National Highway Authority

ISO 9001:2015 Certified

FRIENDLY HIGHWAYS

REQUEST FOR PROPOSAL

FOR

CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED DESIGN FOR UPGRADATION OF EXISTING NATIONAL HIGHWAY (N-15) MANSEHRA-NARAN-JALKHAD-CHILAS TO A 4-LANE DIVIDED EXPRESSWAY (235 KM APPROX.)

Tender No. 6(639)

Pages-1 to 165

JULY, 2024

National Highway Authority * P&CA *

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GOVERNMENT OF PAKISTAN
NATIONAL HIGHWAY AUTHORITY
27-Mauve Area, G-9/1,
Post Box No. 1205,
ISLAMABAD

Dated the _____
Ref No._____

LETTER OF INVITATION (LOI)

To,

All prospective consultants

Gentlemen!

We extend warm welcome to you and invite you for participating in this project. We hope that you will live up to your reputation and provide us accurate information so that the evaluation is carried out "just and transparent". Please understand that the contents of this RFP, where applicable, shall be deemed part of the contract agreement. An example to this affect can be the contents of your work plan and methodology which you shall be submitting in your technical proposal. Since that is the basis of the selection, therefore, it shall become part of the contract agreement subject to approval/revisions of the same by NHA during the negotiations. Similarly, all other services and the content contributing to services shall be deemed part of the contract agreement unless it is specified for any particular item up-front in your technical proposal which obviously will make your proposal a conditional proposal whereby, authorizing NHA to may or may not consider to evaluate your proposal. Please understand that if no such mention appears up-front (i.e. on front page of technical proposal) then it shall be deemed that the consultant is in 100% agreement to the above. You are also advised to kindly read the RFP thoroughly as it can drastically affect the price structure for various services which may not be appearing directly in the terms of reference. In the end, we appreciate your participation and hope that you will feed a good proposal to merit consideration by NHA.

General Manager (P&CA)
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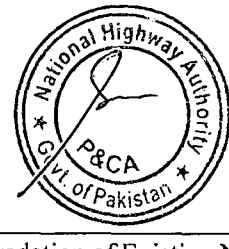
E-mail :gmpca.nha@gmail.com,
Website: www.nha.gov.pk



ATTACHMENTS

1. Instructions to Consultants
2. Data Sheet
3. Summary Evaluation Sheet
4. Personnel Evaluation Sheet
5. Technical Proposal Forms
6. Financial Proposal Forms
7. Appendix A (Terms of Reference)
8. Appendix B (List of Supporting Documents)
9. Appendix C (Person-Months and Activity Schedule)
10. Appendix D (Client's Requirements from the Consultants)
11. Appendix E (Personnel, Equipment, Facilities and other services to be provided by the Client).
12. Appendix F (Copy of Model Agreement)

INSTRUCTIONS TO CONSULTANTS

1. INTRODUCTION

1.1 You are hereby invited to submit a technical and a financial proposal for consulting services required for the assignment named in the attached **Data Sheet** (referred to as "**Data Sheet**" hereafter) annexed with this letter. Your proposal could form the basis for future negotiations and ultimately a Contract between your firm and the Client named in the **Data Sheet**.

1.2 A brief description of the assignment and its objectives are given in the **Data Sheet**. Details are provided in the attached RFP for design services provided in the Documents and will become part of agreement subsequently.

1.3 The assignment shall be implemented in accordance with the phasing specified in the **Data Sheet.**

1.4 The Client has been entrusted the duty to implement the Project as Executing Agency by Government of Pakistan (GoP) and funds for the project shall be arranged by the Client.

1.5 To obtain first-hand information on the assignment and on the local conditions, you are encouraged to pay a visit to the Client before submitting a proposal and attend a pre-proposal conference if specified in the **Data Sheet**. Your representative shall meet the named officials on the date and time specified in the **Data Sheet**. Please ensure that these officials are advised of the visit in advance to allow adequate time for them to make appropriate arrangements. You must fully inform yourself of local conditions and take them into account in preparing your proposal.

