



TENDER DOCUMENT

CA NO CE (P) BMK / /2018-2019
TENDER No. : CE (P) BRAHMANK-01 of 2018-2019

SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK

DATE OF SALE : 21 May 2018 (1000 HRS) ONWARDS

DATE OF RECEIPT : 14 Jun 2018 (1000 HRS)

DATE OF OPENING : 15 Jun 2018 (1100 HRS)
UN-PRICED BID

DATE OF OPENING : WILL BE INTIMATED TO
TECHNICALLY
PRICED BID QUALIFIED BIDDERS

PLACE OF OPENING : HQ CE (P) BRAHMANK, PASIGHAT.

BORDER ROADS ORGANISATION
CHIEF ENGINEER, PROJECT BRAHMANK, C/O 99 APO

Name of
work :

**SURVEY, INVESTIGATION AND PREPARATION OF DETAILED
PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF
ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH
DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN
WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443
BBC/44 BRTF/ PROJECT BRAHAMNK**

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(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

BORDER ROADS ORGANISATION
CHIEF ENGINEER PROJECT BRAHMANK, C/O 99 APO

INVITATION OF BID

Name of Work: **SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTE/ PROJECT BRAHAMNK**

NIT No. 80209/BMK/01 of 2018-19/E8

1.1 **INVITATION OF BID**

1.1.1 Chief Engineer, Project Brahmank has been entrusted with the responsibility of improvement of Road Tato-Menchuka (length about 50.00 Km) in West Siang Distt in the state of Arunachal Pradesh to double lane standards. Chief Engineer, Project Brahmank on behalf of President of India, here under described as "Employer/Client", invites Technical and Financial bid from the **empanelled consultants of MORT&H (under Category-I(A))** for "**SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTE/ PROJECT BRAHAMNK**".

1.1.2 The Tato-Menchuka has been approved for construction /improvement to National Highway Double Lane specifications. This road is proposed to be improved/constructed to NH-double lane specifications with a view to have proper connectivity to this area. The responsibility for improvement of this road rests with Border Roads Organisation. This road at present conforms to CI-9 surfaced specification and being maintained by Project Brahmank. It is accordingly proposed to invite Technical and Financial bid for "**SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTE/ PROJECT BRAHAMNK**".

1.1.3 The RFP has also been uploaded on "INFRACON" (www.infracon.nic.in). As such before submitting the proposal the Consultant shall mandatorily register and enlist themselves (the firm and all key personnel), on the MoRTH portal "INFRACON" and furnish registration details along with its RFP. A copy of Infracon Operation Procedure is also enclosed for bidder's reference.

1.1.4 All the bidders registered on **Infracon** shall form a Team on Infracon and which would be assigned unique Infracon Team ID. Bidders while submitting the proposal shall quote the Infracon Team ID.

1.2 **SCOPE OF SERVICES**

1.2.1 The job to be carried out by the Consultant under this contract comprises of but not limited to the following:-

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- (a) Determination of the techno-feasibility and economic viability or any other suitable alternative for the study section to cater for traffic needs for the design period of 15 years and evolve most cost effective solution.
- (b) Preparation of feasibility report, EPC documents and detailed project report for the improvement of exiting road to NHDL standard, including field surveys and investigation, soil and material surveys and evaluation, detailed engineering designs and drawings for the proposed works in accordance with standard codes specifications and sound engineering practices in vogue in Inida.
- (c) Preparation of work and performance specifications, bills of quantity and cost estimates
- (d) To draw programme for implementation of the project on ground.
- (e) Facilitate approval of the alignment, DPR including cost estimate thereof from the concerned authorities.

1.3 **PROCEDURE FOR OBTAINING BIDDING DOCUMENTS: -**

1.3.1 The consulting firms empanelled with MoRT&H (under Category – I(A)) may download bid document from Infrcon portal web www.infracon@nic.in as per the schedule given in CRITICAL DATE SHEET as under.

CRITICAL DATE SHEET

Date of Publishing	19 May 2018
Bid Document Download/Sale Start Date	21 May 2018 at (1000 Hrs)
Clarification Start Date	21 May 2018 at (1100 Hrs)
Pre Bid Meeting	26 May 2018 at (0900 Hrs)
Clarification End Date	28 May 2018 at (0900 Hrs)
Bid Submission Start Date	28 May 2018 at (1400 Hrs)
Bid Document Download / Sale End Date	14 Jun 2018 at (1000 Hrs)
Bid Submission End Date	14 Jun 2018 at (1000 Hrs)
Bid Opening Date	15 Jun 2018 at (1100 Hrs)

1.3.2 **Bids shall be submitted online only at Infracon portal. Manual (off line) bids shall not be accepted. Bidders are advised to follow the instructions provided in the 'Instructions to the bidder for the e-submission of the bid online through the Infracon portal for e-Procurement at <https://infracon@nic.in>, is enclosed herewith for ready reference.**

1.3.3 Tender must be accompanied by scanned copies of the original instruments in respect of cost of tender document, earnest money, original copy of affidavits, credit facility certificate and all the requisite documents connected to eligibility criterion. All documents/ papers uploaded/ submitted by the bidder must be legible.

1.3.4 As per JFR 2017, Cost of tender has not be catered.

1.3.5 Earnest money is not required to be attached with tender by the enlisted contractor with BRO who have submitted Standing Security Deposit but it is required from other contractors (Scanned and Original Copy) with tender documents for **Rs. 59,900.00 (Rupees Fift Nine Thousand Nine Hundred only)** in the shape of Call Deposit Receipt/DD/FDR in favour of **Chief Engineer (P) Brahmank C/o 99 APO** obtained from any Nationalized /Scheduled Bank and having maturity/validity period 30 days more than validity period of his offer, shall be submitted by post. Un-enlisted

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contractor may note that they will be required to lodge the Security Deposit of the work in the prescribed form on receipt in writing from the Accepting Officer, if their offer is accepted.

1.3.6 The tenderer who has downloaded the tender from the www.eprocure.gov.in and 'INFRACON' (www.infracon.nic.in) website shall not temper/modify the tender form in any manner. In case if same is found to be tempered/modify in any manner, tender will be summarily rejected and tenderer is liable to be banned from doing business with BRO.

1.3.7 Bid documents are not transferable.

1.3.8 Intending tenderers are advised to visit www.eprocure.gov.in and 'INFRACON' (www.infracon.nic.in) website three days prior to last date of submission of tender for any corrigendum/addendum/amendment. Tender quoted after due date shall not be considered for opening and no reason for delay or claim whatsoever shall be entertained.

1.4 PRE-BID MEETING

1.4.1 Intending bidder may obtain further information / clarification in respect of this bid during the pre-bid meeting to be held on **26 May 2018 at 0900 Hrs** at the office of **Chief Engineer, Project Brahmanck, C/O 99 APO**.

1.5 SUBMISSION OF BIDS

1.5.1 A Hard Copy of the Technical Bid shall be submitted in hard bound with pages serially numbered and provided with an index page in sealed cover in manual form to the **Chief Engineer, Project Brahmanck, PIN: 931722, C/o 99 APO**. This should exactly match the submission made online and any deviation may become a reason for summary rejection of the bid. The original instruments in respect of cost of tender document, earnest money, original copy of affidavits, credit facility certificate and all the requisite documents connected to eligibility criterion must be delivered to **The Chief Engineer Project Brahmanck, PIN: 931722, C/O 99 APO within a week from the bid opening date/time** as mentioned in critical date sheet. The bids may be delivered during office hours on all working days (0730 Hrs to 1430 Hrs on all week days except Sunday and Gazetted holidays). Bid not accompanied with the cost of tender is liable to be rejected. **Project Brahmanck** will not be responsible for any delay, loss or non-receipt of Tender document sent by post/courier. Further, Accepting Officer shall reserve the right to accept/reject any or all applications without assigning any reason thereof.

1.5.2 Not more than one bid shall be submitted by one firm or firms in partnership or joint venture.

1.5.3 Bid documents may be submitted by the bidder either in person or through an agent or by post. In case of submission of bid documents by post, the risk and responsibility for loss/ delay in transit of the same shall solely lie on the bidder.

1.5.4 **The bids received by the Chief Engineer, Project BRAHMANK C/O 99 APO will be opened (i.e. T-bid) online at the office of the Chief Engineer, Project BRAHMANK, C/O 99 APO on 15 Jun 2018 at 1100 hrs. Q-bid will however be opened subsequently online on the prescribed date after technical evaluation. However, Q-bid in respect of non-qualified firms will be returned back unopened.**

1.5.5 The bid shall be valid for a period of **120 days (One hundred twenty days)** from the last date of receipt of bids.

1.5.6 The submission of a tender by a tenderer implies that he had read this notice and conditions of contract and has made himself aware of the scope and specifications of the

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For Accepting Officer

work to be done and of the conditions and rates at which stores, tools and plants etc will be issued to him, local conditions and other factors bearing on the execution of the work.

1.6 PERIOD OF COMPLETION

1.6.1 The contract will run for a period of **08 (Eight) months** from the date of concluding the agreement.

1.7 LANGUAGES

1.7.1 All the design work and documents shall be prepared and submitted in English language only.

1.7.2 All the correspondence shall be in English only. The key design and management staff and advisors shall be proficient in spoken and written English.

1.8 MODE OF PAYMENT

1.8.1 Payment to the Consultant will be made in Indian Rupees through NEFT/RTGS only.

1.9 CONTACT ADDRESS FOR FURTHER INFORMATION

1.9.1 The following official may be contacted for any other information required in connection with the subject. The bidder may also visit Infracon portal website [www.infracon@nic.in](https://infracon@nic.in) for further details.

SW / Dir (Contract)

HQ CE (P) BRAHMANK

C/O 99 APO

Tele No:0368- 2222124

Fax No: 0368- 2222173

Email: bro-bmk@nic.in

Commander

44 BRTF (GREF)

C/O 99 APO

Tele No: 03783-222394

Officer Commanding

1443 Bridge Construction Company (GREF)

C/O 99 APO

Above particulars may change due to Adm or any other reasons and shall be available on <https://infracon@nic.in>. Therefore, bidders/contractors are requested to visit these websites frequently and at least THREE DAYS prior to End date of Bid Submission for changes in above particulars.

Dated: 19 May 2018

Sd/- xxx

Director (Contract)

For Chief Engineer

(Signature of the Consultant with seal)

Lt Col

SW

For Accepting Officer

SECTION-II

INSTRUCTIONS TO BIDDERS

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For Accepting Officer

SECTION – II**INSTRUCTION TO BIDDERS****2.1 GENERAL**

2.1.1 The bids are invited for the works referred to in Terms of Reference (T.O.R) vide Section – IV from the pre-qualified Engineering Consultant firms. (The date and time of actual receipt of bids at the said notified place will only count for consideration of the bids).

2.1.2 The applicant, before bidding, shall carefully study the conditions and the details appended herein. In case the applicant have any doubts and requires clarification, he shall obtain, from the Client at the contact address given in Section 1.9.1 or in the pre-bid conference to be held on **26 May 2018 at 0900 Hrs.** The site of the proposed works may be inspected by the bidder or his representative at his own cost. Technical persons of the department will accompany the applicant, if necessary on prior requisition.

2.2 BIDDING

2.2.1 The bidders shall submit bids in a complete shape with all the particulars called for in the Bid documents. All the required details and all other relevant information shall be submitted to enable the Client to evaluate the suitability of the bids and to take a decision as per the Terms of Reference incorporated in the schedules. The bidders may, if necessary, amplify and furnish additional information. If the information furnished is not complete, the bid is liable to be rejected.

2.2.2 The bidder, as far as possible, shall follow the job mentioned in Terms of Reference. If the bidder wishes to depart from the provisions of this job, he shall list out such deviations separately with their financial implications and submit full particulars with reasons thereof.

2.2.3 Clarifications, amplifications or any other correspondence from the bidder subsequent to opening of the bids will not be entertained. The bidder shall therefore ensure that their bids are submitted in a complete shape without any conditions.

2.2.4 The attention of bidder is drawn to the Indian Official Secret Act 1923 (XIX of 1923) as amended up to date, particularly section 5 thereof for compliance with its provision.

2.3 COST OF BIDDING

2.3.1 The bidder shall bear all costs associated with the preparation and submission of his bid and the Client will in no case be responsible or liable for these costs, regardless of the outcome of the bidding process.

2.4 SITE VISIT

2.4.1 The bidder is advised to visit and examine the site of works and its surroundings and obtain for himself on his own responsibility, all information that may be necessary for preparing the bid and entering into a contract. The cost of visiting the site shall be at bidders own expense. Technical person of the Client will accompany the applicant, if required.

2.4.2 The bidder and any of his authorized agents or personnel will be granted permission by the Client or his representative to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the bidder, his personnel or agents,

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will release and indemnify the Client and his personnel and agents from and against all liability in respect thereof and will be responsible himself for personal injury (whether fatal or otherwise), loss or damage to property and any other loss, damage, cost and expenses howsoever caused, which, but for the exercise of such permission would not have arisen.

2.5 ELIGIBILITY OF FIRMS AND JOINT VENTURE OF FIRMS

2.5.1 The engineering consultancy firms having good experience and past record in similar nature of jobs, and who are short-listed by the Client are only eligible to submit the bids.

2.5.2 If the bid is made by a proprietary firm, it shall be signed by the proprietor above his fully typewritten name, name of his firm with current address and registered office with the office stamps.

2.5.3 If the bid is made by a firm in partnership, it shall be signed by all the partners of the firm above their full type written names and current addresses or alternatively by a partner holding a valid power of attorney for the firm from all the partners for signing the bid, in which case a certified copy of the power of attorney shall accompany the bid, including the certified copies of the partnership deed, current address of the firm and the full names and the current address of the partner in India and their registered office. It should also clearly state which member of the partnership would be acting as a lead member on behalf of the partnership in all its relations and communication with the Client.

2.5.4 If the bid is made by a limited company or a limited corporation, it shall be signed by a duly authorized person holding a valid power of attorney, which should accompany the bid. Such limited company or corporation may be required to furnish satisfactory evidence of its existence if job is to be awarded. They should also furnish the articles of memorandum and certificate of incorporation of the Company.

2.5.5 If the bid is made by a joint venture of firms, the sponsoring firm shall submit complete information pertaining to each firm in the group and state which member of the joint venture will be acting as lead member on behalf of the joint venture. The sponsoring firm shall also furnish evidence admissible in law in respect of the authority assigned to such firm on behalf of the general group of firms and for completion of the job. A detailed memorandum of understanding (MOU) between the members of joint venture stating the inter-relationship and division of work between the members, and undertaking to the effect that firms are jointly and severally liable to the employer for the performance of the services should be submitted along with the tender for examination by the Client. Powers of attorney from each member shall authorize the lead member to submit the tender and to negotiate the proposal on their behalf and complete the job in all respect.

2.5.6 It shall be noted that if any member of the group combines the function of a Consultant or designer with those of a contractor and / or manufacturer, all relevant information must be provided regarding such relationship, along with an undertaking to the effect that the member agrees to limit their role to that of a Consultant and / or designer and to disqualify themselves, their associates / affiliates and / or parent firm from work on any other capacity (including tendering related to any goods or services for any part of the project) on this project other than that of Consultant and / or designer.

2.5.7 If, in connection with the performance of the consulting services any group member intends to borrow, hire temporarily personnel from contractors, manufacturer or suppliers, he must include in their proposal all relevant information about such personnel. In such

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cases the bid will be acceptable only if those contractors, manufacturers and suppliers disqualify themselves from work on this Project (including tendering related to any goods or services for any other part of the Project) other than that of Consultant and / or designer.

2.5.8 Each tenderer, or any other associate will be required to confirm and declare in the tender document that no agent or middleman or any intermediary has been or will be, engaged to provide any services, or any other items of work related to the award and performance of the contract. It shall be confirmed and declared in the submittal that no agency commission or any payment that may be construed as an agency commission has been or will be paid and that the tender price will not include any such amount.

2.5.9 All witnesses and sureties shall be from persons of stature and probity and their full names, occupations and addresses shall be stated below their signatures.

2.5.10 The bid from the consultants shall be accompanied by an attested copy of the Income Tax Return for the previous financial year or a photocopy of PAN card.

2.5.11 The bid submitted by an individual shall not be considered.

2.6 DISQUALIFICATION OF THE FIRMS

2.6.1 Not more than one tender shall be submitted by one firm or firms in partnership or joint venture. Under no circumstances will a father or son(s) or other close relatives who have business dealing with one another be allowed to tender for the same contract as separate competitors. A breach of this condition will render tenders of both the parties liable for rejection.

2.6.2 Joining together of two or more Consultants' team, who have applied separately for issue of tender documents, to submit a single tender will not be permitted.

2.6.3 Firms employing a retired official of the Border Roads Organisation within two years from the date of retirement shall ensure that the prior permission of the Government of India has been obtained for the purpose. The contract is liable to be cancelled if either the bidder or any of his employees is found at any time to be such a person who had not obtained the permission of the Government as aforesaid before.

2.7 LANGUAGE & LOCATION OF DESIGN OFFICE

2.7.1 All the documents and subsequent design shall be prepared and submitted in English language only. The key design and management staff proposed to be deployed for the work shall be proficient in spoken and written English.

2.7.2 The consultants core team shall during field survey and investigation be located near the work site preferably at Tato and Aalo. The detailed design and report preparation may however be carried out at firm's main office/Branch office.

2.8 BID GUARANTEE

2.8.1 The bidder shall submit, along with their tender, a bid guarantee, in the form of TDR/STDR/CDR/FDR issued by any Branch of a scheduled commercial bank based in India, for an amount of Rs. **59,900/- (Rupees Fifty-nine Thousand Nine Hundred only), in**

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favour of “The Chief Engineer, Project Brahmanck, C/O 99 APO with a validity period of 90 days from the last date of submission of tender.

2.8.2 The original of this Bid Guarantee shall be submitted in a separate sealed envelope inside the envelope containing the Technical Bid. This envelope shall be opened in the presence of the tenderers to confirm the compliance of this requirement. **Offer submitted without the valid Bid Guarantee will be rejected outright.**

2.8.3 The Bid Guarantee of the successful bidder will be returned on receipt of a Performance Guarantee and the signing of the contract as required herein. The Bid Guarantee of the unsuccessful bidders will however be returned after finalization of bids or on expiry of **120 days** from the last date of receipt of bids which ever is earlier at the request of the bidder.

2.8.4 The Client reserves the right to call in the Bid Guarantee if the successful bidder fails to respond to clarifications sought and sign the contract within the specified time frame or withdraws the offer within the period of **90 days** from the date of receipt of bids. Submission of false statements entails call-in of Tender Guarantee of the bidders, irrespective of his being successful or otherwise.

2.9 BID VALIDITY

2.9.1 The bid shall be valid for a period of **120 days (One hundred twenty days)** from the last date of receipt of bids.

2.10 PRE-BID MEETING

2.10.1 A pre-bid meeting will be convened at the Office of the **Chief Engineer, Project Brahmanck, C/O 99 APO on 26 May 2018 at 0900 Hrs.**

2.10.2 The purpose of the meeting will be to clarify issues and to answer questions or any matter that may be raised at that stage.

2.10.3 The bidder is requested preferably to submit any question in writing or by fax to reach the Client not later than **one day** before the meeting, or ask in the pre-bid meeting.

2.10.4 In case the bidder is not in a position to attend the meeting, minutes of the meeting including copies of the questions raised and replies given, will be furnished expeditiously to all those attending the meeting and subsequently to all purchasers of the bidding documents. Any modification in the tender documents, which may become necessary as a result of the pre-bid meeting, shall be made by the Client exclusively through the issue of an addendum in pursuant to the following clause and not through the minutes of the pre-bid meeting. The same shall be uploaded on web site.

2.11 AMENDMENT OF BIDDING DOCUMENTS

2.11.1 At any time prior to the dead line for submission of bids, the Client may, for any reason, whether at his own initiation or in response to a clarification requested by a prospective bidder modify the bidding documents by the issue of an Addendum / Amendment.

2.11.2 The addendum / amendment will be uploaded on web site.

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2.12 DEAD LINE FOR SUBMISSION OF BIDS

2.12.1 Bids must be submitted online **on or before 1000 Hrs on 14 Jun 2018.**

2.12.2 The Client may at his discretion extend the deadline for submission of bids issuing an amendment in accordance with the above in which case all rights and obligations of the Client and the bidders previously subject to the original deadline shall there after be subject to the new deadline as extended.

