection and cure

Not earlier than 90 (ninety) days prior to Termination but not later than 15 (fifteen) days prior to the effective date of such Termination, the Independent Engineer shall verify, after giving due notice to the Concessionaire of the time, date and venue of such verification, compliance by the Concessionaire with the Maintenance Requirements, and if required, cause appropriate tests to be carried out at the Concessionaire's cost for this purpose. Defaults, if any, in the Maintenance Requirements shall be cured by the Concessionaire at its cost and the provisions of Article 39 shall apply, mutatis mutandis, in relation to curing of defects or deficiencies under this Article 38.

38.3 Cooperation and assistance on transfer of Project

38.3.1 The Parties shall cooperate on a best effort basis and take all necessary measures, in good faith, to achieve a smooth transfer of the Project in accordance with the provisions of this Agreement so as to protect the safety of and avoid undue delay or inconvenience to the Users, other members of the public or the lawful occupiers of any part of the Site.

38.3.2 The Parties shall provide to each other, 9 (nine) months prior to the Transfer Date in the event of Termination by efflux of time and immediately in the event of either Party conveying to the other Party its intent to issue a Termination Notice, as the case may be, as much information and advice as is reasonably practicable regarding the proposed arrangements for operation of the Project following the Transfer Date. The Concessionaire shall further provide such reasonable advice and assistance as the Authority, its concessionaire or agent may reasonably require for operation of the Project until the expiry of 6 (six) months after the Transfer Date.

38.3.3 The Authority shall have the option to purchase or hire from the Concessionaire at a fair market value and free from any encumbrance all or any part of the plant and machinery used in connection with the Project but which does not form part of the assets specified in Clause 38.1.1 and is reasonably required in connection with operation of the Project. For the avoidance of doubt, in the event of dispute or difference relating to fair market value, the Dispute Resolution Procedure shall apply.

38.4 Vesting Certificate

The divestment of all rights, title and interest in the Project Highway shall be deemed to be complete on the date when all of the Divestment Requirements have been met, and the Authority shall, without unreasonable delay, thereupon issue a certificate substantially in the form set forth in Schedule-U.
(the "Vesting Certificate"), which will have the effect of constituting evidence of divestment by the Concessionaire of all of its rights, title and interest in the Project Highway, and their vesting in the Authority pursuant hereto. It is expressly agreed that any defect or deficiency in the Divestment Requirements shall not in any manner be construed or interpreted as restricting the exercise of any rights by the Authority or its nominee on, or in respect of, the Project Highway on the footing that all Divestment Requirements have been complied with by the Concessionaire.

38.5 Additional Facilities

Notwithstanding anything to the contrary contained in this Agreement, all Additional Facilities shall continue to vest in the Concessionaire upon and after Termination.

38.6 Divestment costs etc.

38.6.1 The Concessionaire shall bear and pay all costs incidental to divestment of all of the rights, title and interest of the Concessionaire in the Project Highway in favour of the Authority upon Termination, save and except that all stamp duties payable on any deeds or Documents executed by the Concessionaire in connection with such divestment shall be borne by the Authority.

38.6.2 In the event of any dispute relating to matters covered by and under this Article 38, the Dispute Resolution Procedure shall apply.
ARTICLE 39
DEFECTS LIABILITY AFTER TERMINATION

39.1 Liability for defects after Termination

The Concessionaire shall be responsible for all defects and deficiencies in the Project Highway for a period of 120 (One hundred and twenty) days after Termination, and it shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies observed by the Independent Engineer in the Project Highway during the aforesaid period. In the event that the Concessionaire fails to repair or rectify such defect or deficiency within a period of 15 (fifteen) days from the date of notice issued by the Authority in this behalf, the Authority shall be entitled to get the same repaired or rectified at the Concessionaire's risk and cost so as to make the Project Highway conform to the Maintenance Requirements. All costs incurred by the Authority hereunder shall be reimbursed by the Concessionaire to the Authority within 15 (fifteen) days of receipt of demand thereof, and in the event of default in reimbursing such costs, the Authority shall be entitled to recover the same from the Escrow Account.

39.2 Retention in Escrow Account

39.2.1 Notwithstanding anything to the contrary contained in this Agreement, but subject to the provisions of Clause 39.2.3, a sum equal to 5% (five per cent) of the total Realisable Fee for the year immediately preceding the Transfer Date shall be retained in the Escrow Account for a period of 120 (one hundred and twenty) days after Termination for meeting the liabilities, if any, arising out of or in connection with the provisions of Clause 39.1.

39.2.2 Without prejudice to the provisions of Clause 39.2.1, the Independent Engineer shall carry out an inspection of the Project Highway at any time between 210 (two hundred and ten) and 180 (one hundred and eighty) days prior to the Termination and if it recommends that the status of the Project Highway is such that a sum larger than the amount stipulated in Clause 39.2.1 should be retained in the Escrow Account and for a period longer than the aforesaid 120 (one hundred and twenty) days, the amount recommended by the Independent Engineer shall be retained in the Escrow Account for the period specified by it.

39.2.3 The Concessionaire may, for the performance of its obligations under this Article 39, provide to the Authority a guarantee from a Bank for a sum equivalent to the amount determined under Clause 39.2.1 or 39.2.2, as the case may be, and for the period specified therein, substantially in the form set forth in Schedule-F (the “Performance Guarantee”), to be modified, mutatis mutandis, for this purpose, and the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate the required amounts from the Performance Guarantee for undertaking the repairs or rectification at the Concessionaire's risk and cost in accordance with the provisions of this Article 39, Upon furnishing of a
Performance Guarantee under this Clause 39.2.3, the retention of funds in the Escrow Account in terms of Clause 39.2.1 or 39.2.2, as the case may be, shall be dispensed with.
Part VI

Other Provisions
ARTICLE 40

ASSIGNMENT AND CHARGES

40.1 Restrictions on assignment and charges

40.1.1 Subject to Clauses 40.2 and 40.3, this Agreement shall not be assigned by the Concessionaire to any person, save and except with the prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

40.1.2 Subject to the provisions of Clause 40.2, the Concessionaire shall not create nor permit to subsist any Encumbrance, or otherwise transfer or dispose of all or any of its rights and benefits under this Agreement or any Project Agreement to which the Concessionaire is a party except with prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

40.2 Permitted assignment and charges

The restraints set forth in Clause 40.1 shall not apply to:

(a) liens arising by operation of law (or by an agreement evidencing the same) in the ordinary course of business of the Project Highway;

(b) mortgages/pledges/hypothecation of goods/assets other than Project Assets and their related documents of title, a charge on the Escrow Account, arising or created in the ordinary course of business of the Project Highway, and as security only for indebtedness to the Senior Lenders under the Financing Agreements and/or for working capital arrangements for the Project Highway;

(c) assignment of rights, interest and obligations of the Concessionaire to or in favour of the Lenders' Representative as nominee and for the benefit of the Senior Lenders, to the extent covered by and in accordance with the Substitution Agreement as security for financing provided by Senior Lenders under the Financing Agreements; and

(d) liens or encumbrances required by any Applicable Law.

40.3 Substitution Agreement

40.3.1 The Lenders' Representative, on behalf of Senior Lenders, may exercise the right to substitute the Concessionaire pursuant to the agreement for substitution of the Concessionaire (the "Substitution Agreement") to be entered into amongst the Concessionaire, the Authority and the Lenders' Representative, on behalf of Senior Lenders, substantially in the form set forth in Schedule-V.

40.3.2 Upon substitution of the Concessionaire under and in accordance with the Substitution Agreement, the Nominated Company substituting the
Concessionaire shall be deemed to be the Concessionaire under this Agreement and shall enjoy all rights and be responsible for all obligations of the Concessionaire under this Agreement as if it were the Concessionaire; provided that where the Concessionaire is in breach of this Agreement on the date of such substitution, the Authority shall by notice grant a Cure Period of 120 (one hundred and twenty) days to the Concessionaire for curing such breach.

40.4 Assignment by the Authority

Notwithstanding anything to the contrary contained in this Agreement, the Authority may, after giving 60 (sixty) days’ notice to the Concessionaire, assign and/or transfer any of its rights and benefits and/or obligations under this Agreement to an assignee who is, in the reasonable opinion of the Authority, capable of fulfilling all of the Authority’s then outstanding obligations under this Agreement.
ARTICLE 41

CHANGE IN LAW

41.1 Increase in costs

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 exceeds the higher of Rs. 1 crore (Rupees one crore) and 0.5% (zero point five percent) of the Realisable Fee in any Accounting Year, the Concessionaire may so notify the Authority and propose amendments to this Agreement so as to place the Concessionaire in the same financial position as it would have enjoyed had there been no such Change in Law resulting in the cost increase, reduction in return or other financial burden as aforesaid. Upon notice by the Concessionaire, the Parties shall meet, as soon as reasonably practicable but no later than 30 (thirty) days from the date of notice, and either agree on amendments to this Agreement or on any other mutually agreed arrangement:

Provided that if no agreement is reached within 90 (ninety) days of the aforesaid notice, the Concessionaire may by notice require the Authority to pay an amount that would place the Concessionaire in the same financial position that it would have enjoyed had there been no such Change in Law, and within 15 (fifteen) days of receipt of such notice, along with particulars thereof, the Authority shall pay the amount specified therein; provided that if the Authority shall dispute such claim of the Concessionaire, the same shall be settled in accordance with the Dispute Resolution Procedure. For the avoidance of doubt, it is agreed that this Clause 41.1 shall be restricted to changes in law directly affecting the Concessionaire’s costs of performing its obligations under this Agreement.

41.2 Reduction in costs

If as a result of Change in Law, the Concessionaire benefits from a reduction in costs or increase in net after-tax return or other financial gains, the aggregate financial effect of which exceeds the higher of Rs. 1 crore (Rupees one crore) and 0.5% (zero point five percent) of the Realisable Fee in any Accounting Year, the Authority may so notify the Concessionaire and propose amendments to this Agreement so as to place the Concessionaire in the same financial position as it would have enjoyed had there been no such Change in Law resulting in the decreased costs, increase in return or other financial gains as aforesaid. Upon notice by the Authority, the Parties shall meet, as soon as reasonably practicable but no later than 30 (thirty) days from the date of notice, and either agree on such amendments to this Agreement or on any other mutually agreed arrangement:

Provided that if no agreement is reached within 90 (ninety) days of the aforesaid notice, the Authority may by notice require the Concessionaire to pay an amount that would place the Concessionaire in the same financial position that it would have enjoyed had there been no such Change in Law,
and within 15 (fifteen) days of receipt of such notice, along with particulars thereof, the Concessionaire shall pay the amount specified therein to the Authority; provided that if the Concessionaire shall dispute such claim of the Authority, the same shall be settled in accordance with the Dispute Resolution Procedure. For the avoidance of doubt, it is agreed that this Clause 41.2 shall be restricted to changes in law directly affecting the Concessionaire's costs of performing its obligations under this Agreement.

41.3 Protection of NPV

Pursuant to the provisions of Clauses 41.1 and 41.2 and for the purposes of placing the Concessionaire in the same financial position as it would have enjoyed had there been no Change in Law affecting the costs, returns or other financial burden or gains, the Parties shall rely on the Financial Model to establish a net present value (the “NPV”) of the net cash flow and make necessary adjustments in costs, revenues, compensation or other relevant parameters, as the case may be, to procure that the NPV of the net cash flow is the same as it would have been if no Change in Law had occurred.

41.4 Restriction on cash compensation

The Parties acknowledge and agree that the demand for cash compensation under this Article 41 shall be restricted to the effect of Change in Law during the respective Accounting Year and shall be made at any time after commencement of such year, but no later than one year from the close of such Accounting Year. Any demand for cash compensation payable for and in respect of any subsequent Accounting Year shall be made after the commencement of the Accounting Year to which the demand pertains, but no later than 2 (two) years from the close of such Accounting Year.

41.5 No claim in the event of recovery from Users

Notwithstanding anything to the contrary contained in this Agreement, the Authority shall not in any manner be liable to reimburse to the Concessionaire any sums on account of a Change in Law if the same are recoverable from the Users.
ARTICLE 42

LIABILITY AND INDEMNITY

42.1 General indemnity

42.1.1 The Concessionaire will indemnify, defend, save and hold harmless the Authority and its officers, servants, agents, Government Instrumentalities and Government owned and/or controlled entities/enterprises, (the “Authority Indemnified Persons”) against any and all suits, proceedings, actions, demands and claims from third parties for any loss, damage, cost and expense of whatever kind and nature, whether arising out of any breach by the Concessionaire of any of its obligations under this Agreement or any related agreement or on account of any defect or deficiency in the provision of services by the Concessionaire to any User or from any negligence of the Concessionaire under contract or tort or on any other ground whatsoever, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of this Agreement on the part of the Authority Indemnified Persons.

42.1.2 The Authority will indemnify, defend, save and hold harmless the Concessionaire against any and all suits, proceedings, actions, demands and claims from third parties for any loss, damage, cost and expense of whatever kind and nature arising out of (i) defect in title and/or the rights of the Authority in the land comprised in the Site, and/or (ii) breach by the Authority of any of its obligations under this Agreement or any related agreement, which materially and adversely affect the performance by the Concessionaire of its obligations under this Agreement, save and except that where any such claim, suit, proceeding, action, and/or demand has arisen due to a negligent act or omission, or breach of any of its obligations under any provision of this Agreement or any related agreement and/or breach of its statutory duty on the part of the Concessionaire, its subsidiaries, affiliates, contractors, servants or agents, the same shall be the liability of the Concessionaire.

42.2 Indemnity by the Concessionaire

42.2.1 Without limiting the generality of Clause 42.1, the Concessionaire shall fully indemnify, hold harmless and defend the Authority and the Authority Indemnified Persons from and against any and all loss and/or damages arising out of or with respect to:

(a) failure of the Concessionaire to comply with Applicable Laws and Applicable Permits;

(b) payment of taxes required to be made by the Concessionaire in respect of the income or other taxes of the Concessionaire's contractors, suppliers and representatives; or

(c) payment of amounts due as a result of materials or services

4-Laning of National Highway of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate, Transfer (DBFOT) basis
furnished to the Concessionaire or any of its contractors which are payable by the Concessionaire or any of its contractors.

42.2.2 Without limiting the generality of the provisions of this Article 42, the Concessionaire shall fully indemnify, hold harmless and defend the Authority Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which the Authority Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Concessionaire or by the Concessionaire's Contractors in performing the Concessionaire's obligations or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the Concessionaire shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation or suspension of the injunction or restraint order. If, in any such suit, action, claim or proceedings, the Project Highway, or any part thereof or comprised therein, is held to constitute an infringement and its use is permanently enjoined, the Concessionaire shall promptly make every reasonable effort to secure for the Authority a licence, at no cost to the Authority, authorising continued use of the infringing work. If the Concessionaire is unable to secure such licence within a reasonable time, the Concessionaire shall, at its own expense, and without impairing the Specifications and Standards, either replace the affected work, or part, or process thereof with non-infringing work or part or process, or modify the same so that it becomes non-infringing.

42.3 Notice and contest of claims

In the event that either Party receives a claim or demand from a third party in respect of which it is entitled to the benefit of an indemnity under this Article 42 (the "Indemnified Party") it shall notify the other Party (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim or demand and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim or demand, it may conduct the proceedings in the name of the Indemnified Party, subject to the Indemnified Party being secured against any costs involved, to its reasonable satisfaction.

42.4 Defence of claims

42.4.1 The Indemnified Party shall have the right, but not the obligation, to contest, defend and litigate any claim, action, suit or proceeding by any third party alleged or asserted against such Party in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified hereunder, and reasonable costs and expenses thereof shall be indemnified by the Indemnifying Party. If the Indemnifying Party acknowledges in writing its obligation to indemnify the Indemnified Party in respect of loss to
the full extent provided by this Article 42, the Indemnifying Party shall be entitled, at its option, to assume and control the defence of such claim, action, suit or proceeding, liabilities, payments and obligations at its expense and through the counsel of its choice; provided it gives prompt notice of its intention to do so to the Indemnified Party and reimburses the Indemnified Party for the reasonable cost and expenses incurred by the Indemnified Party prior to the assumption by the Indemnifying Party of such defence. The Indemnifying Party shall not be entitled to settle or compromise any claim, demand, action, suit or proceeding without the prior written consent of the Indemnified Party, unless the Indemnifying Party provides such security to the Indemnified Party as shall be reasonably required by the Indemnified Party to secure the loss to be indemnified hereunder to the extent so compromised or settled.

42.4.2 If the Indemnifying Party has exercised its rights under Clause 42.3, the Indemnified Party shall not be entitled to settle or compromise any claim, action, suit or proceeding without the prior written consent of the Indemnifying Party (which consent shall not be unreasonably withheld or delayed).

42.4.3 If the Indemnifying Party exercises its rights under Clause 42.3, the Indemnified Party shall nevertheless have the right to employ its own counsel, and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Indemnified Party, when and as incurred, unless:

(a) the employment of counsel by such party has been authorised in writing by the Indemnifying Party; or

(b) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the conduct of the defence of such action; or

(c) the Indemnifying Party shall not, in fact, have employed independent counsel reasonably satisfactory to the Indemnified Party, to assume the defence of such action and shall have been so notified by the Indemnified Party; or

(d) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:

(i) that there may be specific defences available to it which are different from or additional to those available to the Indemnifying Party; or

(ii) that such claim, action, suit or proceeding involves or could have a material adverse effect upon it beyond the scope of this Agreement:

Provided that in Sub-clauses (b), (c) or (d) of this Clause 42.4.3 shall be applicable, the counsel for the Indemnified Party shall have the right to direct
the defence of such claim, demand, action, suit or proceeding on behalf of
the Indemnified Party, and the reasonable fees and disbursements of such
counsel shall constitute legal or other expenses hereunder.

42.5 No consequential claims

Notwithstanding anything to the contrary contained in this Article 42, the
indemnities herein provided shall not include any claim or recovery in
respect of any cost, expense, loss or damage of an indirect, incidental or
consequential nature, including loss of profit, except as expressly provided in
this Agreement.

42.6 Survival on Termination

The provisions of this Article 42 shall survive Termination.
ARTICLE 43
RIGHTS AND TITLE OVER THE SITE

43.1 Licensee rights

For the purpose of this Agreement, the Concessionaire shall have rights to the use of the Site as sole licensee subject to and in accordance with this Agreement, and to this end, it may regulate the entry and use of the Project Highway by third parties in accordance with and subject to the provisions of this Agreement.

43.2 Access rights of the Authority and others

43.2.1 The Concessionaire shall allow free access to the Site at all times for the authorised representatives and vehicles of the Authority, Senior Lenders, and the Independent Engineer, and for the persons and vehicles duly authorised by any Government Instrumentality to inspect the Project Highway or 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.

43.2.2 The Concessionaire shall, for the purpose of operation and maintenance of any utility or road specified in Article 11, allow free access to the Site at all times for the authorised persons and vehicles of the controlling body of such utility or road.

43.3 Property taxes

All property taxes on the Site shall be payable by the Authority as owner of the Site; provided, however, that any such taxes payable by the Concessionaire under Applicable Laws for use of the Site shall not be reimbursed or payable by the Authority.

43.4 Restriction on sub-letting

The Concessionaire shall not sublicense or sublet the whole or any part of the Site, save and except as may be expressly set forth in this Agreement; provided that nothing contained herein shall be construed or interpreted as restricting the right of the Concessionaire to appoint Contractors for the performance of its obligations hereunder including for operation and maintenance of all or any part of the Project Highway.
ARTICLE 44

DISPUTE RESOLUTION

44.1 Dispute resolution

44.1.1 Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the "Dispute") shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure set forth in Clause 44.2.

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

44.2 Conciliation

In the event of any Dispute between the Parties, either Party may call upon the Independent Engineer to mediate and assist the Parties in arriving at an amicable settlement thereof. Failing mediation by the Independent Engineer or without the intervention of the Independent Engineer, either Party may require such Dispute to be referred to the Chairman of the Authority and the Chairman of the Board of Directors of the Concessionaire for amicable settlement, and upon such reference, the said persons shall meet no later than 7 (seven) days from the date of reference to discuss and attempt to amicably resolve the Dispute. If such meeting does not take place within the 7 (seven) day period or the Dispute is not amicably settled within 15 (fifteen) days of the meeting or the Dispute is not resolved as evidenced by the signing of written terms of settlement within 30 (thirty) days of the notice in writing referred to in Clause 44.1.1 or such longer period as may be mutually agreed by the Parties, either Party may refer the Dispute to arbitration in accordance with the provisions of Clause 44.3.

44.3 Arbitration

44.3.1 Any Dispute which is not resolved amicably by conciliation, as provided in Clause 44.2, shall be finally decided by reference to arbitration by a Board of Arbitrators appointed in accordance with Clause 44.3.2. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the "Rules"), or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration Act. The venue of such arbitration shall be Delhi, and the language of arbitration proceedings shall be English.

44.3.2 There shall be a Board of three arbitrators, of whom each Party shall select one arbitrator and the third arbitrator shall be appointed by the two arbitrators so
selected, and in the event of disagreement between the two arbitrators, the appointment shall be made in accordance with the Rules.

44.3.3 The arbitrators shall make a reasoned award (the “Award”). Any Award made in any arbitration held pursuant to this Article 44 shall be final and binding on the Parties as from the date it is made, and the Concessionaire and the Authority agree and undertake to carry out such Award without delay.

44.3.4 The Concessionaire and the Authority agree that an Award may be enforced against the Concessionaire and/or the Authority, as the case may be, and their respective assets wherever situated.

44.3.5 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder.

44.4 Adjudication by Regulatory Authority or Commission

In the event of constitution of a statutory Regulatory Authority or Commission with powers to adjudicate upon disputes between the Concessionaire and the Authority, all Disputes arising after such constitution shall, instead of reference to arbitration under Clause 44.3, be adjudicated upon by such Regulatory Authority or Commission in accordance with the Applicable Law and all references to Dispute Resolution Procedure shall be construed accordingly. For the avoidance of doubt, the Parties hereto agree that the adjudication hereunder shall not be final and binding until an appeal against such adjudication has been decided by an appellate tribunal or High Court, as the case may be, or no such appeal has been preferred within the time specified in the Applicable Law.
ARTICLE 45
DISCLOSURE

45.1 Disclosure of Specified Documents

The Concessionaire shall make available for inspection by any person, copies of this Concession Agreement, the Maintenance Manual, the Maintenance Programme and the Maintenance Requirements (hereinafter collectively referred to as the “Specified Documents”), free of charge, during normal business hours on all working days at the Toll Plazas and Concessionaire’s Registered Office. The Concessionaire shall prominently display at each of the Toll Plazas and toll booths, public notices stating the availability of the Specified Documents for such inspection, and shall provide copies of the same to any person upon payment of copying charges on a ‘no profit no loss’ basis.

45.2 Disclosure of Documents relating to safety

The Concessionaire shall make available for inspection by any person copies of all Documents and data relating to safety of the Project Highway, free of charge, during normal business hours on all working days, at the Concessionaire’s Registered Office. The Concessionaire shall make copies of the same available to any person upon payment of copying charges on a ‘no profit no loss’ basis.

45.3 Notwithstanding the provisions of Clauses 45.1 and 45.2, the Authority shall be entitled to direct the Concessionaire, from time to time, to withhold the disclosure of Protected Documents (as defined hereinbelow) to any person in pursuance of the aforesaid Clauses.

Explanation:

The expression Protected Documents shall mean such of the Specified Documents or documents referred to in Clauses 45.1 and 45.2, or portions thereof, the disclosure of which the Authority is entitled to withhold under the provisions of the Right to Information Act, 2005.
ARTICLE 46

REDRESSAL OF PUBLIC GRIEVANCES

46.1 Complaints Register

46.1.1 The Concessionaire shall maintain a public relations office at each of the Toll Plazas where it shall keep a register (the “Complaint Register”) open to public access at all times for recording of complaints by any person (the “Complainant”). Information relating to the availability of and access to the Complaint Register shall be prominently displayed by the Concessionaire at each Toll Plazas so as to bring it to the attention of all Users.

46.1.2 The Complaint Register shall be securely bound and each page thereof shall be duly numbered. It shall have appropriate columns including the complaint number, date, name and address of the Complainant, substance of the complaint and the action taken by the Concessionaire. Immediately after a complaint is registered, the Concessionaire shall give a receipt to the Complainant stating the date and complaint number.

46.1.3 Without prejudice to the provisions of Clauses 46.1.1 and 46.1.2, the Authority may, in consultation with the Concessionaire, specify the procedure for making complaints in electronic form and for responses thereto.

46.2 Redressal of complaints

46.2.1 The Concessionaire shall inspect the Complaint Register every day and take prompt and reasonable action for redressal of each complaint. The action taken shall be briefly noted in the Complaint Register and a reply stating the particulars thereof shall be sent by the Concessionaire to the Complainant under a certificate of posting.

46.2.2 Within 7 (seven) days of the close of each month, the Concessionaire shall send to the Authority and to the Independent Engineer a true photocopy each of all the pages of the Complaint Register on which any entry has been recorded during the course of such month, and upon perusal thereof, the Authority may, in its discretion, advise the Concessionaire to take such further action as the Authority may deem appropriate for a fair and just redressal of any grievance. The Concessionaire shall consider such advice and inform the Authority of its decision thereon, and if the Authority is of the opinion that the Complainant is entitled to further relief, it may refer the matter to the competent forum for its disposal under the Consumer Protection Act, 1986, and advise the Complainant to pursue the complaint at his own risk and cost.
ARTICLE 47

MISCELLANEOUS

47.1 Governing law and jurisdiction

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

47.2 Waiver of immunity

Each Party unconditionally and irrevocably:

(a) agrees that the execution, delivery and performance by it of this
Agreement constitute commercial acts done and performed for
commercial purpose;

(b) agrees that, should any proceedings be brought against it or its assets,
property or revenues in any jurisdiction in relation to this Agreement
or any transaction contemplated by this Agreement, no immunity
(whether by reason of sovereignty or otherwise) from such
proceedings shall be claimed by or on behalf of the Party with respect
to its assets;

(c) waives any right of immunity which it or its assets, property or
revenues now has, may acquire in the future or which may be
attributed to it in any jurisdiction; and

(d) consents generally in respect of the enforcement of any judgement or
award against it in any such proceedings to the giving of any relief or
the issue of any process in any jurisdiction in connection with such
proceedings (including the making, enforcement or execution against
it or in respect of any assets, property or revenues whatsoever
irrespective of their use or intended use of any order or judgement
that may be made or given in connection therewith).

47.3 State Support Agreement

The Concessionaire acknowledges that it has received from the Authority a
certified true copy of the agreement executed between MORTH and the State
Government for providing the support and services specified therein (the
"State Support Agreement"), and the Parties hereto agree to make their
best endeavours to procure the support of the State Government.

47.4 Depreciation and Interest

47.4.1 For the purposes of depreciation under the Applicable Laws, the property
representing the capital investment made by the Concessionaire in the
Project shall be deemed to be acquired and owned by the Concessionaire.

Notwithstanding any contrary provision of law, the Authority shall not in any manner be liable in
respect of any claims for depreciation to be made by the Concessionaire under the Applicable Laws.

47.4.2 Unless otherwise specified, any interest payable under this Agreement shall accrue on a daily outstanding basis and shall be compounded on the basis of quarterly rests.

47.5 Delayed payments

The Parties hereto agree that payments due from one Party to the other Party under the provisions of this Agreement shall be made within the period set forth therein, and if no such period is specified, within 30 (thirty) days of receiving a demand along with the necessary particulars. In the event of delay beyond such period, the defaulting Party shall pay interest for the period of delay calculated at a rate equal to 5% (five per cent) above the Bank Rate, and recovery thereof shall be without prejudice to the rights of the Parties under this Agreement including Termination thereof.

47.6 Waiver

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

(a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;

(b) shall not be effective unless it is in writing and executed by a duly authorised representative of the Party; and

(c) shall not affect the validity or enforceability of this Agreement in any manner.

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

47.7 Liability for review of Documents and Drawings

Except to the extent expressly provided in this Agreement:

(a) no review, comment or approval by the Authority or the Independent Engineer of any Project Agreement, Document or Drawing submitted by the Concessionaire nor any observation or inspection of the construction, operation or maintenance of the Project Highway nor the failure to review, approve, comment, observe or inspect hereof shall relieve or absolve the Concessionaire from its obligations, duties and liabilities under this Agreement, the
Applicable Laws and Applicable Permits; and

(b) the Authority shall not be liable to the Concessionaire by reason of any review, comment, approval, observation or inspection referred to in Sub-clause (a) above.

47.8 Exclusion of implied warranties etc.

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

47.9 Survival

47.9.1 Termination shall:

(a) not relieve the Concessionaire or the Authority, as the case may be, of any obligations hereunder which expressly or by implication survive Termination hereof; and

(b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination.

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

47.10 Entire Agreement

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

47.11 Severability

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

47.12 No partnership

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

47.13 Third parties

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

47.14 Successors and assigns

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

47.15 Notices

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

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

(b) in the case of the Authority, be given by facsimile or e-mail and by letter delivered by hand and be addressed to the Chairman of the Authority with a copy delivered to the Authority Representative or such other person as the Authority may from time to time designate by notice to the Concessionaire; provided that if the Concessionaire does not have an office in Delhi it may send such notice by facsimile or e-mail and by registered acknowledgement due, air mail or by
courier; and

(c) any notice or communication by a Party to the other Party, given in accordance herewith, shall be deemed to have been delivered when in the normal course of post it ought to have been delivered and in all other cases, it shall be deemed to have been delivered on the actual date and time of delivery; provided that in the case of facsimile or e-mail, it shall be deemed to have been delivered on the working day following the date of its delivery.

47.16 Language

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

47.17 Counterparts

This Agreement may be executed in two counterparts, each of which, when executed and delivered, shall constitute an original of this Agreement.
ARTICLE 48  
DEFINITIONS

48.1 Definitions

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

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

"Additional Facilities" means the facilities such as service stations, motels, restaurants, shopping areas and amusement parks which the Concessionaire may, in its discretion and subject to Applicable Laws, provide or procure for the benefit of the Users, and which are in addition to the Project Facilities, and not situated on the Site;

"Additional Tollway" shall have the meaning set forth in Clause 30.1.1;

"Adjusted Equity" means the Equity funded in Indian Rupees and adjusted on the first day of the current month (the "Reference Date"), in the manner set forth below, to reflect the change in its value on account of depreciation and variations in WPI, and for any Reference Date occurring:

(a) on or before COD, the Adjusted Equity shall be a sum equal to the Equity funded in Indian Rupees and expended on the Project, revised to the extent of one half of the variation in WPI occurring between the first day of the month of Appointed Date and the Reference Date;

(b) from COD and until the 4th (fourth) anniversary thereof, an amount equal to the Adjusted Equity as on COD shall be deemed to be the base (the "Base Adjusted Equity") and the Adjusted Equity hereunder shall be a sum equal to the Base Adjusted Equity, revised at the commencement of each month following COD to the extent of variation in WPI occurring between COD and the Reference Date;

(c) after the 4th (fourth) anniversary of COD, the Adjusted Equity hereunder shall be a sum equal to the Base Adjusted Equity, reduced by 0.42% (zero point four two per cent) thereof at the commencement of each month following the 4th (fourth) anniversary of COD and the amount so arrived at shall be revised to the extent of variation in WPI occurring between COD and the Reference Date;

For the avoidance of doubt, the Adjusted Equity shall, in the event of Termination, be computed as on the Reference Date immediately preceding the Transfer Date; provided that no reduction in the Adjusted Equity shall be made for a period equal to the duration, if any, for which the Concession Period is extended, but the revision on
account of WPI shall continue to be made;

"Affected Party" shall have the meaning set forth in Clause 34.1;

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

"Appendix" shall have the meaning set forth in Clause 10.3.1;

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

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

"Appointed Date" means the date on which Financial Close is achieved or an earlier date that the Parties may by mutual consent determine, and shall be deemed to be the date of commencement of the Concession Period. For the avoidance of doubt, every Condition Precedent shall have been satisfied or waived prior to the Appointed Date and in the event all Conditions Precedent are not satisfied or waived, as the case may be, the Appointed Date shall be deemed to occur only when each and every Condition Precedent is either satisfied or waived, as the case may be;

"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;

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

"Authority Default" shall have the meaning set forth in Clause 37.2.1;

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

"Average Daily Fee" means the amount arrived at after dividing the total Realisable Fee of the immediately preceding Accounting Year by 365 (three hundred and sixty five), and increasing the result thereof by 5% (five per cent);

provided that the Average Daily Fee for any period prior to completion of the first Accounting Year following COD shall be a simple average of the Fee collected every day during the period between COD and the last day of the month preceding the date on which the event requiring calculation hereof occurred, and in the event that the Fee payable by any segment of traffic has not been realised for any reason, an assessment thereof shall be made by the Independent Engineer to form part of the Average Daily Fee for such period;

"Bank" means a bank incorporated in India and having a minimum net worth of Rs. 1,000 crore (Rupees one thousand crore) or any other bank acceptable to Senior Lenders, but does not include a bank in which any Senior Lender has an interest;

"Bank Rate" means the rate of interest specified by the Reserve Bank of India from time to time in pursuance of section 49 of the Reserve Bank of India Act, 1934 or any replacement of such Bank Rate for the time being in effect;

"Bid" means the documents in their entirety comprised in the bid submitted by the Consortium in response to the Request for Proposals in accordance with the provisions thereof;

"Bid Security" means the security provided by the Concessionaire to the Authority along with the Bid in a sum of Rs. 20.46 Crores (Rupees Twenty Crores Forty Six Lakhs only) in accordance with the Request for Proposals, and which is to remain in force until substituted by the Performance Security;

"Bus" means any passenger motor vehicle with a registered carrying capacity exceeding 32 (thirty two), excluding the driver;

"COD" or "Commercial Operation Date" shall have the meaning set forth in Clause 15.1;

"Car" means and includes any mechanical vehicle being a light motor vehicle, car, jeep, van, omnibus, or three-wheeled motor vehicle with a Gross Vehicle Weight not exceeding 7,500 (seven thousand five hundred) kilograms or a registered carrying capacity not exceeding 12 (twelve), excluding the driver, but does not include a Motor Cycle, Tractor or road roller;

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

(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 Bid;
(d) a change in the interpretation or application of any Indian law by a judgement of a court of record which has become final, conclusive and binding, as compared to such interpretation or application by a court of record prior to the date of Bid; or
(e) any change in the rates of any of the Taxes that have a direct effect on the Project;

"Change in Ownership" means a transfer of the direct and/or indirect legal or beneficial ownership of any shares, or securities convertible into shares, that causes the aggregate holding of the Consortium Members, together with their Associates, in the total Equity to decline below 51% (fifty one per cent) thereof during Construction Period and two years thereafter; provided that any material variation (as compared to the representations made by the Concessionaire during the bidding process for the purposes of meeting the minimum conditions of eligibility or for evaluation of its application or bid, as the case may be,) in the proportion of the equity holding of any Consortium Member to the total Equity, if it occurs prior to completion of a period two years after COD, shall constitute Change in Ownership;

"Change of Scope" shall have the meaning set forth in Clause 16.1;

"Company" means the company acting as the Concessionaire under this Agreement;

"Competing Road" means a road connecting the two end points of the Project Highway and serving as an alternative route thereof, such road being an existing paved road, which has been widened by more than 2 (two) metres of paved road for at least 75% (seventy five per cent) of the total length thereof at any time after the date of this Agreement, or a new road, which is constructed after such date, as the case may be, but does not include any road connecting the aforesaid two points if the length of such road exceeds the length of the Project Highway by 20% (twenty per cent) thereof;

"Completion Certificate" shall have the meaning set forth in Clause 14.2;

"Concession" shall have the meaning set forth in Clause 3.1.1;

"Concessionaire" shall have the meaning attributed thereto in the array of Parties hereinabove as set forth in the Recitals;

"Concession Fee" shall have the meaning set forth in Clause 26.1;
"Concession Period" means the period starting on and from the Appointed Date and ending on the Transfer Date;

"Concessionaire Default" shall have the meaning set forth in Clause 37.1.1;

"Conditions Precedent" shall have the meaning set forth in Clause 4.1.1;

"Consortium" shall have the meaning set forth in Recital (C);

"Consortium Member" means a company specified in Recital (C) as a member of the Consortium;

"Construction Period" means the period beginning from the Appointed Date and ending on the COD;

"Construction Works" means all works and things necessary to complete the Project Highway in accordance with this Agreement;

"Contractor" means the person or persons, as the case may be, with whom the Concessionaire has entered into any of the EPC Contract, the O&M Contract, the Tolling Contract or any other agreement or a material contract for construction, operation and/or maintenance of the Project Highway or matters incidental thereto, but does not include a person who has entered into an agreement for providing financial assistance to the Concessionaire;

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

(a) commence from the date on which a notice is delivered by one Party to the other Party asking the latter to cure the breach or default specified in such notice;

(b) not relieve any Party from liability to pay Damages or compensation under the provisions of this Agreement; and

(c) not in any way be extended by any period of Suspension under this Agreement; provided that if the cure of any breach by the Concessionaire requires any reasonable action by the Concessionaire that must be approved by the Authority or the Independent Engineer hereunder, the applicable Cure Period shall be extended by the period taken by the Authority or the Independent Engineer to accord their approval;

"DBFOT" or "Design, Build, Finance, Operate and Transfer" shall have the meaning set forth in Recital (B);

"Damages" shall have the meaning set forth in Sub-clause (w) of Clause 1.2.1;

"Debt Due" means the aggregate of the following sums expressed in Indian Rupees outstanding on the Transfer Date:
(a) the principal amount of the debt provided by the Senior Lenders under the Financing Agreements for financing the Total Project Cost (the "principal") but excluding any part of the principal that had fallen due for repayment two years prior to the Transfer Date;

(b) all accrued interest, financing fees and charges payable under the Financing Agreements on, or in respect of, the debt referred to in Sub-clause (a) above until the Transfer Date but excluding (i) any interest, fees or charges that had fallen due one year prior to the Transfer Date, (ii) any penal interest or charges payable under the Financing Agreements to any Senior Lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to Authority Default; and

(c) any Subordinated Debt which is included in the Financial Package and disbursed by lenders for financing the Total Project Cost;

provided that if all or any part of the Debt Due is convertible into Equity at the option of Senior Lenders and/or the Concessionaire, it shall for the purposes of this Agreement be deemed to be Debt Due even after such conversion and the principal thereof shall be dealt with as if such conversion had not been undertaken;

"Debt Service" means the sum of all payments on account of principal, interest, financing fees and charges due and payable in an Accounting Year to the Senior Lenders under the Financing Agreements;

"Development Period" means the period from the date of this Agreement until the Appointed Date;

"Dispute" shall have the meaning set forth in Clause 44.1.1;

"Dispute Resolution Procedure" means the procedure for resolution of Disputes set forth in Article 44;

"Divestment Requirements" means the obligations of the Concessionaire for and in respect of Termination as set forth in Clause 38.1;

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

"Drawings" means all of the drawings, calculations and documents pertaining to the Project Highway as set forth in Schedule-H, and shall include 'as built' drawings of the Project Highway;

"EPC Contract" means the engineering, procurement and construction contract or contracts entered into by the Concessionaire with one or more Contractors for, inter alia, engineering and construction of the Project Highway in accordance with the provisions of this Agreement;
or statutory body including Panchayat under the control of the Government or the State Government, as the case may be, and having jurisdiction over all or any part of the Project Highway or the performance of all or any of the services or obligations of the Concessionaire under or pursuant to this Agreement;

“Grant” shall have the meaning set forth in Clause 25.1.1;

“Gross Vehicle Weight” or “GVW” means in respect of any vehicle the total weight of the vehicle and load certified and registered under the Applicable Laws;

“IRC” means the Indian Roads Congress;

“Indemnified Party” means the Party entitled to the benefit of an indemnity pursuant to Article 42;

“Indemnifying Party” means the Party obligated to indemnify the other Party pursuant to Article 42;

“Independent Engineer” shall have the meaning set forth in Clause 23.1;

“Indirect Political Event” shall have the meaning set forth in Clause 34.3;

“Insurance Cover” means the aggregate of the maximum sums insured under the insurances taken out by the Concessionaire pursuant to Article 32, and includes all insurances required to be taken out by the Concessionaire under Clause 32.1 but not actually taken, and when used in the context of any act or event, it shall mean the aggregate of the maximum sums insured and payable or deemed to be insured and payable in relation to such act or event;

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

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

“Lead Member” shall have the meaning set forth in Recital (C);

“Lenders’ Representative” means the person duly authorised by the Senior Lenders to act for and on behalf of the Senior Lenders with regard to matters arising out of or in relation to this Agreement, and includes his successors, assigns and substitutes;

“Light Commercial Vehicle” or “LCV” means any mechanical vehicle
being a passenger vehicle, minibus, light goods vehicle or goods carrier with a Gross Vehicle Weight exceeding 7,500 (seven thousand five hundred) kilograms but less than 12,000 (twelve thousand) kilograms or a registered passenger carrying capacity exceeding 12 (twelve) but less than 32 (thirty two), excluding the driver, and includes a Tractor with Trailer;

"Local User" means a person using a vehicle registered for non-commercial purposes and used as such for commuting on a section of the Project Highway, provided that (a) such vehicle is owned by a person who resides within a distance of 20 km (twenty kilometres) from the nearest Toll Plaza; (b) its use of such section of the Project Highway does not extend beyond a Toll Plaza other than such nearest Toll Plaza; and (c) such section of the Project Highway has no service road or alternative road; and shall include a vehicle that uses a section of the Project Highway but does not cross a Toll Plaza;

"MORTH" means the Ministry of Road Transport and Highways or any substitute thereof dealing with National Highways;

"Maintenance Manual" shall have the meaning ascribed to it in Clause 17.3;

"Maintenance Programme" shall have the meaning ascribed to it in Clause 17.4.1;

"Maintenance Requirements" shall have the meaning set forth in Clause 17.2;

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

"Medical Aid Post" shall have the meaning set forth in Clause 21.1;

"Motor Cycle" means and includes any two-wheeled motor vehicle;

"Multi-axle truck" or "Heavy Truck" means a mechanical vehicle being any goods carrier, heavy construction machinery or earth moving equipment with a Gross Vehicle Weight exceeding 20,000 (twenty thousand) kilograms, but less than 60,000 (sixty thousand) kilograms, and includes a truck with three to six axles;

"Nominated Company" means a company selected by the Lenders' Representative and proposed to the 'Authority for substituting the Concessionaire in accordance with the provisions of the Substitution Agreement;

"Non-Political Event" shall have the meaning set forth in Clause 34.2;

"O&M" means the operation and maintenance of the Project Highway and includes all matters connected with or incidental to such operation and
maintenance, provision of services and facilities, and collection of Fee in accordance with the provisions of this Agreement;

"O&M Contract" means the operation and maintenance contract that may be entered into between the Concessionaire and the O&M Contractor for performance of all or any of the O&M obligations;

"O&M Contractor" means the person, if any, with whom the Concessionaire has entered into an O&M Contract for discharging O&M obligations for and on behalf of the Concessionaire;

"O&M Expenses" means expenses incurred by or on behalf of the Concessionaire or by the Authority, as the case may be, for all O&M including (a) cost of salaries and other compensation to employees, (b) cost of materials, supplies, utilities and other services, (c) premia for insurance, (d) all taxes, duties, cess and fees due and payable for O&M, (e) all repair, replacement, reconstruction, reinstatement, improvement and maintenance costs, (f) payments required to be made under the O&M Contract, Tolling Contract or any other contract in connection with or incidental to O&M, and (g) all other expenditure required to be incurred under Applicable Laws, Applicable Permits or this Agreement;

"O&M Inspection Report" shall have the meaning set forth in Clause 19.2;

"Operation Period" means the period commencing from COD and ending on the Transfer Date;

"Oversized Vehicle" means any mechanical vehicle having 7 (seven) or more axles or a Gross Vehicle Weight exceeding 60,000 (sixty thousand) kilograms;

"PCU" shall have the meaning ascribed to a passenger car unit in the Indian Roads Congress Publication No. IRC-64, 1990 or any substitute or modification thereof, and when used in this Agreement, shall include only motorised vehicles liable to payment of user charges at the Toll Plazas in accordance with the Fee Rules and the Exempted Vehicles specified therein, but does not include Tractors, Motor Cycles and non-motorised vehicles;

"Panel of Chartered Accountants" shall have the meaning set forth in Clause 33.2.1;

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

"Performance Security" shall have the meaning set forth in Clause 9.1;

"Political Event" shall have the meaning set forth in Clause 34.4;

"Project" means the construction, operation and maintenance of the Project Highway in accordance with the provisions of this Agreement, and includes all works, services and equipment relating to or in respect of the Scope of the Project.
"Project Agreements" means this Agreement, the Financing Agreements, EPC Contract, O&M Contract, Tolling Contract, and any other agreements or material contracts that may be entered into by the Concessionaire with any person in connection with matters relating to, arising out of or incidental to the Project, but does not include the Escrow Agreement, Substitution Agreement, or any agreement for procurement of goods and services involving a consideration of upto Rs. 5(five) crore;

"Project Assets" means all physical and other assets relating to and forming part of the Site including (a) rights over the Site in the form of licence, Right of Way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) Project Facilities situated on the Site; (d) all rights of the Concessionaire under the Project Agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) Applicable Permits and authorisations relating to or in respect of the Project Highway, but does not include Additional Facilities;

"Project Completion Date" means the date on which the Completion Certificate or the Provisional Certificate, as the case may be, is issued under the provisions of Article 14;

"Project Completion Schedule" means the progressive Project Milestones set forth in Schedule-G for completion of the Project Highway on or before the Scheduled Four-Laning Completion Date;

"Project Facilities" means all the amenities and facilities situated on the Site, as described in Schedule-C;

"Project Highway" means the Site comprising the existing road comprising NH-24 from km 262.00 to km 413.200 and all Project Assets, and its subsequent development and augmentation in accordance with this Agreement;

"Project Milestones" means the project milestones set forth in Schedule-G;

"Provisional Certificate" shall have the meaning set forth in Clause 14.3;

"Punch List" shall have the meaning ascribed to it in Clause 14.3;

"RBI" means the Reserve Bank of India, as constituted and existing under the Reserve Bank of India Act, 1934, including any statutory modification or replacement thereof, and its successors;

"Re.", "Rs." or "Rupees" or "Indian Rupees" means the lawful currency of the Republic of India;

"Realisable Fee" means all the Fee due and realisable under this Agreement.
but does not include fees that the Concessionaire has not been able to realise after due diligence and best efforts. For the avoidance of doubt, Realisable Fee shall, save as provided in Clause 26.5, be the amount so declared by the Concessionaire on the basis of its provisional accounts or the audited accounts, as the case may be, and in the event of a dispute thereto, the Dispute Resolution Procedure shall apply;

“Reference Exchange Rate” means, in respect of any one currency that is to be converted into another currency in accordance with the provisions of this Agreement, the exchange rate as of 12.00 (twelve) noon on the relevant date quoted in Delhi by the State Bank of India, and in the absence of such rate, the average of similar rates quoted in Delhi by the Bank of India and the Bank of Baroda;

“Request for Proposals” or “RFP” shall have the meaning set forth in Recital (D);

“Request for Qualification” or “RFQ” shall have the meaning set forth in Recital (C);

“Revenue Shortfall Loan” shall have the meaning set forth in Clause 28.1.1;

“Right of Way” means the constructive possession of the Site, together with all way leaves, easements, unrestricted access and other rights of way, however described, necessary for construction, operation and maintenance of the Project Highway in accordance with this Agreement;

“Safety Consultant” shall have the meaning set forth in Clause 18.1.2;

“Safety Requirements” shall have the meaning set forth in Clause 18.1.1;

“Safety Fund” shall have the meaning set forth in Clause 18.2;

“Scheduled Four-Laning Date” shall have the meaning set forth in Clause 12.4.1;

“Scope of the Project” shall have the meaning set forth in Clause 2.1;

“Senior Lenders” means the financial institutions, banks, multilateral lending agencies, trusts, funds and agents or trustees of debenture holders, including their successors and assignees, who have agreed to guarantee or provide finance to the Concessionaire under any of the Financing Agreements for meeting all or any part of the Total Project Cost and who hold pari passu charge on the assets, rights, title and interests of the Concessionaire;

“Site” shall have the meaning set forth in Clause 10.1;