1.6 The Client shall provide the inputs specified in the **Data Sheet**, assist the Consultants in obtaining licenses and permits needed to carry out the services, and make available relevant project data and reports.

1.7 Please note that:

i. The cost of preparing the proposal and of negotiating the Contract, including a visit to the Client, are not reimbursable as a direct cost of the Assignment, and

ii. The Client is not bound to accept any of the proposals submitted.

1.8 The names of the invited consultants are given in the **Data Sheet**.

1.9 We wish to remind you that in order to avoid conflicts of interest:

a) Any firm providing goods, works, or services with which you are affiliated or associated is not eligible to participate in bidding for any goods, works, or services (other than the services and any continuation thereof) resulting from or associates with the project of which this assignment forms a part; and

b) Any previous or ongoing participation in relation with the project by your firm, its professional staff, its affiliates or associates under a Contract may result in rejection of your proposal. You should clarify your situation in that respect with the Client before preparing the proposal.

1.10 A firm may submit its proposal for the Assignment either as an independent Consultant or as a Member of a JV Consultants but participation of a firm occurring in more than one proposal for the Assignment is not allowed. In case a firm participates in more than one proposal, all such proposals shall be **disqualified and rejected**. However, this condition does not apply for individual Specialist Sub-consultant(s).

2. DOCUMENTS

2.1 To prepare a proposal, please use the Documents specified in the **Data Sheet**.

2.2 Consultants requiring a clarification of the Documents must notify the Client, in writing, not later than twenty-one (21) days before the proposal submission date. Any request for clarification in writing, or by cable, telex or tele-fax shall be sent to the Client's address specified in the **Data Sheet**. The Client shall respond by cable, telex or tele-fax to such requests and copies of the response shall be sent to all invited Consultants.

2.3 At any time before the submission of proposals, the Client may, for any reason, whether at its own initiative or in response to a clarification requested by an invited consulting firm, modify the Documents by amendment. The amendment shall be sent in writing or by cable, telex or tele-fax to all invited consulting firms and will be binding on them. The Client may at its discretion extend the deadlines for the submission of proposals.

3. PREPARATION OF PROPOSAL

It will consist of two parts – Technical and Financial

3.1 Technical Proposal

3.1.1 The Technical Proposal should be submitted using the format specified and shall include duly signed and stamped forms appended with the RFP. This is a **mandatory requirement** for evaluation of proposals and needs to be filled up carefully.

3.1.2 For Technical Proposal, the general approach and methodology which you propose for carrying out the services covered in the TOR, including such detailed information as you deem relevant, together with your appreciation of the Project from provided details and

(a) A detailed overall work program to be provided with timing of the assignment of each expert or other staff member assigned to the project. This will also provide the Client an opportunity to effectively monitor work progress.

(b) Total number of man-months and project duration as per TOR.

(c) Clear description of the responsibilities of each expert staff member within the overall work program.

(d) The Curriculum Vitae (CV) of all Key Staff members and an affidavit that proposed staff shall be available for the assignment during the project duration and their present place of duty must also be specified. The Consultants are advised to suggest such names that shall be available for the Assignment.

(e) The technical proposal shall include duly filled in forms provided with this RFP. The name, background, and professional experience of each expert staff member to be assigned to the project, with particular reference to his experience of work of a nature similar to that of the proposed assignment.

(f) Current commitments and past performance are the basic criteria of technical proposal. You are required to provide the details of present commitments/on- going jobs as referred in the Form A-10 of technical proposal. Further, the basis for the past performance is the report from Design Section and Construction Wing of the Client.

3.1.3 In preparing the technical proposal, you are expected to examine all terms and instructions included in the Documents. Failure to provide all requested information shall be at your own risk and may result adversely in the scoring of your proposal. The proposal should be prepared as per RFP and any suggestion or review of staff etc. should be clearly spelt out in form A-4. This will be discussed at the time of negotiation meeting as and when called.