2.13 MODIFICATION AND WITHDRAWAL OF BIDS

2.13.1 In case the bidder has to revise/ modify the rates quoted in the schedule 'A' before tender submission end date as mentioned in critical data sheet, resubmission bid shall be allowed.

2.13.2 In case the tenderer has to revise /modify /withdraw his quoted rates / offer after it is submitted, he may do so on his on line before the latest date & time fixed for submission of tenders. Any revision/ modification in offer / withdrawal of offer in the form of an open letter shall not be taken into account, while considering in his original offer.

2.13.3 No bid may be modified subsequent to the last date and time for submission of bid.

2.13.4 Withdrawal of a bid during the interval between the last date and time for submission of bid and the expiry of the period of bid validity specified under clause 2.9.1 will result in the call-in of the Tender Guarantee by the Client.

2.14 BID FORMAT AND SIGNING OF BIDS

2.14.1 The bidder shall prepare one Original and One Copy of the documents as per the instructions contained hereunder and clearly marked "ORIGINAL" and "COPY" as appropriate. In the event of any discrepancy between them, the original shall prevail.

2.14.2 The original as well as the copy of the bid shall be typed / printed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the firm, or joint venture.

2.14.3 Proof of authorization shall be furnished in the form of a written power of attorney, which shall accompany the bid. The person or persons signing the bid shall initial all pages of the bid where entries or amendments have been made.

2.14.4 The Complete bid shall be without alterations, interlineations or erasures, except those by the bidders, in which case such corrections shall be initialed by the person or persons signing the bid.

2.14.5 Only one bid may be submitted by each bidder. No bidder may participate in the bid of another for the same contract in any capacity whatsoever.

2.14.6 The complete set of bidding documents issued for the purpose of the bidding together with any addendum / amendment there to, issued by the Client in accordance with clause 2.11 and any modification issued as a result of pre-bid meeting in accordance with

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clause 2.10.4 and the documents furnished, pursuant to clause 2.5 will form part of the agreement.

2.15 TECHNICAL AND FINANCIAL BID

2.15.1 The bidders shall submit technical bid shall be placed in the single cover while submitting the bid in a sealed cover. Technical proposals & Tender Guarantee in original shall be submitted in a separate sealed envelope. Financial bid shall be submitted **online in Excel format**.

2.16 TECHNICAL PROPOSAL

2.16.1 Under the technical proposal, particular about the following shall be furnished online as per the formats specified at Section-VI. No indication of the price-bid shall be given under this proposal and the requisite details alongwith tender guarantee in original in a separate sealed envelope shall be submitted under this package. Scan copy shall be submitted online and hard copy thereof shall be submitted within a week from the last date of submission of bid.

- (a) The composition of the proposed Team of experts and Task Assignment to each key personnel and support staff.
- (b) Approach and methodology proposed to be followed for various services listed in TOR, including quality assurance plan and safety audit thereof.
- (c) Proposed work programme for the execution of the services illustrated with bar charts of activities.
- (d) Manning schedule of each key personnel supported by bar diagrams showing the time proposed (person x months) for each Key Professional staff.
- (e) The name, background, qualifications and professional experience of each key staff including the team leader to be assigned for the services. One set of original Curriculum Vitae (CV) of each key staff needs to be recently signed in blue ink by the proposed key professional staff and also by an authorized official of the Firm. The key information shall be as per the specified format. The authorized signatory shall sign on each page of each CV (i.e. original as well as photocopies). Unsigned copies of CVs shall be rejected.
- (f) Equipments/Instruments proposed to be used for the services.
- (g) Computer Hardware and softwares proposed to be used for the services.
- (h) In case the consultant envisages outsourcing certain specialized services (e.g. geo-technical investigation etc.) to the expert agencies, the details of the same indicating the arrangement made with the agencies be also furnished. These agencies would however, be subject to the approval of the client to ensure quality input by such agencies. For geo-technical investigations, only empanelled firms/consultants with the MoRT&H should be engaged provided such firms are actively involved in the profession.

2.16.3. During preparation of the technical proposal, particular attention be given to the following:

- a) The various manpower i.e. key personnel, technical and administrative support staff are assigned in adequate number and in a manner that the services specified at TOR are

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completed in the specified time schedule as per the desired details and standard. It is emphasized that the time period for the assignment indicated in the TOR should be strictly adhered to.

- b) At least 25% of the proposed Technical Key Personnel must have been employed for the last 6 months (reckoned from the date of submission) by the firm/consortium submitting the proposal. A documentary evidence in support of this should be enclosed.
- c) In case a firm is proposing key personnel from educational/research institutions, a '**No Objection Certificate**' from the concerned institution should be enclosed with the CV of the proposed key personnel committing his services for the instant project.
- d) No alternative key personnel may be proposed and only one CV may be submitted for each position **in the format given at Section-VI. The minimum requirements of qualification and Experience of all key personnel are listed at annexure - 'I' to Section-VI. The proposal not meeting the minimum requirement specified shall not be evaluated further. However, the client reserves the right to lower the minimum requirements in the interest of work without giving any notice.**
- e) Specific experience in case of Retd EE/SE/CE from State/Central Govt. would be considered for specific position.
- f) Where graduation is the required qualification, M.Tech would be considered equivalent to 2 years experience and PHD equivalent to 3 years.
- g) Team Leader, Highway Engineer, Geo-Technical cum material engineer and Survey Engineer should be available from beginning of the project.
- h) The availability of key personnel must be ensured at site during the period shown in the manning schedule.
- i) The proof of age and qualification of the key personnel must be furnished in the technical proposal.
- j) Age limit for support staff to be deployed on project is 60 years.

2.17. FINANCIAL PROPOSAL

2.17.1 This proposal shall be submitted **online in the Excel format** as per Schedule 'A' and annexure thereto (refer section-V) only.

2.17.2 The financial proposal should include the costs associated with the assignment. These shall normally cover, remuneration for key and other staff, accommodation, transportation, equipment, printing of documents, surveys, geo-technical investigations etc. The financial proposal should clearly indicate the amount asked for without any assumptions of conditions attached to such amounts. Conditional offer or the proposal not furnished in the format specified shall be considered non-responsive and is liable to be rejected.

2.17.3 The financial proposal shall take into account all types of the tax liabilities and cost of insurance including services taxes.

2.17.4 Costs shall be expressed in Indian Rupees only both in figure and words.

2.17.5 All payments shall be subjected to deduction of Income tax at source in accordance with the Income tax act as applicable.

2.18 SEALING AND MARKING OF BIDS

(Signature of the Consultant with seal)

Lt Col
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For Accepting Officer

2.18.1 The bidder shall submit the bid in sealed cover.

2.18.2 The inner and outer envelopes shall be addressed to **Chief Engineer, Project Brahmanak, C/O 99 APO, PIN-931722** and shall bear the following identifications.

I. Bid for the work of **“SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTEF/ PROJECT BRAHAMNK”.**

2.18.3 The inner envelopes shall indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared that bid is not submitted online or is otherwise unacceptable. If the outer envelope is not sealed and marked as instructed above, the clients will assume no responsibility for the misplacement or premature opening of the bid submitted. A bid opened prematurely for this cause may be rejected by the Client and returned to the bidder.

2.19. SUBMISSION OF BIDS

2.19.1 **Bids shall be submitted online.** Hard copy of technical bid along with supporting documents will either be received by hand or through mail at the address indicated at Para 2.17.3

2.19.2 Bids can also be sent by registered mail at Bidders risk. The department does not take any responsibility for the postal delays.

2.20 BID OPENING

2.20.1 The Client will open the bids online at **1100 hours on 15 Jun 2018** at **Headquarters, Chief Engineer Project Brahmanak, C/O 99 APO**. Bids for which an acceptable notice of withdrawal has been submitted pursuant to clause 2.13 shall not be opened.

2.20.2 The Client will examine all the Technical proposals for completeness against the stipulated requirements whether the documents are complete, have been properly signed and are in order. The Client will commence tender evaluation subsequently.

2.20.3 To assist in the examination, evaluation and comparison of bids, the client may ask bidders individually for clarification, including presentation on their bids. The request for clarification, presentation and the response shall be in writing or by fax, but no change in the price or substance of the bid shall be sought, offered or permitted

2.21 EVALUATION OF PROPOSALS

2.21.1 A two-stage procedure will be adopted in evaluating the proposals with the technical evaluation being completed prior to opening of any Financial Proposals.

2.22. TECHNICAL PROPOSAL

2.22.1 The Technical Proposals will be evaluated by Technical Expert Committee to be appointed by Chief Engineer, Project Brahmanak. The following criteria will be applied for evaluation of documents (Total points-1000 as per the break-up details given below): -.

- a) Composition of the proposed team of experts and task assignment to each key personnel 100 points

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- b) Approach and methodology proposed - 100 points
- c) Proposed work programme - 100 points
- d) Manning schedule of each key personnel - 200 points
- e) Qualification, related experience and competence of each key personnel proposed for the assignment (Total 400 points as per the break up given below):-
- i) Team leader cum Senior Highway Engineer - 100 points
 - ii) Senior Survey Engineer 75 points
 - iii) Material Cum Geo-technical expert 75 points
 - iv) Traffic Engineer 75 points
 - v) Highway Engineer 75 points
 - vi) Quantity survey and documentation Expert 50 points
- f) Equipments/Instruments proposed to used : 25 points
- g) Computer Hardware and soft ware proposed to be used : 25 point

2.23 AWARD CRITERIA

2.23.1 Technical Proposal

2.23.1.1 Competence, experience, understanding and approach of the consulting service shall be considered as the paramount requirement for the technical acceptance of the proposal. The bids whose technical proposal scores a minimum of 75% marks will only be considered as technically acceptable. All the proposals acceptable technically as per the criteria listed here above will only be considered for opening of Financial Proposal. The accepting officer may however review the criteria depending upon the extent of competition and other related issues.

2.23.1.2 After the Technical evaluation is completed, the Client shall notify those consultants whose proposals didn't meet the minimum qualifying points as mentioned above or were considered non-responsive by the committee as per the terms of Reference, indicating that their Financial proposals will be returned unopened after completing the selection process. The Client shall simultaneously notify the consultants that have secured the minimum qualifying points, indicating the date and time set for opening the Financial Proposal. The opening date shall not be sooner than two weeks after the notification date. The notification may be sent by registered letter/ cable/telex/ facsimile/E-Mail/Fax.

2.23.2 Financial Proposal

2.23.2.1 The Financial proposal shall be opened online on the prescribed date and time fixed by the accepting officer. The Client shall prepare minutes of the financial bid opening.

2.23.3 Final Evaluation

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2.23.3.1 The lowest financial proposal if found complete and in order in all respect will generally be invited for execution of contract agreement. However, Accepting Officer is not bound to accept the lowest or any bid received or to give any reasons for doing so.

2.24. CONFIDENTIALITY OF PROCESS

2.24.1 After the opening of bids, information relating to the examination, clarification, evaluation and comparison of bids and recommendations concerning the award of contract shall not be disclosed to bidders or other persons not officially concerned with such process until the award of the contract to the successful bidder has been announced. Any effort by a bidder (or any of his representatives) to influence the Client in the process of examination, clarification evaluation and comparison of bids, and in decisions concerning award of contract may result in the rejection of the bidder's bid.

2. AWARD

2.25.1 Prior to the expiration of the period of bid validity, the Client will issue a letter of acceptance to the successful tenderer, on approval of competent authority. The issue of the letter of Acceptance shall constitute the formation of the contract and Consultant shall commence the work immediately thereafter on receipt of Notice to Proceed. The same will be uploaded online.

2.26 SIGNING OF AGREEMENT

2.26.1 The successful bidder has to sign the agreement within a period of **15 days** from the date of communication of acceptance of his bid, other wise the Tender Guarantee deposited by him will be called-in without further notice.

2.26.2 After Acceptance and signing of Contract Agreement, the Client will promptly inform the unsuccessful bidders and return the Tender Guarantee as submitted by them with the tender documents.

2.27 PERFORMANCE GUARANTEE

2.27.1 Immediately after the successful tenderer receives the Letter of Acceptance, but not later than the date the Agreement is signed between the parties, the tenderer shall submit a Performance Guarantee having value 10% of the contract price, in the form of a Bank Guarantee issued by a Branch of a Schedule Commercial Bank based in India. The performance Guarantee shall remain valid for the period of 24 months after the completion of services. The bank guarantee initially submitted shall have validity up to 12 months which shall be extended suitably by the bidder on the request of client for further period, if so required. The guarantee shall be as per the format given at Section-VI.

2.27.2 The Tender Guarantee as submitted with the tender documents will however be returned back immediately on receipt of the performance guarantee from the successful tenderer.

2.28 JOINT VENTURE AGREEMENT

2.28.1 In case the successful tenderer is a joint venture of certain firms, the tenderer, immediately on receipt of acceptance letter, shall submit the joint venture agreement between the firms, duly signed by each member of the joint venture.

2.29 ADDITIONAL INFORMATION

2.29.1 Every effort will be made to provide additional information to tenderers that has been requested for in writing. However, request for additional information and any delay in providing information is entirely at tenderer's risk and shall not be considered as a reason

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for late delivery of tenders or a reason for delaying the submission of tenders by the stated date.

2.29.2 Any information asked for by the bidder or provided by the Client that is not given in writing, shall not be considered by the Client and acceptable as a reason for late delivery of tenders or a reason for delaying the submission of tenders on the stated date.

(Signature of the Consultant with seal)

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For Accepting Officer

FORM OF AGREEMENT

This agreement made this Day of 2018 between Chief Engineer, Project Brahmank of Border Roads Organization (hereinafter called “the Client”) on one hand and on the other hand* _____ of _____ (hereafter called “the Consultant”).

***Note :**

The Consultant is a Joint Venture of the following firms

- a)
- b)
- c)

The members authorize _____ to be known as the lead firm, and to act on their behalf in all matters in connection with or arising out of this agreement. The members of Joint Venture undertake together and individually (Jointly and Severally) the obligation of the Joint Venture under the agreement.

Whereas the Consultant has offered to perform certain services in this Contract for “**SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK**” and the Client has accepted the offer by the Consultant for the performance of such Services.

2.30 NOW THIS AGREEMENT WITNESSETH AS FOLLOWS

2.30.1 In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of the Client / Consultant Services Agreement hereinafter referred to.

2.30.2 The following documents shall be deemed to form and be read and construed as part of this Agreement, namely:

2.30.2.1 The Letter of Acceptance.

2.30.2.2 Conditions of Client / Consultant Services Agreement (Section III).

Part I – General Conditions Of Agreement

Part II – Particular Conditions Of Agreement

2.30.2.3 Terms of References (Section – IV).

2.30.2.4 Form of Tender (Section-V)

2.30.2.5 Technical proposal

2.30.2.6 Performance Guarantee.

2.30.2.7 Joint Venture Agreement between the firms (If applicable).

2.30.3. In consideration of the payments to be made by the Client to the Consultant as hereinafter mentioned the Consultant hereby agrees with the Client to perform the Services in conformity with the provisions of the Agreement.

(Signature of the Consultant with seal)

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For Accepting Officer

2.30.4 The Client hereby agrees to pay the Consultant in consideration of the performance of the Services such amounts as may become payable under the provisions of the Agreement at the times and in the manner prescribed by the Agreement.

In Witness whereof the parties hereto have caused this Agreement to be signed in their respective hands as of the day and year first before written.

FOR AND ON BEHALF OF THE CLIENT

Accepting Officer

Name _____

Signature _____

Address _____

FOR AND ON BEHALF OF THE CONSULTANT

By Authorised Representative

Witness:

Name _____

Signature _____

Address _____

Note :- If the Consultant consist of more than one entity, all of these entities should also appear as signatories.

Witness :

(i)

(ii)

(Signature of the Consultant with seal)

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For Accepting Officer

SECTION – III

CONDITIONS OF THE CONTRACT

PART – I: GENERAL CONDITIONS OF CONTRACT

PART – II: CONDITIONS OF PARTICULAR APPLICATION

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For Accepting Officer

PART I**GENERAL CONDITIONS OF CONTRACT****3.1 DEFINITIONS**

3.1.1 The following words and expressions shall have the meanings assigned to them except where the context otherwise requires.

3.1.1.1 "Project" means the project named in Part-II for which the consultancy services are to be provided.

3.1.1.2 "Service" means the services to be performed by the Consultant in accordance with the Agreement and comprise Normal Services, Additional services and Exceptional Services.

3.1.1.3 "Works" means the permanent works to be executed (including the goods and equipment to be supplied to the Client) for the achievement of the Project.

3.1.1.4 "Government" means the President of India, his successor in office and assigns.

3.1.1.5 "Employer / Client" means Chief Engineer, (P) Brahmark, who employs the Consultant, and legal successors to the Client and permitted assignees on behalf of Government.

3.1.1.6 "Accepting Officer" means the duly authorised officer, of the rank of Chief Engineer, who accepts the contract on behalf of the President of India.

3.1.1.7 "Engineer" means the officer of the rank of Executive Engineer (Civil) authorised by the Accepting Officer to administer and direct the contract and who certifies the measurements and payments as due to the consultant. All notices to be given and all actions to be taken on behalf of the Government in respect of this contract may be given or taken by the Engineer.

3.1.1.8 "Consultant" means the party named in the Agreement, who is employed as an independent professional firm by the Client to perform the Services, and legal successors to the Consultant and permitted assignees.

3.1.1.9 "party" and "parties" means the Client and the Consultant and "third party" means any other person or entity, as the context requires.

3.1.1.10 "Agreement" means the conditions comprising the Parts I and II together with Terms of Reference specified at Section IV, Form of tender (Section-V). Performance Guarantee, Letter of Acceptance and Formal Agreement if completed, or otherwise as specified in Part II.

3.1.1.11 "Dte GBR" means "Directorate General Border Roads".

3.1.1.12 "DGBR" means "Director General Border Roads".

3.1.1.13 "CE" means "Chief Engineer".

3.1.1.14 "day" means the period between any one midnight and the next.

3.1.1.15 "month" means a period of one month according to the Gregorian calendar commencing with any day of the month.

3.1.1.16 "Local Currency" (LC) means the currency of India (i.e. Indian Rupee) and "Foreign Currency" (FC) means any other currency.

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For Accepting Officer

3.1.1.17 “Agreed Compensation” means additional sums as defined in Part II which are payable under the Agreement.

3.1.1.18 ‘CTF’ means the ‘Commander Task Force’ of the rank of SE or Colonel authorized by the accepting officer to direct the contract and release the payments for the services offered as per the terms of contract.

3.2 INTERPRETATION

3.2.1 The headings in the Agreement shall not be used in its interpretation.

3.2.2 The singular includes the plural, the masculine includes the feminine, and vice-versa where the context requires.

3.2.3 If there is conflict between provisions of the Agreement, the last to be written chronologically shall prevail, unless otherwise specified in Part II.

3.3 SCOPE OF SERVICES

3.3.1 The Consultant shall perform Services relating to the Project. The Terms of Reference of the services are stated at Section IV.

3.4 NORMAL, ADDITIONAL AND EXCEPTIONAL SERVICES

3.4.1 Normal services are those described as such in the Terms of Reference.

3.4.2 Additional Services are those described as such in Terms of Reference or which by written agreement of the parties are otherwise additional to Normal Services.

3.4.3 Exceptional Services are those which are not Normal or Additional Services but which are necessarily performed by the Consultant in accordance with clause 3.25.

3.5 DUTY OF CARE AND EXERCISE OF AUTHORITY

3.5.1 The Consultant shall exercise reasonable skill, care and diligence in the performance of his obligations under the Agreement.

3.5.2 Where the Services include the exercise of powers or performance of duties authorized or required by the terms of a contract between the Client and any third party, the Consultant shall:

(a) Act in accordance with the contract provided that the details of such powers and duties are acceptable to him where they are not described in the Terms of Reference.

(b) If authorized to certify, decide or exercise discretion, do so fairly between the Client and third party not as an arbitrator but as an independent professional acts by his skill and judgment.

(c) If so authorized vary the obligation of any third party, subject to obtaining the prior approval of the Client to any variation which can have an important effect on costs or quality or time (except in any emergency when the Consultant shall inform the Client as soon as practicable).

3.6 CLIENT’S PROPERTY

3.6.1 Anything supplied by or paid for by the Client for the use of the Consultant shall be property of the Client and where practicable shall be so marked. When the Services are completed or terminated the Consultant shall furnish inventories to the Client of what has not been consumed in the performance of the Services and shall deliver it as directed by the Client.