“Specifications and Standards” means the specifications and standards relating to the quality, quantity, capacity and other requirements for the Project Highway, set forth in Schedule-D, and any modifications thereof,
or additions thereto, as included in the design and engineering for the Project
Highway submitted by the Concessionaire to, and expressly approved by, the
Authority;

"State" means the State of Uttar Pradesh and "State Government" means
the government of that State;

"State Support Agreement" shall have the meaning set forth in Clause
47.3;

"Statutory Auditors" means a reputable firm of chartered accountants
acting as the statutory auditors of the Concessionaire under the provisions of
the Companies Act, 1956 including any statutory modification or re-
enactment thereof, for the time being in force, and appointed in accordance
with Clause 33.2.1;

"Subordinated Debt" means the aggregate of the following sums expressed
in Indian Rupees or in the currency of debt, as the case may be, outstanding
as on the Transfer Date:

(a) the principal amount of debt provided by lenders or the
Concessionaire's shareholders for meeting the Total Project Cost and
subordinated to the financial assistance provided by the Senior
Lenders; and

(b) all accrued interest on the debt referred to in Sub-clause (a) above but
restricted to the lesser of actual interest rate and a rate equal to 5%
five per cent) above the Bank Rate in case of loans expressed in
Indian Rupees and lesser of the actual interest rate and six-month
LIBOR (London Inter Bank Offer Rate) plus 2% (two per cent) in
case of loans expressed in foreign currency, but does not include any
interest that had fallen due one year prior to the Transfer Date;

provided that if all or any part of the Subordinated Debt is convertible into
Equity at the option of the lenders and/or the Concessionaire’s shareholders,
it shall for the purposes of this Agreement be deemed to be Subordinated
Debt even after such conversion and the principal thereof shall be dealt with
as if such conversion had not been undertaken;

"Subsistence Revenue" means the total amount of Fee revenue that is
required by the Concessionaire in an Accounting Year to meet the sum of (a)
O&M Expenses, subject to an annual ceiling of 3% (three per cent) of the
Total Project Cost, plus Grant, if any, during the first Accounting Year after
COD, to be revised for each subsequent year to reflect the variations in WPI
occurring between COD and commencement of such Accounting Year, and
(b) Debt Service in such Accounting Year, but excluding any interest paid by
the Authority under clause 34.7.2 or 35.2;

"Substitution Agreement" shall have the meaning set forth in Clause 40.3;

"Suspension" shall have the meaning set forth in Clause 36.1;
"Taxes" means any Indian taxes including excise duties, customs duties, value added tax, sales tax, local taxes, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, materials, equipment and services incorporated in and forming part of the Project Highway charged, levied or imposed by any Government Instrumentality, but excluding any interest, penalties and other sums in relation thereto imposed on any account whatsoever. For the avoidance of doubt, Taxes shall not include taxes on corporate income;

"Termination" means the expiry or termination of this Agreement and the Concession hereunder;

"Termination Notice" means the communication issued in accordance with this Agreement by one Party to the other Party terminating this Agreement;

"Termination Payment" means the amount payable by the Authority to the Concessionaire upon Termination and may consist of payments on account of and restricted to the Debt Due and Adjusted Equity, as the case may be, which form part of the Total Project Cost in accordance with the provisions of this Agreement; provided that the amount payable in respect of any Debt Due expressed in foreign currency shall be computed at the Reference Exchange Rate for conversion into the relevant foreign currency as on the date of Termination Payment. For the avoidance of doubt, it is agreed that within a period of 60 (sixty) days from COD, the Concessionaire shall notify to the Authority, the Total Project Cost as on COD and its disaggregation between Debt Due and Equity, and only the amounts so conveyed shall form the basis of computing Termination Payment, and it is further agreed that in the event such disaggregation is not notified to the Authority, Equity shall be deemed to be the amount arrived at by subtracting Debt Due from Total Project Cost;

"Tests" means the tests set forth in Schedule-I to determine the completion of Four-Laning in accordance with the provisions of this Agreement;

"Toll Plaza" means the structures and barriers erected near each of the two ends of the Project Highway for the purpose of regulating the entry and exit of vehicles in accordance with the provisions of this Agreement and shall include all land, buildings, equipment, and other facilities required in accordance with or incidental to the provisions of this Agreement; provided that such Toll Plaza(s) shall not ordinarily be located within a distance of 10 (ten) kilometres from the limits of the municipal or local area of the nearest city or town respectively, as applicable on the date of this Agreement, and shall be situated at location(s) specified in the Bid or within a distance of 1 (one) kilometre thereof;

"Tolling Contract" means the contract, if any, entered into by the Concessionaire with the Tolling Contractor for collection of Fee for and on behalf of the Concessionaire and matters incidental thereto;

"Tolling Contractor" means the person, if any, with whom the Concessionaire has entered into a Tolling Contract;
"Total Project Cost" means the lowest of:

(a) the capital cost of the Project, less Equity Support as set forth in the Financial Package;

(b) the actual capital cost of the Project upon completion of Four-Laning of the Project Highway less Equity Support; and

(c) a sum of Rs. 1046 Crores (Rupees One Thousand and Forty Six Crores Only), less Equity Support;

provided that in the event of Termination, the Total Project Cost shall be deemed to be modified to the extent of variation in WPI or Reference Exchange Rate occurring in respect of Adjusted Equity and Debt Due, as the case may be, in accordance with the provisions of this Agreement; provided further that in the event WPI increases, on an average, by more than 6% (six per cent) per annum for the period between the date hereof and COD, the Parties shall meet, as soon as reasonably practicable, and agree upon revision of the amount hereinbefore specified such that the effect of increase in WPI, in excess of such 6% (six per cent), is reflected in the Total Project Cost;

"Tractor" means a motor vehicle which is not itself constructed to carry any load other than the equipment used for the purpose of propulsion, but does not include a road roller; and "Tractor with Trailer" means a Tractor with an attached vehicle used for carrying goods;

"Traffic Aid Post" shall have the meaning set forth in Clause 20.2;

"Transfer Date" means the date on which this Agreement and the Concession hereunder expires pursuant to the provisions of this Agreement or is terminated by a Termination Notice;

"Truck" means any mechanical vehicle being a goods carrier with a Gross Vehicle Weight exceeding 12,000 (twelve thousand) kilograms, but less than 20,000 (twenty thousand) kilograms;

"User" means a person who travels or intends to travel on the Project Highway or any part thereof in/on any vehicle on payment of Fee or in accordance with the provisions of this Agreement and Applicable Laws;

"Vesting Certificate" shall have the meaning set forth in Clause 38.4; and

"WPI" means the Wholesale Price Index for all commodities as published by the Ministry of Industry, GOI and shall include any index which substitutes the WPI, and any reference to WPI shall, unless the context otherwise requires, be construed as a reference to the latest monthly WPI published no later than 30 (thirty) days prior to the date of consideration hereunder.
दरेली हायवे प्रोजेक्ट सिमिटेड रियायतग्राही के
निदेशक नम द्वारा दिसंबर 11 जून, 2010
को हुई अपनी बैठक में पास किए गए संकल्प
के अनुसार में, श्री जे. एल. खुशु निदेशक
dी प्राधिकृति में इस पर रियायतग्राही की आम
मोहर लगाई गई और उन्होंने टोकन के रूप में
हस्ताक्षर किए तथा श्री पंकज जीन, प्राधिकृत
अधिकारी ने टोकन के रूप में इस पर अपने
प्रतिस्पर्श किए।

(जे. एल. खुशु)
निदेशक
dरेली हायवे प्रोजेक्ट सिमिटेड, 153, ओखला इंडस्ट्रियल इस्टेट, फेस-III
नई दिल्ली-110020

(पंकज जीन)
प्राधिकृत हस्ताक्षरकार
dरेली हाइवे प्रोजेक्ट सिमिटेड, 153, ओखला इंडस्ट्रियल इस्टेट, फेस-III
नई दिल्ली-110020

1. हस्ताक्षर

नाम
पता

2. हस्ताक्षर

नाम
पता
IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DAY, MONTH AND YEAR FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED

For and on behalf of

NATIONAL HIGHWAYS AUTHORITY OF INDIA

by:

[Signature]

(H. N. Mallick)
General Manager (F),
National Highways Authority of India
G-5&6, Sector-10, Dwarka
New Delhi-110020

THE COMMON SEAL OF BAREILLY HIGHWAYS PROJECT LIMITED CONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the 11th day of June, 2010 hereunto affixed in the presence of Mr. J. L. Khushu, Director, who has signed these presents in token thereof and Mr. Pankaj Jain, Authorized Officer who has countersigned the same in token thereof:

(J. L. Khushu)
Director
Bareilly Highways Project Limited
153, Okhla Industrial Estate, Phase III,
New Delhi 110020

(Pankaj Jain)
Authorized Signatory
Bareilly Highways Project Limited
153, Okhla Industrial Estate, Phase III,
New Delhi 110020

In the presence of:

1. Signature
   Name: Brijeshwar Singh
   Address: Chairman NHAI

2. Signature
   Name: Dr. J.N. Singh
   Address: Member (F) NHAI

In the presence of:

1. Signature
   Name: 
   Address:

2. Signature
   Name: 
   Address:
SCHEDULE – A
(See Clause 10.1)

SITE OF THE PROJECT

1. The Site

1.1 Site of the Four-Lane Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

1.2 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Concessionaire, and such inventory shall form part of the memorandum referred to in Clause 10.3.1 of the Agreement.

1.3 Additional land required for Toll Plazas, Traffic Aid Posts, Medical Aid Posts and vehicle rescue posts or for construction of works specified in the Change of Scope Order issued under Clause 16.2.3 of this Agreement shall be acquired in accordance with the provisions of Clause 10.3.6 of this Agreement. Upon acquisition, such land shall form part of the Site and vest in the Authority.
Annex - I
(Schedule-A)

Site for Four-Laning

1. The Site

The project highway aims at developing the existing two lanes to four lanes of Bareilly – Sitapur Section (Km 262.000 to Km 413.200) of NH-24 in the State of Uttar Pradesh. The land, carriageway and structures comprising the site are described below:

2. Land

<table>
<thead>
<tr>
<th>S.No</th>
<th>From</th>
<th>To</th>
<th>Location</th>
<th>ROW (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>262.000</td>
<td>288.200</td>
<td>Faridpur, Fatheganj purvi</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>288.200</td>
<td>289.200</td>
<td>Fatheganj purvi</td>
<td>56-57</td>
</tr>
<tr>
<td>3</td>
<td>289.200</td>
<td>290.200</td>
<td>Miranpur Kathara</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>290.000</td>
<td>295.000</td>
<td>Katra Town</td>
<td>55-42</td>
</tr>
<tr>
<td>5</td>
<td>295.000</td>
<td>300.000</td>
<td>Rieen Nagar</td>
<td>45</td>
</tr>
<tr>
<td>6</td>
<td>300.000</td>
<td>305.000</td>
<td>Tilhar</td>
<td>40-45</td>
</tr>
<tr>
<td>7</td>
<td>305.000</td>
<td>310.000</td>
<td>Michrobad</td>
<td>60-55</td>
</tr>
<tr>
<td>8</td>
<td>310.000</td>
<td>312.000</td>
<td>Roshanpur</td>
<td>45-46</td>
</tr>
<tr>
<td>9</td>
<td>312.000</td>
<td>315.000</td>
<td>Paprolia</td>
<td>45-45</td>
</tr>
<tr>
<td>10</td>
<td>315.000</td>
<td>317.000</td>
<td>Ghala Village</td>
<td>40-41</td>
</tr>
<tr>
<td>11</td>
<td>317.000</td>
<td>320.000</td>
<td>Khanour Village</td>
<td>45-46</td>
</tr>
<tr>
<td>12</td>
<td>320.000</td>
<td>324.000</td>
<td>Shajahanpur</td>
<td>42-44</td>
</tr>
<tr>
<td>13</td>
<td>324.000</td>
<td>331.000</td>
<td>Mishripur</td>
<td>45</td>
</tr>
<tr>
<td>14</td>
<td>332.000</td>
<td>334.000</td>
<td>Rauna</td>
<td>40-45</td>
</tr>
<tr>
<td>15</td>
<td>334.000</td>
<td>340.000</td>
<td>Santara</td>
<td>50-55</td>
</tr>
<tr>
<td>16</td>
<td>340.000</td>
<td>343.000</td>
<td>Shakanderpur</td>
<td>45-50</td>
</tr>
<tr>
<td>17</td>
<td>343.000</td>
<td>354.000</td>
<td>Ucholia</td>
<td>25</td>
</tr>
<tr>
<td>18</td>
<td>354.000</td>
<td>365.000</td>
<td>Jung Bahardur Ganj</td>
<td>35</td>
</tr>
<tr>
<td>19</td>
<td>365.000</td>
<td>367.000</td>
<td>Dogulpur</td>
<td>45-50</td>
</tr>
<tr>
<td>20</td>
<td>367.000</td>
<td>373.000</td>
<td>Maigal Ganj</td>
<td>25-26</td>
</tr>
<tr>
<td>21</td>
<td>373.000</td>
<td>380.000</td>
<td>Maigal Ganj</td>
<td>30-35</td>
</tr>
<tr>
<td>22</td>
<td>380.000</td>
<td>390.000</td>
<td>Maholi</td>
<td>40-42</td>
</tr>
<tr>
<td>23</td>
<td>390.000</td>
<td>400.000</td>
<td>Urdeuli</td>
<td>40-45</td>
</tr>
<tr>
<td>24</td>
<td>400.000</td>
<td>405.000</td>
<td>Katili Ramkot</td>
<td>40-45</td>
</tr>
<tr>
<td>25</td>
<td>405.000</td>
<td>410.000</td>
<td>Kobpur</td>
<td>40-45</td>
</tr>
<tr>
<td>26</td>
<td>410.000</td>
<td>414.000</td>
<td>Sitapur</td>
<td>45</td>
</tr>
</tbody>
</table>

3. Carriageway

The present carriageway of the Project Highway is a two-lane carriageway with/without paved shoulders in its entire length.

4. Major Bridges
The Site includes the following Major Bridges:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Chainage (Km)</th>
<th>Type of structure</th>
<th>No. of Spans</th>
<th>Width (In m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>289.210</td>
<td>Not Visible</td>
<td>Brick masonry</td>
<td>2 x 21.25m + 4 x 22.5m</td>
</tr>
<tr>
<td>2</td>
<td>325.800</td>
<td>Well foundation</td>
<td>RCC column piers &amp; RCC spill through abutments</td>
<td>Box girder deck</td>
</tr>
<tr>
<td>3</td>
<td>326.230</td>
<td>Well foundation</td>
<td>RCC column piers &amp; RCC spill through abutments</td>
<td>Box girder deck</td>
</tr>
<tr>
<td>4</td>
<td>357.300</td>
<td>Not Visible</td>
<td>Multiple columns with pier cap</td>
<td>T girder deck</td>
</tr>
<tr>
<td>5</td>
<td>365.425</td>
<td>Not Visible</td>
<td>Brick masonry</td>
<td>RCC arch bridge with non standard carriageway</td>
</tr>
<tr>
<td>6</td>
<td>387.300</td>
<td>Well foundation</td>
<td>RCC wall piers &amp; RCC spill through abutments</td>
<td>T girder deck</td>
</tr>
<tr>
<td>7</td>
<td>405.810</td>
<td>Not visible</td>
<td>RCC wall piers &amp; RCC spill through abutments</td>
<td>I girder deck</td>
</tr>
<tr>
<td>8</td>
<td>410.500</td>
<td>Well foundation</td>
<td>RCC wall piers &amp; RCC spill through abutments</td>
<td>I girder deck</td>
</tr>
</tbody>
</table>

5. Railway Over Bridges

The Site includes the following Railway Over Bridges:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Chainage (Km)</th>
<th>Type of structure</th>
<th>No. of Spans</th>
<th>Width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>332.050</td>
<td>RCC Masonry</td>
<td>RCC</td>
<td>1x6+1x18</td>
</tr>
<tr>
<td>2</td>
<td>407.600</td>
<td>RCC Masonry</td>
<td>RCC</td>
<td>1x18.20</td>
</tr>
</tbody>
</table>

6. Minor Bridges
7. Grade Separators

The Site includes the following Grade Separators:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Chainage (Km)</th>
<th>Type of Structure</th>
<th>No. of Spans</th>
<th>Width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>274.700</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC Solid slab</td>
</tr>
<tr>
<td>2</td>
<td>284.900</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>3</td>
<td>289.380</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>4</td>
<td>291.500</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>5</td>
<td>295.500</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC arch</td>
</tr>
<tr>
<td>6</td>
<td>306.500</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>7</td>
<td>309.700</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>8</td>
<td>314.703</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>9</td>
<td>315.150</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>10</td>
<td>316.150</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>Brick arch superstructure</td>
</tr>
<tr>
<td>11</td>
<td>340.550</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>12</td>
<td>342.300</td>
<td>Open foundation</td>
<td>Brick masonry</td>
<td>RCC solid slab</td>
</tr>
<tr>
<td>13</td>
<td>345.900</td>
<td>Not Visible</td>
<td>RCC abutment</td>
<td>Box girder deck</td>
</tr>
<tr>
<td>14</td>
<td>392.900</td>
<td>Open foundation</td>
<td>brick masonry</td>
<td>RCC solid slab</td>
</tr>
</tbody>
</table>

7. Grade Separators

The Site includes the following Grade Separators:

<table>
<thead>
<tr>
<th>S.No</th>
<th>Chainage (In Km)</th>
<th>Type of Structure</th>
<th>No. of Spans</th>
<th>Width (In m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Bus bays and Truck Lay byes
The total number of bus bays and truck lay byes on the Project Highway is noted below:

(a) No. of Bus bays on LHS - Nil
(b) No. of Bus bays on RHS - Nil
(c) No. of Truck lay-byes on LHS - Nil
d) No. of Truck lay-byes on RHS - Nil

9. Permanent Bridge, Bye Pass or Tunnel costing Rs. 50 crore or more

The Site includes the following permanent bridge/ bypass/ tunnel which was constructed at the cost noted below:

Nil

10. Total number of structures on the Site

Total number of structures on the Site is noted below:

   a) Total No. of Major Bridges - 8
   b) Total No. of Railway Over Bridges - 2
   c) Total No. of Grate Separators - Nil
   d) Total No. of Minor Bridges - 14
   e) Total No. of Pipe Culverts - 90
   f) Total No. of Slab Culverts - 69
   g) Total No. of Under Passess - Nil

11. Referencing System

Kilometer stones are existing in entire length of the project highway. It is called the "Existing Chainage". During topography survey with Total Station, observations made are referred to "Design Chainage". The relationship between the "Existing Chainage" and the "Design Chainage" as per field surveys of the location of existing km stones using the Total Station for the “Project Highway” is given below:

Design Chainage corresponding to existing chainage

<table>
<thead>
<tr>
<th>Existing Chainage (Km)</th>
<th>Design Chainage (Km)</th>
<th>Name of the Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>262.000</td>
<td>262.000</td>
<td>Unser Pura</td>
</tr>
<tr>
<td>263.000</td>
<td>263.000</td>
<td>Ghedinagar</td>
</tr>
<tr>
<td>264.000</td>
<td>264.000</td>
<td>Bahamnagar</td>
</tr>
<tr>
<td>265.000</td>
<td>265.000</td>
<td>Mage nagla</td>
</tr>
<tr>
<td>Existing Chainage (Km)</td>
<td>Design Chainage (Km)</td>
<td>Name of the Place</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>266.000</td>
<td>266.000</td>
<td>Zeo Village</td>
</tr>
<tr>
<td>267.000</td>
<td>267.000</td>
<td>Nauema Village</td>
</tr>
<tr>
<td>268.000</td>
<td>268.000</td>
<td>Nayatpur</td>
</tr>
<tr>
<td>269.000</td>
<td>BYPASS</td>
<td>Faridpur Gauthiya</td>
</tr>
<tr>
<td>270.000</td>
<td>BYPASS</td>
<td>Faridpur Bajar</td>
</tr>
<tr>
<td>271.000</td>
<td>BYPASS</td>
<td>Faridpur</td>
</tr>
<tr>
<td>272.000</td>
<td>272.900</td>
<td>Faridpur</td>
</tr>
<tr>
<td>273.000</td>
<td>273.970</td>
<td>Bakeniya Village</td>
</tr>
<tr>
<td>274.000</td>
<td>275.000</td>
<td>Hariyali Market</td>
</tr>
<tr>
<td>275.000</td>
<td>276.000</td>
<td>Pachome Village</td>
</tr>
<tr>
<td>276.000</td>
<td>277.000</td>
<td>Nglajase</td>
</tr>
<tr>
<td>277.000</td>
<td>277.990</td>
<td>Khanjanpur</td>
</tr>
<tr>
<td>278.000</td>
<td>278.990</td>
<td>Tesua Town</td>
</tr>
<tr>
<td>279.000</td>
<td>279.990</td>
<td>Tesua Town</td>
</tr>
<tr>
<td>280.000</td>
<td>280.990</td>
<td>Nai Basti</td>
</tr>
<tr>
<td>281.000</td>
<td>281.990</td>
<td></td>
</tr>
<tr>
<td>282.000</td>
<td>282.990</td>
<td>Simra Village</td>
</tr>
<tr>
<td>283.000</td>
<td>283.990</td>
<td>Rampura Village</td>
</tr>
<tr>
<td>284.000</td>
<td>284.990</td>
<td>Bhavion Village</td>
</tr>
<tr>
<td>285.000</td>
<td>285.990</td>
<td></td>
</tr>
<tr>
<td>286.000</td>
<td>286.990</td>
<td></td>
</tr>
<tr>
<td>287.000</td>
<td>287.990</td>
<td>Fatheganj purvi</td>
</tr>
<tr>
<td>288.000</td>
<td>288.965</td>
<td>Fatheganj purvi</td>
</tr>
<tr>
<td>289.000</td>
<td>289.950</td>
<td>Fatheganj purvi</td>
</tr>
<tr>
<td>290.000</td>
<td>290.950</td>
<td>Ullasnagar</td>
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SCHEDULE - B
(See Clause 2.1)

DEVELOPMENT OF THE PROJECT HIGHWAY

1. DEVELOPMENT OF THE PROJECT HIGHWAY

Development of the Project Highway shall include construction of the Project Highway as described in this Schedule-B and in Schedule-C.

2. FOUR-LANING

2.1 Four-Laning shall include construction of the Four-Lane Project highway as described in Annex-I of this Schedule-B and Annex-I of Schedule-C.

2.2 Four Laning shall be undertaken and completed by the Concessionaire in conformity with the Specifications and Standards set forth in Annex-I of Schedule-D.

3 [SIX-LANING]
Annex – I
(Schedule – B)

Description of Four – Laning

1. Width of Carriageway

1.1 The paved carriageway shall be 18.0 meters \((7.5 \times 2 + 1.5 \times 2)\) wide excluding the median:

Provided that in the following urban stretches, the width of carriageway shall be:

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1.2 Except as otherwise provided in this Agreement, the width of the paved carriageway shall conform to clause 1.1 above.

2. Project Facilities

Project facilities shall be constructed in conformity with Annex-I of Schedule-C.

3. Specifications and Standards

The Project Highway shall be constructed in conformity with the Specifications and Standards specified in Annex-I of Schedule – D.
4. Other Features of four laning

4.1 Cross Sections

The Project Highway shall be widened to Four lane dual configuration with paved shoulder with or without Service Roads. A typical cross section along with different types of cross section required to be developed in different segments of the project highway are indicated in Appendix B I.

4.2 Alignment Plan and Longitudinal Section

An alignment plan and vertical profile of project highway is given at Appendix B II in soft copy. The minimum FRL given in enclosed drawing shall have to be achieved by Concessionaire.

4.3 Bypasses & Realignment

There are 5 bypasses and 5 realignments in the project highway. The details of bypasses and realignments to be provided are given at Appendix B III.

4.4 Service Road

Service Roads shall be provided in lengths indicated in Appendix -B IV.

4.5 Proposed Right of Way

The details of the Proposed ROW are given in Appendix B V.

4.6 At Grade Intersection

At grade intersections shall be provided at the intersection of service roads and all intersecting roads at locations specified in Appendix -B VI for major intersections and in Appendix B VII for minor intersections.

4.7 Grade Separated Intersections

The grade separated intersections shall be as provided as given at Appendix B VIII.

4.8 Underpasses

Vehicular underpass shall be provided at location given at Appendix -B IX

Pedestrian /cattle underpass shall be provided at location given at Appendix -B X.

4.9 Major bridges

Major bridges as listed in Appendix B XI shall be provided, widened, reconstructed, or
4.10 Minor bridges

Minor bridges as listed in Appendix BXII shall be provided, widened, reconstructed, or extended.

4.11 Culverts

Culverts shall be provided, widened, reconstructed, or extended as listed in Appendix BXIII

4.12 ROB/RUB

Details of ROB/RUBs to be provided are given at Appendix BXIV. Following points shall be taken care of:

i). The proposed span arrangements of the ROBs are tentative and subject to change as per availability of railway boundaries/requirement of the railways.

ii). ROB shall be designed, constructed and maintained as per the requirements of Railway authorities. The construction plans shall be prepared in consultation with the concerned railway authority.

iii). The ROB's shall be constructed and maintained by the concessionaire under supervision of the Railways.

iv) All expenditure related to construction, maintenance and supervision of ROB (except P&E charges) shall be borne by the Concessionaire.

v) During construction, the existing level crossings shall be widened to 12 metres or two separate level crossings of 7 metres each shall be provided

4.13 Entry/exit ramps

Entry/exit ramps for entering into or exiting from the project highway shall be provided wherever necessary.

4.14 Slope protection

The side slope shall be protected by using suitable slope protection measures wherever required along the present highway.

4.15 Utilities

Provision of accommodating utilities shall be made both over as well as underground wherever required.

4.16 Rainwater Harvesting

As per Ministry of Environment and Forests Notification, New Delhi dated 14.01.1997 (as amended on 13.01.1998, 05.01.1999 & 6.11.2000), the construction of Rain water Harvesting structure is mandatory in and around Water Crisis area, notified by the Central Ground Water Board.
1. Typical Cross Sections
TYPICAL 4-LANE ROAD SECTION SHOWING CONCENTRIC WIDENING
(TYPE-II)

TYPICAL 4-LANE ROAD SECTION SHOWING ELEVATED CORRIDOR/FLYOVER/VEHICULAR UNDERPASSED
(TYPE-III)

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
2. OMISSIONS SHALL NOT BE INFERRED FROM THE DIMENSIONS.
3. ONLY INSET DIMENSIONS TO BE FOLLOWED.

Four/Six Laning of Bareilly - Sitapur Section of NH - 24 from km 262.000 to km 413.200
in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F,
Package No. NHDP - III/DLS/14) on BOT Basis

Page B - 6
Four/Six Laning of Bareilly - Sitapur Section of NH - 24 from km 262.000 to km 413.200
in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F,
Package No. NHDP - III/DL5/14) on BOT Basis
2. Cross Section Type along the Project Corridor

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Four/Six Laning of Bareilly - Sitapur Section, from km 262.000 to km 413.200 in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F, Package No. NHDP – III/DLS/14) on BOT Basis.
Alignment Plan and longitudinal Section are enclosed in digital form in CD marked as Appendix BII
Details of Bypasses/Realignment

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The Total length of Service road is 38.10 Kms approx.

Note: The proposed locations of Vehicular underpass are tentative & the final locations shall be decided by concessionaire by site condition in consultation with Independent Engineer.
### Details of Proposed ROW

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Four/Six Laning of Bareilly - Sitapur Section of NH - 24 from km 262.000 to km 413.200
in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F,
Package No. NHJP - III/DLS/141) on BOT Basis
### Details of Proposed Grade Separated Intersections

<table>
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<th>Proposed span arrangement</th>
<th>Proposed structural configuration</th>
<th>Proposed span (m)</th>
<th>MDR</th>
<th>Chainage (SH)</th>
<th>Chainage (SMR)</th>
<th>Chainage (SMC)</th>
<th>Design Change</th>
<th>Location</th>
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**Appendix B111**

**Figure 11.5: Schedule**

Business for B111 - Bid Documents

[Signature]  
Ministry of Highways Authority of India
### Details of Proposed Vehicular Underpasses

The minimum vertical clearance shall be 5.5m

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<th>Design Chainage</th>
<th>Name of Intersecting Roads</th>
<th>Proposed structural configuration</th>
<th>Proposed span arrangement</th>
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<td>VUP</td>
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Note: The proposed locations of vehicular underpass are tentative & the final locations shall be decided by concessionaire by site condition in consultation with Independent Engineer.
Details of Proposed Pedestrian/Cattle Underpasses

The minimum vertical clearance shall be 3.5m

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<td>280.300</td>
<td>281.280</td>
<td>Hareli</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
</tr>
<tr>
<td>5</td>
<td>338.545</td>
<td>341.550</td>
<td>Rauja</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
</tr>
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<td>348.530</td>
<td>349.575</td>
<td>Hunnakuda</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
</tr>
<tr>
<td>7</td>
<td>358.108</td>
<td>361.675</td>
<td>Udaypur</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
</tr>
<tr>
<td>8</td>
<td>366.210</td>
<td>369.880</td>
<td>Chapertala</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
</tr>
<tr>
<td>9</td>
<td>383.867</td>
<td>388.200</td>
<td>Dev baba</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
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<tr>
<td>10</td>
<td>397.526</td>
<td>400.386</td>
<td>Ghabri</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
</tr>
<tr>
<td>11</td>
<td>398.785</td>
<td>404.050</td>
<td>Dhala</td>
<td>PUP</td>
<td>Box</td>
<td>7.5 m Clear Span</td>
<td>26.5</td>
</tr>
</tbody>
</table>

Note: The Proposed locations of Pedestrian underpass are tentative & the final locations shall be decided by concessionaire by site condition in consultation with Independent Engineer.
Details of new Major Bridges and Rehabilitation/Repair/widening Scheme for Existing Major Bridges

A. Construction of new Major Bridges

<table>
<thead>
<tr>
<th>S No.</th>
<th>Name of Bridge</th>
<th>Bridge No.</th>
<th>Existing Chainage</th>
<th>Design Chainage</th>
<th>Type of Crossing</th>
<th>Proposed structural configuration</th>
<th>Proposed Structure type</th>
<th>Proposed span arrangement</th>
<th>Total width of the structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bahbul River Bridge</td>
<td>289/1</td>
<td>289.210</td>
<td>289.240</td>
<td>River</td>
<td>4 - Lane</td>
<td>Girder &amp; Slab</td>
<td>6 x 22.50</td>
<td>11.75 + 11.75</td>
</tr>
<tr>
<td>2</td>
<td>Garrah River Bridge</td>
<td>326/5</td>
<td>325.800</td>
<td>327.590</td>
<td>River</td>
<td>2 - Lane</td>
<td>Box Girder/Girder &amp; Slab</td>
<td>(2 x 25) + (3 x 40)</td>
<td>11.75</td>
</tr>
<tr>
<td>3</td>
<td>Khannaot Bridge</td>
<td>327/1</td>
<td>328.500</td>
<td>328.520</td>
<td>Canal</td>
<td>2 - Lane</td>
<td>Box Girder/Girder &amp; Slab</td>
<td>(2 x 30) + (1 x 40)</td>
<td>11.75</td>
</tr>
<tr>
<td>4</td>
<td>Sharda Canal Bridge</td>
<td>358/1</td>
<td>357.300</td>
<td>360.930</td>
<td>Canal</td>
<td>2 - Lane</td>
<td>I Girder Bridge</td>
<td>3 x 21.6</td>
<td>11.75</td>
</tr>
<tr>
<td>5</td>
<td>Gomati Bridge</td>
<td>366/1</td>
<td>368.425</td>
<td>369.130</td>
<td>River</td>
<td>4 - Lane</td>
<td>Girder &amp; Slab</td>
<td>6 x 22.5</td>
<td>11.75 + 11.75</td>
</tr>
<tr>
<td>6</td>
<td>Katna</td>
<td>388/1</td>
<td>387.300</td>
<td>391.450</td>
<td>River</td>
<td>4 - Lane</td>
<td>Girder &amp; Slab</td>
<td>4 x 25.60</td>
<td>11.75 + 11.75</td>
</tr>
<tr>
<td>7</td>
<td>Pirai Bridge</td>
<td>409/1</td>
<td>405.810</td>
<td>411.195</td>
<td>Canal</td>
<td>2 - Lane</td>
<td>I Girder Bridge</td>
<td>2 x 28.25</td>
<td>11.75</td>
</tr>
<tr>
<td>8</td>
<td>Siryan Bridge</td>
<td>411/1</td>
<td>410.500</td>
<td>415.950</td>
<td>Canal</td>
<td>2 - Lane</td>
<td>I Girder bridge</td>
<td>3 x 32.2</td>
<td>11.75</td>
</tr>
</tbody>
</table>
## Rehabilitation/Repair/widening of existing Major bridges

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Name of Bridge</th>
<th>Bridge No</th>
<th>Chainage (Km.)</th>
<th>Width (m)</th>
<th>Span Arrangement &amp; Total Length</th>
<th>Type of Structure for existing bridge</th>
<th>Details of Rehabilitation/ Repair/ Widening</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Garrah River Bridge</td>
<td>326/5</td>
<td>325.800</td>
<td>11.0</td>
<td>2 x 25m + 3x 40m = 170m</td>
<td>RCC column piers &amp; RCC spill through abutments.</td>
<td>Expansion joints, railing &amp; wearing coat etc of existing 2-lane bridge shall be repaired/replaced/rehabilitated based on the existing condition during construction</td>
</tr>
<tr>
<td>2</td>
<td>Khanna Bridge</td>
<td>327/1</td>
<td>326.500</td>
<td>11.0</td>
<td>2 x 30m + 1x 40m = 100m</td>
<td>RCC column piers &amp; RCC spill through abutments.</td>
<td>Expansion joints, railing &amp; wearing coat etc of existing 2-lane bridge shall be repaired/replaced/rehabilitated based on the existing condition during construction</td>
</tr>
<tr>
<td>3</td>
<td>Sharda Canal Bridge</td>
<td>358/1</td>
<td>357.300</td>
<td>12.0</td>
<td>3 x 21.6m = 64.8m</td>
<td>Multiple columns with pier cap</td>
<td>Expansion joints, railing &amp; wearing coat etc of existing 2-lane bridge shall be repaired/replaced/rehabilitated based on the existing condition during construction</td>
</tr>
<tr>
<td>4</td>
<td>Pirai Bridge</td>
<td>406/1</td>
<td>405.810</td>
<td>11.0+9.0</td>
<td>2 x 28.25m = 56.5m</td>
<td>RCC wall piers &amp; RCC spill through abutments.</td>
<td>Expansion joints, railing &amp; wearing coat etc of existing 2-lane bridge shall be repaired/replaced/rehabilitated based on the existing condition during construction</td>
</tr>
<tr>
<td>5</td>
<td>Siryan Bridge</td>
<td>411/1</td>
<td>410.500</td>
<td>11.0</td>
<td>3 x 32.2m = 96.6m</td>
<td>RCC wall piers &amp; RCC spill through abutments.</td>
<td>Expansion joints, railing &amp; wearing coat etc of existing 2-lane bridge shall be repaired/replaced/rehabilitated based on the existing condition during construction</td>
</tr>
</tbody>
</table>
## Appendix BXII

Details of new Minor Bridges and Rehabilitation/Repair/widening Scheme for Existing Minor Bridges

### A. Construction of New Minor Bridges

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Bridge No.</th>
<th>Existing Chainage</th>
<th>Design Chainage</th>
<th>Type of Crossing</th>
<th>Proposed structural configuration</th>
<th>Proposed Structure Type</th>
<th>Proposed span arrangement</th>
<th>Total width of the structure (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pachaumi Nala Bridge</td>
<td>275/1</td>
<td>275.780</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>3 x 6 m</td>
<td>26.5</td>
</tr>
<tr>
<td>2</td>
<td>Rampura Nala Bridge</td>
<td>285/1</td>
<td>285.030</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>2 x 5 m</td>
<td>26.5</td>
</tr>
<tr>
<td>3</td>
<td>Ullasnagar Nala Bridge</td>
<td>290/1</td>
<td>290.300</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>3 x 6 m</td>
<td>26.5</td>
</tr>
<tr>
<td>4</td>
<td>Salpur Nala Bridge</td>
<td>292/2</td>
<td>292.420</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>2 x 6 m</td>
<td>26.5</td>
</tr>
<tr>
<td>5</td>
<td>Sharda canal Bridge</td>
<td>296/2</td>
<td>296.280</td>
<td>Canal</td>
<td>4-Lane</td>
<td>Girder Bridge</td>
<td>1 x 15 m</td>
<td>26.5</td>
</tr>
<tr>
<td>6</td>
<td>Tilhar Nala Bridge</td>
<td>307/1</td>
<td>307.460</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>3 x 6 m</td>
<td>26.5</td>
</tr>
<tr>
<td>7</td>
<td>Kapseda Nala Bridge</td>
<td>310/2</td>
<td>310.680</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>2 x 5 m</td>
<td>26.5</td>
</tr>
<tr>
<td>8</td>
<td>Panthara Kapseda</td>
<td>315/1</td>
<td>315.645</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>2 x 5 m</td>
<td>26.5</td>
</tr>
<tr>
<td>9</td>
<td>Nagariya Kapseda</td>
<td>316/1</td>
<td>316.280</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>2 x 6 m</td>
<td>26.5</td>
</tr>
<tr>
<td>10</td>
<td>Bhedpur Bridge</td>
<td>317/1</td>
<td>317.120</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>3 x 6 m</td>
<td>26.5</td>
</tr>
<tr>
<td>11</td>
<td>Itvariya Bridge</td>
<td>341/1</td>
<td>343.565</td>
<td>Canal</td>
<td>4-Lane</td>
<td>Girder Bridge</td>
<td>1 x 15 m</td>
<td>26.5</td>
</tr>
<tr>
<td>12</td>
<td>Suaketa Bridge</td>
<td>343/1</td>
<td>345.315</td>
<td>Nalla</td>
<td>4-Lane</td>
<td>Box</td>
<td>3 x 6 m</td>
<td>26.5</td>
</tr>
<tr>
<td>13</td>
<td>Sharda Canal Bridge</td>
<td>346/2</td>
<td>348.910</td>
<td>Canal</td>
<td>2-Lane</td>
<td>Girder Bridge</td>
<td>1 x 37.6 m</td>
<td>11.75</td>
</tr>
<tr>
<td>14</td>
<td>Sharda Bridge</td>
<td>393/3</td>
<td>398.045</td>
<td>Canal</td>
<td>4-Lane</td>
<td>Girder Bridge</td>
<td>1 x 15 m</td>
<td>26.5</td>
</tr>
</tbody>
</table>
### B. Rehabilitation/Repair/Widening of Existing Minor Bridges

<table>
<thead>
<tr>
<th>SL. NO.</th>
<th>Name of Bridge</th>
<th>Bridge No.</th>
<th>Chainage (Km.)</th>
<th>Width (m)</th>
<th>Span Arrangement &amp; Total Length</th>
<th>Type of Structure for existing bridge</th>
<th>Details of Rehabilitation/Repair/Widening</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sharda Canal Bridge 346/2</td>
<td>345.900</td>
<td>11.0</td>
<td>1x37.6=37.6m</td>
<td>Not Visible</td>
<td>RCC abutment Box girder deck</td>
<td>Expansion joints, railing &amp; wearing coat etc of existing 2-lane bridge shall be repaired/replaced/rehabilitated based on the existing condition during construction</td>
</tr>
</tbody>
</table>

Four/Six Laning of Bareilly - Sitapur Section of NH - 24 from km 262.000 to km 413.200 in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F, Package No. NHDP - III/DL5/14) on BOT Basis.
## Table B 3: Reconstruction Scheme for Culverts

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Existing CD No.</th>
<th>Existing Chainage (km)</th>
<th>Design Chainage (km)</th>
<th>Type of Structure</th>
<th>Recommendation</th>
<th>Span Arrangement</th>
<th>Proposed total width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>263/1</td>
<td>262.090</td>
<td>262.090</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>Existing: 0.300 dia</td>
<td>Proposed: 1.2 dia</td>
</tr>
<tr>
<td>2</td>
<td>264/1</td>
<td>263.205</td>
<td>263.210</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>Existing: 0.300 dia</td>
<td>Proposed: 1.2 dia</td>
</tr>
<tr>
<td>3</td>
<td>265/1</td>
<td>264.455</td>
<td>264.450</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>Existing: 0.300 dia</td>
<td>Proposed: 1.2 dia</td>
</tr>
<tr>
<td>4</td>
<td>266/1</td>
<td>265.875</td>
<td>265.870</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>Existing: 0.300 dia</td>
<td>Proposed: 1.2 dia</td>
</tr>
<tr>
<td>5</td>
<td>267/1</td>
<td>266.850</td>
<td>266.620</td>
<td>RCC Slab</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>Existing: 1.5*2.2</td>
<td>Proposed: 2.0*2.0</td>
</tr>
<tr>
<td>6</td>
<td>268/1</td>
<td>267.750</td>
<td>267.742</td>
<td>RCC Slab</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>Existing: 6.0*3.0</td>
<td>Proposed: 6.0*3.0</td>
</tr>
<tr>
<td>7</td>
<td>269/1</td>
<td>268.200</td>
<td>268.140</td>
<td>RCC Slab</td>
<td>New Construction</td>
<td>Existing: 6.0*1.55</td>
<td>Proposed: 6.0*1.65</td>
</tr>
<tr>
<td>8</td>
<td>269/2</td>
<td>268.800</td>
<td>269.200</td>
<td>RCC Slab</td>
<td>New Construction</td>
<td>Existing: 3.0*2.3</td>
<td>Proposed: 3.0*2.3</td>
</tr>
<tr>
<td>9</td>
<td>271/1</td>
<td>271.150</td>
<td>271.830</td>
<td>RCC Slab</td>
<td>New Construction</td>
<td>Existing: 3.0*1.7</td>
<td>Proposed: 3.0*1.7</td>
</tr>
<tr>
<td>10</td>
<td>272/2</td>
<td>271.2</td>
<td>272.110</td>
<td>H.P.</td>
<td>New Construction</td>
<td>Existing: 0.600 dia</td>
<td>Proposed: 1.2 dia</td>
</tr>
<tr>
<td>Package No.</td>
<td>Length (m)</td>
<td>Width (m)</td>
<td>New Construction</td>
<td>Full Formation Width for 4-Lane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
<td>-----------</td>
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<td></td>
</tr>
<tr>
<td>NHDP-III/DW/14)</td>
<td>3.0*2.1</td>
<td>3.0*2.1</td>
<td>Full Formation Width for 4-Lane</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>11</td>
<td>272/3</td>
<td>272.7</td>
<td>272.740</td>
<td>RCC Slab</td>
<td>Box</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>0.300 dia</td>
</tr>
<tr>
<td>12</td>
<td>276/1</td>
<td>275.8</td>
<td>276.830</td>
<td>H.P.</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>0.300 dia</td>
</tr>
<tr>
<td>13</td>
<td>277/1</td>
<td>276.8</td>
<td>277.860</td>
<td>H.P.</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>0.300 dia</td>
</tr>
<tr>
<td>14</td>
<td>279/1</td>
<td>278.85</td>
<td>279.700</td>
<td>RCC Slab</td>
<td>Box</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>4.5*3.0</td>
</tr>
<tr>
<td>15</td>
<td>280/1</td>
<td>279.15</td>
<td>280.265</td>
<td>H.P.</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>0.300 dia</td>
</tr>
<tr>
<td>16</td>
<td>281/1</td>
<td>280.23</td>
<td>281.235</td>
<td>RCC Slab</td>
<td>Box</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>3.0*2.0</td>
</tr>
<tr>
<td>17</td>
<td>282/1</td>
<td>281.9</td>
<td>282.760</td>
<td>RCC Slab</td>
<td>Box</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>1.5*2.0</td>
</tr>
<tr>
<td>18</td>
<td>291/1</td>
<td>290.65</td>
<td>291.585</td>
<td>H.P.</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>0.900 dia</td>
</tr>
<tr>
<td>19</td>
<td>292/1</td>
<td>291.15</td>
<td>292.035</td>
<td>RCC Slab</td>
<td>Box</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>2.0*2.5</td>
</tr>
<tr>
<td>20</td>
<td>293/1</td>
<td>292.1</td>
<td>293.075</td>
<td>RCC Slab</td>
<td>Box</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>1.5*2.0</td>
</tr>
<tr>
<td>21</td>
<td>293/2</td>
<td>292.23</td>
<td>293.150</td>
<td>H.P.</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>0.300 dia</td>
</tr>
<tr>
<td>22</td>
<td>294/1</td>
<td>294.130</td>
<td>H.P.</td>
<td>H.P.</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
<td>0.900 dia</td>
<td>1.2 dia</td>
</tr>
</tbody>
</table>
National Highways Authority of India

Request for Proposal - Bid Documents

Volume III: Schedules

<table>
<thead>
<tr>
<th>No</th>
<th>Milestone</th>
<th>Length</th>
<th>Type</th>
<th>Reconstructed</th>
<th>Full Formation width for 4-Lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>294/2</td>
<td>293.35</td>
<td>RCC Slab</td>
<td>Box</td>
<td>Dismantled &amp; Reconstructed to the requirements of 4-lane</td>
</tr>
<tr>
<td>24</td>
<td>296/1</td>
<td>296.15</td>
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Four/Six Laning of Bareilly - Ghaziabad Section of NH - 24 from km 262.000 to km 413.200 in the State of Uttar Pradesh under PPP Phase III (Lot V Group - F, Package No. NHDP - III/DL5/14) on BOT Basis.
### Request for Proposal – Bid Documents

**National Highways Authority of India**

**Volume-III: Schedules**

<table>
<thead>
<tr>
<th>Section</th>
<th>Km</th>
<th>Lane Width</th>
<th>Materials</th>
<th>Type</th>
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**New Construction**

- **RCC Slab**
- **Box**

**Notation**

- H.P.: High Pressure
- Dia: Diameter

**Project:** Six Laning of Bareilly – Sitapur Section of NH - 24 from km 262.000 to km 413.200

**State:** Uttar Pradesh

**NHDP Phase:** III

**Lot V Group:** F

**Package No.:** NHDP – III/DLS/14 (on BOT Basis)
### Request for Proposal – Bid Documents

| Section | Start KM | End KM | Type | Width | Full Formation width for 4-Lane |
|---------|---------|-------|------|-------|---------------------------------
| Reconstructed to the requirements of 4-lane | 1.2\*2.7 | 2.0\*2.0 |
| Dismantled & Reconstructed to the requirements of 4-lane | 0.300 dia | 1.2 dia |
| Dismantled & Reconstructed to the requirements of 4-lane | 3.0\*2.2 | 3.0\*2.2 |
| Dismantled & Reconstructed to the requirements of 4-lane | 1.5\*3.6 | 2.0\*2.0 |
| Dismantled & Reconstructed to the requirements of 4-lane | 0.600 dia | 1.2 dia |
| Dismantled & Reconstructed to the requirements of 4-lane | 2.0\*2.2 | 2.0\*2.2 |
| Dismantled & Reconstructed to the requirements of 4-lane | 0.900 dia | 1.2 dia |
| Dismantled & Reconstructed to the requirements of 4-lane | 1.2 dia | 1.2 dia |
| Dismantled & Reconstructed to the requirements of 4-lane | 6.0\*4.0 | 6.0\*4.0 |
| Dismantled & Reconstructed to the requirements of 4-lane | 3.0\*3.0 | 3.0\*3.0 |
| Dismantled & Reconstructed to the requirements of 4-lane | 0.600 dia | 1.2 dia |
| Dismantled & Reconstructed to the requirements of 4-lane | 0.300 dia | 1.2 dia |

**Four/Six Laning of Bareilly – Sitapur Section of NH – 24 from km 262.000 to km 413.200 in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F, Package No. NHDP - III/DLS/14) on BOT Basis**
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Four/Six Laning of Bareilly - Sitapur Section of NH - 24 from km 262.000 to km 413.200 in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F, Package No. NHDP - III/DLS/14) on BOT Basis
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<tr>
<td>114</td>
<td>375/1</td>
<td>374</td>
<td>377.970</td>
<td>Arch</td>
<td>1.0*1.5</td>
<td>2.0*2.0</td>
</tr>
<tr>
<td>115</td>
<td>377/1</td>
<td>376.5</td>
<td>380.830</td>
<td>Arch</td>
<td>1.5*2.0</td>
<td>2.0*2.0</td>
</tr>
<tr>
<td>116</td>
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<td>376.6</td>
<td>380.880</td>
<td>Arch</td>
<td>1.0*2.0</td>
<td>2.0*2.0</td>
</tr>
<tr>
<td>117</td>
<td>378/1</td>
<td>377.55</td>
<td>381.905</td>
<td>H.P.</td>
<td>0.300 dia</td>
<td>1.2 dia</td>
</tr>
<tr>
<td>118</td>
<td>379/1</td>
<td>378.55</td>
<td>382.850</td>
<td>RCC</td>
<td>6.0*2.5</td>
<td>6.0*2.5</td>
</tr>
<tr>
<td>119</td>
<td>379/2</td>
<td>378.65</td>
<td>383.040</td>
<td>H.P.</td>
<td>0.300 dia</td>
<td>1.2 dia</td>
</tr>
<tr>
<td>120</td>
<td>381/1</td>
<td>381</td>
<td>381.5</td>
<td>H.P.</td>
<td>0.300 dia</td>
<td>1.2 dia</td>
</tr>
</tbody>
</table>

Dismantled & Reconstructed to the requirements of 4-lane.
<table>
<thead>
<tr>
<th>Section</th>
<th>Length</th>
<th>New Construction Width</th>
<th>Arch</th>
<th>Box Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>381/2</td>
<td>380.25</td>
<td>H.P.</td>
<td>384.650 H.P.</td>
</tr>
<tr>
<td>122</td>
<td>381/3</td>
<td>380.3</td>
<td>H.P.</td>
<td>384.910 H.P.</td>
</tr>
<tr>
<td>123</td>
<td>381/4</td>
<td>380.65</td>
<td>H.P.</td>
<td>384.960 H.P.</td>
</tr>
<tr>
<td>124</td>
<td>382/1</td>
<td>381.4</td>
<td>RCC Slab</td>
<td>385.850 Box</td>
</tr>
<tr>
<td>125</td>
<td>383/1</td>
<td>382.19</td>
<td>RCC Slab</td>
<td>386.510 Box</td>
</tr>
<tr>
<td>126</td>
<td>383/2</td>
<td>382.25</td>
<td>H.P.</td>
<td>386.660 H.P.</td>
</tr>
<tr>
<td>127</td>
<td>384/1</td>
<td>383.6</td>
<td>H.P.</td>
<td>387.780 H.P.</td>
</tr>
<tr>
<td>128</td>
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<td>H.P.</td>
<td>389.150 H.P.</td>
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<tr>
<td>129</td>
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<td>385.35</td>
<td>Arch</td>
<td>388.680 Box</td>
</tr>
<tr>
<td>130</td>
<td>387/1</td>
<td>386.55</td>
<td>RCC Slab</td>
<td>391.090 Box</td>
</tr>
<tr>
<td>131</td>
<td>389/1</td>
<td>388.2</td>
<td>H.P.</td>
<td>392.970 H.P.</td>
</tr>
<tr>
<td>132</td>
<td>390/1</td>
<td>389.38</td>
<td>H.P.</td>
<td>394.295 H.P.</td>
</tr>
<tr>
<td>133</td>
<td>390/2</td>
<td>389.55</td>
<td>Arch</td>
<td>394.395 Box</td>
</tr>
</tbody>
</table>

Reconstructed to the requirements of 4-lane

Full Formation width for 4-Lane

Dismantled & Reconstructed to the requirements of 4-lane

M.00 dia 1.2 dia

Full Formation width for 4-Lane

2.0*3.0 2.0*3.0

Full Formation width for 4-Lane

3.0*2.5 3.0*2.5

Full Formation width for 4-Lane

1.00 dia 1.2 dia

Full Formation width for 4-Lane

1.00 dia 1.2 dia

Full Formation width for 4-Lane

1.00 dia 1.2 dia

Full Formation width for 4-Lane

1.8*2.2 1.8*2.2

New Construction Width

1.5*3.9 2.0*2.0

New Construction Width

0.300 dia 1.2 dia

New Construction Width

0.300 dia 1.2 dia

New Construction Width

1.5*1.5 2.0*2.0

New Construction Width

Four/Six Laning of Bareilly - Sitapur Section of NH - 24 from km 262.000 to km 413.200 in the State of Uttar Pradesh under NHDP Phase III (Lot V Group - F, Package No. NHDP - III/DLS/14) on BOT Basis
<table>
<thead>
<tr>
<th>No.</th>
<th>Full Formation width for 4- Lane</th>
<th>Volume-III: Schedules</th>
</tr>
</thead>
<tbody>
<tr>
<td>134</td>
<td>380/3</td>
<td>389.75</td>
</tr>
<tr>
<td>135</td>
<td>391/1</td>
<td>390.3</td>
</tr>
<tr>
<td>136</td>
<td>391/2</td>
<td>390.6</td>
</tr>
<tr>
<td>137</td>
<td>393/1</td>
<td>392</td>
</tr>
<tr>
<td>138</td>
<td>393/2</td>
<td>392.84</td>
</tr>
<tr>
<td>139</td>
<td>396/1</td>
<td>395.3</td>
</tr>
<tr>
<td>140</td>
<td>396/2</td>
<td>395.6</td>
</tr>
<tr>
<td>141</td>
<td>397/1</td>
<td>396.8</td>
</tr>
<tr>
<td>142</td>
<td>398/1</td>
<td>397.99</td>
</tr>
<tr>
<td>143</td>
<td>400/1</td>
<td>399.5</td>
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<td>144</td>
<td>400/2</td>
<td>399.75</td>
</tr>
<tr>
<td>145</td>
<td>401/3</td>
<td>400.5</td>
</tr>
<tr>
<td>No.</td>
<td>Package</td>
<td>Length (Km)</td>
</tr>
<tr>
<td>-----</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>146</td>
<td>402/1</td>
<td>406.335</td>
</tr>
<tr>
<td>147</td>
<td>403/1</td>
<td>407.565</td>
</tr>
<tr>
<td>148</td>
<td>404/1</td>
<td>408.550</td>
</tr>
<tr>
<td>149</td>
<td>404/2</td>
<td>408.580</td>
</tr>
<tr>
<td>150</td>
<td>405/1</td>
<td>409.410</td>
</tr>
<tr>
<td>151</td>
<td>407/1</td>
<td>412.050</td>
</tr>
<tr>
<td>152</td>
<td>409/1</td>
<td>413.720</td>
</tr>
<tr>
<td>153</td>
<td>409/2</td>
<td>414.335</td>
</tr>
<tr>
<td>154</td>
<td>410/1</td>
<td>414.650</td>
</tr>
<tr>
<td>155</td>
<td>410/2</td>
<td>414.820</td>
</tr>
<tr>
<td>156</td>
<td>412/1</td>
<td>416.820</td>
</tr>
<tr>
<td>157</td>
<td>413/1</td>
<td>417.870</td>
</tr>
</tbody>
</table>
SLC – Slab Culvert, HPC – Hume Pipe Culvert

Note: The Proposed locations of Culverts are tentative & the final locations shall be decided by concessionaire by site condition in consultation with Independent Engineer.