3.1.4 During preparation of the technical proposal, you must give particular attention to the following:

a. The Firm needs to be registered with Pakistan Engineering Council (PEC).

b. If you consider that your firm does not have all the expertise for the assignment you may obtain a full range of experience by associating with other firms or entities. You may also utilize the services of expatriate experts but only to the extent for which the requisite expertise is not available in any Pakistani firm. In case of Joint Venture, the proposal should state clearly partners will be "Jointly and Severally" responsible for performance under the Contract and one (Representative) partner will be responsible for all dealings with the Client on behalf of the Joint Venture. Its "Power of Attorney" on this account is to be enclosed. The representative partner shall retain the responsibility for the performance of obligations and satisfactory completion of the consultancy services. PEC registers a foreign consulting firm for issuing license to provide consultancy services in Pakistan, which is based on formation of JV with the condition that the foreign consulting firm shall provide only that share of consultancy services by the JV for which expertise is not available with Pakistani consulting firms. A copy of JV agreement to be provided at the time of finalizing the contract documents with specific responsibilities and assignments to be looked after by each partner.

c. Subcontracting part of the assignment to the other Consultants is not discouraged and Specialist Sub-Consultants may be included.

d. The key professional staff proposed shall be permanent employees of the firm unless otherwise specified in the **Data Sheet**. The minimum stay with the firm for such persons is Six months. No alternative to key professional staff may be proposed and only one CV may be submitted for each position. The minimum required experience of proposed Key Staff is specified in the **Data Sheet**.

e. The training shall be imparted during the currency of the contract if specified in the **Data Sheet**.

3.1.5 The technical proposal shall not include any financial information. The Consultant's comments, if any, on the data, services and facilities to be provided by the Client and specified in the TOR shall be included in the technical proposal.

3.2 Financial Proposal

3.2.1 The financial proposal should be submitted using the format specified and enclosed with this RFP. This is a mandatory requirement for evaluation of proposals and needs to be filled up carefully. The total cost is to be specified in the Form A-17 and accordingly also in Form A-11.

3.2.2 The financial proposal should list the costs associated with the Assignment. These normally cover remuneration for staff in the field and at headquarters, per diem, housing, transportation for mobilization and demobilization, services and equipment (vehicles, office equipment furniture and supplies), printing of documents, surveys and investigations. These costs should be broken into foreign (if applicable) and local costs. Financial proposal should be prepared using the formats attached as forms A-11 to A-17.

3.2.3 The financial proposal shall also take into account the professional liability as provided under the relevant PEC Byelaws and cost of insurances specified in the **Data Sheet**.

3.2.4 Costs may be expressed in currency (s) listed in the **Data Sheet**.

3.2.5 The evaluation committee will correct any computational errors. When correcting computational errors, in case of discrepancy between a partial amount and the total amount, or between words and figures the formers will prevail. In addition to the above corrections, activities and items described in the Technical Proposals but not priced, in the Financial Proposals shall be assumed to be included in the prices of other activities or items. In case an activity or item is quantified in the Financial Proposal differently from the Technical Proposal, the evaluation committee shall correct the quantification specified in the Financial Proposal so as to make it consistent with that specified in the Technical Proposal.

4. SUBMISSION OF PROPOSALS

4.1 You shall submit one original technical proposal and one original financial proposal and the number of copies of each specified in the **Data Sheet**. Each proposal shall be in a separate envelope indicating original or copy, as appropriate. All technical proposals shall be placed in an envelope clearly marked "Technical Proposal" and the financial proposals in the one marked "Financial Proposal". These two envelops, in turn, shall be sealed in an outer envelope bearing the address and information specified in the **Data Sheet**. The envelope shall be clearly marked, "DO NOT OPEN, EXCEPT IN PRESENCE OF THE EVALUATION COMMITTEE."

4.2 In the event of any discrepancy between the copies of the proposal, the original shall govern. The original and each copy of the technical and financial proposals shall be prepared in indelible ink and shall be signed by the authorized Consultant's representative. The representative's authorization shall be confirmed by a written power of attorney accompanying the proposals. All pages of the technical and financial proposals shall be initialed by the person or persons signing the proposal.