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For Accepting Officer

3.7 INFORMATION

3.7.1 The client shall so as not to delay the services and within a reasonable time give to the Consultant free of cost all information in his power to obtain which may pertain to the Services.

3.8 DECISIONS

3.8.1 On all matters properly referred to him in writing by the Consultant, the Client shall give his decision in writing so as not to delay the Services and within a reasonable time.

3.9 ASSISTANCE

3.9.1 In respect of the Consultant, his personnel and dependents, as the case may be, the Client, pursuant to the applicable Indian Laws shall do all in his power to assist in :

3.9.1.1 The provision of documents necessary for entry, residence, work and exit;

3.9.1.2 Providing unobstructed access wherever it is required for the services;

3.9.1.3 Providing access to other organizations for collection of information, which is to be obtained by the consultant.

3.10 SUPPLY OF PERSONNEL

3.10.1 The personnel who are sent by the Consultant to work in the Project shall have been physically examined and found fit for their assignments, and their qualification shall be acceptable to the client.

3.11 REPRESENTATIVES

3.11.1 For the administration of the Agreement each party shall designate the official or individual to be his representative.

3.11.2 If required by the Client, the Consultant shall designate an individual to liaise with Client's representative at the place of the Project.

3.12 CHANGES IN PERSONNEL

3.12.1 If it is necessary to replace any person, the party responsible for the appointment shall immediately arrange for replacement by a person of comparable competence.

3.12.2 The cost of such replacement shall be borne by the party responsible for the appointment except that if the replacement is requested by the other party.

3.12.2.1 Such request shall be in writing stating the reasons for it and

3.12.2.2 The party making the request shall bear the cost of replacement unless misconduct or inability to perform satisfactorily is established as the reason in the opinion of the accepting officer.

3.13 LIABILITY**3.13.1 Liability of the Consultant**

3.13.1.1. The Consultant shall only be liable to pay compensation to the Client arising out of or in connection with the Agreement if a breach of Clause 3.5.1 is established against him in the opinion of Accepting Officer.

3.13.2 Compensation

3.13.2.1 If it is considered that consultant is liable to the client, compensation shall be payable only on the following terms:

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For Accepting Officer

3.13.2.1.1 Such compensation shall be limited to the amount of reasonably foreseeable loss and damage suffered as a result of such breach, but not otherwise.

3.13.2.1.2 In any event, the amount of such compensation will be limited to the amount specified in Clause 3.15.1.

3.14 DURATION OF LIABILITIES

3.14.1 Neither the Client nor the Consultant shall be considered liable for any loss or damage resulting from any occurrence unless a claim is formally made on him before the expiry of the relevant period stated in Part II, or such earlier date as may be prescribed by law.

3.15 LIMIT OF COMPENSATION AND INDEMNITY

3.15.1 Limit of Compensation

3.15.1.1 The maximum amount of compensation payable by either party to the other in respect of liability under Clause 3.13 is limited to the amount stated in Part-II. This limit is without prejudice to any Agreed Compensation specified under Clause 3.22.2 and 3.28.2 or otherwise imposed by the Agreement.

3.15.1.2 However, the accepting officer reserves the right to reduce or waive off the amount of compensation on merit and justification of the circumstances.

3.15.2 Indemnity

3.15.2.1 So far as the applicable law permits, the Client shall indemnify the Consultant the adverse effects of all claims including such claims by third parties which arise out of or in connection with the Agreement:

3.15.2.1.1 Except insofar as they are covered by the insurances arranged under the terms of Clause 3.16.

3.15.2.1.2 Made after the expiry of the period of liability referred to in Clause 3.14.

3.15.3 Exceptions

3.15.3.1 Clauses 3.15.1 and 3.15.2 do not apply to claims arising:

3.15.3.1.1 From deliberate default or reckless misconduct, or

3.15.3.1.2. Otherwise than in connection with the performance of obligations under the Agreement

3.16 INSURANCE FOR LIABILITY AND INDEMNITY

3.16.1 The Consultant shall take out and maintain, and shall cause any sub-consultant to take out and maintain at their (or the sub-consultant's, as the case may be) own cost but on terms and conditions acceptable to the client, insurance against the risks and for the coverage as specified hereunder.

3.16.1.1 Insures against his liability under Clause 3.13.1, with a minimum coverage equal to the 100 % of the contract amount.

3.16.1.2 Increases his insurance against liability under Clause 3.13.1 over that for which he was insured at the date of the Client's first invitation to him for a proposal for the Services to the limit specified above.

3.16.1.3 Insures against public / third party liability, with a minimum coverage of Rs 1.00 million.

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3.16.3.4 Increases his insurance against public / third party liability over that for which he was insured at the date of the Client's first invitation to him for a proposal for the Services, to the amount specified above.

3.16.3.5 Effects other insurances viz. third party motor vehicle liability insurance as per Motor Vehicle Act-1988, workers' compensation insurance in respect of personnel of the consultant and of any sub-consultant in accordance with the relevant provision of applicable laws, life, health, accident, travel or other insurance as may be appropriate in respect of his personnel and of any sub-consultant.

3.16.4 The consultant shall make all reasonable endeavors to maintain in force the insurances as specified above throughout his period of liability. Whenever requested by the client, the consultant shall submit evidence of the relevant insurance. In case the consultant fails to maintain the insurance cover with respect to the liability listed at clause 3.16.1.1 and 3.16.1.3 above, the client reserves the right to recover cost of such premium including penalty, if any, thereon from any payments as due to the consultant and pay it to the insurance company directly.

3.17 INSURANCE OF CLIENT'S PROPERTY

3.17.1 Unless otherwise requested by the Client in writing the Consultant shall make all reasonable efforts to insure on terms acceptable to the Client:

3.17.1.1 Against loss or damage to the property of the Client supplied or paid for under Clause 3.6.

3.17.1.2 Against liabilities arising out of the use of such property.

3.17.2 The cost of such insurance shall be at the expense of the Client.

3.18 AGREEMENT EFFECTIVE

3.18.1 The Agreement is effective from the date of receipt by the Consultant of the Client's Letter of Acceptance of the Consultant's proposal or of the latest signature necessary to complete the Formal Agreement, if any, whichever is the later.

3.19 COMMENCEMENT AND COMPLETION

3.19.1 The Services shall be commenced and completed at the times or within the periods stated in Part II subject to extensions in accordance with the Agreement.

3.20 VARIATIONS

3.20.1 The agreement can be varied on application by either party by written agreement of the parties.

3.21 FURTHER PROPOSALS

3.21.1 If requested by the Client in writing, the Consultant shall submit proposals for altering the Services. The preparation and submission of such proposals shall be an Additional Service.

3.22 DELAYS

3.22.1 Time is of the essence of this contract. In case the services or any part thereof are not so completed by the consultant within the specified time, for the reasons, which are solely the responsibility of the Consultant, the Consultant shall be liable to pay agreed compensation as per the stipulation given in Part II of the Service Agreement. This shall be in addition to the liability under clause 3.13 and 3.5.1.

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For Accepting Officer

3.23 CHANGED CIRCUMSTANCES

3.23.1 If circumstances arise for which the Consultant is not responsible and which make it irresponsible or impossible for him to perform in whole or in part the Services in accordance with the Agreement he shall promptly dispatch a notice to the Client.

3.23.2 In these circumstances if certain Services have to be suspended, the time for their completion shall be extended until the circumstances no longer apply plus a reasonable period not exceeding 30 days for resumption thereof.

3.23.3 If the speed of performing certain Services has to be reduced, the time for their completion shall be extended as may be made necessary by the circumstances.

3.24 ABANDONMENT, SUSPENSION OR TERMINATION

3.24.1 The Client may suspend all or part of the Services or terminate the Agreement by notice of at least 30 days to the Consultant who shall immediately make arrangements to stop the Services and minimize expenditure.

3.24.2 If the Client considers that the Consultant is without good reason not discharging his obligations he can inform the Consultant by notice stating the grounds for the notice. If a satisfactory reply is not received within 21 days the Client can by a further notice cancel the Agreement and get the balance services completed through any other agency (ies) or means, at the risk and cost of consultant. The extra cost incurred by the client in doing so, over and above the amount that would have been payable to the consultant for the balance services, shall be recovered from the payment due, performance guarantee and securities etc of the consultant. In case adequate amount of consultant is not available with the client, the consultant on demand from client shall pay the amount, however, in case, cost of completion of balance services works out less than that would have been payable to the consultant for the same services, the advantage shall accrue to the client.

3.25 EXCEPTIONAL SERVICES

3.25.1 Upon the occurrence of circumstances described in clause 3.23 or abandonment or suspension or resumption of Services or upon termination of the Agreement otherwise than under the provisions of clause 3.24.2 any necessary work or expense by the Consultant extra to the Normal and Additional Services shall be regarded as Exceptional Services.

3.25.2 The performance of Exceptional Services shall entitle the Consultant to extra time necessary for their performance and to payment for performing them.

3.26 RIGHTS AND LIABILITIES OF PARTIES

3.26.1 Termination of the Agreement shall not prejudice or affect the accrued rights or claims and liabilities of the parties.

3.26.2 After termination of the Agreement, the Provision of Clause 3.15 shall remain in force.

3.27 PAYMENT TO THE CONSULTANT

3.27.1 The Client shall pay the Consultant for Normal Services in accordance with the Conditions and with the details stated in Section-V, and shall pay for Additional Services at rates and prices which are given in or based on those in Section-V and annexure thereto so far as they are applicable but otherwise as are agreed in accordance with clause 3.20.

3.27.2 Unless otherwise agreed in writing the Client shall pay the Consultant in respect of Exceptional services.

3.27.2.1 As for Additional services for extra time spent by the Consultant's personnel in the performance of the Services.

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For Accepting Officer

3.23.2.2 The net cost of all other extra expense incurred by the Consultant.

3.27.3 The decision of the accepting officer shall be final and binding in evaluating the value of Exceptional Services.

3.28 TIME FOR PAYMENT

3.28.1 Amounts due to the Consultant shall be paid promptly

3.28.2 If the Consultant does not receive payment within the time stated in Part II he shall be paid Agreed Compensation at the rate defined in Part II on the sum overdue and in its currency reckoned from the due date for payment of the invoice.

3.29 CURRENCY OF PAYMENT

3.29.1 The Currency applicable to the Agreement is that stated in Part II.

3.30 THIRD PARTY CHARGES ON THE CONSULTANT

3.30.1 Except where specified in Part II.

3.30.1.1. The Client shall whenever possible arrange that exemption is granted to the Consultant and those of his personnel who are not normally resident in the country of the Project from any payments required by the Government or authorized third parties in that country which arise from this Agreement in respect of;

- (a) their remuneration
- (b) their imported goods other than food and drink
- (c) goods imported for the Services documents.

3.30.1.2 Whenever the Client is unsuccessful in arranging such exemption he shall reimburse the Consultant for such payments properly made.

3.30.1.3 Provided that the goods when no longer required for the purpose of the Services and are not the property of the Client.

- (a) Shall not be disposed of in the country of the Project without the Client's approval.
- (b) Shall not be exported without payment to the Client of any refund or rebate recoverable and received from the Government or authorized third parties.

3.31 DISPUTED INVOICES

3.31.1 If any item or part of an item in an invoice submitted by the Consultant is contested by the Client, the Client shall give prompt notice with reasons and shall not delay payment on the remainder of the invoice. Sub-Clause 3.28.2 of Clause 3.28 shall apply to all contested amounts which are finally determined to have been payable to the Consultant.

3.32 INDEPENDENT AUDIT

3.32.1 The Consultant shall maintain up-to-date records which clearly identify relevant time and expense.

3.32.2 Except where the Agreement provides for lump sum payments, not later than twelve months after the completion or termination of the Services, the Client can at notice for not less than 7 days require that a reputable firm of accountants nominated by him audit any amount claimed by the Consultant by attending during normal working hours at the office where the records are maintained.

(Signature of the Consultant with seal)

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For Accepting Officer

3.33 LANGUAGES AND LAW

3.33.1 In part II there is stated the language or languages of the Agreement, the ruling language and the law to which the Agreement is subject.

3.34 CHANGES IN LEGISLATION

3.34.1 If after the date of the Agreement the cost or duration of the Services is altered as a result of changes in or additions to the regulations in any country in which the Services are to be performed except that of the Consultant's principal place of business stated in Part II the agreed remuneration and time for completion shall be adjusted as per the provisions stipulated in Part-II.

3.35 ASSIGNMENT AND SUB-CONTRACTS

3.35.1 The Consultant shall not without the written consent of the Client assign the benefits from the Agreement other than money.

3.35.2 Neither the Client nor the Consultant shall assign obligations under the Agreement without the written consent of the other party.

3.35.3 The Consultant shall not without the written consent of the Client initiate or terminate any sub-contract for performance of all or part of the Services.

3.35.4 The consultant shall be fully responsible for the performance and quality of services of the sub-contract appointed by him irrespective of the fact that such appointment was approved by the client.

3.36 COPYRIGHT

3.36.1 The client shall have the copyright of all the documents prepared by the Consultant in performing the services under the agreement provided that:

3.36.1.1 The Consultant can retain copies of all such documents prepared by them.

3.36.1.2 The Consultant can use the purely technical contents of all such documents for his professional purposes.

3.36.1.3 The client indemnifies and shall be deemed to indemnify the consultant against all claims for loss or damage arising out of the use of such documents for any purpose other than that intended by the consultant.

3.37 CONFLICT OF INTEREST

3.37.1 Unless otherwise agreed in writing by the Client, the Consultant and his personnel shall have no interest in nor receive remuneration in connection with the Project except as provided for in the Agreement.

3.37.2 The Consultant shall not engage in any activity, which might conflict with the interests of the Client under the Agreement.

3.38 NOTICES

3.38.1 Notices under the Agreement shall be in writing and will take effect from receipt at the address stated in Part-II. Delivery can be by hand or facsimile message against a written confirmation of receipt or by registered letter or by fax subsequently confirmed by letter.

3.39 PUBLICATION

3.39.1 Unless otherwise specified in Part-II the Consultant, either alone or jointly with others, can publish material relating to the professional services. Publication shall be

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subject to approval of the Client if it is within two years of completion or termination of the Services.

3.39.2 The consultant, their sub-consultant and personnel of either of them shall not, either during the term or within two years after the expiration of this contract, disclose any proprietary or confidential information relating to the Project, the Services, the Works, this contract or the Client's business or operations. Attention of consultant is drawn to the Indian Official Secret Act-1923, as amended up to date, particularly section 5 thereof for compliance with its provision.

3.40 AMICABLE DISPUTE RESOLUTION

3.40.1 The parties shall seek to resolve in good faith any dispute or difference arising between them in respect of any matter connected with this Agreement. If the parties cannot resolve any such dispute or difference within 14 days, or such a period as the parties may subsequently agree, then it shall be submitted to their respective designated representatives under the Agreement.

3.40.2 If the designated representatives of the parties are unable to reach agreement on any matter referred to them, within 14 days or any such period as the parties may subsequently agree, then that matter or those matters shall be attempted to be settled by conciliation as per the provisions made in Part-III of Indian Arbitration and Conciliation Act-1996.

3.41 CONCILIATION AND ARBITRATION

3.41.1 All disputes relating to this contract on any issue whether arising during the progress of the Services or after the completion or abandonment thereof or any matter directly or indirectly connected with this Services Agreement shall in the first place be referred to a mutually agreed sole conciliator to be appointed by DGBR.

3.41.2 The conciliator shall make the settlement agreement after the parties reach agreement and shall give an authenticated copy thereof to each of the parties.

3.41.3 The settlement agreement shall be final and binding on the parties. The settlement agreement shall have the same status and effect as of an arbitration award.

3.41.4 The views expressed, or the suggestions made or the admissions made by either party in the course of conciliation proceedings shall not be introduced as evidence in any arbitration proceedings.

3.41.5 Any dispute that cannot be settled through the conciliation procedure shall be settled by arbitration in accordance with the rules stipulated in Part II in force at the effective date of the Agreement.

3.41.6 The parties agree to comply with the awards resulting from arbitration and waive their rights to any form of appeal insofar as such waiver can be validly made.

3.41.7 In the event of cancellation of contract under clause 3.24 herein before, the reference shall not take place until alternative arrangements have been finalized by the client to get the balance services completed through other agency or agencies or means.

3.42 PERFORMANCE GUARANTEE

3.42.1 Immediately after the receipt of the letter of Acceptance, but not later than the date the agreement is signed between the parties, the Consultant shall submit to the Client a Performance Guarantee having value 10 % of the contract price, in the form of a Bank Guarantee issued by a Scheduled Commercial Bank based in India, in favour of 'The Chief Engineer, Project Brahmanak as per the specified pro forma. The performance Guarantee shall remain valid till end of the defect liability period as stated at part-II.

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3.42.2 The Client reserves the right to recover all the compensation or other sums of money payable by the Consultant to the Client under this contract or any other contract with the Client or any other department of Government of India from the said Performance Guarantee.

3.43 DEDUCTION OF INCOME TAX AT SOURCE

3.43.1 While releasing the payments to Consultant for the services provided, the Client reserve the right to make suitable deduction at source on account of Income Tax as per the provisions of Indian Income Tax Act and amendments thereto from time to time and thereof service tax as applicable. The Client will however issue a Tax Deduction Certificate to the Consultant for the deduction made at source on the prescribed pro forma.

3.44 JOINT VENTURE AGREEMENT

3.44.1 In case the successful tenderer is a Joint Venture of certain firms, the tenderer immediately on receipt of acceptance letter shall submit the joint venture agreement between the firms as per the joint venture agreement form published by FIDIC and duly signed by each member of the Joint Venture. It shall clearly state which firm of the Joint Venture will be acting as 'Lead Firm' to act on their behalf in all the matters in connection with or arising out of the agreement. The member of Joint Venture shall undertake together and individually (jointly and severally) the obligation of Joint Venture under the Agreement.

3.45 CHANGE IN CONSTITUTION

3.45.1 Consultant shall promptly notify the Client of any changes in the constitution of the Consultant. It shall be open for the Client to terminate the Agreement upon death, retirement, insanity or insolvency of any person being the proprietor / partner of the Consultant or on the addition or introduction of a new partner / firm managing the Project for the Consultant without the approval in writing from the Client. But in absence of and until its termination by the Client as aforesaid, this agreement shall be in full force, and effect notwithstanding any changes in the constitution of the firm by death, retirement, insanity or insolvency of any of its proprietors / partners or addition on introduction of new partners / firm. In case of death or retirement, the surviving or remaining partners of the firm shall be jointly and severally liable for the due and satisfactory performance of all terms and condition of the Agreement, and likewise on the addition of a new partner / firm, the latter will also become jointly and severally liable.

3.46 COMPLETION

3.46.1 The services shall be completed by the consultant to the entire satisfaction of the client and in accordance with the specified time schedule and terms of reference.

3.46.2 Immediately after completion of an item of service or a group of services for which a separate period of completion has been mentioned in the contract, the consultant shall give notice thereof to the client.

3.46.3 The 'Engineer' shall take over from the consultant from time to time the item or group of items of services for which a separate period of completion has been mentioned in the contract and which have been completed to his satisfaction, before the completion of entire services, but for all purpose of the contract the completion of entire contract shall be taken into account.

3.46.4 The 'Engineer' shall certify to the consultant the Date(s) on which the item or group of items of service are completed and taken over and state thereof.

3.46.5 The 'Engineer' shall also certify to the contractor the state of items or group of items of the service at the end of the 'Liability period'.

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3.47 FORCE MAJURE

3.47.1 The consultants shall not be liable for delay in completion of services, in the event of such delays being due to force majeure, which include war (declared or undeclared), riot, invasion act of foreign enemies, hostilities, revolution, rebellion, insurrection, military or power, damage from aircraft, civil commotion, fire other than those caused due to negligence on the part of consultant or his partner/ employees and unrest (other than those by the consultants employees) which is beyond the control of the consultant.

3.47.2 Intimation of the happening and cessation any such occurrences shall be given by the consultants to the client within 7 days of happening and cessation. The client on establishing such causes as force majeure shall extend the period of completion of the services suitably keeping in view the duration of incident and effect of such cause. The decision of the accepting officer in the matter of extension of time shall be final and binding.