<table>
<thead>
<tr>
<th>No.</th>
<th>SLNo/Ref</th>
<th>Location</th>
<th>Phase of Work</th>
<th>Final Size</th>
<th>FullFormation Width</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>158</td>
<td>413/2</td>
<td>412.81</td>
<td>418.180</td>
<td>H.P.</td>
<td>0.900 dia</td>
<td></td>
</tr>
<tr>
<td>159</td>
<td>414/1</td>
<td>413.15</td>
<td>416.420</td>
<td>RCC Slab</td>
<td>3.0*2.6</td>
<td></td>
</tr>
</tbody>
</table>

Four/Six Laning of Bareilly – Sitapur Section of NH – 24 from km 262.000 to km 413.200 in the State of Uttar Pradesh under NHDP Phase III (Lot V Group – F, Package No. NHDP – III/DL5/14) on BOT Basis
## Appendix BXIV
### A. Details of Proposed ROB/RUB

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Location</th>
<th>ROB / RUB</th>
<th>Existing Chainage/ Design Chainage</th>
<th>Name of Crossing</th>
<th>Existing structure</th>
<th>Proposed structural configuration</th>
<th>Proposed Structure Type</th>
<th>Proposed span arrangement</th>
<th>Total width of the structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fatheganj Purvi</td>
<td>ROB</td>
<td>289.660 / 290.510</td>
<td>Fatheganj Purvi</td>
<td>Level Crossing</td>
<td>4-Lane</td>
<td>Girder &amp; Slab</td>
<td>(2 x 31m) + (1x42m)</td>
<td>21.2 m</td>
</tr>
<tr>
<td>2</td>
<td>Amirpur</td>
<td>ROB</td>
<td>398.130 / 403.38</td>
<td>Amirpur</td>
<td>Level Crossing</td>
<td>4-Lane</td>
<td>Girder &amp; Slab</td>
<td>3x31m</td>
<td>21.2 m</td>
</tr>
<tr>
<td>3</td>
<td>Rauza</td>
<td>ROB</td>
<td>334.475</td>
<td>Rauza Bypass</td>
<td>ROB</td>
<td>4-Lane</td>
<td>Girder &amp; Slab</td>
<td>1x24m</td>
<td>21.2 m</td>
</tr>
<tr>
<td>4</td>
<td>Sitapur</td>
<td>ROB</td>
<td>407.660 / 413.04</td>
<td>Sitapur</td>
<td>ROB</td>
<td>2-Lane</td>
<td>Girder &amp; Slab</td>
<td>1x29m + 9m</td>
<td>12 m + 9 m</td>
</tr>
</tbody>
</table>
PROJECT FACILITIES

1 Project Facilities

The Concessionaire shall construct the Project Facilities in accordance with the provisions of this Agreement. Such Project Facilities shall include:

(a) toll plazas;
(b) roadside furniture;
(c) street lighting;
(d) pedestrian facilities;
(e) landscaping and tree plantation;
(f) rest areas;
(g) truck lay-bys;
(h) bus-bays and bus shelters;
(i) cattle crossings;
(j) traffic aid posts;
(k) medical aid posts;
(m) vehicle rescue posts; and
(n) telecom system;

2 Project Facilities for Four-Laning

Project Facilities forming part of Four-Laning and to be completed on or before the Project Completion Date have been described in Annex-I of this Schedule-C.
Annex - I
(Schedule-C)

Project Facilities for Four-Laning

1 Project Facilities

The Concessionaire shall construct the Project Facilities described in this Annex-I to form part of the Four-Lane Project Highway. The Project Facilities shall include:

(a) toll plazas;
(b) roadside furniture;
(c) street lighting;
(d) pedestrian facilities;
(e) landscaping and tree plantation;
(f) rest areas;
(g) truck lay-bys;
(h) bus-bays and bus shelters;
(i) Vehicular Underpasses and Pedestrian/Cattle Underpasses;
(j) traffic aid posts;
(k) medical aid posts;
(l) vehicle rescue posts;
(m) telecom system;
(n) field laboratory.

2 Description of Project Facilities

Each of the Project Facilities is briefly described below:

(a) Toll Plazas

1.) At km. 267.000 (Existing Chainage)
2.) At Km. 370.000 (Existing Chainage)

Specifications and other requirements of the toll plaza’s shall be strictly as per schedule “D”
(b) **Road side Furniture**

Road side furniture shall be provided in accordance with the Manual of Specifications and Standards.

(c) **Street Lighting:**

Street lighting shall be provided in accordance with the Manual of Specifications and Standards.

(d) **Pedestrian Facilities**

Pedestrian Facilities shall be provided in accordance with the Manual of Specifications and Standards.

(e) **Landscaping and Tree Plantation:**

Landscaping and tree plantation shall be provided in accordance with the Manual of Specifications and Standards.

(f) **Rest areas:**

No rest area is proposed along the highway.

(g) **Truck Lay-byes**

Truck lay-by is proposed to be constructed one on either side of road as per locations given below in the tables. It shall be constructed in accordance with the Manual of Specifications and Standards.

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Chainage</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>263.400</td>
<td>Both Sides</td>
</tr>
<tr>
<td>2</td>
<td>275.030</td>
<td>Both Sides</td>
</tr>
<tr>
<td>3</td>
<td>287.380</td>
<td>Left Sides</td>
</tr>
<tr>
<td>4</td>
<td>304.960</td>
<td>Both Sides</td>
</tr>
<tr>
<td>5</td>
<td>321.560</td>
<td>Left Sides</td>
</tr>
<tr>
<td>6</td>
<td>337.260</td>
<td>Both Sides</td>
</tr>
<tr>
<td>7</td>
<td>348.550</td>
<td>Right Sides</td>
</tr>
<tr>
<td>8</td>
<td>370.800</td>
<td>Right Sides</td>
</tr>
<tr>
<td>9</td>
<td>383.290</td>
<td>Left Sides</td>
</tr>
<tr>
<td>10</td>
<td>407.050</td>
<td>Right Sides</td>
</tr>
</tbody>
</table>

(h) **Bus-byes and Bus Shelter,**

Bus-byes and Bus Shelter shall be provided at following locations in accordance with the Manual of Specifications and Standards:
<table>
<thead>
<tr>
<th>Sr No</th>
<th>Chainage</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>263.700</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>2</td>
<td>266.200</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>3</td>
<td>274.480</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>4</td>
<td>278.830</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>5</td>
<td>281.240</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>6</td>
<td>286.880</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>7</td>
<td>290.410</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>8</td>
<td>295.040</td>
<td>Bus Stand Without Bus Bay</td>
</tr>
<tr>
<td>9</td>
<td>298.460</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>10</td>
<td>301.060</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>11</td>
<td>305.960</td>
<td>Bus Stand Without Bus Bay</td>
</tr>
<tr>
<td>12</td>
<td>309.060</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>13</td>
<td>312.360</td>
<td>Bus Stand Without Bus Bay</td>
</tr>
<tr>
<td>14</td>
<td>315.010</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>15</td>
<td>318.760</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>16</td>
<td>320.340</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>17</td>
<td>323.610</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>18</td>
<td>325.210</td>
<td>Bus Stand Without Bus Bay</td>
</tr>
<tr>
<td>19</td>
<td>328.860</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>20</td>
<td>331.060</td>
<td>Bus Stand With Bus Bay</td>
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<td>21</td>
<td>336.930</td>
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<td>341.230</td>
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<tr>
<td>23</td>
<td>343.530</td>
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<tr>
<td>24</td>
<td>347.530</td>
<td>Bus Stand Without Bus Bay</td>
</tr>
<tr>
<td>25</td>
<td>350.830</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>26</td>
<td>354.130</td>
<td>Bus Stand With Bus Bay</td>
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<tr>
<td>27</td>
<td>361.400</td>
<td>Bus Stand With Bus Bay</td>
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<td>28</td>
<td>366.350</td>
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</tr>
<tr>
<td>29</td>
<td>370.100</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>30</td>
<td>374.600</td>
<td>Bus Stand Without Bus Bay</td>
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<tr>
<td>31</td>
<td>380.790</td>
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<tr>
<td>32</td>
<td>384.890</td>
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<tr>
<td>33</td>
<td>387.990</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>34</td>
<td>397.450</td>
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</tr>
<tr>
<td>35</td>
<td>401.400</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>36</td>
<td>405.850</td>
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<td>37</td>
<td>409.410</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>38</td>
<td>412.070</td>
<td>Bus Stand With Bus Bay</td>
</tr>
<tr>
<td>39</td>
<td>417.950</td>
<td>Bus Stand With Bus Bay</td>
</tr>
</tbody>
</table>

These locations are tentative and final locations shall be decided by Concessionaire in consultation with Independent Engineer and Project Director of NHAI during execution of work.
(i) **Vehicular Underpasses and Pedestrian Underpasses:**

Vehicular and Pedestrian underpasses shall be provided as per details given in Schedule ‘B’.

(j) **Traffic Aid Posts:**

Traffic Aid Posts shall be provided at the Toll Plazas in accordance with DCA and Manual of Specifications and Standards.

(k) **Medical Aid Posts:**

Medical aid posts shall be provided at the Toll Plazas in accordance with DCA and Manual of Specifications and Standards.

(l) **Vehicle rescue posts:**

Vehicle rescue posts shall be provided at the Toll Plazas in accordance with DCA and the Manual of Specifications and Standards.

(l) **Telecom system:**

Emergency call boxes shall be provided in accordance with Manual of Specifications and Standards.

(n) **Field laboratory:**

Field laboratory shall be provided in accordance with clause 1.15 of Manual of Specifications and Standards.
Annex - II
(Schedule-C)
Project Facilities for Six-Laning

DELETED
1 Four Laning

The Concessionaire shall comply with the Specifications and Standards set forth in Annex-I of this Schedule-D for construction of the Six/Four-Lane Project Highway.
ANNEX-I
(Schedule-D)

SPECIFICATIONS AND STANDARDS FOR FOUR-LANING

1. Manual of Specifications and Standards to apply

Subject to the provisions of Paragraph 2 of this Annex-I, Four-Laning of the Project Highway shall conform to the Manual of Specifications and Standards for Four Laning of National Highways through Public Private Partnership published by the IRC (An authenticated copy of the Manual has been provided to the Concessionaire as part of the bid documents.)

2. Deviations from the Manual

Notwithstanding anything to the contrary contained in the aforesaid Manual, the following Specifications and Standards shall apply to the Four-Lane Project Highway, and for purposes of this Agreement, the aforesaid Manual shall be deemed to be amended to the extent set forth below

Table D 1

<table>
<thead>
<tr>
<th>S No.</th>
<th>Item Description</th>
<th>Description</th>
<th>Clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Entry and Exit point</td>
<td>Entry and exit ramps between the main highways and the service road may not be provided in order to minimize property impact</td>
<td>2.12.2.3</td>
</tr>
<tr>
<td>2.</td>
<td>Width of service road</td>
<td>The width of proposed service road will be in accordance with the provision given in schedule B</td>
<td>2.12.1</td>
</tr>
<tr>
<td>3.</td>
<td>Vehicular/pedestrian Underpass</td>
<td>The Vehicular/pedestrian/cattle Underpasses provided are as per the details given in schedule ‘B’ of Volume III of bid documents</td>
<td>2.13.2 &amp; 2.13.3</td>
</tr>
<tr>
<td>4.</td>
<td>Lateral/vertical clearance of underpass</td>
<td>The lateral and vertical clearance of proposed underpass is to be provided as per details given in schedule B</td>
<td>2.10.1 &amp; 2.10.2</td>
</tr>
<tr>
<td>5.</td>
<td>Width of earthen shoulders</td>
<td>The width proposed earthen shoulder will be 1.5m instead of 2m</td>
<td>2.6.1</td>
</tr>
<tr>
<td>6.</td>
<td>Width of paved shoulders in build up area and approaches to grade separator</td>
<td>Width of paved shoulders in build up area and approaches to grade separator will be 1.5m instead of 2m</td>
<td>2.6.1</td>
</tr>
<tr>
<td>7.</td>
<td>Typical Cross sections</td>
<td>The proposed cross section has been given in schedule B which are to be followed</td>
<td>2.16</td>
</tr>
</tbody>
</table>
SCHEDULE -E
(See Clause 4.1.3)

APPLICABLE PERMITS

1 Applicable Permits

1.1 The Concessionaire shall obtain, as required under the Applicable Laws, the following Applicable Permits on or before the Appointed Date, save and except to the extent of a waiver granted by the Authority in accordance with Clause 4.1.3 of the Agreement:

(a) Permission of the State Government for extraction of boulders from quarry;
(b) Permission of Village Panchayat and Pollution Control Board for installation of crushers;
(c) Licence for use of explosives;
(d) Permission of the State Government for drawing water from river/reservoir;
(e) Licence from Inspector of factories or other competent authority for setting up Batching Plant;
(f) Clearance of Pollution Control Board for setting up Batching Plant;
(g) Clearance of Village Panchayats and Pollution Control Board for Asphalt Plant;
(h) Permission of Village Panchayat and State Government for borrow earth;
(i) Permission of State Government for cutting of trees; and
(j) Any other permits or clearances required under Applicable Laws.

1.2 Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority as a Condition Precedent.
SCHEDULE - F
(See Clause 9.1)

PERFORMANCE SECURITY

The Chairman,
National Highways Authority of India
New Delhi

WHEREAS:

(A) Bareilly Highways Project Limited (the "Concessionaire") and the Chairman, National Highways Authority of India (the "Authority") have entered into a Concession Agreement dated ................ (the "Agreement") whereby the Authority has agreed to the Concessionaire undertaking Four-Laning of the Bareilly - Sitapur section of National Highway No. 24 on design, build, finance, operate and transfer ("DBFOT") basis, subject to and in accordance with the provisions of the Agreement.

(B) The Agreement requires the Concessionaire to furnish a Performance Security to the Authority in a sum of Rs. 52.30 cr. (Rupees Fifty Two Crores and Thirty Lakhs Only) (the "Guarantee Amount") as security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Construction Period (as defined in the Agreement).

(C) We, ......................... through our Branch at ......................... (the "Bank") have agreed to furnish this Bank Guarantee by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Concessionaire’s obligations during the Construction Period, under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Concessionaire, such sum or sums upto an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an Officer not below the rank of General Manager in the National Highways Authority of India, that the Concessionaire has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Concessionaire is in default in due and faithful performance of its obligations during the
Construction Period under the Agreement and its decision that the Concessionaire is in default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Concessionaire, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Concessionaire for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Concessionaire and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Concessionaire before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfilment and/or performance of all or any of the obligations of the Concessionaire contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Concessionaire, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Concessionaire or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfilment, compliance and/or performance of all or any of the obligations of the Concessionaire under the Agreement.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force until the earlier of the 1st (first) anniversary of the Appointed Date or compliance of the conditions specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee, no later than 6 (six) months from the date of expiry of this Guarantee, all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Performance Security shall cease to be in force and effect when the
Concessionaire shall have expended on Project construction an aggregate sum not less than 20% (twenty per cent) of the Total Project Cost which is deemed to be Rs 209.20 cr. (Rupees Two Hundred Nine Crores and Twenty Lakhs only) for the purposes of this Guarantee, and provided the Concessionaire is not in breach of this Agreement. Upon request made by the Concessionaire for release of the Performance Security alongwith the particulars required hereunder, duly certified by a statutory auditor of the Concessionaire, the Authority shall release the Performance Security forthwith.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred Branch, which shall be deemed to have been duly, authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for a period of one year and six months or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

Signed and sealed this .......... day of .........., 20........ at ...........

SIGNED, SEALED AND DELIVERED
For and on behalf of the BANK by:

(Signature)
(Name)
(Designation)
(Code Number)
(Address)

NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the Head Office of the Bank as well as of issuing Branch should be mentioned on the covering letter of issuing Branch.
PROJECT COMPLETION SCHEDULE

1 Project Completion Schedule
During Construction Period, the Concessionaire shall comply with the requirements set forth in this Schedule-G for each of the Project Milestones and the Scheduled Four-Laning Date (the "Project Completion Schedule"). Within 15 (fifteen) days of the date of each Project Milestone, the Concessionaire shall notify the Authority of such compliance alongwith necessary particulars thereof.

2 Project Milestone-I

2.1 Project Milestone-I shall occur on the date falling on the 180th (one hundred and eightieth) day from the Appointed Date (the "Project Milestone-I").

2.2 Prior to the occurrence of Project Milestone-I, the Concessionaire shall have commenced construction of the Project Highway and expended not less than 10% (ten per cent) of the total capital cost set forth in the Financial Package.

3 Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 400th (Four hundredth) day from the Appointed Date (the "Project Milestone-II").

3.2 Prior to the occurrence of Project Milestone-II, the Concessionaire shall have commenced construction of all bridges and expended not less than 35% (thirty five per cent) of the total capital cost set forth in the Financial Package.

4 Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 650th (Six hundred and fiftieth) day from the Appointed Date (the "Project Milestone-III").

4.2 Prior to the occurrence of Project Milestone-III, the Concessionaire shall have commenced construction of all Project Facilities and expended not less than 70% (Seventy per cent) of the total capital cost set forth in the Financial Package.

5 Scheduled Four-Laning Date

5.1 The Scheduled Four-Laning Date shall occur on the 910th (Nine hundred and tenth) day from the Appointed Date.

5.2 On or before the Scheduled Four-Laning Date, the Concessionaire shall have completed Four-Laning in accordance with this Agreement.
6 Extension of period

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Four-Laning Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.
SCHEDULE -H
(See Clause 12.3)

DRAWINGS

1 Drawings

In compliance of the obligations set forth in Clause 12.3 of this Agreement, the Concessionaire shall furnish to the Independent Engineer, free of cost, all Drawings listed in Annex-1 of this Schedule-H.

2 Additional drawings

If the Independent Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-1, it may by notice require the Concessionaire to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Concessionaire shall promptly prepare and furnish such drawings to the Independent Engineer, as if such drawings formed part of Annex-1 of this Schedule-H.
Annex - I
(Schedule-H)

List of Drawings

Part - A : Drawings for Four Laning

1. The Project Highway drawings, as defined in Clause 1.1, Definitions, Article 1, Definitions and Interpretation, Part-I: Preliminary, of the Concession Agreement shall consist:

(a) Working Drawings of all the components/elements of the Project Highway as approved by Independent Engineer, and

(b) As-built drawings for the Project Highway components/elements as approved by IE. As-built drawings shall be duly certified by Independent Engineer.

2. A broad list of the drawings of the various components/elements of the Project Highway and project facilities required to be submitted by the Concessionaire is given below:

(a) Drawings of horizontal alignment, vertical profile and cross sections

(b) Drawings of cross drainage works (Bridges and Culverts)

(c) Drawings of interchanges, major and minor intersections, grade separators, underpasses and ROB’s

(d) Drawings of toll plaza layout, toll collection systems, building and roadway near toll plaza

(e) Drawings of Control Centre

(f) Drawings of bus-bay and bus shelters with furniture and drainage system

(g) Drawing of a truck parking lay bye with furniture and drainage system

(h) Drawings of road furniture items including traffic signage, markings, safety barriers, etc.

(i) Drawings of traffic diversion plans and traffic control measures

(j) Drawings of road drainage measures

(k) Drawings of typical details slope protection measures

(l) Drawings of landscaping and horticulture

(m) Drawings of pedestrian/ cattle crossings

(n) Drawings of street lighting/ highway lighting

(o) General arrangement of Base camp and Administrative Block
SCHEDULE -1

(See Clause 14.1.2)

TESTS

1 Schedule for Tests

1.1 The Concessionaire shall, no later than 30 (thirty) days prior to the likely completion of Four-Laning, notify the Independent Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 7 (seven) days prior to the actual date of Tests, furnish to the Independent Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Four-Laning.

1.2 The Concessionaire shall notify the Independent Engineer of its readiness to subject the Project Highway to Tests at any time after 7 (seven) days from the date of such notice, and upon receipt of such notice, the Independent Engineer shall, in consultation with the Concessionaire, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Independent Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 14 and this Schedule-I.

2 Tests

2.1 Visual and physical Test: The Independent Engineer shall conduct a visual and physical check of Four-Laning to determine that all works and equipment forming part thereof conform to the provisions of this Agreement.

2.2 Test drive: The Independent Engineer shall undertake a test drive of the Project Highway by a Car and by a fully loaded Truck to determine that the quality of service conforms to the provisions of the Agreement.

2.3 Riding quality Test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be 1,800 (one thousand and eight hundred) mm for each kilometre.

2.4 Pavement Composition Test: The thickness and composition of the pavement structure shall be checked on a sample basis by digging pits to determine conformity of such pavement structure with Specifications and Standards. The sample shall consist of one pit in each direction of travel to be chosen at random in each stretch of 5 (five) kilometres of the Project Highway. The first pit for the sample shall be selected by the Independent Engineer through an open draw of lots and every fifth kilometre from such first pit shall form part of the sample for this pavement quality Test.

2.5 Cross-section Test: The cross-sections of the Project Highway shall be checked on a sample basis through physical measurement of their...
dimensions for determining the conformity thereof with Specifications and Standards. For the road portion, the sample shall consist of one spot to be selected at random in each stretch of 1 (one) kilometre of the Project Highway. The first spot for the sample shall be selected by the Independent Engineer through an open draw of lots and the spots located at every one kilometre from such first spot shall form part of the sample. For the bridge portion, one spot shall be selected at random by the Independent Engineer in each span of the bridge.

2.6 Structural Test for bridges: All major and minor bridges constructed by the Concessionaire shall be subjected to the Rebound Hammer and Ultrasonic Pulse Velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Non-destructive Testing Techniques, at two spots in every span, to be chosen at random by the Independent Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.

2.7 Other Tests: The Independent Engineer may require the Concessionaire to carry out or cause to be carried additional Tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.

2.8 Environmental audit: The Independent Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.

2.9 Safety review: Safety audit of the Project Highway shall have been undertaken by the Safety Consultant as set forth in Schedule-L, and on the basis of such audit, the Independent Engineer shall determine conformity of the Project Highway with the provisions of this Agreement.

3 Agency for conducting Tests

All Tests set forth in this Schedule-I shall be conducted by the Independent Engineer or such other agency or person as it may specify in consultation with the Authority.

4 Completion/Provisional Certificate

Upon successful completion of Tests, the Independent Engineer shall issue the Completion Certificate or the Provisional Certificate, as the case may be, in accordance with the provisions of Article 14.
SCHEDULE - J

(See Clauses 14.2 & 14.3)

COMPLETION CERTIFICATE

1 I, ....................... (Name of the Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement dated .......... (the "Agreement"), for Four-Laning of the Bareilly - Sitapur section (km 262.00 to km 413.200) of National Highway No. 24 (the "Project Highway") on design, build, finance, operate and transfer (DBFOT) basis, through Bareilly Highways Project Limited, hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in commercial service of the Users thereof.

2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Four-Laning have been completed, and the Project Highway is hereby declared fit for entry into commercial operation on this the .......... day of .......... 20.....

SIGNED, SEALED AND DELIVERED
For and on behalf of
the INDEPENDENT ENGINEER by:

(Signature)
(Name)
(Designation)
(Address)
PROVISIONAL CERTIFICATE

1. I, .................................. (Name of the Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement dated ................. (the “Agreement”), for Four-Laning of the Bareilly - Sitapur section (km 262.00 to km 413.200) of National Highway No. 24 (the “Project Highway”) on design, build, finance, operate and transfer (DBFOT) basis through Bareilly Highways Project Limited, hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

2. Construction Works that were found to be incomplete and/or deficient have been specified in the Punch List appended hereto, and the Concessionaire has agreed and accepted that it shall complete and/or rectify all such works in the time and manner set forth in the Agreement. (Some of the incomplete works have been delayed as a result of reasons attributable to the Authority or due to Force Majeure and the Provisional Certificate cannot be withheld on this account. Though the remaining incomplete works have been delayed as a result of reasons attributable to the Concessionaire,) I am satisfied that having regard to the nature and extent of such incomplete works, it would not be prudent to withhold commercial operation of the Project Highway, pending completion thereof.

3. In view of the foregoing, I am satisfied that the Project Highway can be safely and reliably placed in commercial service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into commercial operation on this the ........... day of ........... 20........

ACCEPTED, SIGNED, SEALED AND DELIVERED
For and on behalf of
CONCESSIONAIRE by:
by:

(Signature) ................................
(Name and Designation)
(Address)

SIGNED, SEALED AND DELIVERED
For and on behalf of
INDEPENDENT ENGINEER

(Signature) ................................
(Name and Designation)
(Address)
MAINTENANCE REQUIREMENTS

1 Maintenance Requirements

1.1 The Concessionaire shall, at all times, operate and maintain the Project Highway in accordance with the provisions of the Agreement, Applicable Laws and Applicable Permits. In particular, the Concessionaire shall, at all times during the Operation Period, conform to the maintenance requirements set forth in this Schedule-K (the “Maintenance Requirements”).

1.2 The Concessionaire shall repair or rectify any defect or deficiency set forth in Paragraph 2 of this Schedule-K within the time limit specified therein and any failure in this behalf shall constitute a breach of the Agreement. Upon occurrence of any breach hereunder, the Authority shall be entitled to recover Damages as set forth in Clause 17.8 of the Agreement, without prejudice to the rights of the Authority under the Agreement, including Termination thereof.

2 Repair/rectification of defects and deficiencies

The obligations of the Concessionaire in respect of Maintenance Requirements shall include repair and rectification of the defects and deficiencies specified in Annex - I of this Schedule-K within the time limit set forth therein.

3 Other defects and deficiencies

3.1 In respect of any defect or deficiency not specified in Annex - I of this Schedule-K, the Concessionaire shall undertake repair or rectification in accordance with Good Industry Practice.

3.2 In respect of any defect or deficiency not specified in Annex - I of this Schedule-K, the Independent Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Concessionaire within the time limit specified by the Independent Engineer.

4 Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-K, if the nature and extent of any defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Concessionaire shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Independent Engineer and conveyed to the Concessionaire and the Authority with reasons thereof.
5 **Emergency repairs/restoration**

Notwithstanding anything to the contrary contained in this Schedule-K, if any defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Concessionaire shall promptly take all reasonable measures for eliminating or minimizing such danger.

6 **Daily Inspection by the Concessionaire**

The Concessionaire shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Independent Engineer may specify. Such record shall be kept in safe custody of the Concessionaire and shall be open to inspection by the Authority and the Independent Engineer at any time during office hours.

7 **Divestment Requirements**

All defects and deficiencies specified in this Schedule-K shall be repaired and rectified by the Concessionaire so that the Project Highway conforms to the Maintenance Requirements on the Transfer Date.

8 **Display of Schedule - K**

The Concessionaire shall display a copy of this Schedule-K at the Toll Plazas along with the Complaint Register stipulated in Article 46.
Annex - I  
(Schedule-K)

Repair/Rectification of Defects and Deficiencies

The Concessionaire shall repair and rectify the defects and deficiencies specified in this Annex-I of Schedule-K within the time limit set forth herein.

<table>
<thead>
<tr>
<th>Nature of defect or deficiency</th>
<th>Time limit for repair/ rectification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROADS</strong></td>
<td></td>
</tr>
<tr>
<td>(a) Carriageway and paved shoulders</td>
<td></td>
</tr>
<tr>
<td>(i) Breach or blockade</td>
<td>Temporary / restoration of traffic within 24 hours; permanent restoration within 15 days</td>
</tr>
<tr>
<td>(ii) Roughness value exceeding 2,500 mm in a stretch of 1 km (as measured by a standardised roughometer/bump integrator)</td>
<td>180 days</td>
</tr>
<tr>
<td>(iii) Pot holes</td>
<td>48 hours</td>
</tr>
<tr>
<td>(iv) Cracking in more than 5% of road surface in a stretch of 1 km</td>
<td>30 days</td>
</tr>
<tr>
<td>(v) Rutting exceeding 10 mm in more than 2% of road surface in a stretch of 1 km (measured with 3 m straight edge)</td>
<td>30 days</td>
</tr>
<tr>
<td>(vi) Bleeding/skidding</td>
<td>7 days</td>
</tr>
<tr>
<td>(vii) Ravelling/Stripping of bitumen surface exceeding 10 sq m</td>
<td>15 days</td>
</tr>
<tr>
<td>(viii) Damage to pavement edges exceeding 10 cm</td>
<td>15 days</td>
</tr>
<tr>
<td>(ix) Removal of debris</td>
<td>6 hours</td>
</tr>
<tr>
<td>(b) Hard/earth shoulders, side slopes, drains and culverts</td>
<td></td>
</tr>
<tr>
<td>(i) Variation by more than</td>
<td>30 days</td>
</tr>
</tbody>
</table>
the prescribed slope of camber/cross fall

(ii) Edge drop at shoulders exceeding 40 mm - 7 days

(iii) Variation by more than 15% in the prescribed side (embankment) slopes - 30 days

(iv) Rain cuts/gullies in slope - 7 days

(v) Damage to or silting of culverts and side drains during and immediately preceding the rainy season - 7 days

(vi) Desilting of drains in urban/semi-urban areas - 48 hours

(c) Road side furniture including road signs and pavement marking

(i) Damage to shape or position; poor visibility or loss of retro-reflectivity - 48 hours

(d) Street lighting and telecom (ATMS)

(i) Any major failure of the system - 24 hours

(ii) Faults and minor failures - 8 hours

(e) Trees and plantation

(i) Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs - 24 hours

(ii) Deterioration in health of trees and bushes - Timely watering and treatment

(iii) Replacement of trees and bushes - 90 days

(iv) Removal of vegetation affecting sight line and road structures - 15 days

(f) Rest areas

(i) Cleaning of toilets - Every 4 hours

(ii) Defects in electrical, water and sanitary installations - 24 hours
(g) Toll plazas

(i) Failure of toll collection equipment or lighting - 8 hours

(ii) Damage to toll plaza - 7 days

(h) Other Project Facilities and Approach roads

(i) Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus-shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works - 15 days

BRIDGES

(a) Superstructure of bridges

(i) Cracks
   Temporary measures - within 48 hours
   Permanent measures - within 45 days

(ii) Spalling/scaling - 15 days

(b) Foundations of bridges

(i) Scouring and/or cavitation - 15 days

(c) Piers, abutments, return walls and wing walls of bridges

(i) Cracks and damages including settlement and tilting - 30 days

(d) Bearings (metallic) of bridges

(i) Deformation - 15 days

(e) Joints in bridges

(i) Loosening and malfunctioning of joints - 15 days

(f) Other items relating to bridges

(i) Deforming of pads in elastomeric bearings - 7 days

(ii) Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes - 3 days

(iii) Damage or deterioration in parapets and handrails - 3 days
### National Highways Authority of India

#### Schedules

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>(iv)</td>
<td>Rain-cuts or erosion of banks of the side slopes of approaches</td>
<td>15 days</td>
</tr>
<tr>
<td>(v)</td>
<td>Damage to wearing coat</td>
<td>15 days</td>
</tr>
<tr>
<td>(vi)</td>
<td>Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds</td>
<td>30 days</td>
</tr>
<tr>
<td>(vii)</td>
<td>Growth of vegetation affecting the structure or obstructing the waterway</td>
<td>15 days</td>
</tr>
</tbody>
</table>

4-laning of Bareilly-Sitapur section of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build.
SAFETY REQUIREMENTS

1 Guiding principles

1.1 Safety Requirements aim at reduction in injuries, loss of life and damage to property resulting from accidents on the Project Highway, irrespective of the person(s) at fault.

1.2 Users of the Project Highway include motorised and non-motorised vehicles as well as pedestrians and animals involved in, or associated with accidents. Vulnerable Road Users (VRU) include pedestrians as well as riders of motorised two-wheelers, bicycles and other vehicles which do not provide adequate occupant protection.

1.3 Safety Requirements apply to all phases of construction, operation and maintenance with emphasis on identification of factors associated with accidents, consideration of the same, and implementation of appropriate remedial measures.

1.4 Safety Requirements include measures associated with traffic management and regulation such as road signs, pavement marking, traffic control devices, roadside furniture, highway design elements, enforcement and emergency response.

2 Obligations of the Concessionaire

The Concessionaire shall abide by the following insofar as they relate to safety of the Users:

(a) Applicable Laws and Applicable Permits;

(b) Manual for Safety in Road Design, issued by MORTH;

(c) relevant Standards/Guidelines of IRC relating to safety, road geometrics, bridges, culverts, road signs, pavement marking and roadside furniture;

(d) provisions of this Agreement; and

(e) Good Industry Practice.

3 Appointment of Safety Consultant

For carrying out safety audit of the Project Highway under and in accordance...
with this Schedule-L, the Authority shall appoint from time to time, one or
more qualified firms or organisations as its consultants (the "Safety
Consultant"). The Safety Consultant shall employ a team comprising,
without limitation, one road safety expert and one traffic planner to
undertake safety audit of the Project Highway.

4 Safety measures during Development Period

4.1 No later than 90 (ninety) days from the date of this Agreement, the Authority
shall appoint a Safety Consultant for carrying out safety audit at the design
stage of the Project. The Safety Consultant shall collect data on all fatal
crashes and other road accidents which occurred on the Project Highway in
the preceding two years by obtaining copies of the relevant First Information
Reports (FIRs) from the police stations having jurisdiction. The information
contained in such FIRs shall be summarised in the form prescribed by
IRC/MORTH for this purpose and the data shall be analysed for the type of
victims killed or injured, impacting vehicles, location of accidents and other
relevant factors.

4.2 The Concessionaire shall provide to the Safety Consultant, in four copies, the
relevant drawings containing the design details that have a bearing on safety
of Users (the "Safety Drawings"). Such design details shall include
horizontal and vertical alignments; sightlines; layouts of intersections;
interchanges; road cross-section; bridges and culverts; side drains; provision
for parked vehicles, slow moving vehicles (tractors, bullock carts, bicycles)
and pedestrians; bus bays; truck lay-bys; and other incidental or
consequential information. The Safety Consultant shall review the design
details and forward three copies of the Safety Drawings with its
recommendations, if any, to the Independent Engineer who shall record its
comments, if any, and forward one copy each to the Authority and the,
Concessionaire.

4.3 The accident data and the design details shall be compiled, analysed and
used by the Safety Consultant for evolving a package of recommendations
consisting of safety related measures for the Project Highway. The safety
audit shall be completed in a period of three months and a report thereof (the
"Safety Report") shall be submitted to the Authority, in five copies. One
copy each of the Safety Report shall be forwarded by the Authority to the
Concessionaire and the Independent Engineer forthwith.

4.4 The Concessionaire shall endeavour to incorporate the recommendations of
the Safety Report in the design of the Project Highway, as may reasonably be
required in accordance with Applicable Laws, Applicable Permits, Manuals
and Guidelines of MORTH and IRC, Specifications and Standards, and
Good Industry Practice. If the Concessionaire does not agree with any or all
of such recommendations, it shall state the reasons thereof and convey them
to the Authority forthwith. In the event that any or all of the works and
services recommended in the Safety Report fall beyond the scope of
Schedule-B, Schedule-C or Schedule-D, the Concessionaire shall make a
report thereon and seek the instructions of the Authority for funding such works in accordance with the provisions of Article 18.

4.5 Without prejudice to the provisions of Paragraph 4.4, the Concessionaire and the Independent Engineer shall, within 15 (fifteen) days of receiving the Safety Report, send their respective comments thereon to the Authority, and no later than 15 (fifteen) days of receiving such comments, the Authority shall review the same along with the Safety Report and by notice direct the Concessionaire to carry out any or all of the recommendations contained therein with such modifications as the Authority may specify; provided that any works or services required to be undertaken hereunder shall be governed by the provisions of Article 18.

5 Safety measures during Construction Period

5.1 A Safety Consultant shall be appointed by the Authority, no later than 4 (four) months prior to the expected Project Completion Date, for carrying out a safety audit of the completed Construction Works.

5.2 The Safety Consultant shall collect and analyse the accident data for the preceding two years in the manner specified in Paragraph 4.1 of this Schedule-L. It shall study the Safety Report for the Development Period and inspect the Project Highway to assess the adequacy of safety measures. The Safety Consultant shall complete the safety audit within a period of 4 (four) months and submit a Safety Report recommending a package of additional road safety measures, if any, that are considered essential for reducing accident hazards on the Project Highway. Such recommendations shall be processed, mutatis mutandis, and acted upon in the manner set forth in Paragraphs 4.3, 4.4 and 4.5 of this Schedule-L.

5.3 The Concessionaire shall make adequate arrangements during the Construction Period for the safety of workers and road Users in accordance with the guidelines of IRC for safety in construction zones, and notify the Authority and the Independent Engineer about such arrangements.

6 Safety measures during Operation Period

6.1 The Concessionaire shall develop, implement and administer a surveillance and safety programme for Users, including correction of safety violations and deficiencies and all other actions necessary to provide a safe environment in accordance with this Agreement.

6.2 The Concessionaire shall establish a Highway Safety Management Unit (the "HSMU") to be functional on and after COD, and designate one of its officers to be in-charge of the HSMU. Such officer shall have specialist knowledge and training in road safety and traffic engineering by having attended a course conducted by a reputed organisation on the subject.
6.3 The Concessionaire shall keep a copy of every FIR recorded by the Police with respect to any accident occurring on the Project Highway. In addition, the Concessionaire shall also collect data for all cases of accidents not recorded by the Police but where a vehicle rolled over or had to be towed away. The information so collected shall be summarised in the form prescribed by IRC/MORTH for this purpose. The Concessionaire shall also record the exact location of each accident on a road map. The aforesaid data shall be submitted to the Authority at the conclusion of every quarter and to the Safety Consultant as and when appointed.

6.4 The Concessionaire shall submit to the Authority before the 31st (thirty first) May of each year, an annual report (in ten copies) containing, without limitation, a detailed listing and analysis of all accidents of the preceding Accounting Year and the measures taken by the Concessionaire pursuant to the provisions of Paragraph 6.1 of this Schedule-L for averting or minimising such accidents in future.

6.5 Once in every Accounting Year, a safety audit shall be carried out by the Safety Consultant to be appointed by the Authority. It shall review and analyse the annual report and accident data of the preceding year, and undertake an inspection of the Project Highway. The Safety Consultant shall complete the safety audit within a period of 1 (one) month and submit a Safety Report recommending specific improvements, if any, required to be made to the road, bridges, culverts, markings, signs, road furniture and Project Facilities, including cattle crossings and pedestrian crossings. Such recommendations shall be processed, mutatis mutandis, and acted upon in the manner set forth in Paragraphs 4.3, 4.4 and 4.5 of this Schedule-L.

7 Costs and expenses

Costs and expenses incurred in connection with the Safety Requirements set forth herein, including the provisions of Paragraph 2 of this Schedule, shall be met in accordance with Article 18, and in particular, the remuneration of the Safety Consultant, safety audit, and costs incidental thereto, shall be met out of the Safety Fund.
SCHEDULE - M
(See Clause 19.5)

MONTHLY FEE STATEMENT

Project Highway: Bareilly - Sitapur Highway

<table>
<thead>
<tr>
<th>Type of Vehicle</th>
<th>For corresponding month of previous year</th>
<th>For preceding month</th>
<th>For the month reported upon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Vehicles</td>
<td>Fee collected (in lakh Rs.)</td>
<td>No. of Vehicles</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>A Car</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B LCV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Bus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Truck</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E Multi-axle Truck</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Oversized vehicle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: The above statement does not include Local Users and vehicles travelling on Passes

Note 2: Monthly Fee Statements for Passes have been prepared separately in the above format and are enclosed.

Remarks, if any:
**WEEKLY TRAFFIC CENSUS**

Project Highway: Bareilly - Sitapur  

<table>
<thead>
<tr>
<th>Type of Vehicle</th>
<th>No. of vehicles using the Project Highway during</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corresponding week/last year</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td><strong>A Fee paying Traffic</strong></td>
<td></td>
</tr>
<tr>
<td>A1 Car</td>
<td></td>
</tr>
<tr>
<td>A2 LCV</td>
<td></td>
</tr>
<tr>
<td>A3 Bus</td>
<td></td>
</tr>
<tr>
<td>A4 Truck</td>
<td></td>
</tr>
<tr>
<td>A5 Multi-axle Truck</td>
<td></td>
</tr>
<tr>
<td>A6 Oversized vehicle</td>
<td></td>
</tr>
<tr>
<td><strong>Total (A)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>B Local Users</strong></td>
<td></td>
</tr>
<tr>
<td>B1 Car</td>
<td></td>
</tr>
<tr>
<td><strong>Total (B)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>C Exempted Vehicles</strong></td>
<td></td>
</tr>
<tr>
<td>C1 Motor Cycle</td>
<td></td>
</tr>
<tr>
<td>C2 Car</td>
<td></td>
</tr>
<tr>
<td>C3 LCV</td>
<td></td>
</tr>
<tr>
<td>C4 Bus</td>
<td></td>
</tr>
<tr>
<td>C5 Truck</td>
<td></td>
</tr>
<tr>
<td>C6 Tractor</td>
<td></td>
</tr>
<tr>
<td><strong>Total (C)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>D Total Traffic (A+B+C)</strong></td>
<td></td>
</tr>
<tr>
<td>D1 Motor Cycle</td>
<td></td>
</tr>
<tr>
<td>D2 Car</td>
<td></td>
</tr>
<tr>
<td>D3 LCV</td>
<td></td>
</tr>
<tr>
<td>D4 Bus</td>
<td></td>
</tr>
<tr>
<td>D5 Truck</td>
<td></td>
</tr>
<tr>
<td>D6 Multi-axle Truck</td>
<td></td>
</tr>
<tr>
<td>D7 Oversized vehicle</td>
<td></td>
</tr>
<tr>
<td>D8 Tractor</td>
<td></td>
</tr>
<tr>
<td><strong>Grand Total (E)</strong></td>
<td></td>
</tr>
</tbody>
</table>

Remarks, if any:
WEEKLY REPORT FOR WEIGH STATIONS

Project Highway: Bareilly - Sitapur  

Week ending:

<table>
<thead>
<tr>
<th>Type of Vehicle</th>
<th>Permitted Gross Vehicle Weight (Tonnes)</th>
<th>No. of Vehicles weighed (Sample size)</th>
<th>No. of Vehicles carrying load:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>A LCV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B Truck</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Multi-axle Truck</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Sample size shall not be less than 200 Trucks per week and 20 Trucks per day, and should include a proportionate number of Multi-axle Trucks.