4.3 The proposal shall contain no interlineations or overwriting except as necessary to correct errors made by the Consultants themselves. Any such corrections shall be initialed by the person or persons signing the proposal.

4.4 The completed technical and financial proposals shall be delivered on or before the time, date, and the location specified in the **Data Sheet**.

4.5 The proposals shall be valid for the number of days stated in the **Data Sheet** from the date of its submission. During this period, you shall keep available the professional staff proposed for the assignment. The Client shall make its best effort to complete negotiations at the location stated in the **Data Sheet** within this period.

5. PROPOSAL EVALUATION

5.1 A Single-Stage-Two-Envelope procedures shall be adopted in ranking of the proposals. The technical evaluation shall be carried out first, followed by the financial evaluation. The Consultants shall be ranked using a combined technical/financial score.

5.2 Technical Proposal

5.2.1 The evaluation committee appointed by the Client shall carry out its evaluation for all the projects as listed in Para 1.1, applying the evaluation criteria and point system specified in the **Data Sheet**. Each responsive proposal shall be given a technical score: St. The Consultants scoring less than seventy (70) percent points shall be rejected and their financial proposals returned un-opened.

5.3 Financial Proposal

5.3.1 The financial proposals of technically qualifying Consultants on the basis of evaluation of technical proposals shall be opened in the presence of the representatives of these Consultants, who shall be invited for the occasion and who care to attend. The Client shall inform the date, time and address for opening of financial proposals as specified in the **Data Sheet**. The total cost and major components of each proposal shall be publicly announced to the attending representatives of the firms.

5.3.2 The evaluation committee shall determine whether the financial proposals are complete and without computational errors. The lowest financial proposal (Fm) among all shall be given a financial score: Sf of 1000 points. The financial scores of the proposals shall be computed as follows:

$$Sf = (1000 \times Fm)/F$$

(F = amount of specific financial proposal)

5.3.3 Proposals, in the Quality Cum Cost Based Selection (QCBS) shall finally be ranked according to their combined technical (St) and financial (S_f) scores using the weights (T- the weight given to the technical proposal, P = the weight given to the financial proposal, and T+P=1) stated in the **Data Sheet**:

$$S = St \times T\% + Sf \times P\%$$

6. NEGOTIATION

6.1 Prior to the expiration of proposal validity, the Client shall notify the successful Consultant who submitted the highest-ranking proposal in writing, by registered letter, cable telex or facsimile and invite it to negotiate the Contract.

6.2 Negotiations normally take from two to five days. The aim is to reach agreement on all points and initial a draft contract by the conclusion of negotiations.

6.3 Negotiations shall commence with a discussion of your technical proposal. The proposed methodology, work plan, staffing and any suggestions you may have made to improve the TOR. Agreement shall then be reached on the final TOR, the staffing, and the bar charts, which shall indicate activities, staff, and periods in the field and in the home office, staff months, logistics and reporting.

6.4 Changes agreed upon shall then be reflected in the financial proposal, using proposed unit rates (no negotiation of the staff month rates).

6.5 Having selected Consultants on the basis of, among other things, an evaluation of proposed key professional staff, the Client expects to negotiate a contract on the basis of the staff named in the proposal. Prior to contract negotiations, the Client shall require assurances that the staff members will be actually available. The Client shall not consider substitutions of key staff except in cases of un-expected delays in the starting date or incapacity of key professional staff for reasons of health.

6.6 The negotiations shall be concluded with a review of the draft form of the contract. The Client and the Consultants shall finalize the contract to conclude negotiations. If negotiations fail, the Client shall invite the Consultants that received the second highest score in ranking to Contract negotiations. The procedure will continue with the third in case the negotiation process is not successful with the second ranked consultants.

7. AWARD OF CONTRACT

7.1 The contract shall be awarded after successful negotiations with the selected Consultants and approved by the competent authority. Upon successful completion of negotiations/ initialing of the draft contract, the Client shall promptly inform the other Consultants that their proposals have not been selected.