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PART-II**CONDITIONS OF PARTICULAR APPLICATION****A. References from Clauses in Part-I**

3.1	Definitions
3.1.1.1	(a) The Project is “ <u>SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK</u> ”.
3.1.1.8	The Consultant is not a firm but joint venture of the following member firms:- (a) (b) (c) The members authorize....., to be known as the lead firm , to act on their behalf in all matters in connection with or arising out of the agreement. The members of joint venture undertake together and individually (jointly and severally) the obligation of joint venture under the agreement.
3.10.1	If requested by the Client, necessary certificate on physical examination and fitness of their personnel be produced to him.
3.11	The Consultant may from time to time delegate any of the duties and authorities vested in the consultant to personnel approved by the Client and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing through a “Power of Attorney” and shall not take effect until a copy of it has been delivered to the Client. The consultant’s delegate may at his discretion choose not to exercise any such delegation and can refer to the consultant for any necessary action.
3.14	Liability obligation shall remain valid till a period of 24 (twenty four) months reckoned from the date of completion of services.
3.15.1.1	Limit of Compensation <u>shall be equal to the Contract amount</u>
3.19	The date of commencement <u>shall be the date of issue of Notice to proceed by the Client.</u> The Completion date <u>of this Contract shall be 08 (Eight) months after the date of notice to proceed.</u>
3.22.2.1	Agreed compensation on account of delay by the Consultant shall be payable at the rate of 0.05% (Zero point zero five percent) of the contract amount per day of delay subject to a maximum of 10% (Ten percent) of the contract amount.
3.28.2	Time for payment to be reckoned from the date the bill is received complete in all respect by the Client from the Consultant is 45 days (Forty five days). Agreed compensation for overdue payment shall be at the rate of 0.5 % (zero point five

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	percent) per annum on the overdue amount, subject to a maximum (cumulative) of 5% (Five percent) of the Contract Amount.	
3.29	Currency of Agreement	: Indian Rupee
3.30.1	The Consultants, sub-consultants and their personnel shall pay such taxes, duties, fees and other impositions as may be levied under the Applicable Laws, the amount of which is deemed to have been included in the contract price, including the consultancy service tax payable in India.	
3.33	Language(s) of the Agreement	<u>English</u>
	Ruling Language	<u>English</u>
	Law to which Agreement is subject	<u>Indian Laws</u>
3.34.1	No adjustment to price is admissible on any account.	
3.34.1	Consultant's Principal place of business:	
3.38	<p>All the notices and correspondence with respect to this contract shall be addressed to the 'Engineer' as appointed by the accepting officer, at the address given hereunder. Subsequent change in the address, if any, will however be intimated separately and shall take effect accordingly. A copy of such notices and correspondence shall also be endorsed to Accepting Officer and Cdr, 44 TF, C/O 99 APO for his information at the address given below: -</p> <p>Client's address</p> <p>(a) HQrs, 44 BRTF (GREF) - Cdr 44 TFs Address C/O 99 APO Tele No. 03783-222384</p> <p>(b) HQrs Chief Engineer, - Accepting Officer's Address Project Brahman C/O 99 APO Tele No. 0368- 2222124 Fax No: 0368- 2222173 Email: bro-bmk@nic.in</p> <p>Consultant's address</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Fax No.</p> <p>Telephone No.</p>	
3.40.1	Designated representatives for amicable dispute resolution shall be:	
	Client's representative	Accepting Officer shall act as the Client's representative

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	Consultant's representative	
3.41	<p><u>RULES FOR ARBITRATION</u></p> <p>If the efforts to resolve all or any of the disputes through the conciliation fail, then such disputes shall be referred with in 30 days to Arbitration in accordance with the following provisions:</p> <p>(a) Matters to be arbitrated upon shall be referred to the sole Arbitrator of an Engineer Officer to be appointed by Director General Border Roads; or in his absence the officer officiating as the DGBR whose decision shall be final and binding.</p> <p>(b) The arbitrator shall give reasons for the award in each and every case irrespective of the value of claims or counter claims.</p> <p>(c) The award of the arbitrator shall be final and binding on both the parties.</p> <p>(d) <u>No Suspension of Work on Account of Arbitration.</u> The reference to arbitration shall proceed notwithstanding that works shall not then be or alleged to be complete, provided always that the obligations of the Employer and the Consultant shall not be altered by reasons of arbitration being conducted during the progress of works. Neither party shall be entitled to suspend the work to which the dispute relates on account of arbitration.</p> <p>(e) <u>Rules Governing the Arbitration Proceedings.</u> The arbitration proceedings shall be governed by Indian Arbitration and Conciliation Act 1996, as amended from time to time including provisions in force on Arbitration Award.</p> <p>(f) <u>Interest on Arbitration Award.</u> Where the Arbitration Award is for payment of money, no interest shall be payable on whole or any part of the money for any period, till the date on which the award is made.</p> <p>(g) <u>Venue of Arbitration .</u> The venue of Arbitration shall be place or places as may be fixed by the arbitrator at his direction.</p> <p>(h) <u>Jurisdiction of Court.</u> The appropriate court at Pasighat (Arunachal Pradesh) shall alone have jurisdiction to decide any dispute arising out of or in respect of this contract.</p> <p>(i) The expenses incurred by each party in connection with preparation, presentation etc of its proceedings as also fees and expenses paid to the arbitrator shall be borne by each party.</p>	

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SECTION – IV

TERMS OF REFERENCE

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SECTION-IV
TERMS OF REFERENCE

4.1 DESCRIPTION OF THE PROJECT

4.1.1 Border Roads Organization has been entrusted with the responsibility to implement the road development projects to upgrade the road network to meet the growing traffic requirement in this part of the country by augmenting the road capacity for safe and efficient movement of the traffic. This road also serves for shifting of machineries of upcoming Hydro Electric Projects along the River Siyom. Considering socio-economic development of the area the responsibility for improvement of road Tato-Menchuka to NH double lane specification in West Siang District of Arunachal Pradesh has been entrusted to Project Brahmanck of Border Roads Organisation

4.1.2 ROAD TATO-MENCHUKA

4.1.2.1 The road Tato-Menchuka having length 50.00 Kms is presently being maintained by Project Brahmanck/BRO. This road at present has CI-9 surfaced specification. The entire road passes through hilly terrain in West Siang district of Arunachal Pradesh. The responsibility for construction and maintenance was entrusted to BRO.

4.1.2.2 The alignment of road sector Tato-Menchuka is proposed to have lateral connectivity in between roads Along-Kaying- Tato, Menchuka-Yarlung-Lamang, Tato-Manigong-Tadadege road and Taliha-Tato road. The proposed alignment is further stretch of road Tato-Menchuka which takes off from km 0.00 from village Tato and terminates at km 50.00 at Menchuka on road Tato-Menchuka. The proposed road is passing through West Siang District of Arunachal Pradesh. The proposed alignment passing through the mountainous steep terrain and the existing hill slope vary from 10⁰ to 85⁰.

4.1.2.3 The entire stretch of road Tato-Menchuka i.e. from km 0.00 to Km 50.00 is proposed through consultancy. The bridges falling under this stretch have been planned separately and are either under construction or planning by the department.

4.1.3 The scope of services for construction / improvement to NHDL specification therefore includes: -

- (a) Detailed project preparation for the improvement of existing road to NHDL standard, including field surveys and investigation, soil and material surveys and evaluation, detailed engineering designs and drawings for the proposed improvement works in accordance with standard codes, specifications and sound engineering practices in vogue in India.
- (b) Preparation of work and performance specifications, bills of quantity and cost estimate for the proposed improvement works.
- (c) Chalking out programme for implementation of project on the ground.
- (d) Wherever required, consultant will liaise with concerned authorities and arrange all clarifications. Approval of alignment and all drawings including GAD and detail engineering drawings be also obtained from concerned authorities. The estimates for shifting of utilities of all types involved be also included suitably in the DPR in consultation with concerned local authorities.

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- (e) Assist the client in obtaining approval of the alignment, DPR including cost estimates from the concerned authorities.

4.2 OBJECTIVE

4.2.1. The main objective of the consultancy service is to establish a suitable alignment from the techno, environmental, economical and trafficable considerations and gets its approval from the concerned authorities and prepare detailed project reports for construction/improvement of the road to National Highway (NH) Double lane standards.

4.2.2. The detailed Project would inter-alia include detailed highway design, design of pavement and overlay, and cross drainage structures and grade separated structures, design of service roads, quantities of various items, detailed working drawings, detailed cost estimates, as appropriate for improvement of these roads to the standards as specified here above.

4.3. BRIEF DESCRIPTION OF THE PRIMARY TASK

4.3.1 General Scope of Services shall cover but be not limited to the following major tasks (additional requirements for feasibility studies and preparation of Detailed Project Report for Hill Roads and major Bridges are given in Supplement I and II respectively):

- i) Review of all available reports and published information about the project road and the project influence area:-
- ii) Environmental and social impact assessment including such as related to cultural properties, natural habitats, involuntary resettlement etc.
 - ii(a) Public consolation, including consultation with communities located along the road NGOs working in the area other stake holders and relevant Government departments at all the different stages of assignment (such a inception stage feasibility stage, preliminary design stage and once final designs are concertized)
- iii) Detailed reconnaissance;
- iv) identification of possible improvements in the existing alignment and bypassing congested location with alternatives evaluation of different alternatives comparison on techno – economic and other considerations and recommendations regarding most appropriate option;
- v) traffic studies including traffic surveys and Axle load survey and demand forecasting for next thirty years.
- vi) Inventory and condition surveys for road;
- vii) Inventory and condition surveys for bridges cross drainage structures other structures river bank training /protection works and drainage provisions.
- viii) Detailed topographic survey using mobile / aerial LIDAR or equivalent technology.
- ix) Pavement investigations.

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- x) sub-grade characteristics and strength investigation of required sub grade and sub soil characteristic and strength for road and embankment design and sub soil investigation;.
- xi) Identification of sources of construction materials.
- xii) Detailed design of road its x-sections, horizontal and vertical alignment and design of embankment of height more than 6m and also in poor soil conditions and where density consideration require even lesser height embankment detailed design of structure preparation of GAD and construction drawings and cross drainage structures and underpasses etc.
- xiii) Identification of the type and the design of intersections.
- xiv) Design of complete drainage system and disposal point for storm water.
- xv) Value analysis / value engineering and project costing.
- xvi) Economic and financial analyses.
- xvii) Contract packaging and implementation schedule
- xviii) Strip plan indicating the scheme for carriageway widening location of all existing utility services (both over and underground) and the scheme for their relocation trees to be felled transplants and planted and land acquisition requirement including schedule for LA: reports documents and drawings arrangement of estimates for cutting transplanting of trees and shifting of utilities from the concerned department.
- xix) To find out financial viability of project for implementation and suggest the preferred mode on which the project is to be taken up.
- xx) Preparation of detailed project report, cost estimate approved for construction drawings rate analysis detailed bill of quantities bid documents for execution of civil work through budgeting resources.
- xxi) Design of toll plaza and identification of their members and location and office cum residential complex including working drawings.
- xxii) Design of weighing stations parking areas and rest areas.
- xxiii) Any other user oriented facility en-route toll facility.
- xxiv) Tie-in of on-going/sanctioned work of MORT&H / NHAI/ other agencies.
- xxv) Preparation of social plans for the project affected people as per policy of the lending agencies / Govt of India R & Policy.

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SERVICES TO BE PROVIDED BY THE CONSULTANTS**4.4 GENERAL REQUIREMENTS**

4.4.1 The Consultants shall perform the detailed survey, investigation and design of the highway and other related works as described above with reasonable skill, care and diligence to meet his obligation under this contract. In the conduct of this work the Consultant shall cooperate fully with the client, which shall provide all the available relevant data and reports and assist in arranging details from other departments if so required, to the consultants. Other data as considered necessary however be collected by the consultant. He shall, however, be solely responsible for the analysis and interpretation of all such data received and collected and for the conclusion and recommendations contained in the report.

4.4.2 All units of measurement used in the study shall be in accordance with the International system of Unit (S.I.). All notations abbreviation and symbol used in the reports, documents and drawings shall be as per IRC :- 71-1977.

4.4.3 All design works and documents shall be prepared and submitted in the English Language only. The key design and management staff shall be proficient in spoken and written English.

4.4.4 All the activities related to field studies, design and documentation shall be carried out in accordance with the latest guidelines/circulars of MORT & H and relevant publication of IRC and BIS Codes and standards. Two copies of all codes and standards being followed by the Consultant shall be submitted to the client.

4.4.5 The consultants shall ensure that there are no named or proprietary produce in the documents or on the drawings.

4.4.6 The consultant's core team shall be based suitably near the site and company's main/branch office. Tender shall indicate clearly the part of work, which they proposed to carry out at the worksite and that at their Headquarter.

4.4.7 During all the stage of the consultancy services, the consultants shall maintain a proper and close co-ordination with the Employer and his representatives and arrange and convene regular meetings, working sessions, ad hoc questions and answer sessions so that the Employer is kept well informed of the progress of the services. Drawings, computer simulations and outputs, models and graphic sketch etc shall be used to explain and illustrate the details of the proposal wherever necessary.

4.4.8 The frequency of regular meeting shall be monthly or as and when required or instructed by the Employer's representative.

4.4.9 The deptt official may visit site at any time individually or collectively to acquaint themselves about the field investigation and survey. The consultants shall attend to such visits and explain about the progress thereon.

4.4.10 The consultants shall submit a monthly progress report one each to Engineer, Commander, TF and the Accepting officer by 5th day of followings month indicating date of induction and de-induction of various key personnel and activities performed/progress and extent thereof.

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4.4.11 In additional to the express requirement stated herein above the consultants shall whenever the Employer's representative so requests, provide information and participate in discussion and arrange presentation that relate to design matter and quality control.

4.4.12 All equipment, software and books etc as required for satisfactory service for this project shall be obtained by the consultant at their own cost and shall be their properly.

4.5 QUALITY ASSURANCE PLAN [QAP]

4.5.1 The consultants should have detailed Quality Assurance Plan (QAP) for all field studies including topographics surveys, traffic surveys, engineering surveys and investigations, design and documentation activities. The quality assurance plans/procedures for different field studies, engineering surveys and investigations, design and documentation activities should be presented as separate, sections, like engineering surveys and investigations, traffic surveys, material geo-technical and sub-soil investigations, road and pavement investigations, investigation and design of bridges and structures, environment and R&R assessment, economic & financial analysis, drawings and documentation, preparation, checking, approval and filing of calculations, identification and tractability of project documents etc. It shall also furnish information regarding the details of personal who shall be responsible for carrying out/preparing and checking/verification of various activities since inception to the completion of the services.

4.5.2 It is imperative that the QAP is approved by Accepting officer before the consultants start the field work.

4.6 FIELD SURVEY AND INVESTIGATIONS

4.6.1 TRAFFIC SURVEYS

4.6.1.1 The type of traffic surveys to be conducted and the minimum number of survey stations shall normally be as under, unless otherwise specifically mentioned.

S/No	Description	Number of Survey Stations
1.	Classified Traffic Volume Count	1
2.	Origin-Destination and Commodity Movement Characteristics	1
3.	Axle Loading Characteristics	1

4.6.1.2 The methodology of collection and analysis of data, number and location of traffic survey station shall be finalized in consultation with the Engineer. The following methodology be followed for conduct of the survey. The vehicle classifications system as given in IRC-37 be followed for the traffic survey.

- a) **The classified traffic volume count survey** - For 7 days (continuous, direction-wise) at the selected survey stations as per the guidelines of MoRT & H
- b) **O-D and commodity movement survey** - For one day (24 Hrs, both direction) at congested town to delineate through traffic and at end point of the road.
- c) **Turning movement survey** - As per IRC SP: 41-1994
- d) **Axle load survey** - For truck only 2 days (24 Hrs) using load pad or other sophisticated instruments on

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random sample basis. The aspect of the movement of heavy equipment of Defence Forces and that of Hydro Electric Project be also kept in view.

- e) **Speed delay survey** - Moving car survey to determine the running speed and journey speed.

4.6.1.3 Traffic survey so conducted shall be presented properly as per the guidelines of MoRT&H on the subject and relevant IRC codes. The studies shall clearly highlight.

(a) The hourly and daily variations in traffic, weekly Average Daily Traffic (ADT) and the Annual Average Daily Traffic (AADT) (by applying seasonal factors), based on the classified traffic volume counts.

(b) The O-D survey shall highlight, total weight and average weight per truck for various commodity including sample size of each vehicle type. For the purpose trip matrices shall be worked out for each vehicle type information on weight of truck. The analysis shall also bring out the lead and load characteristics including desired live diagram and need for the construction of by passes.

(c) The axle load data should be collected axle configuration-wise. The number of equivalent standard axles per trucks shall be calculated on the basis of results obtained. The results of the survey should bring out the VDF for each truck type (Axle configuration). If the calculated VDF is found to be below the national average, then national average shall be used. Furthermore, the data from axle load surveys should be analysed to bring out the Gross Vehicle Weight (GVW) and Single Axle Load (SAL) distributions by trucks type (axle configuration). The aspect of the movement of heavy equipment of Defence Forces and that of Hydro Electric Project be also kept in view.

(d) The data derived from the O-D, speed-delay, other surveys and also supplementary survey should be analysed to assess requirement for present and future development of truck terminals at suitable locations enroute.

4.6.1.4 Based on the above mentioned studies, the consultants shall make **traffic demand estimates** and establish possible traffic growth rates in respect of all categories of vehicles, taking into account the past trends, annual population and real per capita growth rate, elasticity of transport demand in relation to income and estimated annual production increase. The other aspects including socio-economic development plans and the land use patterns of the region having impact on the traffic growth, the projections of vehicle manufacturing industry in the country, development plans for the other modes of transport, O-D 'and commodity movement behavior should also be taken into account while working out the traffic demand estimates. The values of elasticity of transport demand shall be based on the prevailing practices in the country. Traffic projections should be based on sound and proven forecasting techniques. In addition to the estimates for normal traffic, the Consultants shall also work out the estimates for generated, induced and diverted traffic. The traffic forecasts shall also be made for both diverted and generated traffic considering a design life of 15 years. Overall traffic forecast thus made shall form the basis for the design of each pavement type and other facilities/ancillary works. The Consultants shall give complete background including references for selecting the value of transport demand elasticity.

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4.6.2 ENGINEERING SURVEYS AND INVESTIGATIONS

4.6.2.1. Reconnaissance and Alignment

(a) The Consultants shall make an in-depth study of the available land width (ROW), topographic maps, satellite imageries and aerial photographs of the project area and other available relevant information collected by them concerning the existing alignment. Consultant himself has to arrange the required maps and the information needed by him from the potential sources, however client will extend all necessary assistance for the purpose and provide available information with the deptt.

(b). The detailed ground reconnaissance may be taken up immediately after the study of maps and other data. At this stage the consultants shall collect all the details of existing road alignment and its various feature and examine suitably thereof for further development /improvement including that on proposed re-alignment and by passes. This shall include but not limited to:

- i) Topographical features' of the area;
- ii) Typical physical features along the existing alignment within and outside ROW i.e. land use pattern;
- iii) Feasibility of improving the existing alignment and proposed re-alignment to the desired standards including deficiency, in the existing alignment with respect to radius of curves, sight distances and gradient and need for re-alignment thereof.
- iv) Any other realignment requirements including the provision of bypasses with possible alignment alternatives;
- v) Preliminary identification of improvement requirements including treatments and measures needed for the cross-roads;
- vi) Traffic pattern and preliminary identification of traffic homogenous links;
- vii) Sections through congested areas;
- viii) Inventory of major aspects including land width, terrain, pavement type, carriageway type, bridges and structures (type. Size and location). Intersections (type. cross-road category, location) urban areas (location. Extent), geologically sensitive areas, environmental features:
- ix) Critical areas requiring detailed investigations; and,
- x) Requirements for carrying out supplementary investigations.
- xi) Soil (textural classifications) and drainage conditions.
- xii) Type and extent of existing utility services along the alignment (within ROW).
- xiii) Existing pavement width, composition and its condition
- xiv) Meteorological data i.e. annual average intensity of rain fall, duration of rain fall, max and min temperature humidity etc and its

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bearing on availability of working period in a year.

(c) The data derived from the reconnaissance surveys are normally utilized for planning and programming the detailed surveys and investigations. All field studies including the traffic surveys should be taken up on the basis of information derived from the reconnaissance surveys.