Remarks, if any:
SCHEDULE -O
(See Clause 22.3.1)

TRAFFIC SAMPLING

1 Traffic sampling

The Authority may, in its discretion and at its own cost, undertake traffic sampling, pursuant to Clause 22.3, in order to determine the actual traffic on the Project Highway. Such traffic sampling shall be undertaken through the Independent Engineer in the manner set forth below.

2 Manual traffic count

The Independent Engineer shall employ the required number of enumerators who shall count, classify and record all the vehicles as they pass by, and divide the survey into fixed time periods. The count stations shall be located near the Toll Plazas on a straight section of the road with good visibility. The survey shall be conducted continuously for a minimum of 24 (twenty four) hours and maximum of 7 (seven) days at a time. The count period shall be 15 (fifteen) minutes with results summarised hourly.

3 Automatic traffic count

For automatic traffic count to be conducted on intermittent (non-continuous) basis, the Independent Engineer shall use suitable and standardised equipment to classify and record the range of vehicles passing through the Toll Plazas. For this purpose, the counter shall be checked with at least 100 (one hundred) vehicles, including all major vehicle types, over a range of speeds to ensure that all vehicles are being counted and classified correctly.

4 Variation between manual and automatic count

Average Daily Traffic (ADT) for each type of vehicle shall be determined separately by the aforesaid two methods and in the event that the number of vehicles in any category, as counted by the manual method, varies by more than 1% (one per cent) of the number of such vehicles as counted by the automatic method, the manual and automatic count of such category of vehicles shall be repeated, and in the event of any discrepancy between the two counts in the second enumeration, the average thereof shall be deemed to be the actual traffic. For the avoidance of doubt, it is expressly agreed that the Authority may, in consultation with the Concessionaire, adopt modified or alternative processes of traffic sampling for improving the reliability of such sampling.
SCHEDULE - P
(See Clause 23.1)

SELECTION OF INDEPENDENT ENGINEER

1 Selection of Independent Engineer

1.1 The provisions of Part II of the Standard Bidding Documents for Consultancy Assignments: Time Based (Volume V) issued by the Ministry of Finance, GOI in July, 1997 or any substitute thereof shall apply, mutatis mutandis, for invitation of bids and evaluation thereof save as otherwise provided herein.

1.2 The Authority shall invite expressions of interest from consulting engineering firms or bodies corporate to undertake and perform the duties and functions set forth in Schedule-Q and thereupon shortlist 10 (ten) qualified firms in accordance with pre-determined criteria. The Authority shall convey the aforesaid list of firms to the Concessionaire for scrutiny and comments, if any. The Concessionaire shall be entitled to scrutinise the relevant records of the Authority to ascertain whether the selection of firms has been undertaken in accordance with the prescribed procedure and it shall send its comments, if any, to the Authority within 15 (fifteen) days of receiving the aforesaid list of firms. Upon receipt of such comments, if any, the Authority shall, after considering all relevant factors, finalise and constitute a panel of 10 (ten) firms (the “Panel of Firms”) and convey its decision to the Concessionaire.

1.3 The Authority shall invite the aforesaid firms in the Panel of Firms to submit their respective technical and financial offers, each in a separate sealed cover. All the technical bids so received shall be opened and pursuant to the evaluation thereof, the Authority shall shortlist 3 (three) eligible firms on the basis of their technical scores. The financial bids in respect of such 3 (three) firms shall be opened and the order of priority as among these firms shall be determined on the basis of a weighted evaluation where technical and financial scores shall be assigned respective weights of 80:20.

1.4 In the event that the Authority shall follow the selection process specified in the Model RFP for selection of Technical Consultants, as published by the Ministry of Finance/ Planning Commission, the selection process specified in this Schedule-P shall be deemed to be substituted by the provisions of the said Model RFP and the Concessionaire shall be entitled to scrutinise the relevant records forming part of such selection process.

2 Fee and expenses

2.1 In determining the nature and quantum of duties and services to be performed by the Independent Engineer during the Development Period and Construction Period, the Authority shall endeavour that payments to the Independent Engineer on account of fee and expenses do not exceed 2% (two per cent) of the Project Cost. Payments not exceeding such 2%...
(two per cent) shall be borne equally by the Authority and the Concessionaire in accordance with the provisions of this Agreement and any payments in excess thereof shall be borne entirely by the Authority.

2.2 The nature and quantum of duties and services to be performed by the Independent Engineer during the Operation Period shall be determined by the Authority in conformity with the provisions of this Agreement and with due regard for economy in expenditure. All payments made to the Independent Engineer on account of fee and expenses during the Operation Period, shall be borne equally by the Authority and the Concessionaire.

3 Constitution of fresh panel

No later than 3 (three) years from the date of this Agreement, and every 3 (three) years thereafter, the Authority shall prepare a fresh panel of firms in accordance with the criteria set forth in this Schedule-P; provided that the Authority may, at any time, prepare a fresh panel with prior written consent of the Concessionaire.

4 Appointment of government entity as Independent Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Independent Engineer; provided that such entity shall be a body corporate having as one of its primary function the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority and/or MoRTH shall not be eligible for appointment as Independent Engineer.
SCHEDULE -Q
(See Clause 23.2.1)

TERMS OF REFERENCE FOR INDEPENDENT ENGINEER

1 Scope

1.1 These Terms of Reference for the Independent Engineer (the “TOR”) are being specified pursuant to the Concession Agreement dated ............... (the “Agreement”), which has been entered into between the Authority and Bareilly Highways Project Limited (the “Concessionaire”) for Four-Laning of the Bareilly - Sitapur section (km 262.00 to km 413.200) of National Highway No. 24 in the State of Uttar Pradesh on design, build, finance, operate and transfer (DBFOT) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 This TOR shall apply to construction, operation and maintenance of the Four-Lane Project Highway.

2 Definitions and interpretation

2.1 The words and expressions beginning with or in capital letters used in this TOR and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, mutatis mutandis, to this TOR.

3 Role and functions of the Independent Engineer

3.1 The role and functions of the Independent Engineer shall include the following:

(i) review of the Drawings and Documents as set forth in Paragraph 4;

(ii) review, inspection and monitoring of Construction Works as set forth in Paragraph 5;

(iii) conducting Tests on completion of construction and issuing Completion/ Provisional Certificate as set forth in Paragraph 5;

(iv) review, inspection and monitoring of O&M as set forth in Paragraph 6;

(v) review, inspection and monitoring of Divestment Requirements as
set forth in Paragraph 7;

(vi) determining, as required under the Agreement, the costs of any works or services and/or their reasonableness;

(vii) determining, as required under the Agreement, the period or any extension thereof, for performing any duty or obligation;

(viii) assisting the Parties in resolution of disputes as set forth in Paragraph 9; and

(ix) undertaking all other duties and functions in accordance with the Agreement.

3.2 The Independent Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

4 Development Period

4.1 During the Development Period, the Independent Engineer shall undertake a detailed review of the Drawings to be furnished by the Concessionaire along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys and traffic surveys. The Independent Engineer shall complete such review and send its comments/observations to the Authority and the Concessionaire within 15 (fifteen) days of receipt of such Drawings. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

4.2 The Independent Engineer shall review any modified Drawings or supporting Documents sent to it by the Concessionaire and furnish its comments within 7 (seven) days of receiving such Drawings or Documents.

4.3 The Independent Engineer shall review the Drawings sent to it by the Safety Consultant in accordance with Schedule-L and furnish its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receiving such Drawings. The Independent Engineer shall also review the Safety Report and furnish its comments thereon to the Authority within 15 (fifteen) days of receiving such report.

4.4 The Independent Engineer shall review the detailed design, construction methodology, quality assurance procedures and the procurement, engineering and construction time schedule sent to it by the Concessionaire and furnish its comments within 15 (fifteen) days of receipt thereof.

4.5 Upon reference by the Authority, the Independent Engineer shall review and comment on the EPC Contract or any other contract for construction, operation and maintenance of the Project Highway, and furnish its comments within 7 (seven) days from receipt of such reference from the Authority.
5 Construction Period

5.1 In respect of the Drawings, Documents and Safety Report received by the Independent Engineer for its review and comments during the Construction Period, the provisions of Paragraph 4 shall apply, mutatis mutandis.

5.2 The Independent Engineer shall review the monthly progress report furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receipt of such report.

5.3 The Independent Engineer shall inspect the Construction Works and the Project Highway once every month, preferably after receipt of the monthly progress report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out a report of such inspection (the "Inspection Report") setting forth an overview of the status, progress, quality and safety of construction, including the work methodology adopted, the materials used and their sources, and conformity of Construction Works with the Scope of the Project and the Specifications and Standards. In a separate section of the Inspection Report, the Independent Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in the construction of the Project Highway. The Inspection Report shall also contain a review of the maintenance of the existing lanes in conformity with the provisions of the Agreement. The Independent Engineer shall send a copy of its Inspection Report to the Authority and the Concessionaire within 7 (seven) days of the inspection.

5.4 The Independent Engineer may inspect the Project Highway more than once in a month if any lapses, defects or deficiencies require such inspections.

5.5 For determining that the Construction Works conform to Specifications and Standards, the Independent Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests on a sample basis, to be specified by the Independent Engineer in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 5.5, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance. The Independent Engineer shall issue necessary directions to the Concessionaire for ensuring that the tests are conducted in a fair and efficient manner, and shall monitor and review the results thereof.

5.6 The sample size of the tests, to be specified by the Independent Engineer under Paragraph 5.5, shall comprise 10% (ten per cent) of the quantity or number of tests prescribed for each category or type of tests in the Quality Control Manuals; provided that the Independent Engineer may, for reasons to be recorded in writing, increase the aforesaid sample size by up to 10% (ten per cent) for specific categories or types of tests.
5.7 The timing of tests referred to in Paragraph 5.5, and the criteria for acceptance/rejection of their results shall be determined by the Independent Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Concessionaire for its own quality assurance in accordance with Good Industry Practice.

5.8 In the event that the Concessionaire carries out any remedial works for removal or rectification of any defects or deficiencies, the Independent Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests to determine that such remedial works have brought the Construction Works into conformity with the Specifications and Standards, and the provisions of this Paragraph 5 shall apply to such tests.

5.9 In the event that the Concessionaire fails to achieve any of the Project Milestones, the Independent Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Independent Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Concessionaire to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Concessionaire, the Independent Engineer shall review the same and send its comments to the Authority and the Concessionaire forthwith.

5.10 If at any time during the Construction Period, the Independent Engineer determines that the Concessionaire has not made adequate arrangements for the safety of workers and Users in the zone of construction or that any work is being carried out in a manner that threatens the safety of the workers and the Users, it shall make a recommendation to the Authority forthwith, identifying the whole or part of the Construction Works that should be suspended for ensuring safety in respect thereof.

5.11 In the event that the Concessionaire carries out any remedial measures to secure the safety of suspended works and Users, it may, by notice in writing, require the Independent Engineer to inspect such works, and within 3 (three) days of receiving such notice, the Independent Engineer shall inspect the suspended works and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

5.12 If suspension of Construction Works is for reasons not attributable to the Concessionaire, the Independent Engineer shall determine the extension of dates set forth in the Project Completion Schedule, to which the Concessionaire is reasonably entitled, and shall notify the Authority and the Concessionaire of the same.

5.13 The Independent Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-I and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 5.13 and all matters incidental thereto, the Independent
Engineer shall act under and in accordance with the provisions of Article 14 and Schedule-I.

5.14 Upon reference from the Authority, the Independent Engineer shall make a fair and reasonable assessment of the costs of providing information, works and services as set forth in Article 16 and certify the reasonableness of such costs for payment by the Authority to the Concessionaire.

5.15 The Independent Engineer shall aid and advise the Concessionaire in preparing the Maintenance Manual.

6 Operation Period

6.1 In respect of the Drawings, Documents and Safety Report received by the Independent Engineer for its review and comments during the Operation Period, the provisions of Paragraph 4 shall apply, mutatis mutandis.

6.2 The Independent Engineer shall review the annual Maintenance Programme furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 15 (fifteen) days of receipt of the Maintenance Programme.

6.3 The Independent Engineer shall review the monthly status report furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receipt of such report.

6.4 The Independent Engineer shall inspect the Project Highway once every month, preferably after receipt of the monthly status report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out an O&M Inspection Report setting forth an overview of the status, quality and safety of O&M including its conformity with the Maintenance Requirements and Safety Requirements. In a separate section of the O&M Inspection Report, the Independent Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in O&M of the Project Highway. The Independent Engineer shall send a copy of its O&M Inspection Report to the Authority and the Concessionaire within 7 (seven) days of the inspection.

6.5 The Independent Engineer may inspect the Project Highway more than once in a month, if any lapses, defects or deficiencies require such inspections.

6.6 The Independent Engineer shall in its O&M Inspection Report specify the tests, if any, that the Concessionaire shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Concessionaire in this behalf.

6.7 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-K, the Independent Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with
reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

6.8 The Independent Engineer shall determine if any delay has occurred in completion of repair or remedial works in accordance with the Agreement, and shall also determine the Damages, if any, payable by the Concessionaire to the Authority for such delay.

6.9 The Independent Engineer shall examine the request of the Concessionaire for closure of any lane(s) of the carriageway for undertaking maintenance/repair thereof, keeping in view the need to minimise disruption in traffic and the time required for completing such maintenance/repair in accordance with Good Industry Practice. It shall grant permission with such modifications, as it may deem necessary, within 3 (three) days of receiving a request from the Concessionaire. Upon expiry of the permitted period of closure, the Independent Engineer shall monitor the re-opening of such lane(s), and in case of delay, determine the Damages payable by the Concessionaire to the Authority under Clause 17.7.

6.10 The Independent Engineer shall monitor and review the curing of defects and deficiencies by the Concessionaire as set forth in Clause 19.4.

6.11 In the event that the Concessionaire notifies the Independent Engineer of any modifications that it proposes to make to the Project Highway, the Independent Engineer shall review the same and send its comments to the Authority and the Concessionaire within 15 (fifteen) days of receiving the proposal.

6.12 The Independent Engineer shall undertake traffic sampling, as and when required by the Authority, under and in accordance with Article 22 and Schedule-0.

7 Termination

7.1 At any time, not earlier than 90 (ninety) days prior to Termination but not later than 15 (fifteen) days prior to such Termination, the Independent Engineer shall, in the presence of a representative of the Concessionaire, inspect the Project Highway for determining compliance by the Concessionaire with the Divestment Requirements set forth in Clause 38.1 and, if required, cause tests to be carried out at the Concessionaire’s cost for determining such compliance. If the Independent Engineer determines that the status of the Project Highway is such that its repair and rectification would require a larger amount than the sum set forth in Clause 39.2, it shall recommend retention of the required amount in the Escrow Account and the period of retention thereof.

7.2 The Independent Engineer shall inspect the Project Highway once in every 15 (fifteen) days during a period of 90 (ninety) days after Termination for determining the liability of the Concessionaire under Article 39, in respect of the defects or deficiencies specified therein. If any such defect or deficiency
is found by the Independent Engineer, it shall make a report in reasonable
detail and send it forthwith to the Authority and the Concessionaire.

8 Determination of costs and time

8.1 The Independent Engineer shall determine the costs, and/or their
reasonableness, that are required to be determined by it under the
Agreement.

8.2 The Independent Engineer shall determine the period, or any extension
thereof, that is required to be determined by it under the Agreement.

9 Assistance in Dispute resolution

9.1 When called upon by either Party in the event of any Dispute, the
Independent Engineer shall mediate and assist the Parties in arriving at an
amicable settlement.

9.2 In the event of any disagreement between the Parties regarding the meaning,
scope and nature of Good Industry Practice, as set forth in any provision of
the Agreement, the Independent Engineer shall specify such meaning, scope
and nature by issuing a reasoned written statement relying on good industry
practice and authentic literature.

10 Other duties and functions

The Independent Engineer shall perform all other duties and functions
specified in the Agreement.

11 Miscellaneous

11.1 The Independent Engineer shall notify its programme of inspection to the
Authority and to the Concessionaire, who may, in their discretion, depute
their respective representatives to be present during the inspection.

11.2 A copy of all communications, comments, instructions, Drawings or
Documents sent by the Independent Engineer to the Concessionaire pursuant
to this TOR, and a copy of all the test results with comments of the
Independent Engineer thereon shall be furnished by the Independent
Engineer to the Authority forthwith.

11.3 The Independent Engineer shall obtain, and the Concessionaire shall furnish
in two copies thereof, all communications and reports required to be
submitted, under this Agreement, by the Concessionaire to the Independent
Engineer, whereupon the Independent Engineer shall send one of the copies
to the Authority along with its comments thereon.

11.4 The Independent Engineer shall retain at least one copy each of all Drawings
and Documents received by it, including ‘as-built’ Drawings, and keep them
in its safe custody.

11.5 Upon completion of its assignment hereunder, the Independent Engineer
shall duly classify and list all Drawings, Documents, results of tests and other relevant records, and hand them over to the Authority or such other person as the Authority may specify, and obtain written receipt thereof. Two copies of the said documents shall also be furnished in micro film form or in such other medium as may be acceptable to the Authority.
SCHEDULE – R
(See Clause 27.1.1)

FEE NOTIFICATION

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

(Department of Road Transport and Highways)

NOTIFICATION

New Delhi, the ..... 20...

S.O. ............. Whereas, by the notification of the Government of India in the Ministry of Road Transport and Highways, number ***** dated the *****, issued under section 11 of the National Highways Authority of India Act, 1988 (68 of 1988), the Central Government has entrusted the section of National Highway from Km 262.00 to Km 413.200 (Bareilly - Sitapur Section) of National Highway No. 24 in the state of Uttar Pradesh to the National Highways Authority of India (hereinafter referred to as the “Authority”);

And Whereas, pursuant to the provisions of section 14 of the said Act, the Authority has entered into an agreement with Bareilly Highways Project Limited, having its Registered Office at 153, Okhla Industrial Estate, Phase III, New Delhi 110 020 (hereinafter referred to as “Concessionaire”) for the development of the Bareilly - Sitapur section from Km 262.00 Km 413.200 (hereinafter referred to as the said section) of the National Highway No. 24 Design, Build, Finance, Operate and Transfer (DBFOT) basis;

Now, therefore, in exercise of the powers conferred by section 8A of the National Highways Act, 1956 (48 of 1956), read with Rule 3 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, the Central Government, having regard to the expenditure involved in building, maintenance, management and operation of the said section of the said national highway, interest on the capital invested, reasonable return, the volume of traffic and the period of said agreement between the Authority and the Concessionaire, hereby notifies that there shall be levied and collected fees on mechanical vehicles for the use of the section from Km 262.00 to Km 413.200 Bareilly - Sitapur) of National Highway No. 24, in the State of Uttar Pradesh at the rates specified in the aforesaid Rules and authorises the said Concessionaire to collect and retain the said fees on and from the date of commercial operation of the said section of national highway, subject to and in accordance with the said Rules and the provisions of the aforesaid agreement.

"The fee levied and collected hereunder shall be due and payable at the following Toll Plazas for the distance specified for each such Toll Plaza:
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Location of Toll Plaza (chainage)</th>
<th>Length (in km) for which Fee is payable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AT KM 267.00</td>
<td>50% of total length of project highway after 4 laning</td>
</tr>
<tr>
<td>2</td>
<td>AT KM 370.00</td>
<td>50% of total length of project highway after 4 laning</td>
</tr>
</tbody>
</table>

F.No. RW/NH-..............

(Name)

Deputy Secretary

Government of India

4-laning of Bareilly-Sitapur section of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate and Transfer (DBFOT) basis
1. **Short title and commencement.** - (1) These rules may be called the National Highways Fee (Determination of Rates and Collection) Rules, 2008.

(2) They shall come into force on the date of their publication in the Official Gazette.

(3) They shall not apply to agreements and contracts executed and bids invited prior to the publication of these rules.

2. **Definitions.** - (1) In these rules, unless the context otherwise requires,

(a) "Act" means the National Highways Act, 1956;

(b) "base year" means the period from 1st April 2007 to 31st March 2008;

(c) "bypass" means a section of the national highway bypassing a town or city;

(d) "concessionaire" means a person with whom an agreement has been entered into under section 8A of the Act;

(e) "elevated highway" means any section of national highway raised above ground level through support of piers or columns;

(f) "executing authority" means an officer or authority notified by the Central Government under section 5 of the Act;

(g) "expressway" means a national highway having a divided carriageway suitable for high speed traffic and with control of access;

(h) "financial year" means the year commencing on the 1st day of April of a year and ending on 31st day of March of the succeeding year;

(i) "gross vehicle weight" in respect of any vehicle means the total weight of the vehicle and load certified and registered by the registering authority as permissible for that vehicle under the Motor Vehicles Act, 1988 (59 of 1988);

(j) "lane" means a lane forming part of the main carriageway and having a minimum width of three meters and fifty centimeters;

(k) "mechanical vehicle" means any vehicle driven under its own power including a motor vehicle as defined under the Motor Vehicles Act, 1988;

(l) "notification" means a notification published in the Official Gazette;

(m) "private investment project" means a project relating to section of national highway, permanent bridge, bypass or tunnel, as the case may be, for which an agreement is entered into with a concessionaire;

(n) "public funded project" means a project which is not a private investment project, as defined in clause (m) above and includes a private investment project in respect of which the agreement has expired;

(o) "toll plaza" means any building, structure or booth made for collection of fee.
(2) Words and expressions used herein and not defined but defined in the National Highways Authority of India Act, 1988 shall have the meanings respectively assigned to them in that Act.

3. **Levy of fee.**—(1) The Central Government may by notification, levy fee for use of any section of national highway, permanent bridge, bypass or tunnel forming part of the national highway, as the case may be, in accordance with the provisions of these rules:

Provided that the Central Government may, by notification, exempt any section of national highway, permanent bridge, bypass or tunnel constructed through a public funded project from levy of such fee or part thereof, and subject to such conditions as may be specified in that notification.

(2) The collection of fee levied under sub-rule (1) of Rule 3, shall commence within forty-five days from the date of completion of the section of national highway, permanent bridge, bypass or tunnel, as the case may be, constructed through a public funded project.

(3) In case of private investment project, the collection of fee levied under sub-rule (1) shall be made in accordance with the terms of the agreement entered into by the concessionaire.

(4) No fee shall be levied for the use of the section of national highway, permanent bridge, bypass or tunnel, as the case may be, by two wheelers, three wheelers, tractors and animal drawn vehicles:

Provided that three wheelers, tractors and animal-drawn vehicles shall not be allowed to use the section of national highway, permanent bridge, bypass or tunnel, as the case may be, where a service road or alternative road is available in lieu of the said national highway, permanent bridge, bypass or tunnel:

Provided further that where service road or alternative road is available and the owner, driver or the person in charge of a two wheeler is making use of the section of national highway, permanent bridge, bypass or tunnel, as the case may be, he or she shall be charged fifty per cent. of the fee levied on a car.

Explanation 1.—For the purposes of this rule,—
(a) “alternative road” means such other road, the carriageway of which is more than ten meters wide and the length of which does not exceed the corresponding length of such section of national highway by twenty per cent. thereof;

(b) “service road” means a road running parallel to a section of the national highway which provides access to the land adjoining such section of the national highway.

(5) The fee notified by the Central Government under these rules shall be rounded off and levied in multiple of the nearest rupees five.

4-Lining of Bareilly-Dehradun national highway under NHDP III in the state of Uttar Pradesh on Design-Build, Finance, Operate and Transfer (DBFIT) basis
4. **Base rate of fee.** - (1) The rate of fee for use of the section of national highway, permanent bridge, bypass or tunnel constructed through public funded project or private investment project shall be identical.

(2) The rate of fee for use of a section of national highway of four or more lanes shall, for the base year 2007-08, be the product of the length of such section multiplied by the following rates, namely:

<table>
<thead>
<tr>
<th>Type of Vehicle</th>
<th>Base rate of fee per km (in rupees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car, Jeep, Van or Light Motor Vehicle</td>
<td>0.65</td>
</tr>
<tr>
<td>Light Commercial Vehicle, Light Goods Vehicle or Mini Bus</td>
<td>1.05</td>
</tr>
<tr>
<td>Bus or Truck</td>
<td>2.20</td>
</tr>
<tr>
<td>Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (three to six axles)</td>
<td>3.45</td>
</tr>
<tr>
<td>Oversized Vehicles (seven or more axles)</td>
<td>4.20</td>
</tr>
</tbody>
</table>

Explanation.- For the purposes of this rule,

(a) “car” or “jeep” or “van” or “light motor vehicle” means any mechanical vehicle the gross vehicle weight of which does not exceed seven thousand five hundred kilograms or the registered passenger carrying capability as specified in the certificate of registration issued under the Motor Vehicles Act, 1988 does not exceed twelve excluding the driver;

(b) “light commercial vehicle” or “light goods vehicle” or “mini bus” means any mechanical vehicle with a gross vehicle weight exceeding seven thousand five hundred kilograms but less than twelve thousand kilograms or the registered passenger carrying capability as specified in the certificate of registration issued under the Motor Vehicles Act, 1988, exceeds twelve but does not exceed thirty two excluding the driver;

(c) “truck” or “bus” means any mechanical vehicle with a gross vehicle weight exceeding twelve thousand kilograms but less than twenty thousand kilograms or the registered passenger carrying capability as specified in the certificate of registration issued under the Motor Vehicles Act, 1988, exceeds thirty two, excluding the driver;

(d) “heavy construction machinery” or “earth moving equipment” or “multi axle vehicle” means heavy construction machinery or earth moving equipment or mechanical vehicle including a multi axle vehicle with three to six axles or vehicle
with a gross vehicle weight exceeding twenty thousand kilograms but less than sixty thousand kilogram; and

(e) "oversized vehicle" means any mechanical vehicle having seven or more axles or vehicle with a gross vehicle weight exceeding sixty thousand kilograms.

(3) The rate of fee for use of a section of national highway, having two lanes and on which the average investment for upgradation has exceeded rupees one crore per kilometer, shall be sixty per cent. of the rate of fee specified under sub-rule (2) of Rule 4.

(4) The rate of fee for use of permanent bridge, bypass or tunnel constructed with the cost exceeding rupees ten crore, shall, for the base year 2007-08, be as follows:

<table>
<thead>
<tr>
<th>Base rate of fee (rupees per vehicle per trip)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of permanent bridge, bypass or tunnel (rupees in crore)</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>10 to 15</td>
</tr>
<tr>
<td>For every additional rupees five crore or part thereof, exceeding rupees fifteen crore and up to rupees one hundred crore.</td>
</tr>
<tr>
<td>For every additional rupees five crore or part thereof, exceeding rupees one hundred crore and up to rupees two hundred crore.</td>
</tr>
<tr>
<td>For every additional rupees five crore or part thereof, exceeding rupees two hundred crore.</td>
</tr>
</tbody>
</table>

Provided that while computing fee for the section of national highway on which a permanent bridge, bypass or tunnel costing rupees fifty crore or more is situated, the length of such permanent bridge, bypass or tunnel shall be excluded from the length of such section of national highway and fee shall be levied at the rates specified for such permanent bridge, bypass and tunnel:

Provided further that where the cost of such permanent bridge, bypass or tunnel, as the case may be, is less than rupees fifty crore, and the said permanent bridge, bypass or tunnel, form
part of the section of national highway, then instead of above rate of fee, the rate of fee specified under sub-rule (2) of Rule 4 shall be applicable for such permanent bridge, bypass or tunnel.

Explanation.- For the purpose of this sub-rule,-

(a) the cost for private investment project, shall be the cost as assessed by the executing authority prior to invitation of bids from the concessionaire;

(b) the cost for public funded project shall be the cost as assessed by the executing authority six months prior to completion thereof.

5. Annual revision of rate of fee.-(1) The rates specified under rule 4 shall be increased without compounding, by three per cent. each year with effect from the 1st day of April, 2008 and such increased rate shall be deemed to be the base rate for the subsequent years.

(2) The applicable base rates shall be revised annually with effect from April 1 each year to reflect the increase in wholesale price index between the week ending on January 6, 2007 (i.e. 208.7) and the week ending on or immediately after January 1 of the year in which such revision is undertaken but such revision shall be restricted to forty per cent of the increase in wholesale price index.

(3) The formula for determining the applicable rate of fee shall be as follows:-

\[
\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left( \frac{\text{WPI A - WPI B}}{\text{WPI B}} \times 0.4 \right)
\]

Explanation.- for the purposes of this sub-rule.-

(a) applicable rate of fee shall be the rate payable by the user;

(b) base rate shall be the rate specified in rule 4 read with sub-rule (1);

(c) WPI A means the wholesale price index of the week ending on or subsequent to 1st January immediately preceding the date of revision under these rules; and

(d) WPI B means the wholesale price index of the week ending on 6th January, 2007 i.e. 208.7.

Illustration:

4-laning of Bareilly-Sitapur section of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate and Transfer (DBFOT) basis
If the revision is to be made for the year 2008-09 by applying the wholesale price index of the week ending on 5th January 2008 (i.e. 216.6), then the rate for car, jeep or van will be 0.6796 as computed below:

Applicable rate of fee: 0.6695 + 0.6695 \times \left[ \frac{216.6 - 208.7}{208.7} \right] \times 0.4 = 0.6796

(4) Annual revision of rate of fee under this rule shall be effective from first of April every year.

6. **Collection of fee.**— (1) Fee levied under these rules shall be collected by the Central Government or the executing authority or the concessionaire, as the case may be, at the toll plaza.

(2) Every driver, owner or person in charge of a mechanical vehicle shall for the use of the section of national highway, permanent bridge, bypass or tunnel, before crossing the toll plaza, pay the fee specified under these rules.

(3) The fee collected under these rules shall be paid either in cash or through smart card or on board unit (transponder) or any other like device:

Provided that no additional charges shall be realised for making the payment of fee by use of a smart card or on board unit (transponder) or any other such device.

(4) Any driver, owner or person in charge of a mechanical vehicle who opts for the installation of on board unit (transponder) or any other such device for payment of fee, shall deposit a refundable security equivalent to the cost of the equipment with the Central Government, the executing authority or the concessionaire, as the case may be, for such installation and no interest shall accrue on such security deposit.

(5) The person receiving such fee under sub-rule (2) of Rule 6, shall issue to the driver, owner or person in charge of mechanical vehicle a receipt, specifying therein the date and time of such receipt of fee, total amount received, and the class of vehicle for which the fee has been received:

Provided that where the fee is paid through smart card or on board unit (transponder) or any other such device, a receipt shall be issued on demand only.

(6) The fee shall be collected in perpetuity by the Central Government or the executing authority, as the case may be, and for a specified period in accordance with the terms of the 4-laning of Bareilly–Sitapur section of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate and Transfer (DBFOT) basis.
agreement entered into by the concessionaire.

(7) In respect of public funded projects the fee levied under these rules shall be collected by the Central Government, or the executing authority, as the case may be, through its own officials or through a contactor.

7. **Remittance and appropriation of fee.**—(1) In case of public funded projects, the fee collected under the provisions of these rules by every executing authority shall be remitted to the Central Government:

Provided that the Central Government may by notification allow any or all executing authorities to appropriate the whole or any part of the fee for such purposes and subject to such conditions as may be specified in the said notification:

Provided further that in case of private investment projects, the fee collected under the provisions of these rules shall be appropriated by the concessionaire in accordance with the provisions of and for the performance of its obligations under the agreement entered into by such concessionaire.

(2) Every executing authority shall remit to the Central Government, the amount of fee collected over and above the amount permitted to be appropriated by the executing authority under sub-rule (1) of Rule 7, within ninety days from the date of the closing of the financial year along with an annual return showing the amount collected and the expenditure incurred on collection of fee, including the administrative and management expenses.

(3) The Central Government shall by notification determine the administrative and management expenses which may be allowed to be deducted and retained by the executing authority.

8. **Location of toll plaza.**—(1) The executing authority or the concessionaire, as the case may be, shall establish a toll plaza beyond a distance of ten kilometers from a municipal or local town area limits:

Provided that the executing authority may, for reasons to be recorded in writing, locate or allow the concessionaire to locate a toll plaza within a distance of ten kilometers of such municipal or local town area limits, but in no case within five kilometers of such municipal or local town area limits:
Provided further that where a section of the national highway, permanent bridge, bypass or tunnel, as the case may be, is constructed within the municipal or town area limits or within five kilometers from such limits, primarily for use of the residents of such municipal or town area, the toll plaza may be established within the municipal or town area limits or within a distance of five kilometers from such limits.

(2) Any other toll plaza on the same section of national highway and in the same direction shall not be established within a distance of sixty kilometers:

Provided that where the executing authority deems necessary, it may for reasons to be recorded in writing, establish or allow the concessionaire to establish another toll plaza within a distance of sixty kilometers:

Provided further that a toll plaza may be established within a distance of sixty kilometers from another toll plaza if such toll plaza is for collection of fee for a permanent bridge, bypass or tunnel.

9. Discounts.—(1) The executing authority or the concessionaire, as the case may be, shall upon request provide a pass for multiple journeys to cross a toll plaza within the specified period at the rates specified in sub-rule (2) of Rule 9.

(2) A driver, owner or person in charge of a mechanical vehicle who makes use of the section of national highway, permanent bridge, bypass or tunnel, may opt for such pass and he or she shall have to pay the fee in accordance with the following rates, namely:-

<table>
<thead>
<tr>
<th>Amount payable</th>
<th>Maximum number of one way journeys allowed</th>
<th>Period of validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>One and half times of the fee for one way journey</td>
<td>Two</td>
<td>Twenty four hours from the time of payment</td>
</tr>
<tr>
<td>Two-third of amount of the fee payable for fifty single journeys</td>
<td>Fifty</td>
<td>One month from date of payment</td>
</tr>
</tbody>
</table>

(3) A person who owns a mechanical vehicle registered for non-commercial purposes and uses it as such for commuting on a section of national highway, permanent bridge, bypass or tunnel, may obtain a pass, on payment of fee at the base rate for the year 2007-2008 of rupees one hundred and fifty per calendar month and revised annually in accordance with rule 5, authorising it to cross the toll plaza specified in such pass:

Provided that such pass shall be issued only if such driver, owner or person in charge of such mechanical vehicle resides within a distance of twenty kilometers from the toll plaza.

*4-laning of Bareilly-Siicpur section of NH-24 under NHDP III in the state of Uttar Pradesh on Design, Build, Finance, Operate and Transfer (DBFOT) basis*
specified by such person and the use of such section of national highway, permanent bridge, bypass or tunnel, as the case may be, does not extend beyond the toll plaza next to the specified toll plaza.

Provided further that no such pass shall be issued if a service road or alternative road is available for use by such driver, owner or person in charge of a mechanical vehicle.

(4) No pass shall be issued or fee collected from a driver, owner or person in charge of a mechanical vehicle that uses part of the section of a national highway and does not cross a toll plaza.

10. Rate of fee for overloading.— (1) Without prejudice to the liability of the driver, owner or a person in charge of a mechanical vehicle under any law for the time being in force, a mechanical vehicle which is loaded in excess of the permissible load specified for its category under sub-rule (2) of rule 4, shall be liable to pay fee at such rate which is applicable for the next higher category of mechanical vehicles:

Provided that the payment of such fee for overloading shall not entitle a driver or owner or a person in charge of a mechanical vehicle to make use of such national highway and his or her vehicle shall be prevented from using the national highway or crossing the toll plaza until the excess load has been removed from such mechanical vehicle.

(2) The weight of a mechanical vehicle, as recorded at a weighbridge installed at the toll plaza, shall be the basis for levying the fee for overloading under this rule:

Provided that where no weighbridge has been installed at the toll plaza, no fee for overloading shall be levied and collected under this rule and the driver, owner or person in charge of the mechanical vehicle shall be liable to pay fee applicable for such vehicle only.

11. Exemption from payment of fee.— (1) No fee shall be levied and collected from a mechanical vehicle,—

(a) transporting and accompanying,—

(i) the President of India;
(ii) the Vice-President of India;
(iii) the Prime-Minister of India;
(iv) the Chief Justice of India;
(v) the Governor;
(vi) the Lieutenant Governor.
(vii) the Union Minister;
(viii) the Chief Minister;
(ix) the Judge of Supreme Court;
(x) the Chairman of the Council of State;
(xi) the Speaker of the House of People;
(xii) the Chairman of the Legislative Council of the State;
(xiii) the Speaker of the Legislative Assembly of the State;
(xiv) the Chief Justice of High Court;
(xv) the Judge of High Court;
(xvi) Ministers of States; and
(xvii) Foreign dignitaries on State visit.

(b) used for official purposes by,-

(i) the Ministry of Defence including those which are eligible for exemption in accordance with the provisions of the Indian Toll (Army and Air Force) Act, 1901 and rules made thereunder, as extended to Navy also;
(ii) the Central and State armed forces in uniform including para military forces and police;
(iii) an executive Magistrate;
(iv) a fire-fighting department or organisation;
(v) the National Highway Authority or any other organisation or person using such vehicle for inspection, survey, construction or operation and maintenance thereof; and

(c) used as ambulance.

12. Display of Information.- (1) The executing authority or the concessionaire, as the case may be, shall publish a notice specifying the amount of fee to be charged from the mechanical vehicle, in at least one Newspaper, each in English and vernacular language, having a wide circulation in such area.

(2) The executing authority shall prominently display in Hindi and English one thousand meters ahead of the toll plaza and in English and local language five hundred meters ahead of the toll plaza,-

(i) the amount of fee payable for each class of vehicles and the discounts available under rule 9;
(ii) the categories of vehicles exempted from payment of fee; and
(iii) the name, address and telephone or contact number of the executing authority or the
concessionaire, as the case may be.

(3) The height of the display boards, their quality and size of lettering shall be clearly
visible and legible to the users.

13. **Unauthorised collection.**— (1) An officer authorised by the Central Government or
by the executing authority, as the case may be, may assess the excess fee collected, if any, by
the executing authority or the concessionaire, as the case may be, and recover the same from
such authority or concessionaire, along with an additional sum equal to twenty five per cent.
of the excess fee collected:

Provided that no recovery of such excess fee shall be made unless an opportunity of hearing
has been given to the executing authority or concessionaire, as the case may be.

(2) Any driver, owner or person incharge of a mechanical vehicle aggrieved by
unauthorised collection of fee, may lodge a complaint with the officer authorised by the
Central Government or the executing authority, as the case may be, in this behalf, who shall
after hearing the parties pass an order on such complaint for refund of excess payment and
damages for the inconvenience suffered by such user within thirty days.

14. **Failure to pay fee.**— (1) If any driver, owner or person incharge of a mechanical
vehicle does not pay or refuses to pay the fee for use of national highway, permanent bridge,
bypass or tunnel, his or her vehicle shall not be allowed to use such section of national
highway, permanent bridge, bypass or tunnel and in case such vehicle obstructs the normal
flow of traffic, the executing authority or the concessionaire, as the case may be, may get
such obstructing vehicle removed from the national highway, permanent bridge, bypass or
tunnel, as the case may be.

(2) Where the driver or the person in charge of a mechanical vehicle refuses or fails to
pay the fee levied under these rules, the same shall be recovered from the registered owner of
the mechanical vehicle.

(3) Where the Central Government, executing authority or the concessionaire, as the case
may be, has reason to believe that a mechanical vehicle is plying on a section of the national
highway, permanent bridge, bypass or tunnel without payment of fee due, it may stop such
vehicle for the purpose of verifying the payment thereof and collect the fee due from such
vehicle.
15. **Power of Central Government to verify records.** An officer duly authorised by the Central Government or the executing authority, as the case may be, shall have the power to verify the collection of fee, and inspect any document, records, other information, receipts or reports of the executing authority or the concessionaire, as the case may be.

16. **Collection of fee in respect of Private Investment Project.**
   1. The fee levied under the provisions of sub-rule (3) of rule 3 shall be collected by the concessionaire till its agreement is in force.
   2. On and from the date of expiry of the agreement specified under sub-rule (3) of rule 3, the fee levied shall be collected by the Central Government or the executing authority, as the case may be.

17. **Bar for installation of additional barrier.** No barrier shall be installed at any place, other than at the toll plaza, except with the prior permission in writing of the Central Government or the executing authority, as the case may be, who after being satisfied that there is evasion of fee, may allow on such terms and conditions as it may impose, the installation of such additional barrier by the Central Government, the executing authority or the concessionaire, as the case may be, within ten kilometers from the toll plaza, to check the evasion of fee:

   Provided that the Central Government or the executing authority, as the case may be, may, at any time, for reasons to be recorded in writing, withdraw such permission.

   Provided further that where the Central Government or the executing authority, as the case may be, do not allow installation of an additional barrier by the concessionaire, the reasons for such refusal shall be communicated to such concessionaire within a reasonable period.
SCHEDULE -S
(See Clause 31.1.2)

ESCROW AGREEMENT

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

AMONGST

1 Bareilly Highways Project Limited, a company incorporated under the provisions of the Companies Act, 1956 and having its registered office at 153, Okhla Industrial Estate, Phase III, New Delhi 110 020, (hereinafter referred to as the “Concessionaire” which expression shall, unless repugnant to the context or meaning thereof, include its successors, permitted assigns and substitutes);

2 .......................name and particulars of Lenders’ Representative and having its registered office at ...............acting for and on behalf of the Senior Lenders as their duly authorised agent with regard to matters arising out of or in relation to this Agreement (hereinafter referred to as the “Lenders’ Representative” which expression shall, unless repugnant to the context or meaning thereof, include its successors and substitutes);

3 .......................name and particulars of the Escrow Bank and having its registered office at ..................... (hereinafter referred to as the “Escrow Bank” which expression shall, unless repugnant to the context or meaning thereof, include its successors and substitutes); and

4 The National Highways Authority of India, established under the National Highways Authority Act 1988, represented by its Chairman and having its principal offices at G-5 & 6, Sector 10, Dwarka, New Delhi-110075 (hereinafter referred to as the “Authority” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns).

WHEREAS:

(A) The Authority has entered into a Concession Agreement dated ................ with the Concessionaire (the “Concession Agreement”) for Four-Laning of the Bareilly - Sitapur section (km 262.00 to km 413.200) of National Highway No. 24 in the State of Uttar Pradesh on design, build, finance, operate and transfer (DBFOT) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this Agreement.

(B) Senior Lenders have agreed to finance the Project in accordance with the terms and conditions set forth in the Financing Agreements.

(C) The Concession Agreement requires the Concessionaire to establish an Escrow Account, inter alia, on the terms and conditions stated therein.
NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

1 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:

“Agreement” means this Escrow Agreement and any amendment thereto made in accordance with the provisions contained herein;

“Concession Agreement” means the Concession Agreement referred to in Recital (A) above and annexed hereto as Annex-A, and shall include all of its Recitals and Schedules and any amendments made thereto in accordance with the provisions contained in this behalf therein;

“Cure Period” means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Concessionaire, and shall commence from the date on which a notice is delivered by the Authority or the Lenders' Representative, as the case may be, to the Concessionaire asking the latter to cure the breach or default specified in such notice;

“Escrow Account” means an escrow account established in terms of and under this Agreement, and shall include the Sub-Accounts;

“Escrow Default” shall have the meaning ascribed thereto in Clause 6.1;

“Lenders' Representative” means the person referred to as the Lenders' Representative in the foregoing Recitals;

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

“Payment Date” means, in relation to any payment specified in Clause 4.1, the date(s) specified for such payment; and

“Sub-Accounts” means the respective Sub-Accounts of the Escrow Account, into which the monies specified in Clause 4.1 would be credited every month and paid out if due, and if not due in a month then appropriated proportionately in such month and retained in the respective Sub Accounts and paid out therefrom on the Payment Date(s).

1.2 Interpretation

1.2.1 References to Lenders’ Representative shall, unless repugnant to the context or meaning thereof, mean references to the Lenders’ Representative, acting...
for and on behalf of Senior Lenders.

1.2.2 The words and expressions beginning with capital letters and defined in this Agreement shall have the meaning ascribed thereto herein, and the words and expressions used in this Agreement and not defined herein but defined in the Concession Agreement shall, unless repugnant to the context, have the meaning ascribed thereto in the Concession Agreement.

1.2.3 References to Clauses are, unless stated otherwise, references to Clauses of this Agreement.

1.2.4 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Concession Agreement shall apply, mutatis mutandis, to this Agreement.

2 ESCROW ACCOUNT

2.1 Escrow Bank to act as trustee

2.1.1 The Concessionaire hereby appoints the Escrow Bank to act as trustee for the Authority, the Lenders' Representative and the Concessionaire in connection herewith and authorises the Escrow Bank to exercise such rights, powers, authorities and discretion as are specifically delegated to the Escrow Bank by the terms hereof together with all such rights, powers, authorities and discretion as are reasonably incidental hereto, and the Escrow Bank accepts such appointment pursuant to the terms hereof.

2.1.2 The Concessionaire hereby declares that all rights, title and interest in and to the Escrow Account shall be vested in the Escrow Bank and held in trust for the Authority, the Lenders' Representative and the Concessionaire, and applied in accordance with the terms of this Agreement. No person other than the Authority, the Lenders' Representative and the Concessionaire shall have any rights hereunder as the beneficiaries of, or as third party beneficiaries under this Agreement.

2.2 Acceptance of Escrow Bank

The Escrow Bank hereby agrees to act as such and to accept all payments and other amounts to be delivered to and held by the Escrow Bank pursuant to the provisions of this Agreement. The Escrow Bank shall hold and safeguard the Escrow Account during the term of this Agreement and shall treat the amount in the Escrow Account as monies deposited by the Concessionaire, Senior Lenders or the Authority with the Escrow Bank. In performing its functions and duties under this Agreement, the Escrow Bank shall act in trust for the benefit of, and as agent for, the Authority, the Lenders' Representative and the Concessionaire or their nominees, successors or assigns, in accordance with the provisions of this Agreement.

2.3 Establishment and operation of Escrow Account

2.3.1 Within 30 (thirty) days from the date of this Agreement, and in any case prior to the Appointed Date, the Concessionaire shall open and establish the
Escrow Account with the ................. (name of Branch) Branch of the Escrow Bank. The Escrow Account shall be denominated in Rupees.

2.3.2 The Escrow Bank shall maintain the Escrow Account in accordance with the terms of this Agreement and its usual practices and applicable regulations, and pay the maximum rate of interest payable to similar customers on the balance in the said account from time to time.

2.3.3 The Escrow Bank and the Concessionaire shall, after consultation with the Lenders' Representative, agree on the detailed mandates, terms and conditions, and operating procedures for the Escrow Account, but in the event of any conflict or inconsistency between this Agreement and such mandates, terms and conditions, or procedures, this Agreement shall prevail.

2.4 Escrow Bank’s fee

The Escrow Bank shall be entitled to receive its fee and expenses in an amount, and at such times, as may be agreed between the Escrow Bank and the Concessionaire. For the avoidance of doubt, such fee and expenses shall form part of the O&M Expenses and shall be appropriated from the Escrow Account in accordance with Clause 4.1.

2.5 Rights of the parties

The rights of the Authority, the Lenders' Representative and the Concessionaire in the monies held in the Escrow Account are set forth in their entirety in this Agreement and the Authority, the Lenders’ Representative and the Concessionaire shall have no other rights against or to the monies in the Escrow Account.

2.6 Substitution of the Concessionaire

The Parties hereto acknowledge and agree that upon substitution of the Concessionaire with the Nominated Company, pursuant to the Substitution Agreement, it shall be deemed for the purposes of this Agreement that the Nominated Company is a Party hereto and the Nominated Company shall accordingly be deemed to have succeeded to the rights and obligations of the Concessionaire under this Agreement on and with effect from the date of substitution of the Concessionaire with the Nominated Company.