7.2 The selected Consultant is expected to commence the assignment on the date and at the location specified in the **Data Sheet**.

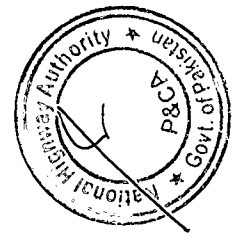
8. CONFIRMATION OF RECEIPT

8.1 Please inform the Client by telex/facsimile courier or any other means:

i. That you received the letter of invitation;

ii. Whether you will submit a proposal; and

iii. If you plan to submit a proposal, when and how you will transmit it.



DATA SHEET

No	DESCRIPTION OF CLAUSE
1.1	The name of Assignment is: **"Consultancy Service for Feasibility Study and Detailed Design for Upgradation of Existing National Highway (N-15) Mansehra-Naran-Jalkhad-Chilas to a 4-lane divided Expressway (235 Km Approx.)"** The Client's Name is: **National Highway Authority**
1.2	The description and the objectives of the assignment are: **As per TOR**
1.3	Phasing of the Assignment (if any): **Nil** The Consultant shall commence the assignment upon signing of Contract Agreement between NHA and the successful Consultant.
1.5	Pre-Proposal Conference: **Yes** ___√___ **No** _____ The name(s) and address(es) of the Official(s) is (are): **General Manager (P&CA)** National Highway Authority 28, Mauve Area, G-9/1 Islamabad Date, Time and Venue for Pre-Proposal Conference: **Date: 26th July, 2024** **Time: 1100 hours** **Venue: General Manager (P&CA)** National Highway Authority 28, Mauve Area, G-9/1 Islamabad.
1.6	The Client shall provide the following inputs: **As per TOR and Appendix E.**
1.7	Following sub-clauses are added: iii. Form A-4 is meant for comments on provision contained in RFP and Terms of Reference (TOR) and unless the observations are noted in this particular form, anything written elsewhere on this account including financial implications, if any, shall be considered of no consequence in the evaluation process. iv. Consultants may form a Joint Venture (JV) to qualify for the Assignment in such case the contract will be signed between the Client and all members of the JV on the prescribed Form included in Appendix F (copy of Model Agreement) subject to the ranking and successful negotiations. To promote the consultancy industry in the country, 50 marks (out of 1000 for Evaluation) are allocated for Transfer of Knowledge in the form of association (sub-consultant) with a new/ less experienced firm by sharing upto 7.5% of Assignment with them.