(d) The data obtained from the reconnaissance surveys should be compiled in the tabular as well as graphical (chart) form indicating the major physical features. The report shall clearly bring out the re-alignments suggested with merits/de-merits thereof and the proposed widening scheme along the existing alignment to facilitate selection of proper alignment for further detailed survey and investigation. The data and the charts should also accompany the rationale for the selection of traffic survey stations. The requirement to by pass particular section of the existing road alignment shall also be brought out clearly.

4.6.2.2. **TOPOGRAPHIC SURVEYS**

(a) The basic objective of the topographic survey would be to capture the essential ground features along the selected alignment in order to consider improvements of existing alignment and for working out construction/improvements, rehabilitation and upgrading costs. The detailed topographic surveys should be taken up after the completion of reconnaissance surveys and approval of the alignment by the client.

(b) The carrying out of topographic surveys will be one of the most important and crucial field tasks under the project. The detailed field surveys shall be carried out using high precision instruments i.e. Total stations. The data from the topographic surveys shall be available in (x, y, z) format for use in a sophisticated digital terrain model (DTM). The Consultants would be fully responsible for any inaccuracy in surveys.

(c) The detailed field surveys would essentially include the following activities:

i) Topographic Surveys along the selected re- alignment/ Existing Right of Way (ROW): Running a continuous open Traverse along the existing road and realignments, wherever required, and fixation of all cardinal points such as horizontal intersection points (HIP's), center points and transit points etc. and properly referencing the same with a pair of reference pillars fixed on either side of the center-line at safe places within the ROW.

ii) Collection of details for all features such as existing road, structures (bridges. Culverts etc.) utilities, electric and telephone installations huts, buildings, fencing and trees (with girth greater than 0.3 metre) oil and gas line etc. falling within the extent of survey.

(d) The width of survey corridor will generally be maintained as under:

i) The width of the survey corridor should take into account the layout of the proposed re-alignments/existing alignment including the extent of embankment and cut slopes and the general ground profile. While carrying out the field surveys the widening scheme (i.e. right left or symmetrical to the center line of the existing carriageway) should be taken into consideration so that the topographic surveys cover sufficient width beyond the center line of

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the proposed carriageway. Normally the surveys should extend a minimum of 20 m beyond either side of the centerline of the proposed carriageway or land boundary whichever is more.

ii) In case the reconnaissance survey reveals the need for bypassing the congested locations, the traverse lines would be run along the possible alignments in order to identify and select the most suitable alignment for the bypass. The detailed topographic survey should be carried out along the bypass alignment approved by the client. Field notes for survey should be maintained which would also provide information about traffic, soil, drainage etc.

iii) The width of the surveyed corridor shall be widened appropriately where developments and / or encroachments have resulted in a requirement for adjustment in the alignment or where it is felt that the existing alignment can be improved upon through minor adjustments.

iv) Where existing roads cross the alignments, the survey will extend for a minimum of 80 m length on either side of the road center line and will be of sufficient width to allow improvements, including at grade intersection to be designed.

(e) The surveyed alignment shall be transferred on to the ground as under:

i) Reference Pillar and Bench Mark / Reference pillar of size 15 cm X 15 cm X 45 cm shall be cast in RCC of grade M 15 with a nail fixed in the center of the top surface. The reference pillar shall be embedded in ground upto a depth of 30 cm. The balance 15 cm above ground shall be painted yellow. The spacing shall be 250m apart. In case Bench Mark Pillar coincides with Reference Pillar only one of the two need be provided.

ii) Establishing Benchmarks at site connected to GTS Bench marks at a interval of 250 meters on Bench mark pillar made of RCC as mentioned above with RL and BM No. marked on it with red paint.

4.6.2.3 Longitudinal And Cross-Sections

(a) The topographic surveys for longitudinal and cross-sections shall cover the following:

i) Longitudinal section levels along final centerline at every 25 m interval, at the locations of curve points, small streams, intersections and at the locations of change in elevation.

ii) Cross sections at every 50 m interval in plain area in full extent of survey cambering sufficient number of spot levels on proposed/ existing carriageway and adjacent ground for profile correction course and earth work calculations. Cross sections shall be taken at an interval of 25.00 mtr at curves/hill section.

iii) Longitudinal section of cross roads for length adequate for design and quantity estimation purposes.

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iv) Longitudinal and cross sections for major and minor streams as per recommendations contained in IRC Special Publication No. 13 (Guidelines for the Design of small Bridges and Culverts) and IRC:5-I998 (“Standard Specifications & Code of Practice for Road Bridges, Section I – General Features of Design) respectively.

(b) At feasibility study, stage cross sections at greater interval may be taken.

4.6.2.4 Details of utility Services and Other Physical Features

(a) The Consultants shall collect details of all-important physical features along the alignment. These features affect the project proposals and should normally include built and structures, monuments, burial grounds, cremation grounds, places of worship, railway lines, stream river, canal, water mains, sewer, gas/oil pipes, crossings, trees, plantations, utility services such as electric, and telephone lines (O/H & U/G) and poles, optical fiber cables (OFC) etc. The survey would cover the entire right-of-way .of the road with adequate allowance for possible shifting of the central lines at some, of the intersections /curve locations.

(b) The information collected during reconnaissance and field surveys shall be shown on a strip plan so that the proposed improvements can be appreciated and the extent of land acquisition with LA schedule, utility removals of each type etc. assessed and suitable actions can be initiated. Separate strip plan ‘for each of the services involved shall be prepared for submission to the concerned agency.

4.6.2.5 Road Inventory Surveys

(a) Detailed road inventory surveys shall be carried out to collect details of all the road and pavement features along the existing road sections. The inventory data shall include but not limited to the following:

- i) Terrain (flat. Rolling, mountainous);
- ii) Land-use (agricultural. Commercial. Forest, residential etc) @ every kilometer,
- iii) Carriageway width, surfacing type @ every 500m and every change of feature whichever is earlier;
- iv) Shoulder surfacing type and width, @ every 500m and every change of feature whichever is earlier;
- v) Sub-grade local soil type (textural classification) @ every 500m and every change of feature whichever is earlier;
- vi) Horizontal curve and vertical curve
- vii) Road intersection type and details at every occurrence;
- viii) Retaining structures and details. At every occurrence;
- ix) Height of embankment or depth of cut @ every 200m and

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every change of feature whichever is earlier.

- x) Land width i.e. ROW
- xi) Culverts, bridges and other structures (type, size, span arrangement and location)
- xii) Roadside arboriculture
- xiv) Existing utility services on either side of ROW
- xv) General drainage conditions
- xvi) Design speed of existing road

(b) The data should be collected in sufficient detail. The data should be compiled and presented in tabular as well as graphical form. The inventory data would be stored 'in computer files using simple utility packages, such as EXCEL.

4.6.2.6 **Pavement Composition**

(a) The data concerning the composition of existing pavement may be already available with the BRO. However, the consultants shall also make trial pits to ascertain the pavement composition.

(b) For each test pit, the following information shall be recorded:

- (i) Test pit reference (Identification number, location):
- (ii) Pavement composition (material type and thickness); and
- (iii) Subgrade type (textural classification) and condition (dry, wet)

(c) The test bit shall be dug at suitable intervals keeping in view the homogenous character of the road stretch and soil parameter.

4.6.2.7 **Road and Pavement Condition Surveys**

a) Detailed field studies shall be carried out to collect road and pavement surface conditions. The data should generally cover:

- i) Pavement condition (surface distress the type and extent, roughness, corrugation, waviness etc)
- ii) Shoulder condition; (Materials loss, rut depth and corrugation)
- iii) Embankment condition; (Condition in general and extent of slope erosion).
- iv) Drainage conditions (General condition cut and embankment,

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connectivity with natural topography).

- b) The objective of the road and pavement condition surveys shall be to identify defects and section with similar characteristics. All defects shall be systematically referenced, recorded and quantified for the purpose of determining the mode of rehabilitation.
- c) The shoulder and embankment conditions shall be evaluated by visual means and the existence of distress modes (cuts, erosion marks, failure. drops) and extent (none, moderate, frequent and very frequent) of such distress manifestations would be recorded.
- d) For sections with severe, distresses, additional investigations as appropriate shall be carried out to determine the cause of such distresses.
- e) Middle 200m could be considered as representative sample for each one km of road and incase all other things are considered similar.
- f) The pavement condition survey shall be carried out using visual means, and standard straight edge. The pavement roughness surveys shall be carried out using Bump Integrator or similar instrument. The methodology for the surveys shall be as per the widely used standard practices. The surveys shall be carried out along the outer wheel paths. The surveys shall cover a minimum of two runs along the wheel paths for each directions. The results of the survey shall be expressed in terms of BI and IRI and shall be presented in tabular and graphical forms. The processed data shall be analysed using the cumulative difference approach to identify road segments homogenous with respect to surface roughness.
- g) The data obtained from the condition surveys should be analysed and the road segments of more or less equal performance may be identified using the criteria given in IRC: 81-1997.

4.6.2.8 **Pavement Structural length**

- a) The Consultants shall carry out structural strength surveys for existing pavements using Benkelman Beam Deflection technique in accordance with the CGRA procedure given in IRC:81-1997 ("Guidelines for Strengthening of Flexible Road Pavements Using Benkelman Beam Deflection Technique").
- b) It is suggested that the deflection surveys may be carried out as per the scheme given below:
 - i) Main line testing; and,
 - ii) Control section testing.
- c) The deflection test for the mainline shall be carried out at every 500 m along the road sections covered under the study. The control section testing shall involve carrying out deflection testing for each 100 m long homogenous road segment along the road sections. The selection of homogenous segment shall be based on the data derived from pavement condition surveys. The total length of such homogenous segments shall not be less than 100 m per kilometer. The deflection measurements for

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the control section testing should be at an interval of not more than 10m.

d) Benkelman Beam Deflection surveys may not be carried out for severely distressed sections of the road warranting reconstruction. The Consultants shall submit to client the scheme describing the testing schedule including the interval. The testing scheme shall be supported by data from detailed reconnaissance surveys.

e) In case, the Consultants wish to use any acceptable method (s) other than Benkelman Beam deflection technique for the evaluation of pavement strength, details of such methods or innovative features for deflection testing along with the methodology for data analysis, interpretation and the use of such data for pavement overlay design purposes using IRC or any other widely used practices, such as AASHTO guidelines, should be got approved from client. The sources of such methods should be properly referenced.

4.6.2.9 Sub grade Characteristics and Strength

(a) Based on the data derived from condition (surface condition, roughness) and structural strength surveys, the project road section should be divided into segments homogenous with respect to pavement condition and strength. The delineation of segments homogenous with respect to roughness and strength should be done using the cumulative difference approach (AASHTO, 1993).

(b) The samples on soil classification and mechanical characteristics be collected as given under:

i) For the widening of existing road within the ROW, the Consultants shall test at least three sub-grade soil samples for each homogenous road segment or three samples for each soil type encountered, whichever is more.

ii) For the roads along new alignments, the test pits for subgrade soil shall be @ 1per 1.00 Km or for each soil type, whichever is more. A minimum of three samples should be tested corresponding to each homogenous segment.

(c) The testing for subgrade soil shall include:

i) In-situ density and moisture content at each test pit.

ii) Field CBR using DCP at each test pit.

iii) Characterization (grain size and Atterberg limits) at each test pit and,

iv) Laboratory moisture-density characteristics (modified AASHTO compaction);

v) Laboratory CBR (unsoak and 4-day soak compacted at three energy levels) and swell.

(d) For problematic soils, the testing shall be more rigorous. The characteristics with regard to permeability and consolidation shall also be determined for these soils. The frequency of sampling and testing of these soils shall be finalised in consultation with the client after the problematic soil types are identified along the road sections.

4.6.2.10 Investigations for Culverts and Structure

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4.6.2.10.1 **Inventory of Culverts and Structures**

- (a) The Consultants shall make an inventory of all the structures (bridges, viaducts, ROBs, culverts etc.) along the road under the project. The inventory for the bridges, viaducts and ROBs shall include the parameters required as per the guidelines of IRC-SP:35-1990. The inventory of culverts shall be presented in a tabular form covering relevant physical and hydraulic parameters.

4.6.2.10.2 **Hydraulic and Hydrological Investigations**

(a) The hydrological and hydraulic studies shall be carried out in accordance with IRC Special Publication No. 13 ("Guidelines for the Design of Small Bridges and Culverts") and IRC:5-1998 ("Standard Specifications & Code of Practice for Road Bridges, Section I General Feature of Design"). These investigations shall be carried out for all existing drainage structures along the road sections under the study.

(b) The Consultants shall make a desk study of available data on topography (topographic maps, stereoscopic aerial photography), storm duration, rainfall statistics, topsoil characteristics, vegetation cover etc. so as to assess the catchments areas and hydraulic parameters for all existing and proposed drainage provisions. The findings of the desk study would be further supplemented and augmented by a reconnaissance along the area. All-important hydrological features shall be noted during this field reconnaissance.

(c) The Consultants shall collect information on high flood level (HFL), low water levels (LWL), discharge velocity etc. from available past records, local inquiries and visible signs, if any, on the structural components and embankments. Local inquiries shall also be made with regard to the road sections getting submerged during heavy rains.

4.6.2.10.3 **Condition Survey for Culverts and Structures**

(a) The Consultants shall thoroughly inspect the existing structures and shall prepare a report about their condition including all the parameters given in the Inspection pro-forma of IRC-SP; 35-1990. The condition and structural assessment survey of the culverts / structures shall be carried out by senior experts of the Consultants and establish remaining service life of each retainable bridge or structure with and without the proposed widening/strengthening and rehabilitation according to acceptable practice in this regard.

4.6.3 MATERIAL INVESTIGATIONS

4.6.3.1 The Consultants shall identify sources, quarry sites, availability of bricks and its by product and borrow areas, undertake field and laboratory testing of the materials to determine their suitability for various components of the work and establish quality and quantity of various construction materials and recommend their use on the basis of techno-economic principles. The Consultants shall prepare mass haul diagram for haulage purposes giving quarry charts indicating the location of selected borrow areas, quarries and the respective estimated quantities.

4.6.3.2 It is to be ensured that no material shall be used from the right-of-way except by way of leveling the ground as required from the construction point of view, or for

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landscaping and planting of trees etc. or from the cutting of existing ground floor obtaining the required formation levels.

4.6.3.3 Environmental restrictions, if any, and feasibility of availability of these sites to prospective civil works contractors, should be duly taken into account while selecting new quarry locations.

4.6.3.4 The Consultants shall make suitable recommendations regarding making good the borrow and quarry areas after the exploitation of materials for construction of works.

4.6.3.5 The Material Investigation aspect shall include preparation and testing of bituminous mixes for various layers and concrete mixes of different design mix grades using suitable materials (binders, aggregates, sand filler etc.) as identified during Material Investigation to conform to latest MORT&H specification.

4.6.3.6 As far as possible feasibility of locally available materials including brick and its by product shall be explored and designs evolved incorporating these materials.

4.7 DETAILED DESIGN OF ROAD, PAVEMENTS, AND STRUCTURES

4.7.1 GENERAL

4.7.1.1 The Consultants are to carryout detailed designs and prepare working drawings for the following:

- i. Highway with 2-lane carriageway configuration complete in all respects as per NH-Standards.
- ii. Design of pavement for the selected alignment/ additional lanes/area and overlay for the existing road.
- iii. Design of Shoulders and medians, verges; where required.
- iv. Culverts, and other structures.
- iv. Prepare alignment plans, longitudinal sections and cross-sections @ 50m Intervals in plain/rolling area and 25 mtr at curves and hill section.
- vi. Designs for road furniture and road safety/traffic control features;
- vii. Designs and drawings for service road/under passes at locations where necessary / required.
- viii. Short bypasses at congested locations.
- ix. Drainage design showing location of turnouts, out falling structures.
- x. Culverts and structure including widening/strengthening rehabilitation plan with design and drawings.
- xi. Traffic amenities (Parking Areas, Weighing Station and Rest Areas, etc.).

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- xii. Median separation and other safety features wherever required.

4.7.2. GEOMETRIC DESIGN

4.7.2.1 Based on the data collected from reconnaissance and topographic surveys, the new sections and the sections with geometric deficiencies, if any, should be identified and suitable measures for construction/ improvement should be suggested for implementation.

4.7.2.2 The detailed design for geometric elements shall cover, but not be limited to the following major aspects:

- i. Horizontal alignment;
- ii. Longitudinal profile;
- iii. Cross-sectional elements.
- iv. Junctions, intersections and interchanges;
- v. Bypasses; and, (if any)
- vi. Service roads. (if any)

4.7.2.3 The, alignment design shall be verified for available sight distances as per the standard norms. The, provision of appropriate markings and signs shall be made wherever the existing site conditions do not permit the adherence to the sight distance requirements as per the standard norms.

4.7.2.4 Design of grade separated pedestrian crossings (viaducts) for large cross traffic of pedestrians and / or animals, if any required.

4.7.2.5. Details for at-grade junctions The geometric design of interchanges shall take into account the site conditions, turning movement characteristics, level of service, overall economy and operational safety.

4.7.2.6 The Consultants shall prepare design and other details in respect of the parallel service roads in urbanized locations and other locations to cater to the local traffic, their effect of the viability of the project on commercial basis if service roads are constructed as part of the project and the implications of not providing the service roads.

4.7.2.7 The consultant shall prepare complete road design including drainage for new bypass option identified around congested town enroute.

4.7.2.8 The alignment plan so finalized shall be got approved from the concerned authorities which shall then form basis for preparation of DPR.

4.7.3 PAVEMENT DESIGN

4.7.3.1 The detailed design of pavement shall include:

- i. Strengthening of existing road pavement
- ii. Design of new pavement for new/ additional carriageway;
- iii. Pavement design for bypasses; and,
- iv. Design of shoulders. (usable/paved as per traffic requirements)

4.7.3.1 The design of pavement shall primarily be based on IRC-37 publications.

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4.7.3.3 For the design of pavement, each set of design input shall be decided on the basis of rigorous; testing and evaluation of its suitability and relevance in respect of in-service performance of the pavement. The design methodology shall accompany the design proposals and shall clearly bring out the basic assumptions, values of the various design inputs, rationale behind the selection of the design inputs and the criteria for checking and control during the implementation of works. In other words, the design of pavement structure should take due account of the type, characteristics of materials used in the respective courses, variability of their properties and also the reliability of traffic predictions. Furthermore, the methodology adopted for the design of pavement shall be complete with flow charts indicating the various steps in the design process their interaction with one another and the input parameter required at each step.

4.7.3.4 For the design of overlays on the existing pavement, the strengthening requirement shall duly take into account the strength of the existing pavement vis-a-vis the remaining life. The overlay thickness requirements shall be worked out for each road segment homogenous with respect to condition, strength and sub-grade characteristics. The rehabilitation provisions should also include the provision of regulating layer. For existing pavement with acceptable levels of cracking, provision of a crack inhibiting layer should also be included.

4.7.3.5. Latest techniques of pavement strengthening like provision of geo-synthetics should be duly considered by the consultant for achieving economy.

4.7.3.6 The paved shoulders where proposed shall be designed as integral part of the pavement for the main carriageway. The design requirements for the carriageway pavement shall, therefore, be applicable for the design of shoulder pavements. The design of usable/ granular shoulder should take into account the drainage considerations besides the structural requirements.

4.7.3.7 The pavement design task shall also cover working out the maintenance and strengthening requirements and periodicity and timing of such treatments.

4.7.4 DESIGN OF EMBANKMENTS

4.7.4.1 The embankments design should provide for maximum utilization of locally available materials consistent with economy.

4.7.4.2 The Consultants shall carry out detailed analysis and design for all embankments of height greater than 6 m based on relevant IRC publications.

4.7.4.3 The design of embankments should include the requirements for protection works and traffic safety features.

4.7.5 GENERAL ARRANGEMENT DRAWING OF CULVERTS AND STRUCTURES

4.7.5.1 The Consultant shall prepare General Arrangement Drawing (GAD) and Alignment Plan showing the salient features of the Culverts, minor bridges and structures proposed to be constructed / reconstructed along the road sections covered under the Study. The salient features such as alignment, overall length, span arrangement, cross section, deck level, founding level, type of minor bridges components (superstructure, substructure, foundations, bearing, expansion joint, return walls etc.) shall be finalized based on the

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hydraulic and geo-technical studies, cost effectiveness and ease of construction. The GAD shall be supplemented by Preliminary designs In respect of span arrangement and type of minor bridges a few alternatives with cost-benefit implications should be submitted to enable Client to approve the best alternative.