3 DEPOSITS INTO ESCROW ACCOUNT

3.1 Deposits by the Concessionaire

3.1.1 The Concessionaire agrees and undertakes that it shall deposit into and/or credit the Escrow Account with:

(a) all monies received in relation to the Project from any source, including the Senior Lenders, lenders of Subordinated Debt and the Authority;

(b) all funds from the Concessionaire from its share-holders, in
any manner or form;

(c) all Fee levied and collected by the Concessionaire;

(d) any other revenues, rentals, deposits or capital receipts, as the case may be, from or in respect of the Project Highway; and

(e) all proceeds received pursuant to any insurance claims.

3.1.2 The Concessionaire may at any time make deposits of its other funds into the Escrow Account, provided that the provisions of this Agreement shall apply to such deposits.

3.2 Deposits by the Authority

The Authority agrees and undertakes that, as and when due and payable, it shall deposit into and/or credit the Escrow Account with:

(a) Grant and any other monies disbursed by the Authority to the Concessionaire;

(b) Revenue Shortfall Loan;

(c) all Fee collected by the Authority in exercise of its rights under the Concession Agreement; and

(d) Termination Payments:

Provided that, notwithstanding the provisions of Clause 4.1.1, the Authority shall be entitled to appropriate from the aforesaid amounts, any Concession Fee due and payable to it by the Concessionaire, and the balance remaining shall be deposited into the Escrow Account.

3.3 Deposits by Senior Lenders

The Lenders' Representative agrees, confirms and undertakes that the Senior Lenders shall deposit into and/or credit the Escrow Account with all disbursements made by them in relation to or in respect of the Project; provided that notwithstanding anything to the contrary contained in this Agreement, the Senior Lenders shall be entitled to make direct payments to the EPC Contractor under and in accordance with the express provisions contained in this behalf in the Financing Agreements.

3.4 Interest on deposits

The Escrow Bank agrees and undertakes that all interest accruing on the balances of the Escrow Account shall be credited to the Escrow Account; provided that the Escrow Bank shall be entitled to appropriate therefrom the fee and expenses due to it from the Concessionaire in relation to the Escrow Account and credit the balance remaining to the Escrow Account.
4.1 Withdrawals during Concession Period

4.1.1 At the beginning of every month, or at such shorter intervals as the Lenders’ Representative and the Concessionaire may by written instructions determine, the Escrow Bank shall withdraw amounts from the Escrow Account and appropriate them in the following order by depositing such amounts in the relevant Sub-Accounts for making due payments, and if such payments are not due in any month, then retain such monies in such Sub-Accounts and pay out therefrom on the Payment Date(s):

(a) all taxes due and payable by the Concessionaire for and in respect of the Project Highway;

(b) all payments relating to construction of the Project Highway, subject to and in accordance with the conditions, if any, set forth in the Financing Agreements;

(c) O&M Expenses, subject to the ceiling, if any, set forth in the Financing Agreements;

(d) O&M Expenses incurred by the Authority, provided it certifies to the Escrow Bank that it had incurred such expenses in accordance with the provisions of the Concession Agreement and that the amounts claimed are due to it from the Concessionaire;

(e) Concession Fee due and payable to the Authority;

(f) monthly proportionate provision of Debt Service due in an Accounting Year;

(g) Deleted

(h) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire pursuant to the Concession Agreement, including repayment of Revenue Shortfall Loan;

(i) monthly proportionate provision of debt service payments due in an Accounting Year in respect of Subordinated Debt;

(j) any reserve requirements set forth in the Financing Agreements; and

(k) balance, if any, in accordance with the instructions of the Concessionaire.

4.1.2 No later than 60 (sixty) days prior to the commencement of each Accounting Year, the Concessionaire shall provide to the Escrow Bank, with prior written approval of the Lenders’ Representative, details of the amounts likely to be required for each of the payment obligations set forth in this Clause 4.1; provided that such amounts may be subsequently modified, with prior written approval of the Lenders’ Representative, if fresh information received during the first six months of the year makes such modification necessary.
4.2 Withdrawals upon Termination

Upon Termination of the Concession Agreement, all amounts standing to the credit of the Escrow Account shall, notwithstanding anything in this Agreement, be appropriated and dealt with in the following order:

(a) all taxes due and payable by the Concessionaire for and in respect of the Project Highway;
(b) 90% (ninety per cent) of Debt Due excluding Subordinated Debt;
(c) outstanding Concession Fee;
(d) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire pursuant to the Concession Agreement, including repayment of Revenue Shortfall Loan and any claims in connection with or arising out of Termination;
(e) retention and payments arising out of, or in relation to, liability for defects and deficiencies set forth in Article 39 of the Concession Agreement;
(f) outstanding Debt Service including the balance of Debt Due;
(g) outstanding Subordinated Debt;
(h) incurred or accrued O&M Expenses;
(i) any other payments required to be made under the Concession Agreement; and
(j) balance, if any, in accordance with the instructions of the Concessionaire:

Provided that the disbursements specified in Sub-clause (j) of this Clause 4.2 shall be undertaken only after the Vesting Certificate has been issued by the Authority.

4.3 Application of insufficient funds

Funds in the Escrow Account shall be applied in the serial order of priority set forth in Clauses 4.1 and 4.2, as the case may be. If the funds available are not sufficient to meet all the requirements, the Escrow Bank shall apply such funds in the serial order of priority until exhaustion thereof.

4.4 Application of insurance proceeds

Notwithstanding anything in this Agreement, the proceeds from all insurance claims, except life and injury, shall be deposited into and/or credited to the Escrow Account and utilised for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project Highway and the balance remaining, if any, shall be applied in
accordance with the provisions contained in this behalf in the Financing Agreements.

4.5 Withdrawals during Suspension

Notwithstanding anything to the contrary contained in this Agreement, the Authority may exercise all or any of the rights of the Concessionaire during the period of Suspension under Article 36 of the Concession Agreement. Any instructions given by the Authority to the Escrow Bank during such period shall be complied with as if such instructions were given by the Concessionaire under this Agreement and all actions of the Authority hereunder shall be deemed to have been taken for and on behalf of the Concessionaire.

5 OBLIGATIONS OF THE ESCROW BANK

5.1 Segregation of funds

Monies and other property received by the Escrow Bank under this Agreement shall, until used or applied in accordance with this Agreement, be held by the Escrow Bank in trust for the purposes for which they were received, and shall be segregated from other funds and property of the Escrow Bank.

5.2 Notification of balances

7 (seven) business days prior to each Payment Date (and for this purpose the Escrow Bank shall be entitled to rely on an affirmation by the Concessionaire and/or the Lenders' Representative as to the relevant Payment Dates), the Escrow Bank shall notify the Lenders' Representative of the balances in the Escrow Account and Sub-Accounts as at the close of business on the immediately preceding business day.

5.3 Communications and notices

In discharge of its duties and obligations hereunder, the Escrow Bank:

(a) may, in the absence of bad faith or gross negligence on its part, rely as to any matters of fact which might reasonably be expected to be within the knowledge of the Concessionaire upon a certificate signed by or on behalf of the Concessionaire;

(b) may, in the absence of bad faith or gross negligence on its part, rely upon the authenticity of any communication or document believed by it to be authentic;

(c) shall, within 5 (five) business days after receipt, deliver a copy to the Lenders' Representative of any notice or document received by it in its capacity as the Escrow Bank from the Concessionaire or any other person hereunder or in connection herewith; and

(d) shall, within 5 (five) business days after receipt, deliver a copy to the
Concessionaire of any notice or document received by it from the Lenders’ Representative in connection herewith.

5.4 No set off

The Escrow Bank agrees not to claim or exercise any right of set off, banker’s lien or other right or remedy with respect to amounts standing to the credit of the Escrow Account. For the avoidance of doubt, it is hereby acknowledged and agreed by the Escrow Bank that the monies and properties held by the Escrow Bank in the Escrow Account shall not be considered as part of the assets of the Escrow Bank and being trust property, shall in the case of bankruptcy or liquidation of the Escrow Bank, be wholly excluded from the assets of the Escrow Bank in such bankruptcy or liquidation.

5.5 Regulatory approvals

The Escrow Bank shall use its best efforts to procure, and thereafter maintain and comply with, all regulatory approvals required for it to establish and operate the Escrow Account. The Escrow Bank represents and warrants that it is not aware of any reason why such regulatory approvals will not ordinarily be granted to the Escrow Bank.

6 ESCROW DEFAULT

6.1 Escrow Default

6.1.1 Following events shall constitute an event of default by the Concessionaire (an “Escrow Default”) unless such event of default has occurred as a result of Force Majeure or any act or omission of the Authority or the Lenders’ Representative:

(a) the Concessionaire commits breach of this Agreement by failing to deposit any receipts into the Escrow Account as provided herein and fails to cure such breach by depositing the same into the Escrow Account within a Cure Period of 5 (five) business days;

(b) the Concessionaire causes the Escrow Bank to transfer funds to any account of the Concessionaire in breach of the terms of this Agreement and fails to cure such breach by depositing the relevant funds into the Escrow Account or any Sub-Account in which such transfer should have been made, within a Cure Period of 5 (five) business days; or

(c) the Concessionaire commits or causes any other breach of the provisions of this Agreement and fails to cure the same within a Cure Period of 5 (five) business days.

6.1.2 Upon occurrence of an Escrow Default, the consequences thereof shall be dealt with under accordance with the provisions of the Concession Agreement.
7 TERMINATION OF ESCROW AGREEMENT

7.1 Duration of the Escrow Agreement

This Agreement shall remain in full force and effect so long as any sum remains to be advanced or is outstanding from the Concessionaire in respect of the debt, guarantee or financial assistance received by it from the Senior Lenders, or any of its obligations to the Authority remain to be discharged, unless terminated earlier by consent of all the Parties or otherwise in accordance with the provisions of this Agreement.

7.2 Substitution of Escrow Bank

The Concessionaire may, by not less than 45 (forty five) days prior notice to the Escrow Bank, the Authority and the Lenders' Representative, terminate this Agreement and appoint a new Escrow Bank, provided that the new Escrow Bank is acceptable to the Lenders' Representative and arrangements are made satisfactory to the Lenders' Representative for transfer of amounts deposited in the Escrow Account to a new Escrow Account established with the successor Escrow Bank. The termination of this Agreement shall take effect only upon coming into force of an Escrow Agreement with the substitute Escrow Bank.

7.3 Closure of Escrow Account

The Escrow Bank shall, at the request of the Concessionaire and the Lenders' Representative made on or after the payment by the Concessionaire of all outstanding amounts under the Concession Agreement and the Financing Agreements including the payments specified in Clause 4.2, and upon confirmation of receipt of such payments, close the Escrow Account and Sub-Accounts and pay any amount standing to the credit thereof to the Concessionaire. Upon closure of the Escrow Account hereunder, the Escrow Agreement shall be deemed to be terminated.

8 SUPPLEMENTARY ESCROW AGREEMENT

8.1 Supplementary escrow agreement

The Lenders' Representative and the Concessionaire shall be entitled to enter into a supplementary escrow agreement with the Escrow Bank providing, inter alia, for detailed procedures and documentation for withdrawals from Sub-Accounts pursuant to Clause 4.1.1 and for matters not covered under this Agreement such as the rights and obligations of Senior Lenders and lenders of Subordinated Debt, investment of surplus funds, restrictions on withdrawals by the Concessionaire in the event of breach of this Agreement or upon occurrence of an Escrow Default, procedures relating to operation of the Escrow Account and withdrawal therefrom, reporting requirements and any matters incidental thereto; provided that such supplementary escrow agreement shall not contain any provision which is inconsistent with this Agreement and in the event of any conflict or inconsistency between provisions of this Agreement and such supplementary escrow agreement, the
provisions of this Agreement shall prevail.

9 INDEMNITY

9.1 General indemnity

9.1.1 The Concessionaire will indemnify, defend and hold the Authority, Escrow Bank and the Senior Lenders, acting through the Lenders' Representative, harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of any breach by the Concessionaire of any of its obligations under this Agreement or on account of failure of the Concessionaire to comply with Applicable Laws and Applicable Permits.

9.1.2 The Authority will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Authority to fulfil any of its obligations under this Agreement materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement or this Agreement other than any loss, damage, cost and expense arising out of acts done in discharge of their lawful functions by the Authority, its officers, servants and agents.

9.1.3 The Escrow Bank will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Escrow Bank to fulfil its obligations under this Agreement materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Escrow Bank, its officers, servants and agents.

9.2 Notice and contest of claims

In the event that any Party hereto receives a claim from a third party in respect of which it is entitled to the benefit of an indemnity under Clause 9.1 or in respect of which it is entitled to reimbursement (the "Indemnified Party"), it shall notify the other Party responsible for indemnifying such claim hereunder (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim, it may conduct the proceedings in the name of the Indemnified Party and shall bear all costs involved in contesting the same. The Indemnified Party shall provide all cooperation and assistance in contesting any claim and shall sign all such writings and documents as the Indemnifying Party may reasonably require.
10 DISPUTE RESOLUTION

10.1 Dispute resolution

10.1.1 Any dispute, difference or claim arising out of or in connection with this Agreement, which is not resolved amicably, shall be decided finally by reference to arbitration to a Board of Arbitrators comprising one nominee of each Party to the dispute, and where the number of such nominees is an even number, the nominees shall elect another person to such Board. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the "Rules") or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996.

10.1.2 The Arbitrators shall issue a reasoned award and such award shall be final and binding on the Parties. The venue of arbitration shall be Delhi and the language of arbitration shall be English.

11 MISCELLANEOUS PROVISIONS

11.1 Governing law and jurisdiction

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

11.2 Waiver of sovereign immunity

The Authority unconditionally and irrevocably:

(a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;

(b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Authority with respect to its assets;

(c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and

(d) consents generally in respect of the enforcement of any judgement or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any asset, property or revenues whatsoever irrespective of their use or intended use of any order or judgement).
that may be made or given in connection therewith).

11.3 **Priority of agreements**

In the event of any conflict between the Concession Agreement and this Agreement, the provisions contained in the Concession Agreement shall prevail over this Agreement.

11.4 **Alteration of terms**

All additions, amendments, modifications and variations to this Agreement shall be effectual and binding only if in writing and signed by the duly authorised representatives of the Parties.

11.5 **Waiver**

11.5.1 Waiver by any Party of a default by another Party in the observance and performance of any provision of or obligations under this Agreement:

(a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;

(b) shall not be effective unless it is in writing and executed by a duly authorised representative of the Party; and

(c) shall not affect the validity or enforceability of this Agreement in any manner.

11.5.2 Neither the failure by any 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 any Party to another Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

11.6 **No third party beneficiaries**

This Agreement is solely for the benefit of the Parties and no other person or entity shall have any rights hereunder.

11.7 **Survival**

11.7.1 Termination of this Agreement:

(a) shall not relieve the Parties of any obligations hereunder which expressly or by implication survive termination hereof; and

(b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, 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.

11.7.2 All obligations surviving the cancellation, expiration or termination of this Agreement shall only survive for a period of 3 (three) years following the date of such termination or expiry of this Agreement.

11.8 **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 to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to dispute resolution under Clause 10.1 of this Agreement or otherwise.

11.9 **Successors and assigns**

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

11.10 **Notices**

All notices or other communications to be given or made under this Agreement shall be in writing and shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each Party, its facsimile number or e-mail are set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5.30 (five thirty) p.m. on a business day, or on a day that is not a business day, the notice shall be deemed to be received on the first business day following the date of actual receipt. Without prejudice to the foregoing, a Party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice or communication. It is hereby agreed and acknowledged that any Party may by notice change the address to which such notices and communications to it are to be delivered or mailed. Such change shall be effective when all the Parties have notice of it.

11.11 **Language**

All notices, certificates, correspondence and proceedings under or in connection with this Agreement shall be in English.

11.12 **Authorised representatives**

Each of the Parties shall, by notice in writing, designate their respective
authorised representatives through whom only all communications shall be made. A Party hereto shall be entitled to remove and/or substitute or make fresh appointment of such authorised representative by similar notice.

11.13 Original Document

This Agreement may be executed in four 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.

THE COMMON SEAL OF CONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the ...... day of ...... hereunto affixed in the presence of .........., Director, who has signed these presents in token thereof and ........., Company Secretary / Authorised Officer who has countersigned the same in token thereof 1:

SIGNED, SEALED AND DELIVERED
For and on behalf of SENIOR LENDERS by the Lenders’ Representative:

(Signature)
(Name)
(Designation)
(Address)
(Fax No.)
(e-mail address)

ESCROW BANK by:

(Signature)
(Name)
(Designation)
(Address)
(Fax No.)
(e-mail address)

In the presence of:

1. 

NATIONAL HIGHWAYS AUTHORITY OF INDIA by:

(Signature)
(Name)
(Designation)
(Address)
(Fax No.)
(e-mail address)

2.

1 To be affixed in accordance with the articles of association of the Concessionaire.

4-laning of Bareilly-Sitapur section of NH-4 under NHDP III in the state of Uttar Pradesh on Design, Build, Operate, Transfer Basis.
SCHEDULE T
(See Clause 33.2.1)

PANEL OF CHARTERED ACCOUNTANTS

1 Panel of Chartered Accountants

Pursuant to the provisions of Clause 33.2.1 of the Agreement, the Authority and the Concessionaire shall prepare a mutually agreed panel of 10 (ten) reputable firms of Chartered Accountants having their registered offices in India (the "Panel of Chartered Accountants"). The criteria for preparing such Panel and the procedure to be adopted in this behalf shall be as set forth in this Schedule-T.

2 Invitation for empanelment

2.1 The Authority shall invite offers from all reputable firms of Chartered Accountants who fulfil the following eligibility criteria, namely:

(a) the firm should have conducted statutory audit of the annual accounts of at least one hundred companies registered under the Companies Act, 1956, of which at least ten should have been public sector undertakings;

(b) the firm should have at least 5 (five) practising Chartered Accountants on its rolls, each with a minimum experience of ten years in the profession;

(c) the firm or any of its partners should not have been disqualified or black-listed by the Comptroller and Auditor General of India or the Authority; and

(d) the firm should have an office in the State or in an adjacent State with at least 2 (two) practising Chartered Accountants on its rolls in such State.

2.2 Interested firms meeting the eligibility criteria shall be required to submit a statement of their capability including the bio-data of all the practising Chartered Accountants on its rolls. In particular, each firm shall be required to furnish year-wise information relating to the names of all the companies with an annual turnover exceeding Rs. 100,00,00,000 (Rs. one hundred crore) whose annual accounts were audited by such firm in any of the preceding 5 (five) Accounting Years.

3 Evaluation and selection

3.1 The information furnished by each firm shall be scrutinised and evaluated by the Authority and 1 (one) point shall be awarded for each annual audit of the companies specified in Paragraph 2.2 above. (For the avoidance of doubt, a firm which has conducted audit of the annual accounts of any such company for five years shall be awarded five points).
3.2 The Authority shall prepare a list of all the eligible firms along with the points scored by each such firm and 10 (ten) firms scoring the highest points shall be identified and included in the draft Panel of Chartered Accountants.

4 Consultation with the Concessionaire

The Authority shall convey the aforesaid panel of firms to the Concessionaire for scrutiny and comments, if any. The Concessionaire shall be entitled to scrutinise the relevant records of the Authority to ascertain whether the selection of firms has been undertaken in accordance with the prescribed procedure and it shall send its comments, if any, to the Authority within 15 (fifteen) days of receiving the aforesaid panel.

5 Mutually agreed panel

5.1 The Authority shall, after considering all relevant factors including the comments, if any, of the Concessionaire, finalise and constitute a panel of 10 (ten) firms which shall be deemed to be the mutually agreed Panel of Chartered Accountants.

5.2 After completion of every five years from the date of preparing the mutually agreed Panel of Chartered Accountants, or such earlier period as may be agreed between the Authority and the Concessionaire, a new panel shall be prepared in accordance with the provisions of this Schedule - T.
VESTING CERTIFICATE

1 The Chairman, National Highways Authority of India (the “Authority”) refers to the Concession Agreement dated ................ (the “Agreement”) entered into between the Authority and Bareilly Highways Project Limited (the “Concessionaire”) for Four-Laning of the Bareilly - Sitapur Section of National Highway No. 24 (the “Project Highway”) on design, build, finance, operate and transfer (“DBFOT”) basis.

2 The Authority hereby acknowledges compliance and fulfilment by the Concessionaire of the Divestment Requirements set forth in Clause 38.1 of the Agreement on the basis that upon issue of this Vesting Certificate, the Authority shall be deemed to have acquired, and all title and interest of the Concessionaire in or about the Project Highway shall be deemed to have vested unto the Authority, free from any encumbrances, charges and liens whatsoever.

3 Notwithstanding anything to the contrary contained hereinafore, it shall be a condition of this Vesting Certificate that nothing contained herein shall be construed or interpreted as waiving the obligation of the Concessionaire to rectify and remedy any defect or deficiency in any of the Divestment Requirements and/or relieving the Concessionaire in any manner of the same.

Signed this .................. day of .............., 20......... at Delhi.

AGREED, ACCEPTED AND SIGNED
For and on behalf of
CONCESSIONAIRE by:

(Signature)
(Name)
(Designation)
(Address)

SIGNED, SEALED AND DELIVERED
For and on behalf of
NATIONAL HIGHWAYS AUTHORITY OF INDIA by:

(Signature)
(Name)
(Designation)
(Address)

In the presence of:

1.

2.
SCHEDULE -V
(See Clause 40.3.1)

SUBSTITUTION AGREEMENT

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

AMONGST

1 The National Highways Authority of India, established under the National Highways Authority Act 1988, represented by its Chairman and having its principal offices at G-5 & 6, Sector 10, Dwarka, New Delhi-110075 (hereinafter referred to as the “Authority” which expression shall unless repugnant to the context or meaning thereof include its administrators, successors and assigns);

2 Bareilly Highways Project Limited, a company incorporated under the provisions of the Companies Act, 1956 and having its registered office at 153, Okhla Industrial Estate, Phase III, New Delhi 110 020, (hereinafter referred to as the “Concessionaire” which expression shall unless repugnant to the context or meaning thereof include its successors and permitted assigns and substitutes);

3 ......................... name and particulars of Lenders’ Representative and having its registered office at ........................., acting for and on behalf of the Senior Lenders as their duly authorised agent with regard to matters arising out of or in relation to this Agreement (hereinafter referred to as the “Lenders’ Representative”, which expression shall unless repugnant to the context or meaning thereof include its successors and substitutes);

WHEREAS:

(A) The Authority has entered into a Concession Agreement dated ................ with the Concessionaire (the “Concession Agreement”) for Four-Laning of the Bareilly - Sitapur section (km 262.00 to km 413.200) of National Highway No. 24 in the State of Uttar Pradesh on design, build, finance, operate and transfer basis (DBFOT), and a copy of which is annexed hereto and marked as Annex-A to form part of this Agreement.

(B) Senior Lenders have agreed to finance the Project in accordance with the terms and conditions set forth in the Financing Agreements.

(C) Senior Lenders have requested the Authority to enter into this Substitution Agreement for securing their interests through assignment, transfer and substitution of the Concession to a Nominated Company in accordance with
the provisions of this Agreement and the Concession Agreement.

(D) In order to enable implementation of the Project including its financing, construction, operation and maintenance, the Authority has agreed and undertaken to transfer and assign the Concession to a Nominated Company in accordance with the terms and conditions set forth in this Agreement and the Concession Agreement.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

1 DEFINITIONS AND INTERPRETATION

1.1 Definitions

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

“Agreement” means this Substitution Agreement and any amendment thereto made in accordance with the provisions contained in this Agreement;

“Financial Default” means occurrence of a material breach of the terms and conditions of the Financing Agreements or a continuous default in Debt Service by the Concessionaire for a minimum period of 3 (three) months;

“Lenders’ Representative” means the person referred to as the Lenders’ Representative in the foregoing Recitals;

“Nominated Company” means a company, incorporated under the provisions of the Companies Act, 1956, selected by the Lenders’ Representative, on behalf of Senior Lenders, and proposed to the Authority for assignment/transfer of the Concession as provided in this Agreement;

“Notice of Financial Default” shall have the meaning ascribed thereto in Clause 3.2.1; and

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

1.2 Interpretation

1.2.1 References to Lenders’ Representative shall, unless repugnant to the context
or meaning thereof, mean references to the Lenders’ Representative, acting for and on behalf of Senior Lenders.

1.2.2 References to Clauses are, unless stated otherwise, references to Clauses of this Agreement.

1.2.3 The words and expressions beginning with capital letters and defined in this Agreement shall have the meaning ascribed thereto herein, and the words and expressions used in this Agreement and not defined herein but defined in the Concession Agreement shall, unless repugnant to the context, have the meaning ascribed thereto in the Concession Agreement.

1.2.4 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Concession Agreement shall apply, mutatis mutandis, to this Agreement.

2 ASSIGNMENT

2.1 Assignment of rights and title

The Concessionaire hereby agrees to assign the rights, title and interest in the Concession to, and in favour of, the Lenders’ Representative pursuant to and in accordance with the provisions of this Agreement and the Concession Agreement by way of security in respect of financing by the Senior Lenders under the Financing Agreements.

3 SUBSTITUTION OF THE CONCESSIONAIRE

3.1 Rights of substitution

3.1.1 Pursuant to the rights, title and interest assigned under Clause 2.1, the Lenders’ Representative shall be entitled to substitute the Concessionaire by a Nominated Company under and in accordance with the provisions of this Agreement and the Concession Agreement.

3.1.2 The Authority hereby agrees to substitute the Concessionaire by endorsement on the Concession Agreement in favour of the Nominated Company selected by the Lenders’ Representative in accordance with this Agreement. (For the avoidance of doubt, the Senior Lenders or the Lenders’ Representative shall not be entitled to operate and maintain the Project Highway as Concessionaire either individually or collectively).

3.2 Substitution upon occurrence of Financial Default

3.2.1 Upon occurrence of a Financial Default, the Lenders’ Representative may issue a notice to the Concessionaire (the “Notice of Financial Default”) along with particulars thereof, and send a copy to the Authority for its
information and record. A Notice of Financial Default under this Clause 3 shall be conclusive evidence of such Financial Default and it shall be final and binding upon the Concessionaire for the purposes of this Agreement.

3.2.2 Upon issue of a Notice of Financial Default hereunder, the Lenders’ Representative may, without prejudice to any of its rights or remedies under this Agreement or the Financing Agreements, substitute the Concessionaire by a Nominated Company in accordance with the provisions of this Agreement.

3.2.3 At any time after the Lenders’ Representative has issued a Notice of Financial Default, it may by notice require the Authority to suspend all the rights of the Concessionaire and undertake the operation and maintenance of the Project Highway in accordance with the provisions of Article 36 of the Concession Agreement, and upon receipt of such notice, the Authority shall undertake Suspension under and in accordance with the provisions of the Concession Agreement. The aforesaid Suspension shall be revoked upon substitution of the Concessionaire by a Nominated Company, and in the event such substitution is not completed within 180 (one hundred and eighty) days from the date of such Suspension, the Authority may terminate the Concession Agreement forthwith by issuing a Termination Notice in accordance with the provisions of the Concession Agreement; provided that upon written request from the Lenders’ Representative and the Concessionaire, the Authority may extend the aforesaid period of 180 (one hundred and eighty) days by a period not exceeding 90 (ninety) days. For the avoidance of doubt, the Authority expressly agrees and undertakes to terminate the Concession Agreement forthwith, upon receipt of a written request from the Lenders’ Representative at any time after 240 (two hundred and forty) days from the date of Suspension hereunder.

3.3 Substitution upon occurrence of Concessionaire Default

3.3.1 Upon occurrence of a Concessionaire Default, the Authority shall by a notice inform the Lenders’ Representative of its intention to issue a Termination Notice and grant 15 (fifteen) days time to the Lenders’ Representative to make a representation, stating the intention to substitute the Concessionaire by a Nominated Company.

3.3.2 In the event that the Lenders’ Representative makes a representation to the Authority within the period of 15 (fifteen) days specified in Clause 3.3.1, stating that it intends to substitute the Concessionaire by a Nominated Company, the Lenders’ Representative shall be entitled to undertake and complete the substitution of the Concessionaire by a Nominated Company in accordance with the provisions of this Agreement within a period of 180 (one hundred and eighty) days from the date of such representation, and the Authority shall either withhold Termination or undertake Suspension for the aforesaid period of 180 (one hundred and eighty) days; provided that upon
written request from the Lenders' Representative and the Concessionaire, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by a period not exceeding 90 (ninety) days.

3.4 Procedure for substitution

3.4.1 The Authority and the Concessionaire hereby agree that on or after the date of Notice of Financial Default or the date of representation to the Authority under Clause 3.3.2, as the case may be, the Lenders' Representative may, without prejudice to any of the other rights or remedies of the Senior Lenders, invite, negotiate and procure offers, either by private negotiations or public auction or tenders for the take over and transfer of the Project Highway including the Concession to the Nominated Company upon such Nominated Company's assumption of the liabilities and obligations of the Concessionaire towards the Authority under the Concession Agreement and towards the Senior Lenders under the Financing Agreements.

3.4.2 To be eligible for substitution in place of the Concessionaire, the Nominated Company shall be required to fulfil the eligibility criteria that were laid down by the Authority for shortlisting the bidders for award of the Concession; provided that the Lenders' Representative may represent to the Authority that all or any of such criteria may be waived in the interest of the Project, and if the Authority determines that such waiver shall not have any material adverse effect on the Project, it may waive all or any of such eligibility criteria.

3.4.3 Upon selection of a Nominated Company, the Lenders' Representative shall request the Authority to:

(a) accede to transfer to the Nominated Company the right to construct, operate and maintain the Project Highway in accordance with the provisions of the Concession Agreement;

(b) endorse and transfer the Concession to the Nominated Company, on the same terms and conditions, for the residual Concession Period; and

(c) enter into a Substitution Agreement with the Lenders' Representative and the Nominated Company on the same terms as are contained in this Agreement.

3.4.4 If the Authority has any objection to the transfer of Concession in favour of the Nominated Company in accordance with this Agreement, it shall within 15 (fifteen) days from the date of proposal made by the Lenders' Representative, give a reasoned order after hearing the Lenders'
Representative. If no such objection is raised by the Authority, the Nominated Company shall be deemed to have been accepted. The Authority thereupon shall transfer and endorse the Concession within 15 (fifteen) days of its acceptance/deemed acceptance of the Nominated Company; provided that in the event of such objection by the Authority, the Lenders' Representative may propose another Nominated Company whereupon the procedure set forth in this Clause 3.4 shall be followed for substitution of such Nominated Company in place of the Concessionaire.

3.5 Selection to be binding

The decision of the Lenders' Representative and the Authority in selection of the Nominated Company shall be final and binding on the Concessionaire. The Concessionaire irrevocably agrees and waives any right to challenge the actions of the Lenders' Representative or the Senior Lenders or the Authority taken pursuant to this Agreement including the transfer/assignment of the Concession in favour of the Nominated Company. The Concessionaire agrees and confirms that it shall not have any right to seek revaluation of assets of the Project or the Concessionaire's shares. It is hereby acknowledged by the Parties that the rights of the Lenders' Representative are irrevocable and shall not be contested in any proceedings before any court or Authority and the Concessionaire shall have no right or remedy to prevent, obstruct or restrain the Authority or the Lenders' Representative from effecting or causing the transfer by substitution and endorsement of the Concession as requested by the Lenders' Representative.

4 PROJECT AGREEMENTS

4.1 Substitution of Nominated Company in Project Agreements

The Concessionaire shall ensure and procure that each Project Agreement contains provisions that entitle the Nominated Company to step into such Project Agreement, in its discretion, in place and substitution of the Concessionaire in the event of such Nominated Company's assumption of the liabilities and obligations of the Concessionaire under the Concession Agreement.

5 TERMINATION OF CONCESSION AGREEMENT

5.1 Termination upon occurrence of Financial Default

At any time after issue of a Notice of Financial Default, the Lenders' Representative may, by Notice in writing require the Authority to terminate the Concession Agreement forthwith, and upon receipt of such notice, the Authority shall undertake Termination under and in accordance with the
provisions of Article 37 of the Concession Agreement.

5.2 Termination when no Nominated Company is selected

In the event that no Nominated Company acceptable to the Authority is selected and recommended by the Lenders’ Representative within the period of 180 (one hundred and eighty) days or any extension thereof as set forth in Clause 3.3.2, the Authority may terminate the Concession Agreement forthwith in accordance with the provisions thereof.

5.3 Realisation of Debt Due

The Authority and the Concessionaire hereby acknowledge and agree that, without prejudice to their any other right or remedy, the Lenders’ Representative is entitled to receive from the Concessionaire, without any further reference to or consent of the Concessionaire, the Debt Due upon Termination of the Concession Agreement. For realisation of the Debt Due, the Lenders’ Representative shall be entitled to make its claim from the Escrow Account in accordance with the provisions of the Concession Agreement and the Escrow Agreement.

6 DURATION OF THE AGREEMENT

6.1 Duration of the Agreement

This Agreement shall come into force from the date hereof and shall expire at the earliest to occur of the following events:

(a) Termination of the Agreement; or

(b) no sum remains to be advanced, or is outstanding to the Senior Lenders, under the Financing Agreements.

7 INDEMNITY

7.1 General indemnity

7.1.1 The Concessionaire will indemnify, defend and hold the Authority and the Lenders’ Representative harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense of whatever kind and nature arising out of any breach by the Concessionaire of any of its obligations under this Agreement or on account of failure of the Concessionaire to comply with Applicable Laws and Applicable Permits.

7.1.2 The Authority will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss,
damage, cost and expense arising out of failure of the Authority to fulfil any of its obligations under this Agreement, materially and adversely affecting the performance of the Concessionaire’s obligations under the Concession Agreement or this Agreement, other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Authority, its officers, servants and agents.

7.1.3 The Lenders’ Representative will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Lenders’ Representative to fulfil its obligations under this Agreement, materially and adversely affecting the performance of the Concessionaire’s obligations under the Concession Agreement, other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Lenders’ Representative, its officers, servants and agents.

7.2 Notice and contest of claims

In the event that any Party hereto receives a claim from a third party in respect of which it is entitled to the benefit of an indemnity under Clause 7.1 or in respect of which it is entitled to reimbursement (the “Indemnified Party”), it shall notify the other Party responsible for indemnifying such claim hereunder (the “Indemnifying Party”) within 15 (fifteen) days of receipt of the claim and shall not settle or pay the claim without the prior approval of the Indemnifying Party, such approval not to be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim, it may conduct the proceedings in the name of the Indemnified Party and shall bear all costs involved in contesting the same. The Indemnified Party shall provide all cooperation and assistance in contesting any claim and shall sign all such writings and documents as the Indemnifying Party may reasonably require.

8 DISPUTE RESOLUTION

8.1 Dispute resolution

8.1.1 Any dispute, difference or claim arising out of or in connection with this Agreement which is not resolved amicably shall be decided by reference to arbitration to a Board of Arbitrators comprising one nominee each of the Authority, Concessionaire and the Lenders’ Representative. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the “Rules”) or such other rules as may be mutually agreed by the Parties, and shall be subject to provisions of the Arbitration and Conciliation Act, 1996.

4-laning of Bareilly-Sitapur section of NH-4 under NHDP III in the state of Uttar Pradesh on Design, Build
8.1.2 The Arbitrators shall issue a reasoned award and such award shall be final and binding on the Parties. The venue of arbitration shall be Delhi and the language of arbitration shall be English.

9 MISCELLANEOUS PROVISIONS

9.1 Governing law and jurisdiction

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

9.2 Waiver of sovereign immunity

The Authority unconditionally and irrevocably:

(a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;

(b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Authority with respect to its assets;

(c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and

(d) consents generally in respect of the enforcement of any judgement or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgement that may be made or given in connection therewith).

9.3 Priority of agreements

In the event of any conflict between the Concession Agreement and this Agreement, the provisions contained in the Concession Agreement shall prevail over this Agreement.

9.4 Alteration of terms

[Stamp]
All additions, amendments, modifications and variations to this Agreement shall be effectual and binding only if in writing and signed by the duly authorised representatives of the Parties.

9.5 Waiver

9.5.1 Waiver by any Party of a default by another Party in the observance and performance of any provision of or obligations under this Agreement:

(a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;

(b) shall not be effective unless it is in writing and executed by a duly authorised representative of the Party; and

(c) shall not affect the validity or enforceability of this Agreement in any manner.

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

9.6 No third party beneficiaries

This Agreement is solely for the benefit of the Parties and no other person or entity shall have any rights hereunder.

9.7 Survival

9.7.1 Termination of this Agreement:

(a) shall not relieve the Parties of any obligations hereunder which expressly or by implication survive termination thereof; 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.

9.7.2 All obligations surviving the cancellation, expiration or termination of this
Agreement shall only survive for a period of 3 (three) years following the date of such termination or expiry of this Agreement.

9.8 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 to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to dispute resolution under Clause 8 of this Agreement or otherwise.

9.9 Successors and assigns

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

9.10 Notices

All notices or other communications to be given or made under this Agreement shall be in writing, shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each Party, its facsimile number and e-mail address are set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5.30 (five thirty) p.m. on any day, or on a day that is a public holiday, the notice shall be deemed to be received on the first working day following the date of actual receipt. Without prejudice to the foregoing, a Party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice or communication. It is hereby agreed and acknowledged that any Party may by notice change the address to which such notices and communications to it are to be delivered or mailed. Such change shall be effective when all the Parties have notice of it.

9.11 Language

All notices, certificates, correspondence and proceedings under or in connection with this Agreement shall be in English.

9.12 Authorised representative
Each of the Parties shall by notice in writing designate their respective authorised representatives through whom only all communications shall be made. A Party hereto shall be entitled to remove and/or substitute or make fresh appointment of such authorised representative by similar notice.

9.13 Original Document

This Agreement may be executed in three 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.

THE COMMON SEAL OF CONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the ......... day of 20...... hereunto affixed in the presence of ..........., Director, who has signed these presents in token thereof and ..........., Company Secretary / Authorised Officer who has countersigned the same in token thereof:

SIGNED, SEALED AND DELIVERED

For and on behalf of NATIONAL HIGHWAYS AUTHORITY OF INDIA by:

(Signature)
(Name)
(Designation)
(Address)
(Fax No.)
(e-mail address)

SIGNED, SEALED AND DELIVERED

For and on behalf of SENIOR LENDERS by the Lenders' Representative:

(Signature)
(Name)
(Designation)
(Address)
(Fax)
(e-mail address)

In the presence of:

1. 
2. 

To be affixed in accordance with the articles of association of the Concessionaire.
MANUAL OF SPECIFICATIONS & STANDARDS FOR FOUR LANEING OF HIGHWAYS THROUGH PUBLIC PRIVATE PARTNERSHIP

INDIAN ROADS CONGRESS 2009
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13.1 General

13.2 Set back distance at horizontal curves
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13.4 Hairpin Bends
13.5 Climbing Lane
13.6 Rock Blasting
13.7 Cut Slopes
13.8 Tunnels
13.9 Drainage
13.10 Retaining Walls
13.11 Aprons etc.
13.12 Disposal of debris
13.13 Report to be submitted

Appendix – 1 (Refer para 1.11) List of paras for preparing Schedules of the Concession Agreement
Appendix – 2 (Refer para 1.4) List of IRC Codes and Standards
SECTION - 1

GENERAL
1.1 This Manual is applicable for Four Laning of Highways through Public Private Partnership (PPP) mode. The scope of the work shall be as defined in the Concession Agreement. This Manual shall be read harmoniously with the intent of the Concession Agreement.

1.2 The Project Highway and the project facilities shall conform to the requirements of design and specifications set out in this Manual which are the minimum prescribed. The project report and other information provided by the Authority\(^1\) shall be used by the Concessionaire only for its own reference and for carrying out further investigations. The Concessionaire shall be solely responsible for undertaking all the necessary surveys, investigations and detailed designs in accordance with good industry practice and due diligence, and shall have no claim against the Authority for any loss, damage, risk, costs, liabilities or obligations arising out of or in relation to the project report and other information provided by the Authority.

1.3 At least 2 weeks prior to commencement of the work, the Concessionaire shall draw up a Quality Assurance Manual (QAM) covering the Quality System (QS), Quality Assurance Plan (QAP) and documentation for all aspects of the bridge and road works and send three copies each to the Independent Engineer (IE) for review. The class of quality assurance shall not be less than Q-3. (Refer IRC:SP:47 and IRC:SP:57)

1.4 The Codes, Standards and Technical Specifications applicable for the design and construction of project components are:

(i) Indian Roads Congress (IRC) Codes and Standards; (Refer Appendix-2).

(ii) Specifications for Road and Bridge Works issued by the Ministry of Road Transport & Highways (MORTH) hereinafter referred to as MORTH or Ministry's Specifications.

(iii) Any other standards referred to in the Manual and any supplement issued with the bid document.

\(^1\) Authority / Government / Client
1.5 Latest version of the Codes, Standards, Specifications, etc., notified/published at least 60 days before the last date of bid submission shall be considered applicable.

1.6 The terms ‘Ministry of Surface Transport’, ‘Ministry of Shipping, Road Transport & Highways’ and ‘Ministry of Road Transport and Highways’ or any successor of substitute thereof shall be considered as synonymous.

1.7 The terms ‘Inspector’ and ‘Engineer’ used in MORTH Specifications shall be deemed to be substituted by the term “Independent Engineer”, to the extent it is consistent with the provisions of the Concession Agreement and this Manual. The role of the Independent Engineer shall be as defined in the Concession Agreement.

1.8 In case of any conflict or inconsistency in the provisions of the applicable IRC Code: Standards or MORTH Specifications, the provisions contained in this Manual shall apply.

1.9 In the absence of any specific provision on any particular issue in the aforesaid Code or Specifications read in conjunction with the Specifications and Standards contained in this Manual, the following standards shall apply in order of priority.

(i) Bureau of Indian Standards (BIS)
(ii) American Association of State Highway and Transportation Officials (AASHTO) Standards or American Society for Testing and Materials (ASTM) Standards or Euro Codes or British Standards or Australian Standards
(iii) Any other specifications/standards proposed by the Concessionaire as reviewed by the IE.

1.10 All items of building works shall conform to Central Public Works Department (CPWD) Specifications for Class 1 building works\(^1\) and standards given in the National Building Code (NBC). For the Project Highway through the state entity, to the extent specific provisions for building works are made in IRC/MORTH Specifications, the same shall prevail over the CPWD/NBC provisions. For this purpose, building works shall be deemed to include toll plaza complex, road furniture, roadside facilities, landscaping elements and/or any other works incidental to the building works.

\(1\) The State Government may prescribe concerned State PWD Specifications, if so desired.
1.11 Guidelines for Preparing Schedules of the Concession Agreement

Certain paras (full or part) in Sections 1 to 13 of this Manual refer to the Schedules of the Concession Agreement. While finalizing the feasibility/project report for the Project Highway, and the scope of the project, each of these Paras should be carefully examined and addressed by the Authority with a view to making appropriate provisions in the Schedules of the Concession Agreement. (A list of the Paras that refer to such Schedules has been provided at Appendix-1 for ready reference).

1.12 Alternative Standards and Specifications

The requirements stated in the Manual are the minimum. The Concessionaire will, however, be free to adopt international practices, alternative specifications, materials and standards to bring in innovation in the design and construction provided they are better or comparable with the standards prescribed in the Manual. The specifications and techniques which are not included in the MORTH /IRC Specifications shall be supported with authentic standards and specifications mentioned in Para 1.9. Such a proposal shall be submitted by the Concessionaire to the Independent Engineer. In case, the Independent Engineer is of the opinion that the proposal submitted by the Concessionaire is not in conformity with any of the international standards or codes, then he will record his reasons and convey the same to the Concessionaire for compliance. A record shall be kept by the Independent Engineer, of the non-compliance by the Concessionaire of the minimum Specifications and Standards specified in the Manual. Adverse consequences, if any, arising from any such non-compliance, shall be treated as "Concessionaire Default" and shall be dealt in accordance with the provisions of the Concession Agreement.

1.13 General considerations for planning, design and construction

The Project Highway shall be planned as a "partially access controlled highway" where access to the highway shall be provided only at pre-determined locations. In doing so, the Concessionaire shall take measures to overcome the physical and operational constraints and plan, design and construct the Project Highway using appropriate methods, management techniques and technologies. General consideration shall, without being limited to, be as follows:-

(a) The constraints

The physical constraints in the existing highway are in the form of limitation of right of way, un-regulated access, inadequate service roads and underpasses, numerous at-grade junctions, lack of physical separation between local and through traffic etc. The
operation constraints arise out of the necessity or possibility of closing a portion of the road for construction and/or diverting the traffic to temporary diversions, thereby reducing the capacity and safety of the existing highway. The solutions evolved by the Concessionaire shall be such that these operational constraints are overcome through appropriate planning, design and construction method, techniques and technologies and by adopting suitable traffic management measures.

(b) Safety of design
All designs shall be safe to ensure that the Project Highway or any part thereof (for example embankment, pavement, retaining structures, bridges, culverts, etc) does not collapse (global stability) nor its serviceability/performance (for example settlement, roughness, undulations, deflections, etc) deteriorates below acceptable level as prescribed in Schedule K of the Concession Agreement.

(c) Durability
The Project Highway shall not only be safe but also durable. This would mean that the deteriorating effects of climate and environment (for example wetting and drying, freezing and thawing, if applicable, temperature differences, aggressive environment leading to corrosion, etc) in addition to the traffic shall be duly considered in design and construction to make the Project Highway durable.

(d) Mitigating disruptive effects of construction
The planning, design and construction of the highway shall be such that the construction of Project Highway does not have adverse impact on the environment and does not disrupt the lives and business activities of the people living close to the Project Highway.

1.14 Safety during Construction and Operation & Maintenance:

1.14.1 The Concessionaire shall develop, implement and administer a surveillance and safety programme for providing a safe environment on or about the Project Highway, and shall comply with the safety requirements set forth in the Concession Agreement.

1.14.2 Before taking up any construction or maintenance operation/work, the Concessionaire shall prepare a Traffic Management Plan for each work zone and furnish it to the Independent Engineer for comments duly incorporating the following:
(i) Designate a Site Safety Team headed by a qualified Safety Officer.
Traffic safety devices as per IRC SP 55 with the following specifications:

(a) Signages of retro-reflective sheet of high intensity grade.

(b) Delineators in the form of cones/drums (300 to 500 mm dia and 1000 mm high) made of plastic/rubber having retro reflective red and white band, at a spacing of maximum 5 m along with a reflective tape (red and white band) to be tied in between the gaps of cones/drums. A bulb/flasher using solar energy is to be placed on the top of the cone/drum for night delineation.

(c) Barricades using iron sheet (plain) with adequate iron railing/frame painted with retro-reflective paint in alternate black and white (or yellow and black) stripes. Warning lights at 5.0 m spacing shall be mounted on the barricades and kept lit in the dark hours and night.

(iii) The arrangement of traffic during construction and maintenance shall conform to the requirements of Clause 112 of MORTH Specifications. Ensure availability of 7 m paved carriageway for traffic without potholes or other defects. At locations where available carriageway is less than 7 m, provide round the clock traffic signals with marshals carrying mobile/walky-talky at both ends to control both directions of traffic.

(iv) Sprinkling of water for dust control at work zones, haul roads and plant/camp sites.

(v) Noise/Pollution suppression measures at work zones, haul roads and plant/camp sites.

(vi) Mechanical, electrical and fire safety practices.

(vii) Safety measures like PPE (Personal Protection Equipment) for workers engaged.

(viii) First Aid and Emergency Response Arrangements i.e. First Aid Box, Ambulance, paramedical staff, alarms, etc.

(ix) Safety training/awareness programmes.

(x) Formats to maintain the accident records/emergency response provided during accidents.

(xi) A penalty scheme for violations in provision of adequate traffic control devices and proper traffic management should be proposed by the Concessionaire.
case of default, the amount of penalty shall be paid by the Concessionaire to the Authority.

(xii) A compensation scheme including insurance cover for third party for workers, road users and road side residents in case of death/injury/damage to the vehicle/property resulting from accidents on the Project Highway, irrespective of the person at fault should be proposed by the Concessionaire.

1.14.3 The Concessionaire shall also be responsible for ensuring compliance of all labour laws and regulations including those relating to the welfare of workers engaged both directly and indirectly on the Project Highway, besides their occupational safety and health.

1.15 The Concessionaire shall set up field laboratory for testing of materials and finished products as stipulated in Clause 121 of MORTH Specifications. It shall make necessary arrangements for additional/confirmatory testing of any materials/products at the government accredited laboratory, for which facilities at site laboratory are not available.

1.16 Environment Mitigation Measures

The Concessionaire shall carry out tests/monitor various parameters impacting the environment of the Project Highway keeping in view the guidelines of the Ministry of Environment and Forests and submit proposals for mitigation of adverse environment impact including provision of noise barriers, etc. for review and comments of the IE, if any and undertake implementation of the proposals in consultation with the IE.

1.17 Utilities

The details of the new utilities which are to be constructed or provided for along or across the Project Highway shall be as specified in Schedule ‘B’ of the Concession Agreement.

1.18 Review and comments by the Independent Engineer

In cases where the Concessionaire is required to send any drawings or documents to the Independent Engineer for review and comments, and in the event such comments are received by the Concessionaire, it shall duly consider such comments in accordance with the Concession Agreement and Good Industry Practice for taking appropriate action thereon. The correspondence between the Concessionaire and the
19 Definitions and Interpretation

19.1 Unless specified otherwise in this Manual, the definitions contained in the Model Concession Agreement (MCA) for Public Private Partnership (PPP) in Highways as published by the Planning Commission, Government of India, shall apply.

19.2 Built up area shall mean sections of the Project Highway that are situated within the limits of a municipal town and shall include sections of 200 m or more in non-municipal areas where dwellings/shops have been built on one or both sides of the Project Highway on at least 50 per cent of the total length comprising such section. The Built up areas shall be as specified in Schedule 'B' of the Concession Agreement.

19.3 The definition of PCU used in this Manual shall be as per IRC Codes and Guidelines.

20 This Manual is for 4-laning of the Project Highway. However, in some stretches, as indicated in Schedule 'B' of the Concession Agreement, 6-lane divided carriageway shall be provided as part of 4-laning of the Project Highway (Refer para 2.18). This shall not be construed as 6-laning of the Project Highway.
SECTION - 2

GEOMETRIC DESIGN

AND

GENERAL FEATURES
Section 2
GEOMETRIC DESIGN AND GENERAL FEATURES

(i) This section lays down the standards for geometric design and general features for four-lane divided carriageway.

(ii) (a) In built-up areas, 6-lane divided carriageway along with service roads shall be provided as part of 4-laning of the Project Highway. Such stretches where the requirement of 6-laning is dispensed with and only 4-laning with or without service road and footpath is to be provided will be as indicated in Schedule 'B' of the Concession Agreement.

(b) Where there is constraint of ROW width, the Authority may specify construction of a bypass. The alignment of the bypasses shall be as specified in Schedule 'B' and in conformity with the site earmarked in Schedule 'A' of the Concession Agreement.

(iii) The geometric design of the Project Highway shall conform to the standards set out in this section as a minimum.

(iv) As far as possible, uniformity of design standards shall be maintained throughout the length of the Project Highway. In case of any change, it shall be effected in a gradual manner.

(v) Where the existing road geometrics are deficient with respect to minimum requirements and its improvements to the prescribed standards is not feasible due to any constraint in acquisition of additional land, such stretches shall be as specified in Schedule 'B' of the Concession Agreement.

(vi) Existing horizontal curves, which are found deficient in radius, layout, transition lengths or super-elevation shall be corrected to the standards specified in this section.

(vii) Any deficiencies in the vertical profile in respect of grades, layout of vertical curves and sight distance shall be corrected to meet the minimum requirements specified in this section.

.2 Design Speed

2.1 The design speeds given in Table 2.1 shall be adopted for various terrain classification (terrain is classified by the general slope of the ground across the highway alignment).
Table 2.1 Design Speed

<table>
<thead>
<tr>
<th>Nature of Terrain</th>
<th>Cross slope of the ground</th>
<th>Design speed (km/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ruling</td>
</tr>
<tr>
<td>Plain and Rolling</td>
<td>Up to 25 per cent</td>
<td>100</td>
</tr>
<tr>
<td>Mountainous and Steep</td>
<td>More than 25 per cent</td>
<td>60</td>
</tr>
</tbody>
</table>

Short stretches (say less than 1 km) of varying terrain met with on the road stretch shall not be taken into consideration while deciding the terrain classification for a given section of Project Highway.

2.2.2 In general, the ruling design speed shall be adopted for the various geometric design features of the road. Minimum design speed shall be adopted only where site conditions are restrictive and adequate land width is not available. Such stretches shall be as indicated in Schedule ‘B’ of the Concession Agreement.

2.3 Right-of-Way

The ROW available for the Project Highway shall be as given in Schedule- A of the Concession Agreement. The Authority would acquire the additional land required, if any. The land to be acquired shall be indicated in Schedule ‘B’ of the Concession Agreement. The minimum Right of Way for non-urban and urban areas should be as prescribed in IRC:73 and IRC:86 respectively.

2.4 Lane width of Carriageway

The standard lane width of the Project Highway shall be 3.5 m.

2.5 Median

2.5.1 The median shall be either raised or depressed. The width of median is the distance between inside edges of carriageway. The type of median shall depend upon the availability of Right of Way. The minimum width of median, subject to availability of Right of Way, for various locations shall be as in Table 2.2.

Table 2.2: Width of Median

<table>
<thead>
<tr>
<th>Type of Section</th>
<th>Minimum Width of Median (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plain and Rolling terrain</td>
</tr>
<tr>
<td></td>
<td>Raised</td>
</tr>
<tr>
<td>Open country with isolated built up area</td>
<td>4.5</td>
</tr>
<tr>
<td>Built up area</td>
<td>2.0</td>
</tr>
<tr>
<td>Approach to grade separated structures</td>
<td>4.5</td>
</tr>
</tbody>
</table>
The type and widths of median in various stretches of Project Highway shall be as indicated in Schedule ‘B’.

5.2 The median shall have suitably designed drainage system so that water does not stagnate in the median.

5.3 In case of depressed median, a minimum 0.6 m width adjacent to carriageway in either direction shall be paved.

5.4 As far as possible, the median shall be of uniform width in a particular section of the highway. However, where changes are unavoidable, a transition of 1 in 20 shall be provided.

5.5 In the case of depressed median, metal beam type (double beam) crash barriers shall be provided at either side of the median. Suitable shrubs as per Section 11 of this Manual shall be provided.

5.6 Suitable antiglare measures such as metal/plastic screens shall be provided in flat stretches or on horizontal curves to reduce headlight glare from opposite traffic. The total height of screen including the height of the barrier shall be 1.5 m.

6 Shoulders

6.1 Width of Shoulders

The shoulder width on the outer side (left side of carriageway) shall be as given in Tables 2.3 and 2.4.

Table 2.3 Width of Shoulders in Plain and Rolling Terrain

<table>
<thead>
<tr>
<th>Type of Section</th>
<th>Width of Shoulder (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Paved</td>
</tr>
<tr>
<td>Open country with isolated built up area</td>
<td>1.5</td>
</tr>
<tr>
<td>Built up area</td>
<td>2.0</td>
</tr>
<tr>
<td>Approaches to grade separated structures</td>
<td>2.0</td>
</tr>
<tr>
<td>Approaches to bridges</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Table 2.4: Width of Shoulders in Mountainous and Steep Terrain (Hilly Area)

<table>
<thead>
<tr>
<th>Type of Section</th>
<th>Width of Shoulder, including drain and crash barrier as applicable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open country with isolated built up area</td>
<td>1.5 (on hill side) 2.0 (on valley side) Earthen Shoulder</td>
</tr>
<tr>
<td>Built up area and approaches to grade separated structures/bridges</td>
<td>1.5 (on hill side) 2.0 (on valley side) Raised Footpath along with provision of adequate drainage along and across the footpath</td>
</tr>
</tbody>
</table>

Note: In mountainous and steep terrain, the scope of work defined by the Authority may be two-lane carriageways on different alignments (contours). In that case, IRC SP 73 - 2007 Manual of Specifications and Standards for two-laning of Highways shall apply to the two-lane carriageways on different alignments (contours).

2.6.2 Type of Shoulder

The type of shoulder shall be as below:

(i) In the built up section and approaches to the grade separated structures, the shoulder shall be paved in full width.

(ii) Earthen shoulders shall be covered with 150 mm thick layer of granular material conforming to the requirements given in Clause 401 of MORTH Specifications.

(iii) In embankments with height more than 6.0 m, the granular shoulder may be raised with provision of kerb channel to channelize the drainage as an erosion control device in accordance with Section 6.

(iv) The composition and specification of the paved shoulder shall be same as that of the main carriageway.

2.7 Roadway Width

2.7.1 The width of roadway shall depend upon the width of carriageway, shoulders and th
On horizontal curves with radius up to 300 m, width of pavement and roadway in each carriageway shall be increased as per Table 2.5.

### Table 2.5: Extra Width of Pavement and Roadway in each carriageway

<table>
<thead>
<tr>
<th>Radius of Curve</th>
<th>Extra Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-100 m</td>
<td>0.9 m</td>
</tr>
<tr>
<td>101-300 m</td>
<td>0.6 m</td>
</tr>
</tbody>
</table>

#### Crossfall

1. The crossfall on straight sections of road carriageway, paved shoulders and paved portion of median shall be 2.5 per cent for bituminous surface and 2.0 per cent for cement concrete surface.

2. The crossfall shall be unidirectional for either side carriageway sloping towards the shoulder in straight reaches and towards the lower edge on horizontal curves. The camber on the existing road shall be modified to unidirectional crossfall.

3. The crossfall for granular shoulders on straight portions shall be at least 0.5 per cent steeper than the slope of the pavement and paved shoulder subject to a minimum of 3.0 per cent. On super elevated sections, the earthen portion of the shoulder on the outer side of the curve would be provided with reverse crossfall of 0.5% so that the earth does not drain on the carriageway and the storm water drains out with minimum travel path.

#### Geometric Design

1. Geometric design shall conform to IRC.73, except as otherwise indicated in this Manual.

2. All horizontal curves shall consist of circular portion flanked by spiral transitions at both ends.

3. Superelevation
Superelevation shall be limited to 7 per cent, if radius of curve is less than desirable minimum radius. It shall be limited to 5 per cent, if radius is more than desirable minimum.

2.9.4 Radii of Horizontal Curves

The minimum and absolute minimum radii of horizontal curves for various classes of terrain are given in Table 2.6.

Table 2.6: Minimum Radii of Horizontal Curves

<table>
<thead>
<tr>
<th>Nature of terrain</th>
<th>Desirable Minimum</th>
<th>Absolute minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain and Rolling</td>
<td>400 m</td>
<td>250 m</td>
</tr>
<tr>
<td>Mountainous and Steep</td>
<td>150 m</td>
<td>75 m</td>
</tr>
</tbody>
</table>

The radius of horizontal curves for various terrain conditions shall not be less than the desirable minimum values given in Table 2.6 except for Sections as indicated in Schedule 'B'. For such Sections, the radius shall not be less than absolute minimum.

2.9.5 Sight Distance

The safe stopping sight distance and desirable minimum sight distance for divided carriageway for various design speeds are given in Table 2.7. The desirable values of sight distance shall be adopted unless there are site constraints. A minimum of safe stopping sight distance shall be available throughout.

Table 2.7: Safe Sight Distance

<table>
<thead>
<tr>
<th>Design Speed (km/hr)</th>
<th>Safe Stopping sight distance (m)</th>
<th>Desirable minimum sight distance (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>180</td>
<td>360</td>
</tr>
<tr>
<td>80</td>
<td>130</td>
<td>260</td>
</tr>
<tr>
<td>60</td>
<td>90</td>
<td>180</td>
</tr>
<tr>
<td>40</td>
<td>45</td>
<td>90</td>
</tr>
</tbody>
</table>

2.9.6 Vertical Alignment

2.9.6.1 The vertical alignment should provide for a smooth longitudinal profile. Grade changes shall not be too frequent as to cause kinks and visual discontinuities in the profile. In this regard, directions given in IRC : 73 should be kept in view.

2.9.6.2 Gradients
The ruling and limiting gradients are given in Table 2.8.

Table 2.8: Gradients

<table>
<thead>
<tr>
<th>Nature of terrain</th>
<th>Ruling gradient</th>
<th>Limiting gradient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain and Rolling</td>
<td>3.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Mountainous</td>
<td>5.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Steep</td>
<td>6.0%</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

9.6.3 Long sweeping vertical curves shall be provided at all grade changes. These shall be designed as square parabolas.

9.6.4 Design of vertical curves and its coordination with horizontal curves, shall be in accordance with IRC: SP: 23.

10 Lateral and Vertical Clearance at Underpasses

Wherever a cross road is proposed to be taken below the Project Highway, minimum clearances at underpasses shall be as follows:

10.1 Lateral Clearance

(i) Full roadway width at the approaches shall be carried through the underpass. This width shall not be less than 12 m (7 m carriageway + 2 x 2.5 m shoulder width on either side) or as indicated in Schedule 'B'.

(ii) Guardrails / crash barriers shall be provided for protection of vehicles from colliding with the abutments and piers and the deck of the structures.

(iii) The width of cattle and / or pedestrian underpass shall not be less than 5 m.

10.2 Vertical Clearance

Vertical clearance at underpasses shall not be less than the values given below:

<table>
<thead>
<tr>
<th></th>
<th>Vehicular underpass</th>
<th>5.5 m</th>
<th>Pedestrian and Cattle underpass</th>
<th>3.0 m (to be increased to 4.5m, in case certain categories of animals such as elephant/camel are expected to cross the Project Highway frequently. This will be as specified in Schedule 'B')</th>
</tr>
</thead>
</table>
Wherever existing slab culverts and minor bridges allow a vertical clearance of more than 2m, these can be used in dry season for pedestrian and cattle crossing by providing necessary flooring. This will not be a substitute for normal requirements of pedestrian and cattle crossings as per para 2.13.3.

2.11 Lateral and Vertical Clearance at Overpasses
Wherever any structure is provided over the Project Highway, the minimum clearances at overpasses shall be as follows:

2.11.1 Lateral Clearance
Full roadway width shall be carried through the overpass structure unless otherwise specified in Schedule ‘B’. Provision shall also be made for future widening of the Project Highway to 6-lane with service roads. The abutments and piers shall be provided with suitable protection against collision of vehicles. Crash barriers shall be provided on abutment side and on sides of piers for this purpose. The ends of crash barriers shall be turned away from the line of approaching traffic.

2.11.2 Vertical Clearance
A minimum 5.5 m vertical clearance shall be provided at all points of the carriageway of the Project Highway.

2.12 Access Control
2.12.1 Access
Access to the Project Highway shall be partially controlled. In general, access to the Project Highway shall be provided at the following locations:

(i) Intersection with National Highways
(ii) Intersection with State Highways
(iii) Intersection with Major District Roads
(iv) Intersection with Village Roads/Other District Roads, subject to a minimum distance of 3 km from the nearest intersection.

The locations of intersections shall be specified in Schedule ‘B’.

2.12.2 Service Roads

2.12.2.1 The location and length of service roads, to be constructed by the Concessionaire shall be specified in Schedule ‘B’ of the Concession Agreement. The width of the service road shall be 7.0m.
For the stretches where total length of a bridge is less than 60 m and the service road is required to be provided on both sides of the stream, then the service road, shall continue across the stream and suitably designed 2-lane bridge structure shall be provided. In cases involving bridges of 60 m length or more, separate bridge structures may not be provided and service road shall be merged with the Project Highway at 50 m distance before the bridge structure, unless otherwise specified in Schedule 'B' of the Concession Agreement.

12.2.3 Wherever service roads are provided, provision shall be made for proper entry and exit ramps between the main highway and the service roads, duly keeping in view future widening of main highway to six-lanes. The layout shall be as per Figure 2.1A to 2.1H.

Grade Separated Structures

13.1 The type, location, length, number and the openings required and approach gradients for various grade separated structures shall be as specified in Schedule 'B' of the Concession Agreement. The approach gradient to the grade separated structure shall not be steeper than 2.5 per cent (1 in 40).

13.2 Vehicular Underpass/Overpass

The vehicular under/overpass structures shall be provided at the intersection of the Project Highway with all the National Highways and State Highways. Such under/over passes shall also be provided across other categories of roads carrying an average daily traffic of more than 5000 Passenger Car Units (PCUs) on the date of inviting bids. The structure may be either an underpass or an overpass depending upon the nature of terrain, vertical profile of road, availability of adequate right of way, etc. Unless otherwise specified in Schedule 'B' of the Concession Agreement, the Project Highway shall be carried at the existing level in rural areas and the cross road would be either an underpass or overpass and the entire cost involved in lowering or raising the existing cross road would be included as part of the cost of the Project Highway. However, in urban areas, the cross road shall be carried at the existing level, unless otherwise specified in Schedule 'B' of the Concession Agreement. Decision whether the cross road or the Project Highway will be carried at the existing level will be taken at the time of preparing the feasibility report and would be based on considerations of drainage, land acquisition, provision of ramps for the grade separated facility, height of embankment and project economy etc.
2.13.3 Cattle and Pedestrian Underpass/Overpass

These shall be provided as specified in Schedule 'B' of the Concession Agreement.

(i) An underpass/overpass for crossing of cattle and pedestrians may not be necessary within a distance of 2 km from Vehicular underpasses.

(ii) The width of Pedestrian or Cattle crossing shall not be less than 5 m.

(iii) The pedestrian crossings shall have provision for movement of physically challenged persons.

(iv) Underpasses shall be preferred to overpasses.

(v) Pedestrian underpass/overpass shall also be provided within a distance of 200 m from a school or hospital or factory/industrial area.

2.13.4 Road Over Bridges (ROBs)/Road Under Bridges (RUBs) shall be provided as per Section-7 of this Manual.

2.14 Median openings

2.14.1 Median openings shall not be spaced closer than 2 km. Additional controlled openings shall also be provided for inspection, and diversion of traffic during repair and rehabilitation.

2.14.2 Median opening shall not be provided in front of the service road entry. The distance between the service road entry and the median opening shall be at least equal to the sum of length of acceleration lane, weaving length, and deceleration length. Location of opening shall be so decided as to minimize intraflow. This distance shall however be not less than 150 m.

2.14.3 All median openings shall be provided with additional 3.5 m wide shelter lane by the side of median in both directions for waiting of vehicles to take U turn. Wherever required, horizontal geometrics of the road shall be suitably adjusted.

2.14.4 Length of median opening shall not be less than 20 m.

2.15 Fencing

Fencing shall be provided between the service road and the Project Highway to prevent the pedestrians, local vehicles and animals entering the highway. The fence...
shall be either of metal double beam crash barrier or pedestrian guardrail given in Para 9.10 of this Manual.

Typical cross sections

Typical cross sections of Project Highway are given in Fig 2.2 to 2.10 for various conditions as below:

Figure 2.2 shows typical cross section Type-A1 for 4-lane divided highway in open country with isolated built-up area in plain/rolling terrain, without service roads and with depressed median.

Figure 2.3 gives typical cross section Type-A2 for 4-lane divided highway in open country in plain/rolling terrain with service roads on both sides and with depressed median.

Figure 2.4 shows typical cross section Type-A3 for 4-lane divided highway in open country with isolated built-up area in plain/rolling terrain, without service roads and with raised median.

Figure 2.5 gives typical cross section Type-A4 for 4-lane divided highway in open country in plain/rolling terrain with service roads on both sides and with raised median.

Figure 2.6 shows typical cross section Type-B for 4-lane divided highway in built-up section in plain and rolling terrain with service roads on both sides and with raised median.

Figure 2.7 shows typical cross section Type-C1 for 4-lane divided highway on different contours in open country with isolated built-up area in mountainous terrain.

Figure 2.8 shows typical cross section Type-C2 for 4-lane divided highway on different contours in built up section in mountainous terrain.

Figure 2.9 shows typical cross section Type-C3 for 4-lane divided highway at same level in open country with isolated built-up area in mountainous terrain.

Figure 2.10 shows typical cross section Type-C4 for 4-lane divided highway at same level in built up section in mountainous terrain.
2.17 Capacity of Four-lane highway
For the purpose of augmentation of the facilities and upgradation of the Project Highway, the design service volume for different terrain conditions and level of service shall be as specified in Table 2.9.

Table 2.9 Design Service Volume for Four-lane Highways in PCUs per day

<table>
<thead>
<tr>
<th>Terrain</th>
<th>Design Service Volume in PCUs per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level of Service</td>
</tr>
<tr>
<td>Plain and Rolling</td>
<td>40,000</td>
</tr>
<tr>
<td>Mountainous and Steep</td>
<td>20,000</td>
</tr>
</tbody>
</table>

Note: The definition of PCU here is as per IRC Codes and Guidelines and not the definition given in MCA

2.18 Warrants for Six-Laning
Unless otherwise specified in the Concession Agreement, the Project Highway shall be widened to 6-lane when total traffic including the traffic on service roads, if any, reaches the design service volume corresponding to Level of Service 'C' for 4-lane highway specified in Table 2.9.
SECTION 3

INTERSECTIONS
AND
GRADE SEPARATORS
INTERSECTIONS AND GRADE SEPARATORS

Introduction

The intersections to be provided shall be one of the following types:
(i) At-grade Intersections
(ii) Grade separated intersections without ramps
(iii) Interchanges

The types and locations of Intersections, Interchanges and Grade-separated Intersections without ramps shall be based on requirements stipulated in IRC:SP:41, IRC:5, IRC:92, MORTH Specifications for Road and Bridge works. These shall be specified in Schedule ‘B’ of the Concession Agreement.

3.1.2 The existing intersections, which are deficient with respect to the minimum requirements shall be improved to the prescribed standards. Additional land, if any, required for improving the existing intersections shall be provided by the Authority.

3.2 At-grade Intersections

3.2.1 The type of intersections to be adopted shall be decided on the basis of parameters like number of intersecting legs, traffic volume/speed, type of traffic control etc. Properly designed intersections shall be provided at all at-grade crossings. Rotary shall not be provided.

3.2.2 (i) The intersections shall be designed having regard to flow, speed, composition, distribution and future growth of traffic. Design shall be specific to each site with due regard to physical conditions of the site available. The design of different elements of intersection shall be done as per IRC: SP: 41 “Guidelines on Design of At-grade Intersections in Rural and Urban Areas” including other criteria given in this Manual. MORTH-Type Designs for Intersection on National Highways may also be referred to, wherever required to develop suitable layout and design of At-grade Intersections.
At multi leg intersections, the points of conflict should be studied carefully and possibilities of realigning one or more of the intersecting legs and combining some elements to reduce the conflicting movements shall be examined. The object shall be to simplify the design and appropriate control devices added to ensure more efficient and safe operation.

The channelising islands shall start from the edge of the paved shoulder. This principle shall also apply in case of MORTH – Type Designs for Intersections on National Highways.

Cross roads shall join directly on to service roads and the entry to and exit from the Project Highway shall be through end connections as shown in figures 2.1A to H.

Grade separated intersections and interchanges

1. Grade separated intersections, without ramps, shall be provided at locations where traffic on cross roads is moderate to heavy. Under this type, two cross roads separate at different grades (as Road Under Bridge or Road Over Bridge). The access from Project Highway to the cross roads in case of such grade separated intersections without ramps, shall be through other existing roads/ service roads.

2. An interchange is justified at locations where traffic on cross road is heavy and an at grade intersection fails to handle the volume of turning, merging and diverting traffic.

3. Geometric Standards for design

The geometric design standards for various elements of grade separators shall be as given in IRC:92. Gradient for approaches shall not be steeper than 2.5% (1 in 40).

4. Design of Structures

Design of structures shall conform to Section 7 of this Manual. Minimum length of viaduct required to be provided shall be specified in Schedule ‘B’.

5. Lighting

Lighting requirement shall be as per Section 12 of this Manual. The top and underside of the grade separated structures and interchange area at the ground level upto 50 m beyond the point from where flaring of the main carriageway takes place shall be provided with lighting.
Detailed Design and Data for review by the IE

The Concessionaire shall submit the details of the ground surveys, traffic data, traffic forecast, design and drawings of the intersections and interchanges showing all safety features to the Independent Engineer for review and comments, if any.
SECTION – 4

EMBANKMENT

&

CUT SECTIONS
Section – 4

EMBANKMENT & CUT SECTIONS

General

1.1 The design and construction of the road in embankment and in cuttings shall be carried out in accordance with Section 300 of MORTH Specifications and the requirements, and standards and specifications given in this Section. This Section also covers specifications for subgrade and earthen shoulders.

1.2 Efforts should be made to remove the inherent deficiencies in plan and profile of the existing road. The final centre line of the road and the road levels shall be fixed duly considering all the relevant factors covering structural soundness, safety and functional requirements as per relevant IRC Codes and provisions of this Manual.

1.3 The existing road embankment shall be widened/ modified to the specified cross sectional details.

4.2 Embankment

4.2.1 The height of the embankment shall be measured with respect to the finished road levels. The following principles shall be kept in view while fixing the road level:

(i) No section of the road is overtopped. The finished road level shall be at least 0.6 m above ground level (except in cutting and transition length).

(ii) The bottom of subgrade is generally 1.0 m above the high flood level/high water table. However, in the case of existing old roads where it may be difficult to fulfill this criterion without needing reconstruction or raising in substantial length, the criteria may be relaxed depending on site conditions, ensuring that the bottom of subgrade is 0.6 m above High Flood Level (HFL). The HFL should be decided by intelligent inspections, local observations, enquiries and studying the past records. If raising of any section (s) of the existing road is required, the same shall be specified in Schedule ‘B’ of the Concession Agreement.

4.2.2 Materials and Physical Requirements

4.2.2.1 Sourcing of materials for embankment and subgrade construction, as well as compliance with environmental requirements in respect of excavation and borrow areas under the applicable laws shall be the sole responsibility of the Concessionaire.
The material to be used in subgrade shall satisfy the design California Bearing Ratio (CBR) at the specified density and moisture content.

The embankment and subgrade shall be compacted to satisfy the minimum compaction requirements given in Clause 305 of MORTH Specifications.

Structural features and design of embankment

Embankment with height 6.0 m or above shall be designed in accordance with IRC:75 taking into account slope stability, bearing capacity, consolidation, settlement and safety considerations based on geotechnical and investigation data. Where the embankment is to be supported on a weak stratum, appropriate remedial/ground improvement measures shall be taken.

2 Side slopes shall not be steeper than 2H:1V unless soil is retained by suitable soil retaining structures.

3.3 The side slopes shall be protected against erosion by providing a suitable vegetative cover, kerb channel, chute, stone/cement concrete block pitching or any other suitable protection measures depending on the height of the embankment and susceptibility of soil to erosion. Drainage arrangement shall be provided as per Section 6 of this Manual.

4 Use of Pond Ash for Embankment Construction

Where pond ash is used for embankment construction in pursuance of the instructions of the Ministry of Environment and Forests or otherwise, the embankment shall be designed and constructed in accordance with IRC: SP:58.

Roadway in Cutting

The road level shall be fixed, keeping in view the provisions of relevant IRC Codes.

Soil Investigations and Design Report

1 General

The Concessionaire shall carry out necessary soil surveys, and field and laboratory investigations for selecting appropriate borrow pits, identifying and treating problematic ground locations, if any, and for finalizing structural features and design of the
Embarkment and cut sections and establishing improved ground properties. A report on the soil investigation shall be furnished along with the design.

Soil Investigations for Embankment

Soil investigations shall cover the following:

(a) Soil investigations and tests in accordance with the requirements specified in IRC: SP:19 and shall be reported in the Proforma given in Table 1 of IRC:SP:19. In addition to this, all tests as per the requirements of MORTH Specifications shall be reported.

(b) In respect of embankments with height more than 6 m, additional investigations and soil tests as per IRC: 75 and Appendix 10 of IRC: SP:19.

(c) Information regarding the topography, high flood level, natural drainage conditions, highest sub-soil water level, and the nature and extent of inundation, if any.

(d) The characteristics of embankment foundation including the presence of any unsuitable/weak strata, marshy areas, water logged areas, etc.

(e) Along the alignment of the road, where unstable strata, soft material or poor subsoil conditions have been met with at the foundation level, the soil profile shall be drawn after determining through borings, the type of soil at different levels. The borings shall be at maximum interval of 100 m to a depth of 2 m or more below the existing ground as necessary. In the case of high embankments, the borings shall be taken down to a depth equal to twice the height of the embankment.

(f) Any particular construction problems of the area or other important features.

(g) Geotechnical properties of pond ash, covering parameters specified in Table 1 of IRC: SP: 58 and Optimum Moisture Content (OMC) - dry density relationship for heavy compaction. This information shall be furnished, in case pond ash is used in embankment construction.

4.4.3 Soil Investigations for Cut Sections
All investigations and tests shall be carried out in accordance with the requirements specified in IRC:SP:19 and information regarding depth of water table, seepage flow, presence of any weak, unstable or problematic strata.

Design Report

Concessionaire shall prepare the design report with all relevant details including the following:

Road Embankment

(a) The detailed design of the embankment, remedial / ground improvement treatment where required. For embankments with height more than 6 m, construction methodology should also be included.

(b) Design of retaining walls / reinforced earth structures.

(c) Design of protection measures for embankment slope and drainage arrangement.

(d) Design of pond ash embankment in case use of pond ash is proposed.

(e) Any additional information relevant to the design of embankment.

(ii) Cut Section

(a) Type of cutting involved and proposed cut slopes shall be provided in accordance with the nature of the soil encountered. Where required, benching including use of slope stability measures like pitching, breast walls, etc. shall be adopted to make the slopes stable and safe.

(b) Design and details of erosion control, slope protection measures, etc.

(c) In cut sections in hilly terrain, the problem of seepage flow is common. Where such conditions exist, necessary measures shall be taken including provision of deep side drains to intercept the seepage flow and discharge the drained water into suitable outlets to avoid any damage to road and cut slopes. Design and details of drainage arrangement for sub-soil and surface water shall be furnished. It should be ensured that rain water and seepage water is quickly drained out. The gradient of drain shall not be flatter than 1 in 200.

(d) Any other additional information relevant to the design of cut slopes.
SECTION - 5

PAVEMENT DESIGN
PAVEMENT DESIGN

General

The design and construction of new pavement sections, and of strengthening measures (overlay) for the existing pavement shall be carried out in accordance with the criteria, standards and specifications given in this section. Where alternative specifications or materials are proposed to bring in innovation in design etc., provisions of Para 1.12 of this Manual shall apply.

The design of new pavement sections or strengthening of existing pavements shall take into account all relevant factors for assuring reliable performance and shall also satisfy the specified minimum performance requirements.

1. The Concessionaire shall undertake the necessary soil, material and pavement investigations and traffic volume and axle load studies in accordance with the good industry practice for preparing detailed designs.

2. The materials, mixes and construction practice shall meet the requirements prescribed in the MORTH/ IRC Specifications.

3. Where problematic conditions such as expansive soils, swamps or marshes, flooding, poor drainage, frost susceptible areas etc. are found to exist, adequate measures shall be adopted to deal with such site conditions.

Type of Pavement

1. Unless otherwise specified in Schedule ‘B’, the Concessionaire may adopt any type (flexible/rigid) of pavement structure for new construction.

2. Strengthening of the existing flexible pavement will be carried out by providing appropriate bituminous overlay, unless specified otherwise in Schedule ‘B’ of the Concession Agreement.
The Authority may require provision of cement concrete pavement on the new carriageway and/or replacement of existing pavement depending upon specific site conditions. Such requirements shall be as specified in Schedule 'B' of the Concession Agreement. The minimum design, construction, performance and maintenance requirements for cement concrete pavements will be specified by the Authority and Schedule-K of the Concession Agreement will be modified accordingly.

3 Method of Design – New Pavements

3.1 Method of Design of Flexible Pavement

The new pavement shall be designed in accordance with the IRC: 37 Guidelines for the Design of Flexible Pavements.

3.2 Method of Design of Rigid Pavement

Rigid pavement shall be designed in accordance with the method prescribed in IRC:58 "Guidelines for the Design of Plain Jointed Rigid Pavements for Highways".

5.4 Design Requirements for New Pavement Sections

5.4.1 Flexible Pavement - Design Period and Strategy

(i) Flexible pavement shall be designed for a minimum design period of 15 years or operation period, whichever is more. Stage construction will be permissible subject to the requirements specified in para (ii) below.

(ii) Alternative strategies or combination of initial design, strengthening and maintenance can be developed by the Concessionaire to provide the specified level of pavement performance over the operation period subject to satisfying the following minimum design requirements.

(a) The thickness of sub-base and base of pavement section is designed for a minimum design period of 15 years or the operation period, whichever is more and the bituminous surfacing for a minimum design period of 10 years.
The pavement shall be strengthened by bituminous overlay as and when required to extend the pavement life to full operation period. The thickness of bituminous overlay shall be determined on the basis of IRC: 81.

Pavement – Design Period and Strategy

The pavement shall be designed for a minimum design period of 30 years. The stage construction shall not be permitted.

Pavement Quality Concrete (PQC) shall rest over Dry Lean Concrete (DLC) base of 150 mm thickness.

DLC will meet the minimum cement and compressive strength requirement as prescribed in IRC:SP:49. DLC will extend beyond the PQC (including that in shoulder, if any) by 0.5 m on either side.

Below DLC layer, a properly designed drainage layer Granular Sub Base (GSB) of 150 mm thickness shall be provided throughout the road width. It shall be designed to obtain a drainage coefficient of not less than 20 m per day.

3. Pavement Performance Requirements

(i) The pavement structure shall be capable of giving the specified performance over the entire operation period.

(ii) The new pavement surface shall satisfy the following standards,

(a) Surface Finish As per requirements of Clauses 902 and 903 of MORTH Specifications

(b) Roughness in each lane Not more than 2000 mm/km for each lane in a km length

(c) Rutting

In wheel path measured by 3 m Straight Edge Nil

(d) Cracking or any other distress Nil
During the operation period, the pavement surface roughness or any structural or functional distress shall not exceed the values specified in Schedule-K of the Concession Agreement. Generally the pavement condition in terms of roughness, cracking and rutting should not deteriorate to the maximum values specified in Schedule-K for rectification, earlier than 5 years from the original level/ from the year of rectification. Any treatment in the form of renewal/ overlay carried out or required to restore/ correct/ improve the riding quality or any distress shall be of such thickness and specification that will restore the riding quality to roughness not exceeding 2000 mm/km.

During the operation and maintenance period, the pavement strength shall be evaluated periodically through deflection measurements (Refer to para 5.8 (ii) of this Section) and the stretches exhibiting any structural deficiency shall be rectified.

5.5. Design Traffic

5.5.1. The design traffic shall be estimated in terms of cumulative number of standard axles (8160 kg) to be carried by the pavement during the design period.

5.5.2. Estimate of the initial daily average traffic flow shall be based on at least 7 days, 24 hr classified traffic counts. IRC: 9 may be used as guidance for carrying out the traffic census.

5.5.3. Any likely change in traffic due to proposed four laning of the facility and/or future development plans, land use, shall be duly considered in estimating the design traffic.

5.5.4. Traffic growth rate shall be established for each category of commercial vehicles to be considered for design of pavement. For traffic projections, the procedure outlined in IRC: 108 may be followed. The Concessionaire shall adopt a realistic value of the rate of traffic growth, provided that annual rate of growth of commercial vehicles shall not be adopted less than 5 per cent.

5.5.5. The design traffic in case of service road shall be five million standard axles. The crust composition shall be provided accordingly.
Subgrade, whether in cut or fill, shall meet the requirements stipulated in Clause 6 of MORTH Specifications. The thickness of subgrade shall not be less than 500 mm.

Components and Materials

The pavement construction materials for sub-base, base and bituminous surfacing shall conform to the requirements prescribed in MORTH Specifications and IRC Standards.

Where several materials will adequately serve as component within the pavement structure, such as a sub-base or a base course, the Concessionaire shall have the option of using any of the materials/specifications, subject to sound engineering practice and product quality requirements.

Performance Evaluation

(i) Roughness in each lane for full length shall be measured bi-annually using appropriate approved method and equipment.

(ii) The structural evaluation of the pavement shall be made by taking deflection measurements every 5 years in accordance with the procedure given in IRC:81, unless needed earlier for stretches exhibiting severe distress during the operation and maintenance period.

Strengthening of Existing Pavements

Before strengthening treatment is prescribed, a detailed pavement condition survey and evaluation shall be carried out in accordance with IRC: 81 to determine

(i) The extent of distress and nature of deficiency in the existing pavement structure, and

(ii) Whether any special treatments e.g. provision for remedying reflection cracking, pavement internal drainage, sub-grade improvement/reconstruction, or rectification of any other deficiencies are warranted.

Necessary corrective measures to treat the identified deficiency shall be taken along with strengthening of the pavement.
5.9.3. In stretches where the pavement is damaged/deteriorated to such an extent that the use of Benkelman Beam method may not result in a realistic assessment of the strengthening treatment, pavement shall be designed as new pavement.

5.9.4. Where an existing pavement is built over an untreated expansive/ black cotton soil subgrade, its improvement/ strengthening shall be treated separately. Such stretches shall require reconstruction with provision of necessary measures such as replacement/ treatment of expansive subgrade, drainage, etc. as per the prescribed specifications and IRC: 37; and shall be designed as new pavement. Stretches to be reconstructed, whether due to expansive subgrade or having grossly deteriorated, etc. shall be specified in Schedule 'B' of the Concession Agreement.

5.9.5. No granular layer shall be provided over an existing bituminous surfacing. Situations may arise where it is envisaged to strengthen grossly deficient existing road with a granular layer in addition to the bituminous overlay, or where for camber and/or grade correction substantial thickness of profile corrective course is needed. In such cases, the existing bituminous surfacing shall be completely removed by scarifying / milling and then the pavement built up with the granular layer(s) and bituminous overlay. The thickness and composition of bituminous surfacing (Binder course and Wearing course) over the granular layer shall conform to IRC: 37.

5.9.6 Design of Overlay

(i) The thickness of the bituminous overlay shall be determined on the basis of Benkelman Beam Deflection Technique and the design traffic as per the procedure outlined in IRC: 81 "Guidelines for Strengthening of Flexible Road Pavement using Benkelman Beam Deflection Technique" as also from structural numbers of existing pavement layers.

(ii) The design period will be the same as specified for the new pavement sections vide Para 5.4.1 of this Section. The initial strengthening shall be done for a minimum design period of 10 years. Subsequent strengthening to extend the pavement to full operation period shall be implemented at the end of initial design period or earlier, in case of any structural distress in the pavement or if the surface roughness exceeds the value specified in Schedule K of the Concession Agreement.
(iii) The design traffic will be estimated as per the procedure described for new pavement.

(iv) The thickness of bituminous overlay for pavement strengthening shall not be less than 50 mm bituminous concrete, after attending to the requirements of profile corrective course.

Bituminous Mix for Overlay

(i) The specifications for the bituminous mixes for the overlay shall be as specified for bituminous surfacing for new pavement sections.

(ii) Design of recycled mix where provided shall conform to the requirements of Clause 517 of MORTH Specifications.

8.8 Pavement Performance Requirements and Evaluation

(i) The strengthened pavement shall satisfy the minimum standard and maintenance requirements specified for new pavement sections in this Manual and Schedule-K of the Concession Agreement.

(ii) The performance measurement and evaluation will be done as given in this Manual.

10 Paved Shoulders

(i) Paved shoulders shall be provided as specified in this Manual.

(ii) If the thickness of the existing paved shoulder, if any, is less than the thickness of the existing pavement, the paved shoulders shall be reconstructed to the pavement thickness in the adjoining carriageway.

11. Construction, Workmanship and Quality of Works

All materials, construction operations, workmanship, surface finish and quality of completed construction for all pavement works including sub-grade, sub-base, base course, bituminous surface courses for both new pavement and strengthening of
existing pavements, shoulders, service roads, etc. shall conform to the specified requirements and comply with the provisions of Section 900 of the MORTH Specifications.

5.12. Premature Distress

Notwithstanding the minimum design, specifications and standards specified in the preceding paras for new pavements and strengthening of existing pavements, if the pavement shows premature distress in the form of cracking, rutting, patching, loss of camber or any other structural or functional distress, necessary remedial measures by strengthening/resurfacing/recycling shall be undertaken for conforming to the minimum requirements prescribed in Schedule-K of the Concession Agreement. In case of repetition of the distress, reconstruction shall be resorted to after proper investigations.

5.13 Detailed Design Report

5.13.1 The new pavement design and strengthening proposals formulated on the basis of the detailed investigations and studies shall be submitted to the Independent Engineer along with Data Collection, Data Evaluation and Design Reports.

5.13.2 Data Collection

Following details shall be included in the report:

(i) Soil investigation data for new pavements as per Table 13.2 of IRC: SP: 19. Report shall include OMC–dry density relationship with heavy compactor and soaked CBR values in addition to other data and information as per the prescribed Proforma.

(ii) Test values of aggregate for pavement courses as per Tables 13.3 and 13. of IRC: SP: 19. All tests as per requirements of MORTH Specifications shall be reported in addition to the tests and information included in the above mentioned Tables.

(iii) Classified traffic counts in Proforma 1 of IRC: SP: 19.

(iv) Axle load surveys and VDF values for each category of commercial vehicles as per Proforma 4 of IRC: SP: 19.

Estimation of traffic growth and traffic projections for pavement design.
(vi) Pavement condition data in the Proforma given in Table 2 of IRC: 81.

(vii) Pavement roughness data determined through appropriate method as approved by the Authority.

(viii) Pavement Deflection Data measured by Benkelman Beam as per the procedure detailed in IRC: 81. Pavement deflection data shall be recorded in the prescribed Proforma vide Table 3 of IRC 81. The deflection data shall be accompanied with the characteristics of the sub-grade soil covering type of sub-grade soil, field moisture content (at the time of deflection survey), average annual rainfall in the area, and pavement temperature at the time of deflection survey.

(ix) Any other relevant information required by the Independent Engineer for review and comments, if any.

3. Data Evaluation

The report shall inter alia cover:

(i) Data evaluated – soil characteristics and subgrade strength, pavement distress, pavement deflection, riding quality, skid resistance, drainage aspects, etc.

(ii) Pavement deficiencies, drainage and constraints.

(iii) Any other relevant details.

3.4 Detailed Design

The Report shall contain the detailed design of the preferred solution along with any special treatment proposed for adoption. Any departures from the specifications stated herein shall be supported with authentic standards and specifications and accepted practice.
SECTION - 6

HIGHWAY DRAINAGE
Section - 6
HIGHWAY DRAINAGE

General

The design and construction of surface and subsurface drains for highway drainage shall be carried out in accordance with the requirements of this Section.

For efficient drainage system for the entire Project Highway including structures and facilities, directions contained in Clause 309 of MORTH Specifications, IRC:SP:42 and IRC:SP:50 as relevant shall be followed.

In road sections in cuttings and at underpasses where it may not be possible to drain out the water using gravity flow, necessary arrangement for pumping shall be made.

Detailed survey for levels along the proposed longitudinal drains shall be carried out on both sides of the Project Highway. The bottom levels of these drains shall meet the culverts and bridges.

Surface Drainage

2.1 The selection of type of roadside drains shall be based on the magnitude and duration of flow. The roadside drains shall be designed on the principles of flow in open channel.

2.2 The roadside drains shall not pose any danger to traffic, slopes of cuttings, embankment, pavement or structures.

2.3 As far as possible, longitudinal slope shall not be less than 0.5 percent for lined drains and 1.0 percent for unlined drains. Permissible non-erodible flow velocity for corresponding earth surface as mentioned in Clause 9.4 of IRC:SP:42 shall be kept in view.

2.4 The side slopes of the unlined drains shall be as flat as possible and shall not be steeper than 2H: 1V.

2.5 The drains shall be provided with CC lining in the following situations...
(i) When due to space constraint, the drains are located near the toe of the embankment or near structures.

(ii) Drains located in built-up areas.

(iii) Flow velocity is more than 0.3 m to 1 m/s in silt and sand; and more than 1.5 m/s in stiff clay.

6.2.6 In built-up areas, covered or piped drains, with manholes at suitable intervals to desilt the pipes, shall be provided.

6.3 Median Drainage

6.3.1 Proper arrangement for drainage of median shall be provided. The median drain should have adequate longitudinal slope to the nearest culvert to drain off transversely.

6.3.2 In case the carriageway is sloping towards unkerbed median (wider than 5 m), provision of a central swale shall be made for drainage of the median. The swale shall slope longitudinally for drainage, water intercepted by inlets at intervals and discharged through transverse drains into outlet channel.

6.3.3 Median of width 7 m or less shall be turfed or paved and could be crowned for drainage across the pavement.

6.3.4 In superelevated sections, proper arrangement for drainage of raised carriageway and median shall be made without allowing water to drain on the other carriageway.

6.4 Drainage of Embankment with height above 3 m

6.4.1 In embankments with height more than 3 m and approaches to bridges, special arrangement for protection of embankment slopes shall be essential in order to ensure that embankment slopes maintain their shape during the monsoon season. In this respect, directions contained in Clause 7 of IRC:SP:42 may be followed as appropriate for the climatic conditions of the area of the Project Highway.

6.4.2 Drainage arrangement shall include provision of kerb channel at the edges of the roadway to channelise the water, and Cement Concrete (CC) lined chutes along the...
slopes at designed intervals to discharge the water into side channels at the bottom along with appropriate protection of the slope. The slope protection material and chutes shall be kept well maintained at all times.

The chute drains and drains at toe of the embankment shall be of Plain Cement Concrete (M 15 grade), over proper bedding.

Catch Water Drains

Suitable catch water drains shall be provided on the hill slope above cutting to collect and remove surface water run-off from upper reaches. These drains shall be of trapezoidal shape and stone lined and cement pointed.

The catch water drains shall be designed to carry the intercepted water to the nearest culvert or natural drainage channel.

It shall be ensured that the catch water drains are provided in stable hill slopes outside the periphery of slide/unstable areas.

Where required, lined chutes shall be provided to lead the discharge to the catch pit of culvert or to a natural drainage channel.

Sub-surface Drains

The sub-surface drainage shall be provided

(i) for lowering the level of water table for drainage of sub-grade;
(ii) to intercept or drain out free water in cut slopes; and
(iii) for drainage of pervious subbase in situations where it may not be practicable to extend the subbase across the shoulder.

Sub-surface drains shall not be used for surface drainage.

The sub-surface drains shall be:

(i) Close jointed perforated pipes or open jointed unperforated pipes in trenches with backfill material around pipes.
(ii) Aggregate drains consisting of free draining material in the trench without any pipe.

6.6.4 Perforated pipes and unperforated pipes shall meet the requirements of Clause 309.2 of the MORTH Specifications.

6.6.5 The internal diameter of the pipe shall not be less than 150 mm.

6.6.6 The sub-surface drains shall be located not less than 0.5 m below the sub grade.

6.6.7 Backfill material:

(i) Backfill material shall be free draining sand, gravel or crushed stone designed on inverted filter criteria for filtration and permeability, or of an appropriate grading conforming to the requirements of Table 300.3 of the MORTH Specifications.

(ii) Thickness of backfill material around the pipe shall not be less than 150 mm. The minimum thickness of material above the top of the pipe shall be 300 mm.

6.6.8 Sub-surface drains outside the road pavement shall be sealed at the top to avoid percolation of surface water into these drains.

6.6.9 Use of Geo-textile

(i) The sub-surface drains may be designed using appropriate geotextile to serve the functions of filtration and separation.

(ii) The sub-surface drains can be provided with geotextile either along the trench or around the pipe or both.

(iii) The geotextile shall satisfy the requirements of Clause 702 of the MORTH Specifications.

6.6.10 Trench excavation, laying of pipe, backfilling, and use of geosynthetics shall conform to the requirements of Clause 309.3 of the MORTH Specifications.

6.6.11 The drain outlet shall be a free outlet and shall be provided as per Clause 309.3 of the MORTH Specifications.
12 Aggregate drains

(i) The trench for aggregate drain shall be of minimum 300 mm width and cut to a depth to expose the granular pavement courses to be drained.

(ii) Aggregate for the drain shall be gravel, stone aggregate or slag of grading as per Table 8 of IRC:SP:42.

(iii) The aggregate drain shall be provided with a geo-textile wrap to act as filtration and separation layer.