4.7.5.2 Subsequent to the approval of the GAD and Alignment Plan by the Client, the Consultant shall prepare detailed design as per IRC codes and working drawings for all components of the minor bridges and structures. The Consultant shall furnish the design and working drawings for suitable protection works and/or river training works wherever required.

4.7.5.3 Dismantling/reconstruction of existing structures shall be avoided as far as possible except where considered essential in view of their poor structural conditions/inadequacy of the provisions etc. The existing structures having inadequate strength width shall be widened / reconstructed in part or fully as per the latest MoRT&H guidelines. The Consultant shall furnish the detailed design and working drawings for carrying out the above improvements.

4.7.5.4 Suitable repair / rehabilitation measures shall be suggested in respect of the existing structures as per IRC-SP:40 along with their specifications, drawings and cost estimate in the form of a report. The rehabilitation or reconstruction of the structures shall be suggested based on broad guidelines for rehabilitation and strengthening of existing bridges contained in IRC-SP:35 and IRC-SP:40.

4.7.5.5 Subsequent to the approval of the GAD and the alignment plan by the client detailed design shall also be carried out for the proposed underpasses, overpasses and interchanges, if any.

4.7.5.6 The Consultants shall also carry out the design and make suitable recommendations for protection works for bridges and drainage structures.

4.7.5.7 In case land available is not adequate for embankment slope, suitable design for RCC retaining wall shall be furnished. However, RES wall may also be considered depending upon techno-economic suitability to be approved by the client.

4.7.6 DRAINAGE SYSTEM

4.7.6.1 The requirement of roadside drainage system and the integration of the same with proposed cross-drainage system shall be worked out for the entire length of the project road section.

4.7.6.2 In addition to the roadside drainage system, the Consultants shall design the special drainage provisions for sections with super-elevated carriageways, high embankments and for road segments passing through cuts. The drainage provisions shall also be worked out for road segments passing through urban areas.

4.7.6.3 The designed drainage system should show locations of turnouts/outfall points with details of outfall structures fitting into natural contours. A separate drawing sheet covering every 5 km stretch of road shall be prepared.

4.7.7 TRAFFIC SAFETY FEATURES, ROAD FURNITURE AND ROAD MARKINGS

4.7.7.1 The Consultants shall design suitable traffic safety features and road furniture including traffic signals, signs, markings, overhead sign boards, crash barriers, delineators

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etc. The locations of these features shall be given in the reports and also shown in the drawings.

4.7.8 ARBORICULTURE AND LANDSCAPING

4.7.8.1 The Consultants shall work out appropriate plan for planting of trees (specifying type of plantation), horticulture, floriculture on the surplus land of the right-of-way with a view to beautify the highway and making the environment along the highway pleasing. The existing trees / plants shall be retained to the extent possible.

4.7.9 PARKING AREAS AND REST AREAS

4.7.9.1 The consultant shall select suitable sites for parking areas and rest areas and prepare suitable separate designs in this regard. The common facilities like petrol pump, first-aid medical facilities, police office, restaurant, vehicle parking etc. should be included in the general layout for planning. For petrol pump, the guidelines issued by OISD of Ministry of Petroleum shall be followed. The facilities should be planned to be at approximately 50 km interval. At least each facility (1 no.) is foreseen to be provided for this project stretch.

4.7.10 MISCELLANEOUS WORKS

4.7.10.1 The Consultants shall make suitable designs and layout for miscellaneous works including rest areas, bus bays, vehicle parking areas, telecommunication facilities etc. wherever appropriate.

4.7.10.2 The Consultants shall prepare detailed plan for the traffic management and safety during the construction period.

4.8 ESTIMATION OF QUANTITIES AND PROJECT COSTS

4.8.1. The Consultants shall prepare detailed estimates for quantities (considering designs and mass haul diagram) and project cost for the entire project including the cost of environmental and social safeguards proposed, based on the MoRT&H Data book DGBR SSR rates and market rates. The estimation of quantities shall be based on detailed design of various components of the projects.

4.8.2 The Consultants shall make detailed analysis for computing the unit rates for the different items of works. The unit rate analysis shall duly take into account the various inputs and their basic rates, suggested location of plants and respective lead distances for mechanized construction. The unit rate for each item of works shall be worked out in terms of manpower, machinery and materials. Where ever, rates are available in DGBR SSR-2004, that may be followed with suitable addition on account of extra lead , market rate of material, POL, bitumen etc.

4.9 SUBMISSION OF REPORTS

4.9.1 GENERAL

4.9.1.1 All reports, documents and drawings shall be submitted in the manner specified hereunder and as per IRC-SP-19-2001 manual for Survey, Investigation and preparation of Road Projects.

4.9.1.2 Reports shall be submitted in Six stages as brought out below.

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Stage 1: Inception Report

Stage 2: Feasibility Report

Stage 3: LA & Clearances I Report

Stage 4: Detailed Project Report (DPR)

Stage 5: Technical schedule

Stage 6: LA& Clearance II Report

4.9.1.3 The Consultant shall submit to the client the reports and documents in bond volumes (and not spiral binding form) after completion of each stage of work as per the schedule and in the number of copies as given in enclosure III. Further the reports shall also be submitted in floppy diskettes /CDs in addition to the hardcopies as mentioned in Enclosure-III. Consultant shall submit all other reports sectioned specifically in the preceding para's of the TOR.

4.9.1.4 The time schedule for various submissions prescribed at s.l.no I above shall be strictly adhered to no time –over-run in respect of these submission will normally be permitted. Consultant is advise to go through the entire terms of reference carefully and plan his work method in such a manner that various activates followed by respective submission as brought out at Sl.NO.1 above are completed a stipulated. Consultant is therefore, advised to deploy sufficient number of supporting personnel both technical and administrative to undertake the project preparation activities in construction package (Section) simultaneously as far as possible the proposal should include compete information such as number of such persons name position period of engagement remuneration rate tec. The consultant is also advised to start necessary survey works form the bringing so as to gain time in respect of various other activists in that stage.

Quality Assurance Plan (QAP) Document

4.9.1.5 Immediately upon the award, the Consultants shall submit four copies of the QAP document converging all respects of field studies investigations design and economic financial analysis. The quality assurance plans/procedures for different filed studies. investigation design and economic financial analysis. The quality assurance plans / procedures for different filed studies. engineering surveys and investigation, design and documentation activities should be presented as separate section like engineering surveys and investigation. Traffic surveys. material geo-technical and sub-soil investigations road and pavement investigations. Investigation and design of bridges & structures environment and R &R assessment. economic & financial analysis, drawings and documentation; preparation checking approval and filing of calculation, identification and traceability of project documents etc in the additional information as per format shall be furnished regarding the details. Of personnel who shall be responsible for carrying out/preparing and checking/verifying various activates forming part of feasibility study and project preparation since inception to the completion of work. The field and design activates shall start after the QAP is approved by CE (P) BRAHMANK (BRO).

4.9.2 STAGE 1. INCEPTION REPORT (IR)

4.9.2.1 The report shall cover the following major aspects:

- a) Project appreciation;
- b) Detailed methodology to the requirements of the TOR finalized in

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consultation with the deptt including scheduling of various sub activities to be carried out for completion of various stages of the work; stating out clearly their approach & methodology for project preparation after due inspection of the entire project stretch and collection/ collation of necessary information;

- c) Task Assignment' and Manning Schedule;
- d) Work programme.
- e) Proforma for data collection;
- f) Design standards and proposed cross-sections;
- g) Key plan and Linear Plan;
- h) Development plans being, implemented and / or proposed for implementation in the near future by the local bodies and the possible impact of such development plans on the overall scheme for field work and design for the study;
- i) Quality Assurance Plan (QAP) finalized in consultation with the deptt.
- j) Draft design standards
- k) The requirement if any for the instruction of bypasses should be identified on the basis of data derived from reconnaissance and traffic studies the available alignment option should be worked out on the basis of available maps. The most appropriate alignment option for bypasses should be identified on the basis of site conditions and techno-economic considerations inception report should include the details regarding these aspects concerning the construction of bypasses for approval by CE (P) BRAHMANK (BRO).

4.9.3 STAGE 2. **FEASIBILITY REPORT**

4.9.3.1 The Consultant shall commence the Feasibility Study of the project in accordance with the accepted Inception Report. The feasibility report shall contain the following:

- Executive summary
- Overview of CE (P) BRAHMANK (BRO) organization and activates and project financing and cost recovery mechanisms.
 - Project description including need for re-alignment/bypasses/major bridge sittings and technical /engineering alternatives.
- Methodology adopted for the feasibility study.
- Various alternative alignments considered and proposed final alignment from technical and economical consideration.
- Socio-economic profile of the project areas.
- Traffic surveys and analysis

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- Indicative design standards, methodologies and specifications.
- Environmental screening and preliminary environmental assessment.
- initial social assessment and preliminary land acquisition/resettlement plan
- Preliminary land acquisition, utility shifting plan.
- Cost estimates based on preliminary rate analysis and bill of quantities.
- Economic and financial analysis.
- Conclusions and recommendations.

4.9.3.2 The basic data obtained from the field studies and investigations shall be submitted in a separate volume as an Appendix to Feasibility Report.

4.9.3.3 The consultant has to submit the following documents in six sets:

- i Technical specification: The MORT&H's Technical Specification for Road and Bridge works shall be followed for this study however volume iv technical specification shall contain the special technical specifications which are not covered by MORT&H Specification for Road and Bridges (lasts edition /revision) and also specific quality control norms for the construction of works.
- ii) Rate Analysis This volume will present the analysis of rates for all items of works the details of unit rate of materials at source carriage charges any othe applicable charges labour rates and machine charges as considered in arriving at unit rates will be included in this volume.
- iii Cost Estimates: This volume will present the each items of work as well as a summary of total cost.
- iv Bill of quantities: this volume shall contain the detailed bill of quantities for all items of works.

4.9.3.4 The basic data obtained form the filed studies and investigations shall be submitted in a separate volume as an appendix to feasibility reports.

4.9.3.5 The final feasibility study report incorporating comments revisions and modifications suggested by CE (P) Brahmank (BRO) on draft feasibility study report.

4.9.4 **STAGE 3 STRIP PLAN AND CLEARANCE**

4.9.4.1 This report shall contain the following documents:

- a) Details of the center line of the proposed widened NH along with the existing and proposed right-of-way limits to appreciate the requirements of land acquisition;
- b) The information concerning the area including ownership of land to be acquired far the implementation of the project shall be collected from the revenue and other concerned authorities and presented along with the strip plans;

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- c) Strip plans showing the position of existing utilities and services indicating clearly the position of their relocation;
- d) Details for various clearances such as environment and forest clearances; Separate strip plan showing shifting / relocation of each utility services in consultation with the concerned local authorities;
- e) The utility relocation plans should clearly show existing right-of-way and pertinent topographic details, including buildings, major trees, fences and other installations such as water-mains telephone, telegraph and electricity poles, and suggest relocation of the services along with their crossings the highway at designated locations as required and prepare necessary details for submission to the Service Departments;
- f) Detail schedules for acquisition of additional land and additional properties in consultation with the revenue authorities; and
- g) Land acquisition plan shall be prepared after digitization of cadastral land revenue maps the digitized map shall exactly match the original map like a contact print since the dimensions and area of plots or the whole village is to be extracted from the map itself an accuracy of 1mm or higher in a 1:1000 scale map shall be ensured as this translates into an accuracy of 1m or higher on ground

4.9.4.2 The strip plans and land acquisition plan shall be prepared on the basis of data from reconnaissance and detailed topographic surveys.

4.9.4.3 The Report accompanying the Strip Plans should cover the essential aspects as given under:

- i. Kilometer-wise Land Acquisition Plan, (LAP) and schedule of ownership thereof and Costs as per Revenue Authorities and also based on realistic rates,
- ii. Details of properties, such as buildings and structures falling within the right-of-way and costs of acquisition based on realistic rates.
- iii. Kilometer-wise Utility Relocation Plan (URP) and costs for relocation as per concerned authorities.
- iv. Kilometer-wise account in regard to felling of trees of different type and girth and value estimate of such trees based on realistic rates obtainable from concerned District forest office.

4.9.4.4 The strip plans shall clearly indicate the scheme for widening. The views and suggestions of the deptt should be duly taken into account while working out the widening scheme (left, right or symmetrical). The widening scheme shall be finalised in consultation with the client.

4.9.4.5 Kilometer wise strip plans for section (Packages) shall be prepared separately for each concerned agency and suggested by CE (P) Brahmanak (BRO)..

4.9.5 **REPORT ON LAND ACQUISITION**

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4.9.5.1 The land acquisition report shall be prepared and submitted for section (package). The report shall include details schedules about acquisition of landholdings as per revenue records and their location in a strip plan and also the costs as per district authorities details shall be submitted in land acquisition program to be supplied by CE (P) Brahmanak (BRO). the land acquisition report shall be submitted in both Hindi and English languages.

4.9.5.2 The land acquisition report should be prepared in consultation with affected persons non – governmental organization and concerned government agencies and should cover land acquisition and resettlement plan and costs of resettlement and rehabilitation of such affected persons it should also include plan of compensating afforestation its land requirement with specific location and cost involved for undertaking all activities in this regard.

4.9.5.3 All the details as required for diversion of forest land shall be compiled and presented as per the specified proforma to obtain necessary Forest clearance for the project.

4.9.6 **STAGE 4 DRAFT DETAILED PROJECT REPORT (DPR)**

4.9.6.1. The draft DPR Submission shall consist of Main Report, Design Report, Materials Report, Engineering Report, Drainage Design Report, Economic and Financial Analysis Report, Environmental Assessment Report including Resettlement Action Plan (RAP).

4.9.6.2 Report, the Documents and Drawings shall be submitted in the manner specified hereunder: -

(a). **Volume-I:- Main Report:** This report will present the project background, social analysis of the project, details of survey and Investigations carried out, analysis and interpretation of survey and investigation data, traffic studies and demand forecasts. designs, cost estimation, environmental aspects, economic and commercial analyses and conclusions. The report shall include Executive Summary giving brief accounts of the findings of the study and recommendations. It shall also include the following:

- i) Plans, charts and diagrams showing locations and details of existing features and the essential features of improvement and upgrading.
- ii) The basic data obtained from the field studies and investigations and input data used for the preliminary design in a separate volume as an Appendix to Main Report,

b) **Volume: – II: - Design Report:** This volume shall contain design calculation, supported by computer printout of calculations wherever applicable, The Report shall clearly bring out the various features of design standards adopted for the study. The design report will be in two parts. Part-I shall primarily deal with the design of road features and pavement composition while Part-II shall deal with the General arrangement of bridges, and cross-drainage structures. The sub-soil exploration report including the complete details of boring done, analyses and interpretation of data and the selection of design parameter shall be included as Appendix to the Design Report. The detailed design for all features should be carried out as per the requirements of the Design Standards for the project. However, there may be situations wherein it has not been possible to strictly adhere to the design standards due to the existing site conditions, restrictions and other considerations. The report should clearly bring out the details of these aspect and

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the standards adopted.

c) **Volume: - III, Materials Report:** The report shall include details on locations of borrow area, possible source of work and quarries shown on maps and charts and also the estimated quantities with mass haul diagram including possible end use with leads involved, the details of sampling and testing carried out and results in the form of important index values with possible end use thereof. The materials Report shall also include details of sampling, testing and test results obtained in respect of physical properties of sub grade soils. The information shall be presented in tabular as well as in graphical representations and schematic diagrams. The Report shall present soil profiles along the alignment. The material Report should also clearly indicate the locations of areas with problematic soils. Recommendations concerning the improvement of such soils for use in the proposed construction works, such as stabilisation (cement, lime, mechanical) should be included in the Report. The report should specially bring out the cost effect with use of soft aggregate (bricks and its by products) available widely in the area vis a vis that of the imported stone chips from Assam. A separate chapter on use of soft aggregates in the road construction including proposed specifications thereof be included in the report.

d. Environmental Assessment report including environmental management plan (EMP) & Resettlement action plan (RAP) the report shall be prepared conforming to the guidelines of the government of India state government and world bank/ADB as appropriate for construction package

e. **Volume-IV: - Technical Specifications:** The MOSRT&H's Technical Specifications for Road and Bridge works shall be followed for this study, However, technical specifications which are not covered under MOSRT&H Specifications for Roads and Bridges (latest edition / revision) (such as on soft aggregated) be evolved and specified suitably including norms thereof for the construction works and DGBR SSR, and quality control measures to be followed.

f. **Volume – V: - Rate Analysis:** This volume will present the analysis of rates for all items of works based on the MOSRT&H data book and DGBR SSR. The details of unit rate of materials at source, carriage charges, any other applicable charges, labour rates, machine charges as considered in arriving at unit rates will be included in this volume.

g. **Volume – VI: - Cost Estimates:** This volume will present the cost of each item of work as well as a summary of total cost.

h. **Volume – VII:- Bill of Quantities:** This volume shall contain the detailed Bill of Quantifies for all items of works.

i. **Volume-VIII: - Resources Appreciation:** It is proposed to undertake construction of these roads departmentally by the client (excluding the construction of bridges having span more than 40.00 mtr). A proper appreciation on requirement of veh/eqpt/plants including capacity thereof for implementation of this Project, keeping in view the available working periods and proposed time schedule, be also analysed and presented in this report. This shall also include a proper appreciation of requirement of skilled/unskilled manpower, construction materials and stores including specification thereof viz stone, bricks and aggregate thereof, sand,

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cement, bitumen, steel (size wise, timber etc).

j. **Volume – IX:- Drawing Volume**: All drawings forming part of this volume shall be good for construction drawings. All plan and profile drawings will be prepared in scale 1:250V and 1 "2500H scale to cover one km in one sheet. In addition this volume will contain 'good for construction' drawings for the following. All drawings will be prepared on A2 size sheet. The drawing shall include details of all BMs and reference pillars. The co-ordinates of all points should be referenced to a common datum, preferably GTS referencing system.

- a. Horizontal Alignment and Longitudinal Profile.
- b. Cross-section @ 50m interval along the alignment within ROW
- c. Typical Cross-Sections with details of pavement structure.
- d. Detailed Working Drawings for individual Culverts and Cross-Drainage Structures,
- e. Detailed Working Drawings for individual Bridges, and Structures.
- f. General Arrangement Drawings for Improvement of At-Grade and Grade-Separated Intersections and Interchanges.
- g. General Arrangement Drawings for Road Sign, Markings, and other Facilities.
- h. Schematic Diagrams (linear chart) indicating but be not limited to be following:
 - Widening scheme;
 - Locations of median openings, intersections, interchanges, underpasses, overpasses, bypasses;
 - Locations of service roads
 - Location of traffic 'signals, traffic signs, road markings, safety features; and,
 - Locations of parking areas, weighing stations, bus bays, rest areas, if any.

j. Drawings for toll plaza bus bays parking areas rest areas weighing station etc all drawings will be prepared in A2 size sheets the format for plan cross section and profile drawings shall be finalized in consultation with the concerned CE (P) Brahmank (BRO). officers the drawings shall also include details of all BM and reference pillars HIP and VIP the co-ordinates of all points should be referenced to a common datum preferably GTS referencing system the drawings shall also include the location of all traffic safety features including traffic signal sings markings crash barriers delineators and rest areas bus bays parking areas etc.

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k The typical cross section drawings should indicate the scheme for further widening of the carriageway the proposed cross section of road regiment passing through urban areas should indicate the provisions for pedestrian movements and suitable measures for surface and sub surface drainage and lighting as required.

4.9.7 **STAGE 5. FINAL DETAILED PROJECT REPORT; DOCUMENTS AND DRAWINGS (6 SETS)**

4.9.7.1 The Final DPR consisting of Main Report, Design Report, Drainage Design Report and Materials Report, incorporating all revisions deemed relevant following receipt of the comments from the client on the draft DPR shall be submitted as per the specified schedule.

4.9.8 **STAGE 6. LA & CLEARANCES II REPORT**

4.9.8.1 All the necessary project related clearances such as environment forest and wildlife clearance form MODF Railways in respect of ROB/RUBs Irrigation Deptt and any other concerned agencies shall be obtained and submitted to CE (P) Brahmank (BRO) so that project implementation can straight away proceed without any hold up for utility clearances consultant shall prepare draft utility shifting estimates using the latest schedule of rates and obtain final approval form utility agency and CE (P) Brahmank (BRO).