13 Design of subsoil drainage shall be based on a rational basis. Reference may be made to IRC:SP-42

Internal Drainage of Pavement Structure

(i) Boxed type construction in which pavement is housed in earthen shoulders shall not be provided.

(ii) The sub-base shall be extended across the shoulders for efficient drainage of pavement.

(iii) The granular sub-base shall be of proper design and grading to perform satisfactorily as a drainage layer. The drainage layer shall not have material finer than 75 micron size.

(iv) A suitable filter of granular material or geotextile to act as filtration and separation layer shall be incorporated, where necessary, between the subgrade and sub-base to prevent clogging.

3.8 Survey, Investigation and Design Report

The Concessionaire shall carry out proper surveys and investigations for detailed design of the drainage system. The proposal for drainage system supported with survey investigation report and detailed design report shall be submitted to the Independent Engineer for review and comments, if any.

3.8.1 Drainage Studies

The survey and investigation and drainage studies shall include:

(i) Alignment plan, longitudinal and cross sections, contour map.
(ii) Hydrological data
Drainage area, water shed delineation, direction of flow, location of outfalls, existing surface drains, ground surface condition, rainfall, flood frequency, etc.

(iii) Data for hydraulic design of drains

(iv) Geo-technical investigations for sub surface strata, level of water table, seepage flow etc.

(v) Identification of areas requiring sub-surface drainage.

(vi) Any other relevant information
IRC:SP:19, IRC:SP:42, IRC:SP:48 and IRC:SP:50 may be referred to.

6.8.2 Design Details

The report shall include:

(i) Estimation of design discharge.

(ii) Design of surface drains.

(iii) Design of sub-surface drains.

(iv) Drainage arrangement plan along with cross section of drains with longitudinal level, cross drainage work and a strip chart.

(v) Specifications of drains.

(vi) Any additional information as required by the IE for review of the drainage system.

6.8.3 Responsibility for Design and Adequacy

The Concessionaire shall be fully responsible for design and adequacy of the drainage system throughout the operation period as per the requirements of the Concessior Agreement.
SECTION – 7

DESIGN

OF

STRUCTURES
SECTION - 7
DESIGN OF STRUCTURES

All bridges shall be designed in accordance with the relevant Codes, Standards and Specifications and Special Publications and Guidelines of the IRC. All construction of bridges shall conform to MORTH Specifications for Road and Bridge Works.

All bridges shall have independent superstructure for each direction of travel unless specified otherwise in Schedule 'B'. Culverts may have single or independent superstructure.

All bridges shall be high level bridges unless specified otherwise in Schedule 'B' of the Concession Agreement.

Viaduct spans shall be provided if the height of solid embankment in built-up sections is more than 5 m.

The width of median in the culvert and bridge portion shall, as far as possible, be kept same as that in the approaches. In case width of median is different from that of approach section due to site constraints, suitable transition shall be provided near approaches for guiding vehicular traffic.

The median in the portion of structures shall be treated as below:

(a) A suitably designed catch pit shall be provided to collect and carry discharge from median drain.

(b) For bridges, where the median is more than 1.2 m wide, the median shall be open to sky. The safety barrier on the median side shall be provided at a clear distance of 0.5 m from the edge of carriageway.

Suitable provision shall be made for retaining the earth in the median portion either by extending the abutment wall or constructing a new retaining wall. The abutment wall shall have provision for taking the discharge from the median. Care shall also be taken to merge the wing wall /return wall and flooring of the old bridge with those of the new bridge.

Any utility service to be carried by the structures shall be specified in Schedule 'B' of the Concession Agreement.
Loads and Stresses

The design loads and stresses shall be as per IRC: 6 appropriate for the width of carriageway, velocity of stream, location, altitude, environment, etc.

All new structures shall be designed for the condition when footpath is used as carriageway. The footpath portion may be provided at the same level as the bridge carriageway and separated by crash barrier in non built-up areas. In built-up areas, raised footpaths shall be provided.

All the components of structures shall be designed for a service life of 100 years except appurtenances like crash barriers, wearing surface and rubberized components in expansion joints and elastomeric bearings. All the requirements to achieve durability and serviceability shall be implemented.

Width of structures

Width of the culverts and bridges shall be adopted as below:

New culverts

Overall width of all new culverts shall be equal to roadway width of the approaches. The outer most face of railing/parapet shall be in line with the outer most edge of shoulder. Typical cross section of the new culverts for a 4-lane project highway is given in Fig 7.1.

New bridges

(a) The overall width of new bridges shall be same as the roadway width of the approaches. All new bridges shall have a footpath on left side of the traffic. Typical cross section of such type of new bridge with footpath for a 4-lane project highway is given in Fig 7.2.

(b) Where the daily traffic in PCUs exceeds 30,000 at the time of feasibility study/bidding, the width of new bridge shall be as per Six-lane standards vide details given in Fig. 7.3 with footpath. Such bridges shall be indicated in Schedule ‘B’.

(c) Where the length of bridge structure including grade separated structures exceeds one km, provision shall be made for passing place at the rate of one passing place for every one km (or part thereof). These shall be indicated in Schedule “B” of the Concession Agreement. However, no passing place would be provided where structures are six-lane wide.

Existing culverts
(a) All culverts which are structurally distressed or not having sufficient vent/size shall be reconstructed as new structures of width as per Sub Para 7.3 (i) of this Section.

(b) All existing culverts which are not to be reconstructed shall be widened equal to the roadway width of the approaches.

(c) The culverts and Hume pipe structures shall be widened so as to make the deck width same as specified in Sub Para 7.3 (i) of this Section. If the width of additional widening is less than 0.5 m on either side, the widening of the structure may be dispensed with and traffic shall be guided with the help of crash barriers in a transition of 1 in 20 on either side approaches.

(d) List of culverts to be reconstructed and/or widened shall be specified in Schedule 'B' of the Concession Agreement.

(iv) Existing bridges

(a) All bridges which are structurally distressed shall be reconstructed as new bridges of width as per Sub Para 7.3 (ii).

(b) Components like bearings, expansion joints, railings, crash barriers, wearing surface, etc., which are not in sound condition, shall be replaced. Minor non-structural works shall be suitably repaired.

(c) If the width of additional widening is 1.0 m (0.5 m on each side) or less, the widening of the structure may be dispensed with and traffic shall be guided with the help of crash barriers in a transition of 1 in 20 on either side approaches.

(d) The bridges having 2-lane carriageway particularly those with T-beam/Box type superstructure with well/pile foundation, which are in sound condition, may be retained and proper transition between approach and bridge shall be provided. Typical cross sections at deck level for bridges with and without footpaths showing new bridge on one side and existing 2-lane bridge on the other side are given in Fig. 7.4 A and Fig. 7.4 B respectively.

(e) The width of the new structures constructed on the other side of the existing bridge shall be as specified in Sub Para 7.3 (ii) of this Section.

(f) List of bridge structures to be reconstructed and/or widened shall be specified in Schedule 'B' of the Concession Agreement.
The bridge structure should aesthetically blend with the environment.

The type and span arrangement may be fixed so as to provide riding comfort.

Wherever box girders are proposed for superstructure, the minimum clear depth inside the box shall be 1.50 m with suitable openings in the diaphragms and box to facilitate inspection. Haunches of minimum size of 300 mm (horizontal) and 150 mm (vertical) shall be provided at the extreme corners of the box section. Suitable arrangements for lighting shall be made to enable inspection of the box.

The following types of structures shall not be accepted.

(a) Drop in spans with halved joints (articulations)

(b) Trestle type frames for substructures

If construction of structures like cable stayed/suspension bridge or with special techniques is envisaged, it shall be specified in Schedule 'B' of the Concession Agreement.

Hydrology

The structures shall have adequate waterway, which shall in any case be not less than that of existing bridge (except when such waterways can be reduced in cases like digging or silting of spans, etc.) . The design discharge shall be evaluated for flood of 100-year return period.

Sub-Soil Investigations

Independent sub-soil investigations shall be carried out to establish the soil parameters required for detailed design of foundations in accordance with relevant provisions of IRC: 178 and MORTH Specifications.

Culverts and bridges using pipes

(i) Reinforced concrete pipes for culverts and bridge structures shall be of Non Pressure (NP) - 4 type conforming to the requirements of IS: 458. Minimum diameter of pipes for new pipe culverts shall be 1200 mm.

(ii) Existing culverts of diameter 900 mm and above, which are in sound condition and functioning satisfactorily, may be extended, using pipes of same diameter. All culverts having pipe diameter less than 900 mm shall be replaced with pipes of minimum 1200 mm diameter under both the carriageways. Minimum depth of earth cushion over pipe including road crust shall not be less than 1000 mm for new / reconstructed culverts. In case of existing sound and safe culverts, a minimum cushion of 600 mm may be acceptable. In case the cushion is...
insufficient, encasing of pipe in concrete shall be ensured. Floor protection shall be as specified in the relevant IRC Codes and Specifications.

Temporary Works

Form Work

The Concessionaire shall be responsible for the safe, workable design and methodology for all temporary or permanent forms, staging and centering required for supporting and forming the concrete of shape, dimensions and surface finish as shown on the drawings (Refer IRC: 87). Adequate foundation for the staging shall be ensured. Redundancy in support system shall also be ensured by providing diagonals and additional members. The following guidelines shall be adopted:

(i) Formwork shall be of steel, marine ply or laminated plywood.

(ii) Only such shuttering oil (release agent) shall be used, which permits easy removal of shutters without leaving stains or other marks on the surface of the concrete. Requirements given under Clause 3.5 of IRC: 87 shall also be complied with.

(iii) In case of tubular staging of heights more than 10 m, special attention shall be paid to the structural adequacy of the system, efficacy of the connections (clamps etc), and foundations. Foundation blocks of adequate thickness in M15 cement concrete shall be provided under the base plates to prevent differential settlements. All bent tubular props shall be straightened before re-use and the member with deviation from straightness more than 1 in 600 of its length shall not be re-used. For re-used props, suitable reduction in the permissible loads shall be made depending upon their condition in accordance with recommendations of the manufacturer and as reviewed by the IE.

(iv) In case of prestressed concrete members, the side forms shall be removed as early as possible and the soffit forms shall permit movement of member without restraint, when prestress is applied. Form supports and forms for cast-in-situ members shall not be removed until sufficient prestress has been applied to carry all anticipated loads during construction stage.

(v) Adequate foundations for formwork shall be ensured.

8.2 Special Temporary and Enabling Works
the Concessionaire in the use of drawings and methodology proposed by the Concessionaire in the use of temporary and enabling works like Launching Girders, Cantilever Construction equipment, Tall Formwork, Shoring for Earth Retention, Lifting and Handling Equipments and the like shall be submitted to the Independent Engineer (IE) for his review and comments if any. The Concessionaire shall be fully responsible for the design and structural adequacy of all temporary and enabling works. Review by IE shall not relieve Concessionaire of this responsibility.

Foundations and sub-structures

The design of foundations and sub-structures shall conform to IRC: 78.

Open Foundations

The design of open foundations shall conform to IRC:78. Floor protection shall be provided as per Section 2500 of MORTH Specifications.

Pile Foundations

The design of pile foundations shall be done as per IRC: 78. The Concessionaire shall submit a method statement supported by the following:

(a) Bore-log details for each foundation;
(b) Design assumptions;
(c) Design calculations both for single pile or group of piles and for pile type;
(d) Type of piles- Bored cast-in-situ piles and driven piles;
(e) Procedure adopted for installation of piles;
(f) Arrangements for load testing of piles;
(g) Format for reporting of test results.

The Concessionaire shall submit the following information regarding proposed proprietary system of piling:

(a) General features of the process/system along with specifications and standards;
(b) Authenticated consent/license/ agreement, if any;
Details of plant and equipment to be used along with the names of manufacturers and name of process/system;
Details of projects where the process/system has been successfully used;
Limitations, if any;
Acceptance tests and criteria;
Installation and maintenance procedure and schedule; and
Performance warranty.

Foundations
For conventional method of well sinking, the Concessionaire shall submit a method statement including the following:

(a) Design calculations and drawings,
(b) Procedure for sinking and plugging of well,
(c) Format for reporting of test results.

If proprietary system of well sinking like jack down method is proposed to be used, the Concessionaire shall submit relevant information covering inter-alia the following:

(a) General features of the system along with specifications and standards and justification for the thickness of steining proposed to be adopted;
(b) Authenticated copies of license/agreement, if any;
(c) Details of plant and equipment to be used along with the names of manufacturers and name of process/system;
(d) Details of projects where the process/system has been successfully used;
(e) Limitations, if any;
(f) Acceptance tests and criteria;
(g) Installation and maintenance procedure and schedule; and
(h) Performance warranty.

(iii) The Concessionaire in his Methods Statement shall include the procedure for sinking by special methods, carrying out tests, if any, of wells including design criteria/ calculations, drawings and formats for reporting test results.

Approach Slabs
Approach slabs shall be provided as per Clause 217 of IRC:6 and Section 2700 of NORTH Specifications.

Superstructures

The design of reinforced and pre-stressed concrete superstructures shall be as per IRC: 6 and IRC: 18 respectively. The design of steel and steel-concrete composite superstructures shall conform to IRC: 24 and IRC: 22 respectively.

The Concessionaire shall submit Method Statement indicating interalia the following:

(i) Sources of materials,
(ii) Design, erection and removal of formwork,
(iii) Layout of casting yard together with necessary details,
(iv) Production, transportation, laying, compacting and curing of concrete,
(v) Sequence of concreting in cast-in-situ construction, side shifting of girders, if applicable and placing of girders on the bearings,
(vi) Details of construction joints,
(vii) Prestressing system, if required,
(viii) Methodology and equipment for side shifting and launching of pre-cast girders,
(ix) Key personnel for execution and supervision,
(x) Testing and sampling procedure,
(xi) Equipment details.

Bearings

All bearings shall be easily accessible for inspection, maintenance and replacement. Suitable permanent arrangements shall be made for inspection of bearings from bridge deck. Design and specifications of bearings shall be as per IRC: 83 (Part I, II & III). Spherical bearings shall conform to the requirements of BS: 5400. The materials of bearings may however conform to the relevant BIS codes nearest to the specifications given in BS: 5400. The drawing of bearings shall include the layout plan showing exact location on top of pier and abutment cap and the type of bearings i.e. fixed/free/rotational at each location along with notes for proper installation. The bearing should cater for movement in both longitudinal and lateral direction in respect of bridge structures more than 12 m wide.
The Concessionaire shall procure bearings only from the manufacturers approved by the CONCESSIONAIRE.

The Concessionaire shall submit detailed specifications, designs and drawings including installation drawings and maintenance manual incorporating the replacement procedure.

The Concessionaire shall obtain and submit a complete Quality Assurance Programme (QAP) from the manufacturer. The QAP shall give the full details of the process of quality control, raw material testing, various stages of manufacture, testing of bearing components as well as testing of complete bearing in conformity with relevant part of IRC: 83, prior to the commencement of manufacture of the bearings.

In addition to the routine testing of the materials and bearings at the manufacturer's premises, the Concessionaire shall arrange testing of random samples of one per cent (minimum one number of each type) of bearings from independent agency approved by the IE.

The Concessionaire shall submit a certificate of confirmation regarding quality control measures taken during manufacture of the bearings and the material conforming to the prescribed standards and specifications. Full lot of bearings of the sample found to have inferior specifications to those certified by the manufacturer or to have major discrepancy in material specifications or which fail to meet the acceptance criteria, shall be rejected.

3. Expansion Joints

(i) Structures shall have minimum number of expansion joints. This may be achieved by adopting longer spans, making the superstructure continuous or by adopting integrated structures. Expansion joints shall conform to IRC: SP: 69. The Concessionaire shall furnish guarantee/proprietary indemnity bonds from the manufacturers/suppliers of expansion joints for a period of 10 years.

(ii) For existing bridges all expansion joints, which are older than 15 years shall be replaced.
The Concessionaire shall procure expansion joints only from manufacturers approved by MORTH.

The expansion joints should cater for movement in both longitudinal and lateral direction in respect of bridge structures more than 12 m wide.

Wearing Coat

The wearing coat may be either bituminous concrete or cement concrete. For new bridges and culverts, the wearing coat shall have unidirectional camber and shall be in conformity with Section 2700 of MORTH Specifications. For existing bridges, the camber as existing may be retained.

Wearing coat older than 15 years or in damaged / distressed condition shall be replaced.

Reinforced Earth Retaining Structures

Reinforced earth retaining structures shall not be provided for height more than 10 m unless otherwise specified, and near water bodies. Such structures should be given special attention in design, construction, ground improvement where necessary, maintenance and selection of System/System design. Local and global stability of the structure shall be ensured.

Design Accreditation and warranty for life of the structure from the approved supplier/manufacturer shall be obtained and furnished. A qualified and experienced technical representative of the approved supplier/manufacturer shall be present on site throughout during the casting and erection phases to ensure that the quality of the works executed by the Concessionaire is in accordance with good industry practice.

The Concessionaire shall submit relevant information on the system covering inter-alia the following:

(i) General features of the system along with specifications and standards;
(ii) Authenticated copies of license/agreement, if any;
(iii) Details of plant and equipment to be used along with the names of manufacturers and name of process/system;
(iv) Details of projects where the process/system has been successfully used.
(v) Limitations, if any;
(vi) Acceptance tests and criteria;
(vii) Installation and maintenance procedure and schedule; and
(viii) Performance warranty.

The Concessionaire shall submit a method statement including the following:

(i) Design assumptions calculations and drawings,
(ii) Construction Procedure,
(iii) Tests to be conducted including frequency and the formats for reporting the test results.

The packaging of reinforcing elements shall clearly indicate the name of the manufacturer/ supplier and brand name, date of production, expiry, if any and batch identification number along with the manufacturers test certificates.

River Training and Protective Works

River training and protective works shall be provided wherever required for ensuring the safety of bridges and their approaches on either side. The special features and design of various types of river training and protective works shall be in accordance with IRC: 89.

Safety Barriers

(i) For bridges without foot paths, concrete crash barriers shall be provided at the edge of the carriageway on all new bridges.

(ii) The type design for the crash barriers may be adopted as per IRC:5. The design loading for the crash barriers shall be as per Clause 209.7 of IRC: 6.

(iii) For bridges with foot paths, pedestrian railing shall be provided on the outer side of footpath.

(iv) The railings of existing bridges shall be replaced by crash barriers, where specified in Schedule 'B' of the Concession Agreement.

(v) Parapets/Railings of the existing bridges/culverts to be repaired/replaced shall be specified in Schedule 'B' of the Concession Agreement.
less otherwise specified in Schedule ‘B’ of the Concession Agreement, ROB/ RUB to provided shall be as specified in this Manual, with particular reference to the provisions of Para 7.3 of this Section.

Road Over Bridge (Road over Rail)

(i) In case a two-lane bridge exists over the railway tracks, another two-lane bridge shall be constructed for one side traffic. The treatment to existing structure shall be given as in Sub-Para 7.3 (iv) of this Section.

(ii) In case the bridge is to be provided over an existing level crossing, twin 2-lane bridges shall be constructed with overall width as given in Sub-Para 7.3 (ii) of this Section. If the alignment of road at the existing railway crossing has skew angle more than 45 degrees, the alignment of road or of pier/abutment shall be suitably designed to reduce skew angle up to 45 degrees.

(iii) The horizontal and vertical clearances to be provided shall be as per requirement of the Railway authorities.

(iv) The Concessionaire shall be required to obtain approvals of all designs and drawings from the concerned Railway authorities.

(v) The construction of ROB within the railway boundary shall be under the supervision of Railway authorities.

(vi) The approach gradient shall not be steeper than 1 in 40.

Road under Bridges (Road under Railway line)

(i) Full roadway width as in the approaches shall pass below the bridge structure allowing for widening of Project Highway to 6-lane at a later date. The service roads where provided shall be continued in the bridge portion also.

(ii) The vertical and lateral clearances shall be as per guidelines given in Section 2 of this Manual.

(iii) These structures shall be designed to carry railway loads. The Concessionaire shall be required to obtain approvals of all designs and drawings from the concerned Railway authorities. The design of structure shall be in accordance with relevant Railway codes.
The construction of RUB and its approaches shall be carried out in conformity with the terms specified in the approval granted by the Railway authorities.

### Grade Separated Road Structures

The location, type and length of grade separated structures to be provided on the Project Highway shall be as specified in Schedule ‘B’ of the Concession Agreement.

The vertical and lateral clearances shall be as per requirements given in Section 2 of this Manual. Design of structures shall conform to requirements specified in this Manual.

### Drainage

An effective drainage system for the bridge deck shall be planned, designed and installed so as to ensure that water from the deck is taken down to ground level/drainage courses by adequate size of drainage spouts and pipes. The type of such arrangement shall be specified in Schedule ‘B’ of the Concession Agreement.

### Structures in Marine Environment

Necessary measures/treatments for protecting structures in marine environment shall be as specified in Schedule ‘B’ of the Concession Agreement.

### Repairs and Strengthening

(i) Structures requiring repairs and strengthening shall be specified in Schedule ‘B’ of the Concession Agreement. This shall be based on detailed condition survey of existing structures and shall bring out the nature and extent of repairs to be carried out, covering the following in addition to other specific requirements:

(a) Repair/replacement of damaged railings and parapets, provision of crash barriers,
(b) Replacement of wearing coat (old wearing coat shall be removed and replaced by bituminous wearing coat),

(c) Replacement of expansion joints,

(d) Replacement of bearings,

(e) Structural repairs to substructure/super structure, including replacement of substructure/superstructure if required

(f) Repair to flooring and protection works.

(i) The Concessionaire shall submit repairs and strengthening plan for structures in para (i) above to the Independent Engineer for review and comments, if any. For all other structures with minor deficiencies, not affecting structural inadequacies and integrity, appropriate repair measures may be proposed and submitted to the Independent Engineer for review and comments, if any.

(ii) Strengthening/rehabilitation work shall be carried out in accordance with relevant IRC Codes and Guidelines.

(iv) The Concessionaire shall take up repair and widening of existing bridge at a particular site only after the new bridge at that site is constructed and the same can be used by the traffic. Before taking up the works of repair and widening of the existing bridge, the Concessionaire shall make all arrangements to ensure that both way traffic can use the new bridge and a smooth flow of traffic is maintained. The Concessionaire shall take all precautions to guard against any traffic accident due to such diversion and shall use all necessary road signs, traffic management measures etc. for the purpose. After completion of repair and widening of the existing bridge, all arrangements shall be made so that both the old and the new bridges at the site can be used by the traffic. Repair works for substructure, foundation, and abutment etc., which will not affect or disturb the flow of traffic over the existing bridges, may, however, be taken up before completion of the new bridge. In such cases where new 2-lane bridges is not required to be constructed before COD, the existing bridge shall be repaired/strengthened by suitably regulating the traffic on the bridge or by temporary diversion.
The Concessionaire shall furnish the design report including the following to the Independent Engineer for his review and comments, if any.

(i) Sub soil exploration report as per IRC: 78 as specified in para 7.6 above.

(ii) Hydrological Investigation report including design discharge calculation for all bridges, in case of any change in the proposed waterway of any bridge as specified in para 7.5 above.

(iii) Designs and drawings of temporary works, foundations, substructures and superstructure of structures

(iv) Detailed report regarding the bridges whose width is less than the roadway width and the proposal for their improvement.

(v) Any other information relevant to the design report.

7.24 Responsibility for Design and Structural Adequacy

The Concessionaire shall be fully responsible for the design, structural adequacy and detailing of bridge and culvert structures. Review by IE shall not relieve the Concessionaire of this responsibility.
SECTION - 8

MATERIALS
All materials to be used in works shall be in conformity with the requirements laid down for relevant item in IRC/MORTH Specifications unless otherwise specified in this Section. If the Concessionaire proposes to use any material, which is not covered in IRC/MORTH Specifications, it shall conform to relevant Indian Standards, if there are any, or to the International Standards. Proprietary products proposed to be used shall be proven by use in comparable international road and bridge projects, and shall be supported with authenticated licensing arrangement with the manufacturer.

The Concessionaire shall identify the proposed sources of materials and submit the proposal prior to delivery. If it is found that proposed sources of supply do not produce uniform and satisfactory products at any time during execution, the Concessionaire shall procure acceptable materials conforming to the specifications from other sources.

In case of manufactured items, the Concessionaire shall submit details pertaining to the product/process/system covering interalia:

(a) Name of manufacturer and name of product/process/system;

(b) General features of the product/process/system along with specifications and standards adopted for the product/process/system;

(c) Authenticated copies of license/agreement;

(d) Details of projects where the product/process/system has been successfully used;

(e) Limitations, if any;

(f) Acceptance tests and criteria;

(g) Installation and maintenance procedure and schedule; and

(h) Performance warranty.
Structural Concrete

The Concrete for use in structures shall conform to the provisions in Clauses 302.6 to 302.9 of IRC:21 and Section 1700 of MORTH Specifications. Wherever High Performance Concrete (HPC) is proposed to be used, the same shall conform to the provisions of IRC:SP:70. Sampling and testing of concrete shall be as per Clause 302.10 of IRC:21. Acceptance criteria for concrete shall conform to Clause 302.11 of IRC: 21.

Cement

Any type of cement specified in IRC: 21 may be used for the works subject to limitations, if any, specified therein.

Coarse Aggregates

Before commencement of the works, at least three samples, in accordance with the procedure laid down in IS: 2430, shall be taken for each quarry source to ascertain the quality, suitability and fitness of the available material for use in the works. Fresh tests shall be conducted in case there is any change in the source or the type of rock being quarried. The proposal, along with a copy of test reports, shall be submitted.

Sand/ Fine Aggregates

All fine aggregates shall conform to IS:383 and tests for conformity shall be carried out as per IS: 2386 (Part I to VIII). The fineness modulus of fine aggregates shall be between 2.0 and 3.5.

Before the commencement of the works, at least three samples as per IS:2430 shall be taken for each quarry source to ascertain the quality, suitability and fitness of the available material for use in the works and the proposal along with a copy of test reports shall be submitted to the IE for review and comments, if any.

Fine aggregates having positive alkali-silica reaction shall not be used.

Water

Water for use in the works for mixing and curing of concrete shall be in conformity with Clause 302.4 of IRC:21.
Water from each source shall be tested before the start of works and thereafter every three months and after each monsoon till the completion of the works and the proposal along with a copy of test reports shall be submitted to the IE for review and comments, if necessary.

**Chemical Admixtures**

The following guidelines shall apply in selection and use of admixtures:

(i) Chemical admixtures shall comply with IS: 9103 and meet the requirements stipulated in clause 5.5 of IS: 456.

(ii) Admixtures generating hydrogen or nitrogen or containing nitrates, sulphides, sulphates, or any other material liable to affect the reinforcement/embedments or concrete shall not be used.

(iii) Compatibility of admixture with the cement being used shall be tested before actual use in the works. The test shall be repeated in case of change of type or grade or source of cement.

(iv) Admixtures shall not impair the durability of concrete. They shall not combine with the ingredients to form harmful compounds or endanger the protection of reinforcement against corrosion.

(v) The packaging of admixtures shall clearly indicate the name of the manufacturer/supplier, brand name (name of the product), date of production and expiry, batch/identification number.

In addition to the details as stipulated in Clause 1012.1 of MORTH Specifications, the following information shall also be furnished:

(i) pH value and colour.

(ii) Latest date of test and name of the laboratory.

(iii) Shelf life, maximum and minimum temperature for storage, precautions to be taken while mixing and any other instructions for use.

Steel
Steel for Prestressing

addition to the requirement mentioned in Clause 1009.2 of MORTH Specifications, the steel for prestressing shall satisfy following conditions:

(i) Uncoated stress relieved low relaxation steel conforming to IS: 14268.

(ii) Prestressing steel shall be subjected to acceptance tests in respect of modulus of elasticity, relaxation loss at 1000 hrs, minimum ultimate tensile strength, stress-strain curve etc. prior to actual use on works as per guidelines contained in BS: 4447. The modulus of elasticity value, as per acceptance tests, shall conform to the design value, which shall be within a range not more than 5 per cent between the maximum and the minimum.

Reinforcement/Untensioned Steel

(i) Only Fe 500 grade of steel shall be used on works and all reinforcing steel for use in works shall be procured from main/ major producers. Fe 415 grade of steel can also be used where permissible as per IRC Codes and Guidelines.

(ii) Only fresh steel shall be brought to the site. Every bar shall be inspected before assembling on the work; and defective, brittle or burnt bars shall be discarded. Cracked ends of bars shall be cut before use:

(iii) Only Thermo Mechanically Treated (TMT) bars conforming to IS:1786 shall be used as reinforcing steel.

(iv) All reinforcement shall be free from loose rust and coats of paints, oil, mud or any other substance, which may destroy or reduce bond. The reinforcement bars bent and fixed in position shall be free from loose rust or scales, coats of paints, oil, mud or chloride contamination and other corrosion products. Where cleaning of corroded portions is required, proposal for effective method of cleaning such as sand blasting shall be submitted to the IE for prior review and comments.

(v) Proprietary steel products will be permissible provided they conform to the minimum requirements.

Steel for Bearings

Mild steel, high tensile steel, cast steel, steel forgings, and stainless steel shall conform to the provisions contained in clause 925.1 of IRC: 83 (Part III)
Structural Steel

Steel, castings and forgings, fasteners (bolts, nuts, washers and rivets), welding consumables and wire ropes and cables shall conform to the provisions of clause 505.1.2, 505.2, 505.3, 505.4 and 505.6 respectively of IRC: 24.

Bitumen

Bitumen shall be paving bitumen of viscosity grade complying with Indian Standard specifications for "Paving bitumen" IS:73:2006 of grade appropriate for the traffic and climatic conditions of the Project Highway. The heavily trafficked roads in hot areas may find harder grade bitumen more appropriate while pavements in mountainous regions subject to sub-zero temperatures during winter months carrying relatively lower traffic loads and subject to the phenomenon of "Frost Heave" may find less viscous bitumen resistant to fatigue and cold cracking more appropriate.

Storage of Materials

All materials shall be stored at proper places so as to prevent their deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work. Any material, which has deteriorated or has been damaged or is otherwise considered defective after review by the Independent Engineer shall not be used in the works and shall be removed from site by the Concessionaire at his cost. Such materials shall not be made acceptable by any modifications.

Report to be submitted

The Concessionaire shall prepare and submit report containing test results of all materials and finished products proposed to be used in the Project Highway.
SECTION - 9

TRAFFIC CONTROL DEVICES /

ROAD SAFETY DEVICES /

ROAD SIDE FURNITURE
Section - 9

TRAFFIC CONTROL DEVICES /ROAD SAFETY DEVICES/ ROAD SIDE FURNITURE

General
Traffic Control Devices/ Road Safety Devices/ Road Side Furniture shall comprise of road signs, road markings, object markers, hazard markers, studs, delineators, attenuators, safety barriers, pedestrian guard rails, boundary stones, kilometre stones, etc. Guidelines given in IRC: 8, IRC: 25, IRC: 26, IRC: 35, IRC: 67, IRC: 79, IRC: 103 and Section 800 of MORTH Specifications shall be used for providing these items unless otherwise specified in this Section.

Road Signs
The three types of road signs viz., mandatory / regulatory signs, cautionary / warning signs and informative signs shall be provided as given in IRC: 67 and section 802 of MORTH Specifications. Proper signs shall be provided for left in and left out at service roads for safe guidance of traffic. Clustering and proliferation of road signs shall be avoided for enhancing their effectiveness.

1. The material and specifications for Road Signs shall be governed by the Specifications for Road and Bridge Works issued by the MORTH.

2. There shall be corresponding road markings with stop signs, give way signs, merging or diverging traffic signs, lane closed signs, road narrowing signs, slip roads/ diverter signs, compulsory keep left/right signs, or any other signs as per IRC-67.

3. Wherever the Project Highway alignment is on a curve, there shall be advance cautionary signs for sharp curves (depending on whether it is on left or right) and chevron sign (rectangular in shape with traffic yellow background and black arrow) at the outer edge of the curve. The sign for the curve ahead particularly in mountainous and steep terrain shall always be accompanied with chevron signs at the outer edge of the curve an appropriate delineation.

4. The Specifications and Standards of road signs such as chevron, overhead, etc., which are not covered by IRC-67 would be as per International Standards.
Road signs shall be with retro-reflective sheeting of high intensity grade with encapsulated lens fixed over aluminum sub-strata as per clause 801 of MORTH specifications.

Overhead signs shall be supported on GI pipes. Overhead signs shall be placed on structurally sound gantry or cantilever structure made of GI pipes. Its height, lateral distance and installation shall be as per MORTH specifications. The pedestal supporting the gantry or cantilever structure of the overhead signs shall be flushed at the ground level and in no case shall protrude more than 150 mm above ground level.

Locations and size of overhead traffic signs shall be specified in Schedule ‘B’ of the Concession Agreement. The following conditions may be considered while deciding about the locations of overhead signs:
- Traffic volume at or near capacity,
- Restricted sight distance,
- Built up stretches,
- Insufficient space for ground mounted signs,
- Distances of important places and route highways at suitable intervals.
- Before major intersections

A sign, signal or any other device erected for traffic control, traffic guidance and/or traffic information shall obscure any other traffic sign. Further, the signs and signals shall not carry any advertisement.

Each exit ramp shall have signs mounted on posts indicating the name of the place and important roads it would lead to.

Road Markings

All road markings shall conform to IRC: 35. Road markings shall comprise of carriageway markings, markings on intersections, hazardous locations, parking areas, etc. Where service roads are provided, proper layout and road markings shall be ensured so that merging with traffic is safe. The markings shall be done by means of a self propelled machine which has a satisfactory cut-off value capable of applying broken line automatically.

Material

- Hot applied thermoplastic paint with glass beads shall be used as road marking material.
Road markings may also be in the form of prefabricated sheet material, e.g., plastic sheets, which may be set into the pavement with upper surface flush with the pavement surface.

**Road Delineators**

- Are roadway indicators, hazard markers and object markers as given in IRC: 79.

**Roadway Indicators**

- Iron Posts of 1.0 m height covered with reflectorised synthetic material/film, as per placement and spacing given in IRC: 79 shall be provided.

**Hazard Markers** shall be provided as given in IRC: 79. In addition, the objects close to road shall be painted with black and yellow stripes using the paint conforming to IS: 164.

**Object Markers** shall be provided as given in IRC: 79. In addition, the kerbs in the traffic islands shall be painted with black and white stripes (black and yellow stripes at hazardous locations) using the paint conforming to IS: 164.

**Lighted Bollards** shall be provided in the median/traffic islands of all major/minor sections as per International Standards.

**Raised Pavement Markers (Cat's Eyes/Road Studs)**

- The cat's eyes or road studs shall be provided to improve the visibility in night-time and wet-weather conditions. These shall be prismatic retroreflective type two way markers conforming to STM D 4280 and provided as per Table 9.1.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description of sections</th>
<th>Length of section to be provided with studs</th>
<th>Spacing of studs</th>
<th>Location of studs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All sections of Project Highway having radius of horizontal curve below 700 m</td>
<td>Length of horizontal curve including its transitions</td>
<td>5 m</td>
<td>Centre of the carriageway</td>
</tr>
<tr>
<td>2</td>
<td>All sections of Project Highway where vertical grade is steeper than 5 percent</td>
<td>Till the grade comes to 5 percent</td>
<td>5 m</td>
<td>Centre of the carriageway</td>
</tr>
<tr>
<td>3</td>
<td>All major/minor junctions and median openings</td>
<td>(i) 100 m on either side of the junction/median opening (approaching side)</td>
<td>5 m</td>
<td>Centre of the carriageway</td>
</tr>
<tr>
<td></td>
<td>(ii) Three Rows of studs at a spacing of 0.15 m</td>
<td>across the main carriageway and the cross roads</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Solar Studs shall be provided for locations at S. No. 3 (i) and 5 in Table 9.1.

White colour road studs shall be used at locations where lane marking in white colour is prescribed in IRC : 35. Amber colour shall be used at locations where lane marking in amber colour is prescribed in IRC : 35. Red colour may be used to indicate no entry (like contraflow side).

Attenuators

Attenuators shall be provided at hazard markers locations given in IRC : 79, structural columns of large direction signs, illumination lamp posts and at approaching traffic islands of toll plaza. It shall take repeated impacts without any additional recovery procedures and with minimal or no repairs. The attenuators modules shall be moulded from HDPE plastic. The design, size, number of modules, etc. of attenuators shall be as per International Standards and location specific duly considering the likely impact.

Road Side and Median Safety Barriers

There are two types of safety barriers viz., roadside safety barriers, and median safety barriers.

Road Side Safety Barriers

Warrants: The longitudinal roadside barriers are basically meant to shield two types of roadside hazards i.e. embankments and roadside obstacles and also for preventing the vehicles veering off the sharp curves. The warrants for a fill section in terms of the height and slope needing protection with roadside barriers are shown in Fig.9.1. The barrier is not warranted for embankment having a fill slope of 3 H : 1 V or flatter. The warrants for roadside objects are mainly dependent upon the type of obstacle and the probability of their being hit. A barrier shall be installed only if the result of vehicle striking the barrier is likely to be less severe than the severity of accident resulting from the vehicle impacting the unshielded obstacle. Some of the commonly encountered roadside obstacles are bridge piers, abutments and railing ends, roadside rock mass, culverts, pipes and headwalls cut slopes, retaining walls, lighting supports, traffic signs and signal supports, trees and utility poles.
Types of Roadside Safety Barriers

There are three types of longitudinal roadside safety barriers viz:

(a) Flexible type (like wire rope fencing)

(b) Semi-rigid type like

- "W" beam type steel barrier
- Thrie beam type steel barrier

These steel barriers are of strong post type and usually remain functional after moderate collisions thereby eliminating the need for immediate repair.

(c) Rigid type (like concrete crash barriers)

Road Side Steel Barriers

(a) Design Aspects: The "W" beam type safety barrier consists of steel posts and a 3 mm thick "W" beam rail element which is spaced away from the posts. The spacer minimizes vehicular snagging and reduces the likelihood of a vehicle vaulting over the barrier. The steel posts and the blocking out spacer shall both be channel section of 75mm x 150 mm size and 5 mm thick. The rail shall be 700 mm above ground level and posts shall be spaced 2m center to center. Typical details are shown in Fig.9.2.

The thrie beam safety barrier shall have posts and spacers similar to the ones mentioned above for "W" beam type. The rail shall be placed at 850 mm above the ground level. This barrier has higher initial cost than the "W" beam type but is less prone to damages to vehicle collisions especially for shallow angle impacts. Typical details of Thrie beam barrier are shown in Fig. 9.3.

The "W" beam, the Thrie beam and the posts spacers and fasteners for steel barriers shall be galvanized by hot dip process.

(b) End treatment for steel barrier: An untreated end of the roadside barrier can be hazardous, if hit, because the barrier beam can penetrate the passenger compartment and cause the impact vehicle to stop abruptly. End treatment should, therefore, form an integral part of safety barriers and the end treatment should...
spear vault or roll a vehicle for head on or angled impacts. The two end treatments recommended for steel barriers are "Turned down guardrail and Anchored in back slope".

Turned down guardrails have the "W" or Thrie sections reduced from full height to ground level with a gentle slope over a distance of 8 to 9 meters. The turned down rail is intended to collapse on impact allowing the vehicle to pass over it without becoming airborne or unstable. In order to locate the barrier terminal away from the traveled way and to minimize drivers' reaction to a hazard near the road by gradually introducing a parallel barrier installation or to transition a roadside barrier nearer the roadway such as a bridge parapet or a railing, the turned down shall be flared away from the roadway. Suggested flare rates depending upon the design speed and type of barrier are given in Table 9.2.

<table>
<thead>
<tr>
<th>Design speed in km per hour</th>
<th>Flare Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rigid barriers</td>
</tr>
<tr>
<td>100</td>
<td>17:1</td>
</tr>
<tr>
<td>80</td>
<td>14:1</td>
</tr>
<tr>
<td>60</td>
<td>11:1</td>
</tr>
<tr>
<td>40</td>
<td>8:1</td>
</tr>
</tbody>
</table>

The posts in the end treatment should have the same cross sections as provided in the main barrier.

At road cross sections in cutting or if the road transitions from cut to fill, the safety barriers can be anchored in back slopes. The back slope covering the anchored portion of the barrier should be graded flat with side slopes preferably not steeper than 10:1. The anchored portion should develop a tensile strength in the rail element to prevent the rail from pulling out of the anchorage. The barrier can also be anchored in an earth berm specially constructed for this purpose provided the new berm itself is not a hazard to the traffic. The earth berm should be made impervious to erosion.

(c) Placement: Placement recommendations determine the exact layout of the barrier and shall be made by the design engineer keeping in view the lateral offset of the barrier and flare rate. The final layout shall be a site-specific combination of these factors. The barriers shall be as far away from the traffic as possible and shall preferably have uniform clearance between the traffic and the hazard.
As far as possible the safety barrier shall be placed beyond 2.5 m of the traveled way. For long and continuous stretches, this offset is not critical. The distance between the barrier and the hazard shall not be less than the deflection of the barrier by an impact of a full sized vehicle. In case of embankments, a minimum distance of 600 mm shall be maintained between the barrier and the start of embankment slope of a hazard to prevent the wheels from dropping over the edge. Typical details are shown in Fig.9.4.

Flatter flare rates may be used particularly where extensive grading would be required to ensure a flat approach from the traveled way subject to the availability of right of way.

**Road Side Concrete Barriers**

(a) **Design Aspects:** Roadside Concrete safety barriers are rigid barriers having a sloped front face and a vertical back face. The recommended designs of the cast in situ and precast barriers are shown in Figs.9.5 and 9.6 respectively. Based on evaluation of vehicle direction, sight distance, structural stability and the psychological effect of barrier height on driver reaction, the most desirable height of the median barrier is 800 mm. Variations up to 50 mm in height of barrier can be made in the total height of the barrier to meet the site requirements. It is however, important to maintain the height of lower slope between 200 mm and 350 mm so as to reduce the chances of overturning of the vehicles.

The concrete barrier may be precast in lengths of up to 6 m depending upon the feasibility of transport and lifting arrangements. Concrete grade for the barriers shall not be leaner than M30. The minimum thickness of foundations shall be 25 mm thick cement concrete or hot mix asphalt placed at the base of barrier to provide lateral restraint. Where more than 75 mm thick overlay on the road pavement is anticipated, the foundation step may be increased to 125 mm. However, longitudinal roadside concrete barrier should have elaborate footing design which is structurally safe unless sufficient earth support is available.
End Treatment: Safety barrier shall be provided with an end treatment, which shall be obtained by tapering the height of terminating end of the median barrier within a length of 8 m to 9 m.

Placement: Placement recommendations for roadside steel barriers, mentioned in para 9.7.1 (iii) (c) above are applicable to concrete barriers as well.

Median Barriers

General: Head-on-collisions, especially on highways with narrow medians, caused by out-of-control vehicles jumping across the medians are a major source of accidents. Fixed objects on medians also require shielding from the traffic flow. Provision of median safety barrier in such conditions is an important requirement.

Warrants: The requirement of a median barrier is a function of the width of the median and the traffic volume on the road. Fig 9.7 indicates the warrants for provision of median barriers in terms of the combination of median width and Average Daily Traffic (ADT) in PCUs. At ADT less than 20,000 PCUs and with medians wider than 9 m, the probability of a vehicle crossing across the median is relatively low and median barriers in such cases are optional. Medians with width between 9 m and 15 m do not warrant a barrier unless there is an adverse history of median crossovers.

Median barriers may be impractical where a road has a large number of closely spaced median openings since the barrier needs to be terminated with an end treatment at these points;

An evaluation of the number of median openings, accident history, alignment, sight distance, design speed, traffic volume and median width shall be made prior to taking a decision to install a median barrier.

Median barriers shall also be provided to shield fixed objects in a narrow median. If necessary, median barriers shall be flared to encompass a fixed object, which may be a lamp post, foundation of overhead signs, bridge pier etc.
There are three types of median safety barrier viz., 'W' beam type steel barrier, (Strong post type), Thrie beam type steel barrier, (Strong post type) and Concrete barriers.

(a) Steel Median Barriers

Design Aspects: The 'W' beam barrier shall be similar to the roadside barrier described in para 9.7.1 (iii) (a) above except that the 'W' beam shall be provided on both sides of the post with similar spacers. Typical details are indicated in Fig.9.8.

The Thrie beam barrier shall be similar to the roadside barrier described in para 9.7.1 (iii) above except that the Thrie beam shall be provided on both sides of the post with similar spacers. Typical details are shown in Fig.9.9.

End Treatment: Steel median barriers shall be provided with a "Turned-down-guardrail" end treatment as described in para 9.7.1 (iii) (b) above except that no flaring is to be provided.

Placement: At locations, where the two adjacent carriageways are at the same level, the barrier shall be placed in the center of the median, duly taking into consideration, the drainage requirements. The placement of median barriers in cases where the two carriageways are at different levels is a function of the slopes between the two medians. Recommended placement for various combinations is indicated in Fig.9.10. In case the median barriers need to be flared e.g. for the protection of supports to overhead signs, the flare rates given in Table 9.2 shall be followed.

(b) Concrete Median Barriers

Design Aspects: The design of cast-in-situ and precast median barriers is indicated in Figs.9.11 and 9.12.

Median barrier shall be terminated sufficiently away from the median opening with the twin objectives of preventing impact by the turning traffic and providing...
adequate sight distance to the turning traffic. The terminating end of the median barrier shall be tapered in a length of 8 to 9 meters.

**Placement:** Placement recommendations for steel median barriers mentioned in para 9.7.2 (iii) (a) above apply to concrete median barriers also.

**General**

Raised kerbs or drains shall not be provided between the traveled way and the barriers. These destabilize the vehicle balance and disturb its equilibrium before it strikes the barrier, thus defeating the essential purpose of safety and redirection of the impacting vehicle. Steel barriers shall be provided in rural sections whereas concrete barriers shall be provided in built-up sections. In addition to the warrants given in Para 9.7.1 (i) and 9.7.2 (ii) above, the safety barriers shall also be provided at the following locations:

a) Where embankment is retained by a retaining structure.
b) On valley side of highway in mountainous and steep terrain.
c) Between main carriageway and footpath in bridges.
d) At hazardous locations identified in Schedule ‘B’ or through safety audit.

The requirements of Safety Barriers for structures are given in Para 7.17 of this Manual.

**Road Boundary Stones (RBS)**

Road boundary stones shall be provided at the boundary on both sides of the Right of Way. These shall be spaced at 200 m. The boundary stones shall be of cement concrete as per Type Design given in IRC: 25. The boundary stones shall be painted with cement primer and enamel paint and marked ‘RBS’ by paint.

**Kilometre and Hectometre Stones**

(i) The kilometre stones shall be provided at each kilometre on both sides of the Project Highway. The design and specification of kilometre stones shall conform to IRC: 8. The matter to be written on various kilometre stones and the pattern thereof shall be as specified in IRC: 8.

(ii) Hectometre (200m) Stones shall be provided at every 200 m distance on both sides of the Project Highway. The design and specification of 200 m stones shall conform to IRC: 26. The matter to be written on the 200 m stones shall be as specified in IRC: 26.
Pedestrian Railings /Guard Rails

Pedestrian guardrails of iron/ steel sections shall be provided as per IRC: 103. The iron/ steel guard rails shall be finished with epoxy primer and two coats of synthetic enamel after sand blasting (appropriate corrosion protection layer shall be provided in corrosive environment). In case iron/steel sections are not suitable in corrosive environment even after providing corrosion protection layer, concrete guard rails as per IRC:103 shall be provided in those sections.

Solar Based Beacons or Flashing Signals

These shall be provided at uncontrolled pedestrian crossings; near the public gathering places like educational institutions, worship places, hospitals, etc; cross roads; and median opening locations.

Design Report

The Concessionaire shall submit the proposals for traffic control / road safety devices and road furniture together with drawings and details to the Independent Engineer for review and comments, if any. The proposals shall include type, location, material specifications, installation details and the requisite warranties for satisfactory field performance (as applicable).
Section - 10

TOLL PLAZAS

General

The Concessionaire shall provide the Toll Plazas at the locations specified in Schedule C for collection of toll fee as per the Concession Agreement. The fee collection system shall be speedy, efficient and user friendly. The design of the Toll Plazas should be such that they are aesthetically pleasing and efficient and the fee collection staff should be quick, courteous and adequately trained before deployment.