4.10 **ASSISTANCE IN OBTAINING APPROVAL OF THE PROJECT FROM CONCERNED AUTHORITIES**

4.10.1 Consultant shall extend all the necessary assistance to client in obtaining approval of the competent authority for implementation of this project. This shall include.

- (a) Approval of DPR, and cost estimates from the concerned authorities
- (b) Land acquisition process at State govt level

4.10.2 During entire period of services the consultant shall interact continuously with CE (P) Brahmank (BRO) and provide any clarification as regards methods being followed and carryout modification as suggested by CE (P) BRAHMANK (BRO) a programme of various activities shall be provided to CE (P) Brahmank (BRO). and prior intimation shall be given to CE (P) Brahmank (BRO). regarding start of key activities such as boring survey etc so that inspections of CE (P) Brahmank (BRO). officials could be arranged in time.

4.10.3 The CE (P) Brahmank (BRO) officer and other Government officers may visit the site at any time individually or collectively to acquaint/supervise the field investigation and survey works CE (P) Brahmank (BRO) may also appoint a proof consultant to supervise the work of the DPR consultant including inter-alia field investigation survey work design work and preconstruction activities.

4.10.4 The consultant shall be required to send 3 copies of concise monthly progress report by the 5th days of following month to the designated officer at his head quarter so that progress could be monitors by the CE (P) Brahmank (BRO). these reports will indicate the dates of induction and de-induction of various key personnel and the activities performed by them frequent meetings with the consultant at site office or in Delhi are foreseen during the currency of project preparation.

4.10.5 All equipment software and books etc required for satisfactory services for this project shall be obtained by the consultant at their own cost and shall be their property.

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4.11 TIME PERIOD FOR THE SERVICE

4.11.1 Time period envisaged for, the study of this road projects is **08 months (Eight months)** from the date of notice to proceed. The final reports, drawings and documentation shall be completed within this time schedule.

4.11.2 The client shall arrange to give; approval on all sketches, drawings, reports and recommendations and other matters and proposals submitted for decision by the Consultant in such reasonable time so as not to delay or disrupt the performance of the Consultant's services.

4.12 PROJECT TEAM AND PROJECT OFFICE OF THE CONSULTANT

4.12.1 The Consultants shall be required to form a multi-disciplinary team for this assignment. The consultants Team shall be manned by adequate number of experts with relevant experience in the execution of similar detailed deign assignments.

4.12.2 All type of key personnel mentioned will be evaluated at the time of evaluation of technical proposal. Consultants are advised in their own interest to frame the technical proposal in an objective manner as far as possible so that these could be properly assessed in respect of points to be given as part of evaluation criteria as mentioned in section III. It shall be ensured by the consultant that adequate strength of key personnel, technical and administrative support staff is assigned for the service to meet the TOR requirements and the time schedule specified.

4.13 SUBMISSION OF DOCUMENTS AND TIME SCHEDULE THEREOF

4.13.1 All the documents as described herein above shall be submitted to the Employer as per the following. Two soft copy of each report shall be delivered together with the number of hard copy sets specified below within the specified time schedule.

S/No	Name of report	No. of hard copies	Time period from the date of issue of Notice to proceed
Stage I	Inception report	06	Within 6 weeks
Stage II	Feasibility report	04	Within 12 weeks
Stage III	LA & Clearances I Report	06	Within 16 weeks
Stage IV	Detailed Project Report (DPR)	06	Within 18 weeks
Stage V	Technical schedule	06	Within 26 weeks
Stage VI	LA& Clearance II Report	04	Within 34 weeks

4.13.2 Subsequently, on submission of the Final Detailed Project report, the consultant shall assist the client in getting approval of DPR and cost estimates from the concerned authorities and including processing of land acquisition cases with concerned revenue authorities.

4.14 PRICE

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4.14.1 The consultant shall quote his price for the consultancy services referred herein above in the manner prescribed on lumpsum basis. The amount shall be set out in the Financial Proposal. The price as quoted shall include all direct and indirect cost, expenses including taxes, insurance premium etc, payable by the consultant excluding the 'service Tax' payable by the consultant in India as per the applicable laws. The Consultant shall allow in his pricing for all to meet the requirement of the services as stated in the documents.

4.14.2 Tenders are to take note that a suitable deduction at source on account of the Income Tax will be effected as per the Indian Income Tax Act and service tax while releasing the payment.

4.14.3 The Accepting officer is not bound to accept lowest bid or any other bid.

4.15 DATA AND SOFTWARE

4.15.1 The CDs containing all basic as well as the processed data from all field studies and investigations shall be submitted by the consultant at the time of the submission of the final Report. The data can be classified as follows:

- (a). **Engineering Investigations and Traffic Studies:** Road Inventory, Condition, Roughness, Test Pit (Pavement composition), Benkelman Beam Deflection, Material Investigation including test results for subgrade soils, Traffic Studies (traffic surveys), axle load surveys, Sub-soil Exploration, Drainage Inventory" Inventory data for bridge and culverts indicating rehabilitation, new construction requirement etc. in MS EXCEL or any other format which could be imported to widely used utility packages.
- (b). **Topographic Surveys and Drawings.** All topographic data would be supplied in (x, y, z) format along with complete reference so that the data could be imported into any standard highway design software. The drawing file would be submitted in dxf or dwg format.
- (c). **Rate Analysis:** The Consultant shall submit the rate analysis for various works items including the data developed on computer in this relation so that it could be used by the Authority later on for the purpose of updating the cost of the project.
- (d). **Software:** The Consultant shall also hand-over CD's containing any general software including the financial model which has been specifically developed for the project.

4.15.2 The CD's should be properly indexed and a catalogue giving contents of all CD's and print-outs of the contents should be handed over at the time of submission of the Final Report. Two copies of CDs and print-out be submitted for the purpose.

4.16 PROFESSIONAL INDEPENDENCE

4.16.1 The consultant shall have no direct or indirect interest in commercial, manufacturing or contracting activities that might tend to influence his professional judgment. His approach for the assignment shall be objective and provide solution by using sound technical and economical principles, which serve the best interest of the employer/state.

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SUPPLEMENT I**ADDITIONAL POINTS TO BE CONSIDERED FOR HILL ROADS IN ADDITION TO POINTS COVERED IN MAIN TOR**

S.No.	Clause No. of TOR	Additional points
1.	2.3	<p>a) Design of tunnels if required (General Arrangement Drawing of the Tunnel)</p> <p>b) Design of protective works, slope stabilization measures, erosion control measures, land slide, control/protection measures snow drift control/snow clearance measures, avalanche protection measures, if required</p>
2.	3	Feasibility study and preparation of Detailed Project Report for hill roads shall be Done in accordance with best international practices and wherever practicable/feasible steep gradients and hair pin bends may be avoided by realignments and by provision of structures
3.	4.1	<p>a) Inventory and condition survey for tunnels, if required.</p> <p>b) Identification of faults in rock strata and impact of faults in design of tunnels, if required</p> <p>c) Detailed design of road considering and incorporating specific aspects related to hill region like terrain, topographic conditions, extreme weather conditions, altitude effects etc.</p> <p>d) Design of protective works, slope stabilization measures, erosion control measures, land slide control/protection measures, snow drift control/snow clearance measures, avalanche protection measures, if required</p> <p>e) Design of scenic overlooks/watering points etc.</p>
4.	4.5 (I)	All activities related to field studies, design and documentation shall be done as per the latest guidelines/circulars of MORT &H and relevant publications of the Indian Roads Congress (IRC)/Bureau of Indian Standards (BIS) for hill roads. For aspects not covered by IRC and BIS, international standard practices, such as, British and American Standards may be adopted
5.	4.7	<p>Review of data and documents pertaining to</p> <p>a) Terrain and soil condition</p> <p>b) Condition of tunnels, if required.</p> <p>c) Sub-surface and geo-technical data for existing tunnels, if required.</p> <p>d) Drawing and detail of existing tunnels, if required.</p> <p>e) Existing protective works, erosion control and land slide control/protection works, slop stabilization measures, snow drift control measures, avalanche protection measures ",</p> <p>f) Existing land slide and snow clearance facilities</p> <p>g) Geological detail of rock strata in the area in case of tunnels</p>

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6.	4.6	The Consultant should make an in-depth study of available geological and meteorological maps of the area.
7.	4.6.2.1	<p>The primary tasks to be accomplished during the reconnaissance survey shall also include:</p> <ul style="list-style-type: none"> a) Details of terrain (steep or, mountainous) cliffs and gorges, general elevation of the road including maximum heights negotiated by main ascents and descents, total number of ascents and descents, hair pin bends, vegetation etc. b) Climatic conditions i.e. temperature, rain fall data, snow fall data, fog conditions, unusual weather conditions etc. c) Realignment requirements including provision of tunnels, if required. d) Inventory of tunnels and geologically sensitive areas like slip prone areas, areas subject to land slides, rock fall, snow drifts, erosion, avalanche activity etc
8.	4.6.2.3	Cross sections shall be taken at every 25 mtr in case of hill roads and at points of appreciable changes in soil conditions. While taking cross sections, soil conditions shall also be recorded.
9.	4.6.2.10.1	<p>The inventory data shall also include:</p> <ul style="list-style-type: none"> a) General elevation of road indicating maximum & minimum height negotiated by main ascents & descent and total no. of ascents & descents. b) Details of road gradients, length of gentle & steep slope, length & location of stretches in unstable areas, areas with cliffs, areas with loose rocks, Land slide prone areas, snow drift prone areas, no & location of hairpin bends etc. c) Details of tunnels d) Details & types of protective structure, erosion & land slide control/protection measures, snow drift control measures, avalanche protection/control measures etc
10.	4.7.3	<p>Pavement:</p> <ul style="list-style-type: none"> a) Location of crust failure along with their causes b) Condition of camber/cross falls/super elevations etc., whether affected by subsidence <p>Embankment: Extent of slope erosion on hill and valley side</p>
11.		<p>Condition Survey & Investigation For Slope Stabilization, Erosion Control, Landslide Correction/Protection & Avalanche Protection Measures:</p> <ul style="list-style-type: none"> a) Inventory & Condition Survey of Existing Protective/Control Measures:

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		<p>The consultant shall make an inventory of all the structure related to slope Stabilization, Erosion Control, Landslide Control/protection, Avalanche Protection etc. This shall include details of effectiveness of control measures already done and condition of protective/control structures.</p> <p>b) Landslide Investigation</p> <p>This shall be carried out to identify landslide prone areas, to suggest preventive measures or alternate routes that are less susceptible to landslide hazard. Further in existing slide areas this shall help to identify factors responsible for instability and to determine appropriate control measures needed to prevent or minimize recurring of instability problems.</p> <p>Initial preliminary studies shall be carried out using available contour maps, topographical maps, geological/geo-morphological maps, aerial photographs etc. for general understanding for existing slide area and to identify potential slide areas. This shall be followed by further investigations like geological/geo-technical/hydrological investigation to determine specific site condition prevailing I the slide area as per relevant IRC specification/publication, MOSRT & H circular and relevant recommendations of the international standards for hill roads. The results of the investigation shall provide basic for engineering analysis and the design of protection/remedial measures.</p>
12.	4.7.1	<p>The Consultants shall carry out designs and prepare working designs for the following:</p> <p>a) Cross section at every 25 mtr intervals</p> <p>b) Slope stabilization and erosion control measures</p> <p>c) Design of protection/control structure in areas subject to subsidence, landslide, rock fall, rock slide, snow drift, icing, scour, avalanche activity etc.</p> <p>d) Design of protective structure in slip prone and unstable areas.</p> <p>e) Design of scenic overlooks, watering points etc.</p> <p>f) Safety features specific to hill roads.</p>
13.	4.7.2	<p>The Consultants shall evolve Design Standards and materials specification for the study primarily based on IRC publication, MORT & H circular and relevant recommendations of the international standards (American, British etc) for hill roads.</p>
14.		<p>Wherever practicable/feasible hairpin bends and steep gradients shall be avoided by realignments, provision of structures or any other suitable provisions.</p>
15.	4.7.3	<p>While designing pavement for hill roads specific aspects relevant to hill regions like terrain & topographic conditions, weather conditions, altitude effects etc. shall be duly considered and suitably incorporated, in design so that pavement is able to perform well for the design traffic and service life. Effects of factors like heavy rainfall, frost action, intensive snow and avalanche activity, thermal stresses due to temperature difference in day and night, damage by tracked vehicles during snow clearance operation etc. must also be considered along with traffic intensity, its growth axle loads and design life.</p>

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16.	4.7.4	The design of embankments should include the requirements for protection works and traffic safety features. Including features specific to hill roads.
17.		Design and Drawing of Tunnels: The Consultant shall prepare design and drawings for tunnels, if required as per the results feasibility study, as per the relevant specifications of IRC / MoRT&H and other international specifications.
18.	4.7.6	a) Topography of hills generates numerous watercourses and this coupled with continuous gradients of roads in hills and high intensity of rainfall calls for effective drainage of roads. The drainage system shall be designed to ensure that the water flowing towards the road surface may be diverted and guided to follow a definite path by suitable provision of road side drains, catch water drains, interceptors etc. and flow on valley side is controlled so that stability is not affected. b) Further, adequate provision shall be made for sub-surface/subgrade drainage to take care of seepage through the adjacent hill face of the road & underground water flows.
19.	4.7.7	The consultant shall design suitable traffic safety features and road furniture including traffic signals, signs, markings and overhead sign boards crash barriers, delineators etc. including any feature specific to hill roads. The locations of these features shall be given in the report and also shown in the drawings.
20.	4.7.9	The Consultant shall make suitable designs and layout for miscellaneous works including rest areas, bus bays, vehicle parking areas, telecommunication facilities, scenic overlooks, watering points etc. wherever appropriate.
21.	4.9.6	Volume II: Design Report: a) inventory of protection measures and other structures b) inventory of tunnels, if required. c) Proposed preliminary designs for tunnels, if required. Volume III: Drawings a) Drawings for protection/control measures and other structures b) Drawings for tunnels if required.
22.	4.9.6	Volume II: Design Report (Part II) Part II of Design Report shall also deal with design of tunnels, if required and design of other protection/control structures. Volume IX: Drawing Volume This shall also include: a) Detailed working drawings for tunnels, if required. b) Detailed working drawings for protection/control structure

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SUPPLEMENT -II**ADDITIONAL REQUIREMENT FOR SAFETY AUDIT****Checklists**

The use of checklists is highly recommended as they provide a useful "aide memoire" for the audit team to check that no important safety aspects are being overlooked. They also give to the project manager and the design engineer a sense of understanding of the place of safety audit in the design process. The following lists have been drawn up based on the experience of undertaking systematic safety audit procedures overseas. This experience indicates that extensive lists of technical details has encouraged their use as "tick" sheets without sufficient thought being given to the processes behind the actions. Accordingly, the checklists provide guidelines on the principal issues that need to be examined during the course of the safety audits.

Stage F-During Feasibility Study

1. The audit team should review the proposed design from a road safety perspective and check the following aspects.

CONTENTS	ITEMS
Aspects to be checked	<p>A. Safety and operational implications of proposed alignment and junction strategy with particular references to expected road users and vehicle types likely to use the road.</p> <p>B. Width options considered for various sections.</p> <p>C. Departures from standards and action taken.</p> <p>D. Provision of pedestrians, cyclists and intermediate transport</p> <p>E. Safety implications of the scheme beyond its physical limits i.e. how the scheme fits into its environs and road hierarchy</p>
A I : General	<ul style="list-style-type: none"> ➤ Departures from standards ➤ Cross-sectional variation ➤ Drainage ➤ Climatic conditions ➤ Landscaping ➤ Services apparatus ➤ Lay-byes ➤ Footpaths ➤ Pedestrian crossings ➤ Access (minimize number of private accesses) ➤ Emergency vehicles ➤ Public Transport ➤ Future widening
	<ul style="list-style-type: none"> ➤ Staging of contracts ➤ Adjacent development
A2 : Local Alignment	<ul style="list-style-type: none"> ➤ Visibility ➤ New/Existing road interface

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

	➤ Safety Aids on steep hills.
A3 : Junctions	<ul style="list-style-type: none"> ➤ Minimise potential conflicts ➤ Layout ➤ Visibility
A4 : Non-Motorised road users Provision	<ul style="list-style-type: none"> ➤ Adjacent land ➤ Pedestrians ➤ Cyclists ➤ Non-motorised vehicles
A5 : Signs and Lighting	<ul style="list-style-type: none"> ➤ Lighting! ➤ Signs/makings
A6: Construction and Operation	<ul style="list-style-type: none"> ➤ Buildability ➤ Operational ➤ Network Management

Stage 1 - Completion of Preliminary design

1.	The audit team should review the proposed design' from a road safety perspective and check the following aspects	
CONTENTS	ITEMS	
Aspects to be checked	A.	Safety and operational implications of proposed alignment and junction strategy with particular references to expected road users and vehicle types likely to use the road.
	B.	Width options considered for various sections.
	C.	Departures from standards and action taken.
	D.	Provision of pedestrians, cyclists and intermediate transport
	E.	Safety implications of the scheme beyond its physical limits i.e. bow the scheme fits into its environs and road hierarchy
BI : General	➤	Departures from standards
	➤	Cross-sectional variation
	➤	Drainage
	➤	Climatic conditions
	➤	Landscaping
	➤	Services apparatus
	➤	Lay-byes
	➤	Footpaths
	➤	Pedestrian crossings
	➤	Access (minimize number of private accesses)
➤	Emergency vehicles	

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

	➤ ➤ ➤ ➤	Public Transport Future widening Staging of contracts Adjacent development
B2 : Local Alignment	➤ ➤ ➤	Visibility New/Existing road interface Safety Aids on steep hills.
B3 : Junctions	➤ ➤ ➤	Minimize potential conflicts Layout Visibility
B4 : Non-Motorised road users Provision	➤ ➤ ➤ ➤	Adjacent land Pedestrians Cyclists Non-motorised vehicles
B5 : Signs and Lighting	➤ ➤	Lighting Signs kings
B6 : Construction and Operation	➤ ➤	Buildability Network Management

Stage 2 - Completion of Detailed Design

I. The audit team should satisfy itself that all issues raised at Stage 1 have been resolved. Items may require further consideration where significant design changes have occurred.

2. If a scheme has not been subject to a stage I audit, the items listed in Checklists 8 I to 86 should be considered together with the items listed below.

CONTENTS		ITEMS
Aspects to be checked	A.	Any design changes Since Stage I.
	B.	The detailed design from a road safety viewpoint, including the; road safety implications of future maintenance (peed limits; road signs and markings; visibility; maintenance of street lighting and central I reserves).

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

CI : General	Departures from standards Drainage Climatic conditions Landscaping Services apparatus Lay byes Access Skid-resistance Agriculture Safety Fences Adjacent development
C2 : Local Alignment	Visibility New/Existing road interface
C3 : Junctions	Layout Visibility Signing Lighting Road Markings T,X,Y-junctions All roundabouts Traffic signal
C4 Non-Motorised road users Provision	Adjacent land Pedestrians Cyclists Non-motorised vehicles
C5 : Signs and Lighting	Advanced direction signs Local traffic signs Variable message signs Other traffic signs Lighting
C6 : Construction and Operation	Buildability Operational Network Management

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

SECTION –V

FORM OF TENDER (FINANCIAL PROPOSAL)

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

From :

To,

The Chief Engineer,
HQrs Chief Engineer
Project BRAHMANK
C/O 99 APO
PIN-931722

Name of Service: “SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK”

Sir,

1. Having examined the Tender Documents for the subject contract as set out in your Notice of Invitation to Bid, Instructions to Bidders, the Conditions of Contract, Terms of Reference and the matters set out in the Schedule ‘A’ and annexures thereto, we undertake to perform the consultancy services for the work referred in Terms of Reference for the Lump Sum Price of Rs. _____ (Rupees _____ only) as per the break up details given at Schedule ‘A’ :
2. If our tender is accepted we will provide performance guarantee for the due performance of the contract as stipulated in the General Conditions of Contract hereto.
3. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof shall form a binding Contract between us.
4. We agree to abide by this bid for the period of **90 days** from the date fixed for receiving the same, and it shall remain binding upon us and may be accepted any time before expiration of that period.
5. We understand fully that you are not bound to accept the lowest or any bid received.

Yours faithfully,

Signature
Full Name :
Designation:
Address :
(Authorised Representative)

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Name of Service: “SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK”

SCHEDULE ‘A’

S/No.	Description	Unit	Length involved	Remarks
<u>ROAD TATO-MENCHUKA</u>				
I.	Survey, Investigation, project preparation and approval of Project report as described in terms of reference along the proposed alignment	Kms	50 Kms	Period of completion shall be 08 (Eight) months from the date of issue of order to proceed as per the break up schedule specified at clause 4.15 of TOR

Note : 1. The break up details of the lump-sum price quoted for items at Srl No-I above be given at annexure ‘II’ to schedule ‘A’.

2. The length of the finalized alignment shall be considered finally to arrive at the total cost of items specified at Srl No. I above.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Annexure 'II' to Schedule 'A'

**QUANTITIES AND UNIT PRICES CONSIDERED TO ARRIVE AT LUMP SUM PRICE
QUOTED FOR ITEMS AT SRL NO 'I' OF SCHEDULE 'A'**

(To be used subsequently for valuation of additional and exceptional services, if any)

Refer clause 4.3,4.7 of TOR

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Annexure 'III' to Schedule 'A'**LIST OF KEY PERSONNEL/SPECIALIST TECHNICAL AND ADMINISTRATIVE
SUPPORT STAFF INCLUDING NAMES THEREOF TO BE PROVIDED FOR THE
SERVICES BY THE CONSULTANT**

Sl/No	Responsibility	Job description in brief	Man months

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Annexure-IV to Schedule 'A'REMUNERATION AND PAYMENT**1. PRICES FOR THE SERVICES**

1.1. The consultant shall quote his prices for the subject work in a fixed lump sum cost basis for the consultancy services referred herein at terms of reference, with break-up details thereof as per the activity-wise schedule given at schedule 'A'

1.2. The price as quoted shall include all fees and expenses including taxes, insurance premium etc as payable by the consultant as per the applicable laws. Service tax to be quoted separately as per applicable laws.

1.3. The lump sum price as quoted above is made up of quantities and unit prices given at annexure II to Schedule 'A' which shall be used subsequently for the valuation of additional and exception services. The quantities shall not be subject to re-measurement for Normal services. However, payment for items not covered at annexure II to Schedule 'A' shall be at actual cost. The decision of accepting officer shall be final and binding on valuation of the cost of Additional and Exceptional services.

2. SCHEDULE OF PAYMENT

2.1. All the payments released to the, consultant shall be treated as stage/advance payment except the last one which shall be the final payment.

2.2. All such payments except the last one shall be treated as installments and the consultant shall remain a debtor in respect of them until final settlement.

2.3. All the payments as released to the consultant shall be subjected to deduction of Income-Tax at source as per the applicable Income Tax Act of India i.e. at the rate 2% of the value of contract amount.

2.4. All the stage payments shall be subjected to deduction of **retention money @ 5% of the total value of the bill** which will be however be finally released/adjusted in the final bill.

2.5. To maintain a complete record of the services performed under this contract and release of payments thereon, all the activities having financial value shall be described and recorded in the measurement book and signed by both the parties as token of their acceptance.

3. STAGE PAYMENT

3.1. The stage payment to the consultant shall be released by the client in a manner as follow: -

A. The percentage of contract value as per schedule

S/No	Name of submittal	Payment as % of Contract	Cumulative percentage of lump sum
01	Submission of final Inception Report	15%	15%
02	Submission of final Alignment Report	10%	25%
03	Submission of final feasibility Report	5%	30%
04	Submission of final Land Acquisition Report	10%	40%
05	Submission of clearance proposals	5%	45%

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

06	Submission of Draft DPR	10%	55%
07	Approval of final DPR	10%	65%
08	Approval of Technical Schedules	5%	70%
09	3D publication	10%	80%
10	Clearance – Stage I Approval	5%	85%
11	Clearance – Stage II/Final Approval	5%	90%
12	Retention to be released after 3 year	10%	100%
13	Bonus on submission of draft 3A within 1 month of alignment finalization	2.5%	Bonus
14	Bonus on submission of clearance draft proposals within 1 month of alignment finalization	2.5%	Bonus

B. On carrying out the activity listed under Srl ‘II’ of Schedule ‘A’:

The payments on Geotechnical investigations will be released as per the actual length of drilling activities performed on the date of measurement.

3.2 The consultant on submission of the respective reports to the accepting officer (as listed above) shall submit a bill in triplicate to the Engineer with supporting details in respect of the above mentioned activities, who will thereafter examine the bill, certify the payment and arrange for release within the stipulated time frame through Cdr, TF and Concern Account Office.

4. FINAL PAYMENT

4.1 The final payment to the consultant shall be released on completion of all the services as listed at TOR. The final amount payable shall be reviewed at the stage of preparation of final bill on completion of all the services listed at TOR, based on the actual length of approved alignment and actual quantity of drilling activities correct out.

4.2 The final bill shall be accompanied by all abstracts, vouchers, orders etc supporting it and shall be prepared in the manner prescribed by the Engineer.

4.3 No further claims shall be made by the consultant after submission of final bill and these be deemed to have been waived and extinguished.

4.4 The consultant shall be entitled for the payment of final sum less the value of stage payments already made, subject to the certification of the final bill by the Engineer.

4.5 No fees and expenses shall be allowed to the consultant on account of preparation of final bill.

5. PAYMENT OF WORK

5.1 The payment will be released through E-Payment mode, for which the contractor is required to submit the NEFT/RTGS Mandate Form (enclosed at **Appendix ‘K’**) duly filled in the specified details. Otherwise, it will be released through A/c Payee Cheque.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

5.2 In case where the payment is released through cheque it will be sent by post to the Contractor for which the postage charges will be deducted from the net amount due to the Contractor.

Annexure 'V' to Schedule 'A'

**PERSONNEL EQUIPMENT, FACILITIES AND SERVICES OF
OTHERS TO BE PROVIDED BY THE CLIENT**

-NIL-

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

SECTION -VI

FORMATS FOR

TECHNICAL PROPOSALS

&

GUARANTEES

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

(Form-I)

To:
The Chief Engineer
HQrs, Chief Engineer, PROJECT BRAHMANK
C/o 99 APO
PIN- 931 722

Sir:

**TECHNICAL PROPOSAL FOR SURVEY, INVESTIGATION AND PREPARATION OF
DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD
TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE
SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF
ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK**

I, We _____ Consultant/Consultancy firm (s) herewith enclose Technical
Proposal for selection of my/our firm for the subject Consultancy services.

Yours faithfully,

Signature

Full Name_____
Designation_____
Address

(Authorized Representative)

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'A'**COMPOSITION OF THE PROPOSED TEAM OF EXPERTS
AND TASK ASSIGNMENT TO EACH KEY PERSONNEL AND SUPPORT STAFF**

Please give this details in a tabular form indicating position, Name and Task assignment of the key personnel, technical support and administration support staff proposed to be made available for the services.

1. KEY PERSONNEL

Position	Name	Task Assignment
----------	------	-----------------

2. TECHNICAL SUPPORT STAFF

Position	Name	Task Assignment
----------	------	-----------------

3. ADMINISTRATIVE SUPPORT STAFF

Position	Name	Task Assignment
----------	------	-----------------

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'B'**APPROACH AND METHODOLOGY**

Please list your approach and methodology proposed to be followed for survey, data collection, analysis, design and report submission including your Quality Assurance plan and safety audit for this assignment. Your proposed team structure in the form of organization chart shall also be presented here. Please describe these details in not more than three pages.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'C'**WORK PROGRAMME**

Keeping in view the service requirement as listed at Terms of Reference and time schedule indicated for the purpose, please describe your detailed work programme, and present it in a tabular form giving type of services and activities involved there under, duration thereof and month wise plan in bar chart manner for performing the activity including the category of experts who would have primary responsibility for the activity.

Category of key personnel responsible	Description of activity	Total Duration	Month-wise plan				
			1	2	3	4	5

1. INCEPTION REPORT (IR)

- Mobilization
- Review of data and documents
- Reconnaissance survey
- Preparation of Quality Assurance plan
- Draft Design Standards
- Preparation of Inception Report

2. FEASIBILITY REPORT (FR)

- Socio-Economic profile of the Project Area
- Traffic survey
- Analysis of Traffic Data and Forecast of Traffic
- Identification of Traffic Homogeneous links
- Topographic Survey including fixing of reference Pillars/Bench Marks
- Inventory and Condition Survey of Roads
- Inventory and Condition Survey of Culverts
- Pavement Investigation
- Materials Investigation
- Inventory of Culverts and Structures
- Condition Survey of Culverts and Structures

(Signature of the Consultant with seal)

Lt Col
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For Accepting Officer

Category of key personnel responsible	Description of activity	Total Duration	Month-wise plan				
			1	2	3	4	5

- Hydraulic and Hydrological Investigations
- Drainage Studies
- Identification of Proposals of Widening and Strengthening of Existing Road and Alignment Option for Realignments /Bypasses
- Finalization of Design Standards
- Pavement (Type) Option Study and Preliminary Design of Pavement
- Preliminary GADs of Bridges and Structures
- Proposals for Service Roads, Junction Improvement and Wayside amenities
- Identification of Locations for Amenities and Preparation of Typical Design
- Carrying Out Safety Audit
- Draft Environmental and social impact Screening Report
- Draft Feasibility Report
- Final Environmental Screening Report
- Final Feasibility Report

(Signature of the Consultant with seal)

Lt Col
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For Accepting Officer

Category of key personnel responsible	Description of activity	Total Duration	Month-wise plan				
			1	2	3	4	5

3. PRELIMINARY PROJECT REPORT (PPR)

- Finalization of Proposals for Alternative alignments/Widening and Improvement of Existing Road and Bypass
- Land Acquisition Plans and Report
- Preliminary Design of Road, Pavement, High Embankments and Culverts
- Preliminary Design of Culverts and Structures including Details GADs
- Preliminary Design of Intersection Layouts
- Preliminary Design of All Ancillary Road Works like Junction, Service Roads, Drainage measurers
- Weighting Station, Parking Areas and Rest Areas
- Traffic Safety Features, Road Furniture and Road Markings
- Alignment Plans
- Miscellaneous Works
- Arboriculture and Landscaping
- Carrying Out Safety Audit
- Update Cost Estimate
- Strip Plans with LA Reports/Plans
- Draft Preliminary Project Report and Drawings
- Final Preliminary Project Report and Drawing

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Category of key personnel responsible	Description of activity	Total Duration	Month-wise plan				
			1	2	3	4	5

4 DETAILED PROJECT

. REPORT (DPR)

- Detailed Design of Road, Pavement, High Embankment and Culverts
- Detailed Design of All Ancillary Road Works like Junctions, Service Roads, Drainage Measures, Traffic Safety Features, Road Signs/ Markings and Way-side Amenities, etc
- Detailed Design and Layouts for Miscellaneous works
- Carry Out Safety Audit
- Detailed Drawings
- Technical Specifications
- Final Cost Estimate and Bill of Quantities (BOQ)
- Draft Detailed Project Report and Drawings
- Final Detailed Project Report and Drawings

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'D'**MANNING SCHEDULE OF KEY PERSONNEL**

Name of expert	Position in team	Duration-Months					Man-Months
		1	2	3	4	5	

Total

-
- Notes: 1. Shown only for key personnel.
2. Show duration by solid line for continuous inputs and by broken line for staggered inputs
-

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'E'**Format of Curriculum Vitae (CV) For Proposed Key Staff**

1. Proposed _____ Position:
_____.
 2. Name of Staff :

_____.
 3. Date of Birth: _____ (Please furnish proof of age)
 4. Nationality: -
_____.
 5. Educational Qualification:
(Summarize college/university and other specialized education of staff member, giving names of school dates attended and degrees obtained). (Please furnish proof of qualification)
 6. Membership _____ of _____ Professional _____ Societies:

_____.
 7. Publication:
(List of details of major technical reports/papers published in recognized national and international journals)
 8. Employment Record:
(Starting with present position, list in reversed order, every employment held. List all positions held by staff member since graduation, giving dates, names of employing organization, title of positions held and location of assignments. For experience period of specific assignment must be clearly mentioned, also give client references, where appropriate).
 9. Summary of the CV
(Furnish a summary of the above CV. The information in the summary shall be precise and accurate. The information in the summary will have bearing on the evaluation of the CV).
- A) Education:
- i) Field of Graduation and year
 - ii) Field of post graduation and year.
 - iii) Any other specific qualification

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'F'**EQUIPMENT & INSTRUMENTS PROPOSED TO BE USED**

Sl. No	Name of Equipments/ Instruments	Nos proposed to be deployed
--------	---------------------------------	-----------------------------

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'G'**COMPUTER HARDWARE AND SOFTWARE PROPOSED TO BE USED**

Sl. No	Description	Nos proposed to be used
--------	-------------	-------------------------

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'H'

SERVICES PROPOSED FOR OUTSOURCING

Please give details of services proposed to be out sourced and agency proposed to be engaged for the purpose.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'I'**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

Sl. No	Description	Essential Qualification	Minimum professional/Experience (in years)	Minimum Experience in Highway Projects
01.	Senior Highway Engineer cum team leaders	Graduate in Civil Engineering	20 yrs	15 yrs on Project Preparation of DL Highways and minimum one Project of hill road of any type
02.	Highway Engineer	-do-	15 yrs	10 yrs on Project Preparation of DL Highways and minimum one Project of hill road of any type
03.	Traffic Engineer	-do-	10 yrs	05 yrs on similar Project
04.	Material Engineer cum Geotechnical Engineer	Graduate in Civil Engineering/MSC Geology	15 yrs	08 yrs on similar Project in design and/or construction
05.	Senior Survey Engineer	Diploma in Civil Engineering or surveying/graduate in civil Engineering	10 yrs	05 yrs on similar Project preparation. Should have proper understanding of modern
06.	Quantity Surveyor/Document Expert	Certificate course from Institution of Quantity surveyor/Graduate in civil Engineering	15 yrs	05 yrs in preparation of DPR of Highways Projects

Note:- Maximum age limit for each expert is 60 years.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'J'

**Appendix J1-Form of Bank Guarantee For Performance Guarantee
Appendix J2- Form of Bank Guarantee for Tender Guarantee**

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'J1'**FORM OF BANK GUARANTEE FOR PERFORMANCE GUARANTEE**

(Reference clause 2.28)

(To be stamped in accordance with the Stamp Act of India)

To :

The Chief Engineer
Headquarters
Project BRAHMANK
C/O 99 APO

WHEREAS(Name and address of Consultant) (hereinafter called "the Consultant") has undertaken, in pursuance of contract No.dated..... to execute the detailed design the consultancy services for **SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK** (hereinafter called "the contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Consultant shall furnish you with a bank guarantee by a recognized bank for the sum specified herein as security for compliance with his obligations in accordance with the contract in lieu of cash deposits held by you for such compliance of obligation/ performance guarantee.

AND WHEREAS we have agreed to give the consultant such a bank guarantee.

NOW THEREFORE we hereby affirm that we are the guarantor and responsible to you, on behalf of the consultant up to a total of(amount of guarantee).....
.....(in words), such sum being payable in Indian Rupees, and we hereby unconditionally, irrevocably and without demur undertake to immediately pay you, upon your first 'written demand' and without cavil or argument any sum or sums within the limits of(amount of guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the consultant before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract or of the works to be performed there under or of any of the contract documents which may be made between you and the consultant shall in any way release us from any liability under the guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid for 24 months from the date of completion of the Services. The tendency of any dispute or arbitration or other proceeding shall not affect this guarantee in any manner.

SIGNATURE AND SEAL OF THE GUARNATOR

NAME OF BANK

ADDRESS

NAME OF OFFICIAL

AND HIS DESIGNATION

DATE

Notes:

1. The stamp papers of appropriate value shall be purchased in the name of the bank which issues the 'Bank Guarantee'.
2. The 'Bank Guarantee' shall of a scheduled commercial bank based in India and acceptable client.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'J2'**FORM OF BANK GUARANTEE FOR TENDER GUARANTEE**

(Reference Clause 2.9)

(To be stamped in accordance with Stamp Act, if any, of the country of issuing bank)

KNOW ALL MEN by these presents that (Name of Bank) of India, having our registered office at(hereinafter called "the bank") are bound unto CHIEF ENGINEER, PROJECT BRAHMANK, C/O 99 APO (hereinafter called " the employer") in sum of Rs.for which payment well and truly to be made to the said employer the bank binds himself, his successors and assigns by these presents.

WHEREAS.....(Name of bidders) (hereinafter called " the bidder") has submitted his tender dated.....for the consultancy **SURVEY, INVESTIGATION AND PREPARATION OF DETAILED PROJECT REPORT FOR CONSTRUCTION IMPROVEMENT OF ROAD TATO-MENCHUKA FROM KM 0.00 TO KM 50.00 TO NH DOUBLE LANE SPECIFICATIONS THROUGH CONSULTANCY IN WEST SIANG DISTT OF ARUNACHAL PRADESH UNDER 1443 BBC/44 BRTF/ PROJECT BRAHAMNK.**

WHEREAS the bidder is required to furnish a bank guarantee for the sum of Rs.....(Amount in figures and words) as Tender Guarantee against the bidder's offer as aforesaid.

AND WHEREAS(name of bank) have, at the request of the bidder, agreed to give this guarantee as hereinafter contained.

We further agree as follows:

(i) That the employer may without affecting this guarantee grant time or other indulgence to or negotiate further with the bidder in regard to the conditions contained in the said tender and thereby modify these conditions or add thereto any further conditions as may be mutually agreed upon between the employer and the bidder.

(ii) That the guarantee hereinbefore contained shall not be affected by any change in constitution of our bank or in the constitution of the bidder.

(iii) That any account settled between the employer and the bidder shall be conclusive evidence against us of the amount due hereunder and shall not be questioned by us.

(iv) That this guarantee commences from the date hereof and shall remain in force till:

(a) The bidder in case his tender is accepted by the employer, executed a formal agreement after furnishing the performance guarantee on an Indian bank acceptable to the employer.

(b) Thirty days after the date of validity or the extended date of validity of the tender as the case may be which ever is earlier.

(c) That the expression "the bidder" and the "the bank" herein used shall, unless such an interpretation is repugnant to the subject or context, include their respective successors and assigns.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

The conditions of this obligation are:

- (i) If the bidder withdraws his tender during the period of tender validity specified in the form of tender or
- (ii) If the bidder provides false information in his bid.
- (iii) If the bidder having been notified of the acceptance of his tender by the employer during the period of tender validity.
 - (a) Fails or refuses to furnish the performance guarantee and /or
 - (b) Fails or refuses to enter in to a contract within the time limit specified.

We undertake to pay to the employer up to the above amount upon receipt of his first written demand, without employer having to substantiate his demand provided that in his demand the employer will note that the amount.

claimed by him is due to him owing to the occurrence of any or more of the conditions (i), (ii), (iii) mentioned above, specifying the occurred condition or conditions.

Signature of
Authorized Official of the Bank
Name of official
Designation
Stamp/Seal of the bank

Note :-

1. The stamp paper of appropriate value shall be purchased in the name of bank, which issues the 'bank guarantee'.
2. The 'Bank guarantee' shall be from a scheduled commercial bank based in India and acceptable to client.

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer

Appendix 'K'**(Ref clause 5 of Annexure-IV of Schedule 'A', Section V, Form of Tender)****NEFT/RTGS MANDATE FORM**

(1)	Name of firm/contractor as per account in the Bank	
(2)	Beneficiary's Account Number (As appearing on the Cheque Book)	
(3)	Name of Bank where a/c is held	
(4)	Name of Branch	
(5)	Address of Branch	
(6)	Telephone No. of Branch	
(7)	IFSC Code of Branch	
(8)	9-Digit MICR Code Number of the Bank & Branch	
(9)	E-Mail ID of Contractor	

Note Please attach a blank cancelled cheque for verification of the above particulars.

I, hereby, declare that the particulars given above are correct and complete. If the transaction is delayed or not effected due to incomplete or incorrect information of the bank details, I will not hold the payment releasing authority responsible for it.

Dated :

Signature of the contractor
(Seal)

CERTIFICATE BY BANK

Certified that the particulars furnished above are correct as per our records.

Seal of Bank

Dated :

Signature of the branch manager
of the Bank

(Signature of the Consultant with seal)

Lt Col
SW
For Accepting Officer