Location of Toll Plaza

The location of toll plaza shall be indicated in Schedule C of the Concession Agreement. Their locations shall be decided keeping in view the following factors:

(i) Land availability
(ii) Stream of traffic on Toll Plaza
(iii) Visibility for the approaching traffic
(iv) Reasonably away from road intersections and/or rail crossings
(v) Free from risk of flooding and submergence, etc.
(vi) Preferably on flat land and away from congested urban locations.

Land for Toll Plaza

Adequate land for Toll Plaza shall be acquired to permit the provision of toll lanes for projected peak hour traffic of 20 years subject to a minimum number of 16 toll lanes including all other buildings and structures to be accommodated at the Toll Plaza location. Land shall be acquired as per provisions of the Concession Agreement.

Lay out and Design of Toll Plaza

Typical layout of 5+5 toll plaza is given in Fig. 10.1. The layout shall provide for full expansion of toll lanes. Stage construction of Toll Plaza in respect of number of toll lan
be allowed. However, other structures as envisaged in the Concession Agreement shall be provided at the initial stage itself.

Width of Toll Lane
The width of each toll lane shall be 3.2 m, except for the lane for over dimensioned vehicles, where it shall be 4.5 m.

Traffic Islands at the Toll Plaza
Between each toll lane of the toll plaza, traffic islands are required to accommodate toll booth. These islands shall be of minimum 25 m length and 1.8 m width. Protective barriers of reinforced concrete and traffic impact attenuators shall be placed at the front of each island to prevent out of control approaching vehicles crashing into the toll booth. They would be painted with reflective chevron markings.

Toll Booths
Toll booths may be provided of prefabricated materials or of masonry. The toll booths shall have adequate space for seating of toll collector, computer, printer, cash box, etc. It should have provision for light, fan and air conditioning. The typical details of traffic island with toll booth are given in Fig. 10.2.

toll booth shall be placed at the centre of each traffic island. The toll booth shall have large glass window to provide the toll collector with good visibility of approaching vehicles. The bottom of the toll window should be placed at such a height (0.9 m) above ground level so as to provide convenience of operation. The toll booths shall be ergonomically designed and vandal proof. There shall be CCTV camera installed at each booth.

Tunnels
For the movement between toll office and toll booth of each toll lane, an underground tunnel across all toll lanes shall be provided. Its dimension would be sufficient to accommodate the required wiring/cable system and for convenient movement of personnel. It should also be provided with lighting and ventilation system so that the movement is convenient.
transition

transition of 1 in 20 to 1 in 10 may be provided from four-lane section to the widened
width at Toll Plaza on either side.

Canopy

The toll lanes and toll booths shall be covered with a canopy. The canopy shall be
sufficiently large enough to provide weather protection to toll operators, drivers and facilities. The
canopy shall be of aesthetically pleasing design with cylindrical support columns located
at a suitable distance from the toll island so that there is no restriction on visibility and traffic movement. The
typical clearance shall be as prescribed in this Manual.

Drainage

The toll plaza shall be provided with surface and sub surface drainage system so that all
the storm water is drained off efficiently and no ponding or stagnation of water takes
place at any area of the toll plaza.

Equipment for Toll Lanes

Each entry lane shall be equipped with a micro controller based Vehicle Counting-cum-
Classifier Unit for counting the number of vehicles and their axle number and for
identification of the category of vehicle. The semi automatic toll collection system shall
also have a ticket issuing machine for issue of the tickets for user fee at the press of a
button on a touch panel and entry lane controller for controlling the equipment of the entry
lane and for sending the data to the data processing equipment at toll plaza office. Each
toll lane shall have electronically operated boom barrier along with synchronised system
for traffic lights.

11.10 Electronic Toll Collection

The Electronic Toll Collection (ETC) system shall consist of an On Board Unit (with a
Smart Card) fitted on a vehicle and a roadside antenna (Road Side Unit) to receive
communication for identification of its code and other stored data and a system for
transmitting data to and from the on board unit to the customer information management
system through the road side unit.
Prevention of Overloading

Toll plaza location shall also be provided with system for checking and preventing overloading of vehicles at toll plaza. For this purpose, weigh in motion systems at approaches to each toll lane are to be installed. Separate space for static weigh bridge and area to hold off-loaded goods from overloaded vehicles shall be provided after the toll barriers for each direction of travel.

Number of lanes at Toll Plaza

The total number of toll booths and lanes shall be such as to ensure the service time of not more than 10 seconds per vehicle at peak flow regardless of methodology adopted for fee collection. For purpose of guidance following parameters are suggested as a capacity of individual toll lane for design purpose:

(i) Semi-automatic toll lane 240 veh/hour
    (Automatic vehicle identification but manual fee transaction)

(ii) Electronic toll collection (ETC lanes) 1200 veh/hour
    (Toll collection through on board unit and no stoppage of vehicles)

At least two toll lanes in each direction of travel shall be provided with the system of payment through ETC. Not less than 2 middle toll lanes shall be capable of being used as reversible lanes to meet the demand of tidal flow.

Toll plazas shall be designed for projected peak hour traffic of 20 years. As mentioned in Para 10.4.1, the stage construction of toll plaza in respect of number of toll lanes shall be allowed. If at any time, the queue of vehicles becomes so large that the waiting time of the user exceeds three minutes, the number of toll lanes shall be increased so that the maximum waiting time is brought down to less than three minutes.
3 Toll Collection System

For smooth and efficient functioning of toll collection, the following arrangements / facilities shall be provided:

(i) The staff posted at the counters in the semi-automatic system of toll collection shall be provided with sufficient electronic equipment for the collection of toll and recording data, and small denomination notes / coins at the start of each shift.

(ii) Intercom facility shall be provided between booths and the office of the supervisors.

(iii) If the booth is closed for any reason, incoming traffic shall be guided into the adjoining working booth with the help of appropriate signs.

(iv) The entire fee collection complex shall be adequately guarded.

4.14 Pavement

Concrete pavement shall be provided in the Toll Plaza area including tapering zone, from durability and long time serviceability consideration and to permit the provision of toll lanes initially for a projected peak hour traffic of 10 years. The concrete pavement may be widened to provide for future toll lanes required as per stage construction. The rigid pavement shall be designed as per IRC:58. For this work, use of paver shall not be insisted.

4.15 Traffic Signs

A well thought out strategy should be evolved for providing traffic signs and road markings in and around the Toll Plaza in accordance with IRC: 67 and IRC:35. The Concessionaire would design the configuration/placement of signs for toll plaza which are not given in IRC : 67 and furnish to IE for review so as to ensure uniformity of signs in use on all the highways across the country.

Signs should be placed along the Project Highway, roadway of Toll Plaza to guide and render assistance to the drivers approaching the Toll Plaza. It is necessary to alert the driver about the existence of Toll Plaza one km ahead with a repeater sign 500 m ahead.
Stop sign shall always be used in combination with certain road markings such as stop
line and the word 'STOP' marked on the pavement.

The Toll Plaza sign should be supplemented by the sign advising the users of the notified
toll rates (fees) for various types of vehicles and exempted categories of vehicles.

Appropriate Signs and Signals shall also be provided on the canopy of toll plaza to
properly guide the approaching vehicles about the lane in operation, lane applicable to
specific category of vehicle, lane with Electronic Toll System, reversible lane, etc.

Road Markings
The road markings shall be used in accordance with Section 9 of this Manual. The road
markings for the Toll Plaza area shall consist of lane markings, diagonals, chevron
markings. Single centre line is provided at the centre of carriageway at toll gate to
demarcate each service lane. Diagonal markings for central traffic island and chevron
markings at side traffic island shall be provided to guide the approaching and separating
traffic.

In order to check overspeeding of the vehicle approaching toll booth, transverse bar
markings, as per typical details given in Fig 10.3 shall be provided.

Lighting
The toll plaza shall have lighting system to provide visibility to drivers for the use of facility
especially to access the correct service lane and also to the toll collector. Indian
Standard 'Code of Practice for Lighting of Public Thoroughfare' IS: 1944 shall be
followed. This would be done by interior and exterior lighting as indicated below. Power
supply shall be from public power supply system, but stand by generating set of the
capacity to supply the required power shall be provided at toll plaza.
Exterior Lighting: The toll booths and facility building office shall be illuminated adequately. Indoor lighting shall be with fluorescent lamps. Lighting should be provided in such a manner that glare is avoided or minimised. The level of illumination shall be 200 to 90 Lux as per IS: 3646 part II.

Exterior Lighting: Lighting of the Toll Plaza is important for enhancing the night visibility. The lighting system shall consist of the following major components.

(i) High Mast lighting
(ii) Lighting on both side approaches to the Toll Plaza
(iii) Canopy lighting of complex

High Mast Lighting: Normal low light poles are not able to give the required lighting conditions. It is, therefore, necessary to install high mast. A height of 30 m for the mast is considered suitable to have uniform spread of desired level of illumination in the Toll Plaza area for safe movement of vehicles.

Highway Lighting: A minimum requirement of illumination on the road surface of 40 Lux shall be ensured. Lighting in minimum 500 m length on both side approaches of toll plaza shall be provided to enhance the safety at night on the Project Highway and to make the drivers conscious of their approaching the toll gate. These shall be provided on the mild steel welded tubular pole of 10 m height from road surface and with 2 m overhang. Sodium Vapour lamp of 200-250 watts should be provided for these poles on both sides at 50 m staggered spacing. There should be provision for flashing signals for foggy weather conditions.

Canopy Lighting: A higher level of illumination upto 100 Lux by providing 150 watt metal halide lamps shall be provided at the toll gate and at toll booth locations. 1000-watt halogen lamps shall be provided at the selected nodes of space frame of the canopy to ensure uniform illumination of the area.

Water Supply
Adequate water supply shall be provided. For working out water requirement and internal drainage system, reference may be made to IS:1172, IS: 5339 and IS: 1742.
Fire Fighting System
Toll Plaza shall have fire fighting equipment, including smoke detectors and auto visual alarm system as per section 4.17.1 of National Building Code, so that the personnel working in the complex and the office and the road users are protected against fire hazards.

Toll Plaza Complex

Toll plaza shall have a separate office building so as to provide comfortable office space for manager, cashier and other staff. There shall be separate rooms for T.V. monitors, meetings, toilets, and for the sale of passes, smart cards, on board units and public interaction. The building shall have a strong room for keeping the cash and a garage to accommodate the security van (during operation of loading the collected revenue). There shall be parking space in the same campus for vehicles for the staff and workers and other vehicles engaged in the operation of the Project Highway.

The size of the office complex depends on the minimum requirement of above facilities

Provision for future expansion: The office building shall be located taking into consideration of future expansion.

21 Toll Audit
The toll plaza shall have toll audit system and fraud protection measures. The operations for toll collection, supervision, auditing and cash handling shall be done through the qualified personnel with adequate number so that each operation is efficiently handled.

Report to be submitted
The design and layout of Toll Plaza complex including all facilities shall be submitted to the Independent Engineer for review and comments, if any.
SECTION - 11

LANDSCAPING
AND
TREE PLANTATION
Section – 11

LANDSCAPING AND TREE PLANTATION

General

The Concessionaire shall plant trees and shrubs of required number and type at the appropriate locations within the Right of Way and in the land earmarked by the Authority for afforestation keeping in view the IRC Guidelines on Landscaping and Tree Plantation. The Authority will specify the number of trees which are required to be planted by the Concessionaire as compensatory afforestation or otherwise. The Concessionaire shall also maintain the trees and shrubs in good condition during the Concession Period as per the maintenance schedule. The guidelines given in this Section shall be followed in plantation of trees and shrubs.

Design considerations in various locations

Set-back distance of trees and other plantation: Trees on the roadside shall be sufficiently away from the roadway so that they are not a hazard to road traffic or restrict the visibility. Most vulnerable locations in this regard are the inside of curves, medians, junction corners and cut slopes. Trees shall be placed at a minimum distance of 14 m from the centre line of the extreme traffic lane to provide recovery area for the vehicle that runs off the road. A second row of trees 6m further away will also be planted wherever possible. Preferably the first row of trees shall consist of species with thick shade and other rows of vertical type providing thin shade. Expansion of the Project Highway to 6-lanes shall be taken into consideration while locating the trees so that land is free of trees when further widening takes place. The distances for alternative rows of trees shall be reckoned from the nearest edge of the unidirectional carriageway. No plantation shall be allowed on the embankment slopes.

Set-back of trees on curves: Experience has been that growth of thick vegetation close to the formation on inside of horizontal curve leads to serious reduction of sight distance and causes avoidable accidents with cattle/children suddenly emerging from the side. Uncontrolled trees/vegetation, may also affect visibility of traffic control devices and road signs. Therefore, we plan terrain a stopping sight distance of 180 m corresponding to the
Design speed of 100 km per hour may be ensured on all curved sections of the Project Highway along the innermost lane. However, where there are site restrictions their requirement may be reduced to 130 m corresponding to the design speed of 80 km per hour as a special case. The existing trees and vegetation on the sides have to be suitably thinned/trimmed, or even removed if necessary and a regular programme of pruning of the offending trees shall be undertaken as part of the maintenance operations.

In all cases, location of trees shall be checked to ensure that clear vision of all highway signs/signals is available at all times to the motorists. Also, the foliage or trees shall not come in the way of roadway lighting.

**Vertical clearance of trees and other plantations:** For safe traffic operation, the vertical clearance available across the roadway shall be minimum 5 m. From this angle, the probable size of all plants shall be anticipated in advance, at the time of initial planting.

To allow for the effects of growth, wind and rain, trees shall be trimmed to 6 m and 6.5 m above the pavement in rural and urban areas respectively.

**Plantation in medians:** In the sections of the Project Highway where median width is more than 3 m, shrubs shall be planted and maintained to cut off headlight glare from traffic in the opposite direction. Flowering plants and shrubs are eminently suited for the purpose. These shall be planted either in continuous rows or in the form of baffles. The height of shrubs shall be maintained at 1.5 m to cut off the effect of traffic lights coming from the opposite direction.

In the sections, where the width of median is less than 3 metres, shrubs or flowery plants may be planted in between crash barriers or other means like metal/plastic strips to cut off glare shall be provided.

The shape of shrubs and plants shall be suitably regulated so that there is no overgrowth either vertically or horizontally beyond the edge of the paved median.
In the vicinity of road intersections and median openings, median plantation shall be avoided or restricted to low-growing varieties to ensure adequate visibility.

Spacing of avenue trees: The spacing of avenue trees will depend on the type and growth characteristics of trees, requirements of maintenance, penetration of distant views, etc. A range of 10-15 m would meet the requirement for most varieties.

Choice of trees: The following guidelines shall be kept in view while selecting the species of trees to be planted:

(i) Trees shall be selected with due regard to soil, rainfall, temperature and water level.

(ii) Trees which become very wide shall be avoided as their maintenance would cause interference with traffic flow.

(iii) The species must be capable of developing a straight and clean bole up to a height of 2.5 to 3.5 m from the ground level.

(iv) The selected trees shall, preferably, be fast growing and wind-firm. These shall not be thorny or drop too many leaves.

(v) The trees shall be deep rooted, as shallow roots injure pavements.

(vi) In urban areas, the species selected shall be of less spreading type, so that these do not interfere with overhead services, clear views of signs/signals, and efficiency of roadway lighting.

Report to be submitted

The Concessionaire shall submit scheme for plantation and maintenance of plants and trees to the Independent Engineer for review and comments, if any.
SECTION – 12

PROJECT FACILITIES
Section – 12

PROJECT FACILITIES

General

The requirement of the project facilities to be provided shall be indicated in Schedule-C of the Concession Agreement. This shall include information regarding location and size of the facilities. Land required for provision of facilities shall be acquired by the Authority and the date of handing over of the land to the Concessionaire shall be indicated in the Concession Agreement.

Pedestrian Facilities

General: Pedestrians are vulnerable to being involved in accidents. Therefore, adequate consideration shall be given to their safety through provision of facilities. The facilities for pedestrians given in this Section shall be provided on the Project Highway.

Footpaths (Sidewalks)

(i) The sidewalks shall be provided in the built-up sections, on both sides, by barrier type (non-mountable) kerbs of height 200 mm above the adjacent road surface.

(ii) The width of sidewalks depends upon the expected pedestrian flow and shall be fixed subject to land availability, but shall not be less than 1.5 m.

Pedestrian Guard Rails

Pedestrian guardrails shall be provided as specified in Section 9 of this Manual.

Pedestrian Crossings

Pedestrian crossings shall be provided where they will be well used. Pedestrian crossings shall be suitably integrated with the overall design of the intersection.

The following criteria shall be followed regarding selection of pedestrian crossings:

(i) At-Grade Pedestrian Crossing (Pedestrian Crosswalk): Pedestrian crosswalks shall be provided at all important intersections and such other locations where substantial conflict exists between vehicular and pedestrian movements. Wherever possible, the crosswalks shall be at right angles to the carriageway and properly
marked so that the pedestrians are subjected to minimum inconvenience. Crosswalks shall not substantially increase the walk distance of pedestrians. Adequate visibility, freedom from obstructions and sufficient space for waiting are the other important requirements for location of crosswalks.

At-grade pedestrian crossings shall be controlled. Controlled form of crossing shall be achieved through provision of Zebra Crossings, whether at signalized intersection or pedestrian actuated signal.

Zebra Crossing: A Zebra Crossing shall not be sited within 150 m of another such crossing. The Zebra Crossing shall be somewhat set back from the carriageway line. However, the set back distance shall not be so much as to cause an appreciable increase in walking distance for the pedestrians. Pedestrian guardrails may be necessary where the setback distance is appreciable or at the skew crossings.

The width of the Zebra Crossing shall be adequate and shall generally lie within a range of 2.0 m to 4.0 m. The crossing shall, as far as possible, proceed uninterrupted through the median strip. In the event of the median strip being used as pedestrian refuge, adequate width of median shall be provided. In case of raised medians, such portion could be suitably depressed with kerb height not exceeding 150 mm.

In the vicinity of Zebra crossing, guardrails of sufficient length shall be provided to deter pedestrians from crossing the road at any arbitrary point along the road.

(iii) Pedestrian Underpasses/ Overpasses: The pedestrian underpasses/ overpasses shall be provided as specified in Para 2.13.3 of this Manual.

2.3 Street Lighting

2.3.1 General

(i) The Concessionaire shall provide lighting at locations of the Project Highway specified in Schedule 'B', using appropriate system and source of electric power as per the requirements of this Section.
(ii) The Concessionaire shall make suitable arrangements for procuring power supply to ensure uninterrupted lighting during night and when visibility is low, including provision of DG sets as standby arrangements.

(iii) The Concessionaire shall bear all costs of procurement, installation, running and operation cost of all lighting, including cost of energy consumption specified in this Section.

Specifications

(i) Unless stated otherwise elsewhere in this Manual, the minimum level of illumination on the stretches of the Project Highway including Toll Plazas, truck lay-byes, interchanges etc. shall be 40 Lux.

(ii) The layout of the lighting system together with type of luminaries for different locations shall be prepared by the Concessionaire in such a manner that the minimum illumination level prescribed in Para 12.3.2(i) can be achieved and shall be submitted to the Independent Engineer for review and comments, if any, for compliance by the Concessionaire.

(iii) Overhead electrical power and telecommunication lines erected within the ROW by the Concessionaire shall be provided with adequate clearance so that safe use of the highway is not affected.

(iv) Vertical and horizontal clearances for electrical installations shall conform to IRC:32.

(v) All the fixtures, wires/cables, lights shall conform to relevant BIS specifications as a minimum. The Concessionaire with the prior review and comments of the Independent Engineer can use fixtures with better specifications.

Locations where lighting is to be provided: Unless specified otherwise in Schedule-C of the Concession Agreement and elsewhere in this Manual, the Concessionaire shall provide lighting at the following locations of the Project Highway:

(i) Toll Plaza Area: The lighting in and around Toll Plaza, toll booths, office building, on the approach road, etc. shall be as per Section 10 of this Manual.
(ii) Truck lay byes: Lighting at the truck lay byes shall be as per para 12.4 of this Manual.

(iii) At interchanges: Lighting at the interchanges shall be as per para 3.3.5 of this Manual.

(iv) At Built-up sections on the Project Highway.

**Truck Lay-byes**

1 **General**: The Concessionaire shall construct and maintain adequate number and size of truck lay-byes for parking of trucks by the side of the Project Highway as indicated in Schedule 'B' of the Concession Agreement. The guidelines, as given here, shall be followed in regard to location, size and facilities to be provided at the truck lay-byes.

2.2 **Location and size**: Truck lay-byes shall, in general, be located near check barriers, interstate borders, places of conventional stops of the truck operators, etc. The places be identified on the basis of field survey and shall have adequate space for facilities as specified in subsequent para 12.4.3 and future growth.

2.3 **Facilities**: The truck lay-byes shall have the following facilities:

(i) Paved parking,

(ii) Rest areas with toilets, drinking water,

(iii) Telephone.

2.4 **Lighting**: The truck lay-byes and 50 m length of the Project Highway on its either side shall be illuminated at night to provide a minimum illumination of 40 Lux. Suitably designed electric poles having aesthetic appeal and energy saving bulbs may be used to provide required illumination. Alternatively, photo voltaic lamps may be used.

2.5 **Bus Bays and Passenger Shelters**

2.5.1 **General**: The buses shall be allowed to stop for dropping and picking up passengers only at the bus bays. The Authority will indicate in Schedule 'C' of the Concession Agreement the number and broad location of bus bays to be provided by the Concessionaire. The bus bays shall conform to the specifications and standards given in this Section. In case:
where bus stands are provided by the concerned State Government Transport Authorities, the Concessionaire shall provide only access road within the right of way.

**Location:** The location of the bus bays shall be fixed on the basis of following principles:

(i)  The bus stops shall be sited away from bridges and other important structures and embankment sections more than 3 m high.

(ii) As far as possible, bus bays shall not be located on horizontal curves or at the summit of vertical curves.

(iii) The location shall have good visibility, not less than the safe stopping sight distance.

(iv) The bus bays shall not be located too close to the road intersections. A gap of 300 m from the tangent point of intersections to start/end of the bus bay shall be desirable. At minor intersections (e.g. junctions with village roads), distance of 60 m may be adopted. However, if a substantial volume of buses is to turn right at the intersection, it is necessary that the bus bay shall be located sufficiently ahead of the intersection so that the buses can be manoeuvred easily from the pick-up stop on the left hand side to the extreme right lane for turning. The location of the bus bays may be fixed after due consultation with the local communities expected to use such facilities.

(v) At major four-way intersections involving transfer of a substantial number of passengers from one pick-up stop to the other, it might be desirable to construct a single, composite bus stop of suitable design to cater to all the bus routes collectively.

(vi) In hilly areas, the bus bays shall be located, preferably, where the road is straight on both sides, gradients are flat and the visibility is reasonably good (usually not less than 50 m). Subject to these requirements, it will be advisable to choose locations where it is possible to widen the roadway economically for accommodating bus bays.

(vii) Where grade separator is provided, the location of bus bays shall be as under

(a) Sufficiently away from the ground intersection.
(b) Sufficiently away from the longitudinal slope of the approaches.

(viii) The bus bay and passenger shelter shall be designed to provide for safe and convenient use by physically challenged persons as well.

**Layout and Design**

(i) For plain area, typical layouts of bus bays given in Fig. 12.1 shall be adopted. The length \( L \) shown in Fig. 12.1 shall be 15 m, which shall be increased in multiples of 15 m if more than one bus is likely to halt at the bus bay at one time.

(ii) For hilly areas, where there is a general constraint on space, the layout indicated in Fig. 12.2 may be adopted.

(iii) The chanellizing island between the paved shoulder and bus-bay shall not be raised; it shall be paved.

(iv) Bus bays shall be provided on both carriageways of the Project Highway for each direction of travel independently. At intersections, the bus bays for up and down direction shall be located on farther sides of the intersection.

(v) The bus bay shall be provided with a shelter for passengers. The shelter shall be structurally safe and aesthetic in appearance, while also being functional so as to protect the waiting passengers adequately from sun, wind and rain. If the shelter is constructed on the hillside, slopes shall be properly dressed and suitably protected to avoid slips. The shelter shall be set back from the kerb line by at least 500 mm.

4. **Pavement:** The pavement in the bus bays shall have adequate crust with respect to the wheel loads expected. Also, the surfacing shall be strong enough to withstand forces due to frequent braking and acceleration by the buses. The colour and texture of the bus bay surfacing shall be preferably distinctive from that of the main carriageway.

5. **Drainage**

(i) The bus bays shall have proper cross slope to drain off the excess water. No water, which is likely to splash on the waiting passengers, shall be allowed to collect near the bus shelters.

(ii) Suitable kerb gutter section with requisite longitudinal slope and outlets at intervals to ensure quick disposal of water shall be provided.
Road Markings: Pavement markings as specified in Section 9 of this Manual shall be provided at the bus stops as shown in Figs. 12.1 and 12.2 with the word ‘BUS’ written prominently on the pavement. Pedestrian crossings shall be marked slightly behind the standing position of the buses in order to reduce pedestrian conflicts. The kerbs shall be marked with continuous yellow line to indicate “No Parking”.

Rest Areas

Location and Layout of the rest areas shall be as indicated in Schedule ‘B’ of the Concession Agreement. Rest areas shall be provided by the Concessionaire on the lands included in the Site and procured by the Authority. Within the areas so provided, the Concessionaire shall construct and operate, or cause to be constructed and operated, paid facilities such as toilets, telephones, cafeteria, parking, etc.

Cattle Crossings

Facility for cattle crossings shall be provided as specified in para 2.13.3 of this Manual.

Traffic Aid Posts

12.8.1 Traffic Aid Posts shall be established at Toll Plaza locations in accordance with the provisions of the Concession Agreement.

12.8.2 The Concessionaire shall establish and operate Highway patrol unit(s) manned by at least two persons apart from the driver for every unit which shall continuously patrol the highway in a stretch not exceeding 50 km and shall remain in contact with the Control Room on a real time basis. The patrol shall render assistance to users in distress and disabled vehicles through own intervention or by calling for assistance from Control Room, Crane operators or ambulance as required. The patrol shall promptly clear the road of any obstruction. Where the obstructions take time to be cleared, the section shall be cordoned off by placing traffic cones, which shall be illuminated during night. The patrol vehicle shall be large enough for seating at least four personnel besides the driver and space to carry essential traffic and incidence management and safety tools. It shall also have a light on its top and a siren on board. It shall be equipped with traffic cones and other accessories for traffic control which are fully visible during night time.
Medical Aid Posts

Medical Posts shall be established at Toll Plaza locations in accordance with the provisions of the Concession Agreement.

The Concessionaire shall provide ambulance(s) manned by at least two trained and certified paramedics so that the response time is not more than 20 minutes of call. Each ambulance shall be equipped with first aid, life saving medical services and support system implements for transporting the victims to the nearest trauma care hospitals, and providing emergency medical aid during transportation of victims from accident site to the nearest trauma care hospital.

Vehicle Rescue Posts

1. The Concessionaire shall provide a vehicle rescue post at Toll plaza location with all necessary equipment as specified in the Concession Agreement.

2. Crane(s) shall be available at the site of the incident within 30 minutes of call to clear the disabled/accidented vehicles.

1 Telecom System

The Concessionaire shall provide a Telecom System at Toll plaza location with all necessary equipment as specified in Schedule ‘B’ of the Concession Agreement.

12 Highway Traffic Management Systems (HTMS):

12.1 A real time system working round the clock shall be established for informing the road users of the road, traffic, and weather conditions on the Project Highway when the daily traffic exceeds 40,000 PCUs; for making interventions as required for smooth, safe and efficient traffic operation; and for providing rescue and relief to the users in distress. The system shall be capable of (i) acquisition of data from various sources such as the road, the users, the maintenance and operation patrol, the ambulance, and the intervention team (ii) three way communication between the data source and a Central Control Room, the Control Room and the data sources and display units, and between the maintenance and operation teams, through a transmission system, and (iii) A Central Control Room to process all data and control the highway operation.
The systems and equipment of HTMS shall meet the following main climatic and environmental requirement as specified in IS-9000

Temperature Range of Operation – Low of 0°C Celsius (± 3°C) to high of 60°C Celsius (± 2°C)

Relative Humidity of 95%

Vibration Frequency Range of 10 Hz – 55 Hz

Data acquisition system: This shall consist of (a) Automatic Traffic Counter and Classifier (ATCC), with an in-road loop detectors and treadles. (b) Video cameras installed on road with such pan and tilts that a length of 2 km road is captured for video monitoring of traffic, (c) Emergency Call Boxes installed at every 2 km to enable any user to be instantly in contact with the Control Room, (d) Meteorological sensors for capturing data on temperature, weather, wind, (e) Mobile radios for patrol vehicles and ambulances to be in communication with Central Control Room and among themselves.

Emergency call boxes (ECB) with loud speaker, microphone, activation button with LED indicating conversation, shall be housed in a vandal proof casing and operate in full to play mode in noise level of up to 95 decibels with built-in diagnostic features for automatic detection in case of damage by any object. Mobile communication system shall comprise the mobile radio base stations and control centre equipments. It shall have provision for mounted mobile set on ambulances, cranes and patrolling vehicles.

The system shall have the facility to connect mobile to mobile, mobile to controller, and controller to mobile along with the systems for waiting, holding, and transfer of calls. The system shall use a pair of frequencies to be allotted to the Concessionaire with the approval of wireless planning and coordination (WPC), Deptt. of Telecommunications and shall operate for full duplex mode.

The design for the Variable Message Signs (VMS) will be modular with sign panels using LEDs / High-Gain Trans-Reflective LCDs for outdoor ambient lights. The sign panel should be such that a display is legible from a distance of about 200 m. For this purpose, panels shall have minimum dimensions of 3m length x 1.8 m depth. The minimum height of the characters shall be 300 mm. The contrast ratio shall be more than 30 perpendicular to the bold face and more than 10 at an angle of ± 70 degrees to the perpendicular. The equipment shall be capable of storing minimum 10 frames that can be triggered on receiving the tele-command. The sign panels shall be installed on the structure in such a manner that they are aesthetically pleasing and can withstand wind.
pressures. The equipment shall be capable of storing minimum semi-duplex mode and
other known forces. The minimum vertical clearance available at VMS shall be 5.5 m
from the road surface. Power supply shall be fed from the integrator locations. The
locations for VMS shall be specified in Schedule ‘B’.

6 The meteorological sensors shall comprise thermocouple/pyrometer, humidity meter,
anemometer, visibility meter and sensor for measuring pavement surface temperature.
They shall be installed on a single pole with a specific attachment and power supply fed
from the integrator. They shall have the facility to communicate on Polythene Insulated
Jelly Filled copper cables (PIJF)/Optical Fibre Cable.

7 The Automatic Traffic Counter-cum-Classifier (ATCC) shall be capable of detecting and
recording all categories of vehicles plying on the Project Highway based on their length
and number of axles. The system shall be robust and capable of operating with minimum
maintenance and may be either piezo-electric or infrared. It should have minimum
accuracy level of 99%. The logic units shall be microprocessor based. The system
should be able to record and store vehicle data for a period of at least two weeks with a
Daily Traffic Volume of up to 1,00,000 vehicles. The system shall have compatibility to
transfer the data on PIJF/Optical Fibre Cable by using any of the available
communication mode like GSM (Global System for Mobile Communications) / GPRS
(General Packet Radio Service), landline modem, CDMA (Code Division Multiple Access)
depending upon the effective and economic operation of the particular mode available at
the site. The system shall be electric/solar power operated depending upon the
availability of source.

2.8 The Closed Circuit Television (CCTV) Surveillance shall comprise video camera, its
housing and pan, and Tilt Heads. The video camera shall be mounted at a height so as
to cover the target length of highway and the housing shall be able to withstand adverse
weather conditions. It shall have a 360 degree angular travel in the horizontal plane and
a tilt of 90 degrees down from 0 degree horizontal. It shall have zoom lens with minimum
power of 30 X, auto iris and infrared filter, infrared compatibility for night operation and
remotely selectable operating modes. It shall have compatibility with co-axial
cable/optical fibre cable.

2.12 The main control centre shall be designed for round-the-clock operations of monitoring,
on-line information acquisition and processing the same for decision making. The Main
Control Centre shall have equipment of central computer, call centre, terminal junction
box, uninterrupted power supply (UPS), counsel operator with monitors and joy sticks, rack accommodation, large display board, line printer and general purpose office computer with monitor, printer, fax and telephone. The system shall also have Network Management system (NMS) or real-time monitoring of Emergency Call Boxes (ECBs) and network diagnostics.

10 Transmission System: This shall consist of a backbone Optical Fiber Transmission system, cable system, interface system, network management system, repeater/amplification system, and power supply system. There shall be 3 or 4 sub-centres (as appropriate) housing all the interface equipment apart from the Control Centre, provided with, as appropriate, cables, interface, terminals (such as optical line terminals and interface, network management system equipment, optical fiber cable interface equipment and control centre interface equipment, data acquisition system interface, etc). The cables from ECBs, VMS, meteorological data systems, ATCC shall be Polythene Insulated Jelly filled (PIJF) copper cables and those from CCTV cameras shall be coaxial cables. Repeaters/amplifiers shall be used to maintain the quality of signals. All the cables shall have at least 20% spare capacity to allow for expansion. The interface system shall be capable of handling the composite audio, video and data signals at various interface levels and process them.

2.1 Central Control Room (Control Centre): The Central Control Room (CCR) shall be the repository of all the data acquired from the field and their processing, storing, and archiving. All the information for real-time monitoring of the Project Highway shall be generated at the CCR and the relevant information shall be disseminated to the users through Variable message signs, and to the operation and management teams through mobile radio communication system for appropriate intervention. Another important function to be performed at the Control Centre shall be the operation and management of the HTMS itself along with its various sub-systems.

CCR shall have the following minimum equipment, hardware and software:
(i) A Central Computer Server with integrated HTMS and HTMS software
(ii) A Traffic Manager’s Terminal for operation of the integrated traffic management system
(iii) Call system equipment comprising Operator PC along with sub-systems and digital voice recorder
Mobile radio terminal comprising Operator PC and engineering terminal

Computers for Network Management System (NMS) for Fiber Optic Communication System.

CCTV Console Equipment

Computers for VMS, AVCC, MET, Traffic Control

A large size screen

A line Printer

An Office Computer

A Power Supply and back up system

12 Dissemination of information: Information generated at the Control Centre shall be disseminated in the following manner:

(a) To the users: By displays on the Variable Message Signs, via internet web pages, and by creating a node at the wayside amenities to display the relevant information.

(b) To the Operation and maintenance teams: By mobile phones.

(c) To the ambulances: By mobile phones.

(d) To the trauma care centres: Via ambulances.

3 Operation and Maintenance Centre

3.1 There shall be operation and maintenance centre(s) either at the toll plaza(s) or at any other location along the Project Highway as identified by the Concessionaire. The land for the same shall be acquired by the Concessionaire at his cost and risk. The operation and maintenance centre would have following minimum facilities:

(i) Main control centre and Administrative block.

(ii) Equipment for operation and maintenance and storage space for them.

(iii) Storage space for equipment and material for traffic signs and markings.

(iv) Workshop.

(v) General garage and repair shop.

(vi) Testing laboratory.

(vii) Parking space for minimum 4 number of large vehicles and for other expected vehicle during peak hours including those for working staff and visitors.
All building works shall be designed to meet the functional requirements and shall be compatible with regional architecture and micro climate. Locally available materials shall be given preference but not at the cost of construction quality.

The circulation roads and parking spaces in the O&M centre shall be paved to withstand vehicle loads and forces due to frequent acceleration and deceleration of vehicles. Parking bays / lots shall have proper cross slope and drainage. The marking of the parking bays shall be as per IRC: 35 to demarcate parking and circulation space. Parking lots shall have illumination as provided in IS: 1944 (Parts I and II).

The whole campus of operation and maintenance centre shall have system for security with safe entry and exit.

Report to be submitted

The Concessionaire shall submit report containing the proposals for provision of project facilities on the Project Highway to the IE for review and comments, if any.
SECTION-13

SPECIAL REQUIREMENTS FOR HILL ROADS
SECTION - 13
Special Requirements for Hill Roads

General

The additional/ new carriageway in hilly areas may either be constructed at the same level as that of the existing carriageway or at different levels to form a split highway depending upon the feasibility and geo-technical stability of the area.

The Concessionaire shall pay due attention to geo-technical, environmental and social aspects of hill roads and take appropriate measures to ensure the following:

(i) Stability against geological disturbances.
(ii) Prevention of soil erosion.
(iii) Provision of efficient drainage and preservation of natural drainage system.

If there are any landslide prone areas along the road alignment, adequate investigation shall be undertaken and appropriate remedial measures shall be provided as per guidelines given in IRC:SP: 48.

Where any new construction/realignment is involved, the alignment shall avoid large scale cutting and filling and follow the profile of land, as far as possible.

Areas having potential landslide or settlement problems shall be avoided. Adverse impact on the environment shall be reduced by adopting proper mitigation measures. Refer to guidelines given in IRC:SP: 48.

Unstable hill slopes shall be adequately addressed by providing appropriate bioengineering and stabilization measures.

Necessary safeguard shall be taken to protect ecologically sensitive areas like wild life and bird sanctuaries, reserve forests, national parks, etc.

Protective structures for traffic such as parapets, railings, roadside safety barriers, boulder nets, etc. shall be provided, where necessary.
In mountainous and steep terrain, the scope of work defined by the Authority may be two-lane carriageways on different alignments (contours). In that case, the Manual of Specifications and Standards for two-laning of Highways shall apply to the two-lane carriageways on different alignments (contours).

Set back distance at horizontal curves

Requisite sight distance should be available across the inside of horizontal curves. Lack of visibility in the lateral direction may arise due to obstructions like walls, cut-slopes, wooded areas, etc. Set back distance from the central line of the carriageway, within which the offending obstructions should be cleared to ensure the needed visibility, can be determined using the Equation given in IRC:52.

Grade compensation at curves

At horizontal curves, the gradient shall be eased by applying the grade compensation correction for gradients steeper than 4 per cent in accordance with IRC:52.

Hairpin Bends

Hairpin bends, where unavoidable, may be designed either as a circular curve with transition curves at each end or as a compound circular curve.

Design criteria given in IRC:52 shall be adopted for the design of hairpin bends. At hairpin bends, the full roadway width shall be surfaced.

Climbing Lane

Climbing lane shall be provided, where specified in Schedule ‘B’ of the Concession Agreement, in order to address the necessity of making available separate lane for safe overtaking for vehicle traveling uphill.

Proper signs and road markings shall be provided to ensure that the absolute right of way for climbing vehicles is available.

Rock Blasting

Heavy rock blasting should be avoided. Controlled blasting shall be resorted to. Blasting shall be supervised by experienced personnel. Blasting and related operations shall be carried out in accordance with Clause 302 of MORTH Specifications.
Cut Slopes

Cut slopes shall be rendered stable in the construction stage itself, by cutting at the correct angle and benching etc., including slope stabilizing structures like drains, breast walls, pitching, etc.

Tunnels

Where it is necessary to cross hills or high ridges, the various alternatives including construction of tunnel to avoid deep cuts shall be considered and the most preferred alternative shall be chosen. The alternative to be followed shall be indicated in Schedule 'B' of the Concession Agreement. Where road is to be taken through tunnel, its salient details shall be indicated in Schedule 'B' of the Concession Agreement.

Drainage

For drainage of water from roadside, an effective system of drainage shall be constructed to lead the run-off to natural water courses. In particular, catch water drains (Refer to para 6.5 of this Manual) shall be provided above the cut slopes. It shall be ensured that water is not drained into villages and cultivated land. Location of cross drains and culverts should be so chosen as to avoid erosion of the outlet. Erosion control works like drop walls, apron at out-fall points along with pitching/paving of the channel shall be provided where required.

Retaining Walls

0.1 Retaining walls shall be provided:

(i) To support the down hill side unstable strata or fills,
(ii) To achieve width of roadway, where cutting into hill is restricted,
(iii) To arrest damage caused to the valley side and the road, by under cutting by a stream or other water course,
(iv) At valley points, where water flows over the road,
(v) At places where the valley side gets saturated in the monsoons and is likely to result in slips and damage to the road,
(vi) At any other locations warranting provision of retaining walls.

0.2 The retaining walls on the existing roads shall be inspected by the Concessionaire to check and assess the requirements of repairs and/or strengthening or reconstruction.
so required, the repair, strengthening or reconstruction work shall be carried out as per the assessment.

For general features, arrangement and design, guidelines given in IRC:SP: 48 may be referred to.

Aprons etc.

Construction of apron, pitching, flooring shall conform to Clauses 2503 to 2507 of MORTH Specifications.

Disposal of debris

Disposal sites shall be identified by the Concessionaire for disposal of waste, debris, etc. Tipping of waste into valley sides, stream channels, water bodies, and forest areas shall not be resorted to.

3 Report to be submitted

The Concessionaire shall submit report containing proposal for special requirements in hill areas to the IE for review and comments, if any.
SUGGESTIVE LAYOUT FOR ENTRY RAMP TO HIGHWAY
(AT THE END OF SERVICE ROAD)

FIG. 2.1A

NOTE:
1. DETAILED SYSTEM OF ROAD MARKING AS PER IRC:35
2. DETAILED SYSTEM OF ROAD SIGNS AS PER IRC:07
SUGGESTIVE LAYOUT FOR ENTRY RAMP TO HIGHWAY
(SERVICE ROAD ON BOTH SIDES OF ENTRY RAMP)
FIG. 2.1B

NOTE:
1. DETAILED SYSTEM OF ROAD MARKING AS PER IRC:35
2. DETAILED SYSTEM OF ROAD SIGNS AS PER IRC:67
SUGGESTIVE LAYOUT FOR EXIT RAMP FROM HIGHWAY
(AT THE END OF SERVICE ROAD)
Fig. 2.1C

NOTE:
1. DETAILED SYSTEM OF ROAD MARKING AS PER IRC:33
2. DETAILED SYSTEM OF ROAD SIGNS AS PER IRC:67
SUGGESTIVE LAYOUT FOR EXIT RAMP FROM HIGHWAY
(SERVICE ROAD ON BOTH SIDES OF EXIT RAMP)
FIG. 2.1D

NOTE:
1. DETAILING SYSTEM OF ROAD MARKING AS PER IRC:35
2. DETAILING SYSTEM OF ROAD SIGNS AS PER IRC:87
SUGGESTIVE LAYOUT OF SERVICE ROAD ENDING
AT A JUNCTION WITH CROSS ROAD

NOTE:-
1. THE SUGGESTIVE LAYOUT SHOWN HERE IS NOT MEANT TO SHOW THE EXACT DIMENSIONS OR CONSTRUCTION OF THE SERVICE ROAD.
2. THE COURTS FROM CROSS ROAD ON TO THE MAIN HIGHWAY SHALL BE DEALT IN ACCORDANCE WITH SECTION 2.2.(3).
3. THE OTHER END OF SERVICE ROAD SHALL BE PROVIDED WITH END TREATMENT AS PER FIGURE 2.1.B.
4. DETAILED SYSTEM OF ROAD MARKING AS PER IRC:35
5. DETAILED SYSTEM OF ROAD SIGNS AS PER IRC:67
SUGGESTIVE LAYOUT SHOWING CONFIGURATION OF
SERVICE ROAD, ENTRY/EXIT RAMPS, SIDE ROAD, AND UNDERPASS
FIG. 2.1F

NOTE:-
1. DETAILED SYSTEM OF ROAD WORKING AS PER IRC:35
2. DETAILED SYSTEM OF ROAD SIGNS AS PER IRC:97
SUGGESTIVE LAYOUT OF SERVICE ROAD CONTINUING
AT INTERSECTION
FIG. 2.1G

NOTE:
1. DETAILLED SYSTEM OF ROAD SIGNS AS PER IRC:67
**TYPICAL CROSS SECTION TYPE-A1**
(Open country—Plain/Rolling terrain)

**4-LANE DIVIDED HIGHWAY WITHOUT SERVICE ROADS AND WITH DEPRESSED MEDIAN**

Fig: 2.2

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**TYPICAL CROSS SECTION TYPE-A2**
(Open country—Plain/Rolling terrain)

**4-LANE DIVIDED HIGHWAY WITH SERVICE ROADS AND WITH DEPRESSED MEDIAN**

Fig: 2.3
TYPICAL CROSS SECTION TYPE-B
(Built-up Section - Plan/Section terrain)
4-LANE DIVIDED HIGHWAY WITH SERVICE ROAD AND WITH BARBED WIRE

Fig : 2.6

TYPICAL CROSS SECTION TYPE-C1
(Open country - Mountainous terrain)
4-LANE DIVIDED HIGHWAY ON DIFFERENT CONTOURS

Fig : 2.7
TYPICAL CROSS SECTION TYPE-C2
(Built up section - Mountainous terrain)
4-LANE DIVIDED HIGHWAY ON DIFFERENT CONTOURS

Fig 1.2.8

TYPICAL CROSS SECTION TYPE-C3
(Open country - Mountainous terrain)
4-LANE DIVIDED HIGHWAY AT SAME LEVEL WITH RAISED MEDIUM

Fig 1.2.9
Cross Section of Pipe Culvert at Road Level
4-LANE DIVIDED HIGHWAY
Fig: 7.1

Cross Section of Bridge at Deck Level - With Footpath
(Slab/Box type with open foundations)
4-LANE DIVIDED HIGHWAY
Fig: 7.2A

Cross Section of Bridge at Deck Level - Without Footpath
(Slab/Box type with open foundations)
4-LANE DIVIDED HIGHWAY
Fig: 7.2B
Cross Section of Bridge at Deck Level - With Footpath
(T-Beam/Box Girder type/Weld/Pile foundation)
4-LANE DIVIDED HIGHWAY (Both side new Bridges)

Fig: 7.3A

Cross Section of Bridge at Deck Level - Without Footpath
(T-Beam/Box Girder type/Weld/Pile foundation)
4-LANE DIVIDED HIGHWAY (Both side new Bridges)

Fig: 7.3B
TRAVELLED SHOULDER

FILL SECTION EMBANKMENT

HEIGHT

Fig. 9.1. WARRANTS FOR ROADSIDE BARRIERS
ON EMBANKMENTS

RECPROCAL OF EMBANKMENT SLOPE (b'/h')

FILL SECTION HEIGHT (m)

BARREER NOT WARRANTED FOR EMBANKMENT. HOWEVER CHECK BARRIER NEEDED FOR OTHER ROADSIDE HAZARDS
Fig. 9.2. TYPICAL DETAILS OF "W" BEAM SECTION

Note: All dimensions are in mm
Fig. 9.3. TYPICAL DETAILS OF THRIE BEAM SECTION

Note: All dimensions are in mm
Fig. 9.4. RECOMMENDED BARRIER PLACEMENT
Fig. 9.5. ROAD SIDE BARRIER CAST-IN-SITU DESIGN

NOTE:
1. HYSD - High yield strength deformed reinforcement
2. All dimensions are in mm
Fig. 9.6. ROAD SIDE BARRIER PRECAST DESIGN

NOTES:
1. Concrete M 30
2. Place on 25 mm grout bed
3. High yield strength deformed (HYSD) reinforcement
4. All dimensions are in mm.
TRAVELED WAY

SHOULDER

MEDIAN WIDTH

TRAVELED WAY

AVERAGE DAILY TRAFFIC *

(THOUSAND PCUs)

BASED ON A 5-YEAR PROJECTION

MEDIAN BARRIER WARRANTS

Fig. 9.7 MEDIAN BARRIER WARRANTS
Fig. 9.8. TYPICAL DETAILS OF "W" BEAM MEDIAN BARRIER

Note: - All dimensions are in mm
Note: All dimensions are in mm
Fig. 9.10 RECOMMENDED MEDIAN BARRIER PLACEMENT IN NON-LEVEL MEDIAN
Fig. 9.11. MEDIAN BARRIER CAST-IN-SITU DESIGN

NOTE:
1. HYSD - High yield strength deformed reinforcement
2. All dimensions are in mm
TYPICAL LAYOUT FOR A TOLL PLAZA

FIG. 10.1

NOTE:
DetaileD SYSTEM OF ROAD WORKING AS PER IRC:33
Fig. 13.1. LAYOUT OF STAGGERED PICK-UP BUS STOP

Note: All dimensions are in metres except as shown otherwise.
Fig. 13.2. LAYOUT OF PICK-UP BUS STOP IN HILLY AREA

Note: All dimensions are in metres except as shown otherwise.