National Highway Authority P&CA Govt. of Pakistan

	v. Except as the Client may otherwise agree, no changes shall be made in the Key Personnel during the Contract period. If, for any reason beyond the reasonable control of the Consultants, it becomes necessary to replace any of the Key Personnel, then the Consultants at the written instructions of Client shall provide as a replacement with equivalent or better qualification. vi. The Consultants shall clear all payable dues and salaries of its staff in time and not later than 10th of the following month positively. In case of failure to do so Client shall intervene and pay these dues and salaries of the concerned Personnel on behalf of the Consultants and recover from the invoice of the Consultants the actual charges paid plus a penalty of 1% of this amount. This will also be accounted adversely in making assessment of the Consultants in the next evaluation process, if such defaults are reported by any section of the NHA. vii. The payment to the sub-consultant shall be the responsibility of the Lead firm as per the agreed services. Detail/Proof of the payment to the sub-consultant will be submitted along with the relevant invoice (s).
1.8	The Invited Consultants/ **Eligible Consultants** are: Any firm meeting the following requirements: **Eligibility of Consultants:** **(I)** Technical Proposal: i. For Single Entity, Valid Registration Certificate of Pakistan Engineering Council with Project Profile Code of 1215 (ii) *(Highways/ Bridges/Tunnels as applicable)*. In case of JV, experts proposed by each consultant should have relevant project profile code of 1215 (ii.) (Highways/ Bridges/Tunnels) as applicable. In case of formation of JV with foreign consultant in such case foreign consulting firms shall make JV in accordance with Byelaw 6(2) and Byelaw 9 of the Pakistan Engineering Council (Conduct and Practice of Consulting Engineers) Bye-Laws 1986. Failure to provide Registration Certificate (license) of the firms/ Relevant registration documents/receipts (in case of foreign consulting firm) (each member in case of JV) by the PEC will entitle the Client to reject proposal. ii. All JV partners/firms must be registered and on Active Taxpayer list (ATL) of Federal Board of Revenue (FBR). Proof along with valid NTN No. shall be provided. iii. In case of JV members, Letter of Intent to form JV on each firm's letter head is required in original *(scanned copy is not acceptable). The specimen is attached at* ***Annexure-A*** iv. TECHNICAL PROPOSAL FORMS A-1 to A-10 duly completed as per Instructions to Consultants/ Data Sheet and requirements of TOR (To be attached with Technical Proposal except Form A-4, which can be submitted with or without comments) v. Lists of facilities available with the Consultant to perform their functions effectively (software, hardware, etc.). In case of JV, the same will be provided by the lead firm only. **(II)** Financial Proposal: i. FINANCIAL PROPOSAL FORMS A-11 to A-17 and PROPOSAL SECURING DECLARATION duly completed as per Instructions to Consultants/ Data Sheet and requirements of TOR (To be attached with Financial Proposal). *Scanned financial proposal shall be* ***rejected.*** ii. While engaging in Public Procurement contracts worth Rs. 50 million and above, each Consultant (lead and their JV Members) shall provide duly filled Performa of

	"Declaration of Ultimate Beneficial Owners Information for Public Procurement Contracts", in their Financial Proposals, which is attached as Annexure-I at the end of this RFP. **(III)** The proposals (technical + financial) should be bound in hard book binding form to deny the possibility of removal or addition of page(s). All the pages of proposals must be signed and stamped in original by authorized representative of the firm/JV. All the pages must be numbered starting from first page to last. At the time of proposal submission/ opening, page numbering, signing and stamping of proposals will be checked by Committee Members. If any minor discrepancy is found, then same shall be asked by the Committee members to the Authorized Representative of firms to correct it in front of all committee members. In the absence of authorized representative, the concerned firm will be announced **dis-qualified/ non-responsive**. **Note: If the financial proposal of the Consultant is found non-responsive, then for evaluation purpose, financial score of the Consultant shall be given as zero.**
2.1	The Documents are: (a) Letter of Invitation (LOI). (b) Instructions to Consultants (ITC). (c) Data Sheet. (d) Technical Proposal Forms. (e) Financial Proposal Forms (f) Appendix – A: TOR and Background Information. (g) Appendix – B: List of Supporting Documents (h) Appendix – C: Man-Months and Activity Schedule (i) Appendix – D: Client's Requirements from the Consultant. (j) Appendix – E: Personnel Equipment, Facilities and Other Services to be provided by the Client. (k) Appendix – F: Copy of Model Agreement/ Draft Form of Contract & Appendices etc. (l) Form of Contract *(For Consultants to perform services as a Joint Venture)*
2.2	The words "Twenty-one (21)" is deleted in its entirety and replaced with "Ten (10)". The information will be shared through email or courier. The address for seeking clarification is: **General Manager (P&CA)** National Highway Authority 28, Mauve Area, G-9/1, Islamabad E-mail: gmpca.nha@gmail.com directorservices.pca@gmail.com
2.3	Add following clause: "The information will be shared to all prospective consultants through uploading on NHA

	website/ PPRA Website or publishing on Newspapers whatever the case".
3.1.4	a. Add following at the end of Sub – Para 3.1.4 (b): Clearly mention the percentage and detail of share as well of each JV partner in the JV agreement. First page of the JV agreement must be on Stamp Paper of minimum Rs. 100 duly attested by the Oath Commissioner. c. The term associates, if used in the proposal or otherwise shall not be considered as an alternative of JV member. Any personnel proposed for the Assignment but belonging to the so-called associates (Sub-consultants) shall not be marked in evaluation of technical proposal like in case of Sub-consultants (except individual Specialist Sub-consultants having unique expertise which is rarely available OR an expatriate Personnel) who are not supposed to contribute in qualification of their main consultants. **Yes** √ **No** _____ The minimum required experience of proposed Key Personnel is given below:

FOR KEY PERSONNEL

Team Leader / Sr. Highway Engineer	**Education:** Preferably M.Sc. (Transportation Engineering) or minimum B.Sc. (Civil Engineering). **Experience:** Preferably twenty (20) years' design experience as Team Leader/ Highway Engineer on National Highways/ Roads Projects. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
Sr. Structural Engineer/Bridge Engineer	**Education:** M.Sc. (Structural Engineering) or minimum B.Sc. (Civil Engineering). **Experience:** Preferably fifteen (15) years' relevant experience [proven ten (10) years' design experience as Senior Structural Engineer on National Highways Projects]. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
Senior Tunnel Engineer	**Education:** Preferably PhD (Tunnel Engineering) or PhD (Geotechnical Engineering/ Structure Engineering with Experience in Tunnel Engineering) or minimum M.Sc. in Tunnel Engineering/ M.Sc. in (Structure Engineering/ Geotechnical Engineering with Experience in Tunnel Engineering). **Experience:** Preferably twelve (12) years' relevant experience on Highways/Tunnel Design/Design review projects. **Rating**: PhD. with relevant training - 100%; PhD. without relevant training - 90%; M.Sc. with relevant training - 80%; M.Sc. without relevant training - 70%.
Junior Structure/Bridge Engineer	**Education:** Preferably M.Sc. (Structural Engineering) or minimum B.Sc. (Civil Engineering). **Experience:** Preferably seven (07) years' design experience as Junior Structural/Bridge Engineer on Highways/ Roads Projects. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant

		training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
	Junior Highway Engineer	**Education:** Preferably M.Sc. in (Transportation Engineering) or minimum B.Sc. (Civil Engineering). **Experience:** Preferably seven (07) years' design experience as Highway Engineer on Highways/ Roads Projects. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
	Junior Tunnel Engineer	**Education:** Preferably PhD (Tunnel Engineering) or PhD (Geotechnical Engineering/ Structure Engineering with Experience in Tunnel Engineering) or minimum M.Sc. in Tunnel Engineering/ M.Sc. in (Structure Engineering/ Geotechnical Engineering with Experience in Tunnel Engineering). **Experience:** Preferably five (05) years' relevant experience on Highways/Tunnel Design/Design review projects. **Rating**: PhD. with relevant training - 100%; PhD. without relevant training - 90%; M.Sc. with relevant training - 80%; M.Sc. without relevant training - 70%.
	Pavement & Drainage Engineer	**Education:** Preferably M.Sc. (Transportation Engineering) or minimum B.Sc. (Civil Engineering). **Experience:** Preferably fifteen (15) years' design experience as Pavement & Drainage Engineer on National Highways/ Roads Projects. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
	Slope Stabilization Expert	**Education:** Preferably M.Sc. (Soil Mechanics/ Geo-Tech Engineering) or minimum B.Sc. (Civil Engineering/ Geo-Tech Engineering). **Experience:** Preferably twelve (12) years relevant as Slope Stabilization Expert on Tunnel and Highway Design projects. Weightage shall be given to the experience in similar geographical conditions. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
	Snow Survey & Avalanche Specialist	**Education:** Preferably M.Sc. (Snow Avalanche protection works or equivalent) or minimum B.Sc. (Civil Engineering) with experience in Snow and Avalanche survey and protection design. **Experience:** Preferably twelve (12) years relevant experience as snow avalanche protection works on major Tunnel and Highway Design projects. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.

	Tunnel E&M Engineer	**Education:** Preferably M.Sc. in (Mechanical / Electrical/Electronic Engineering with Experience in E&M works of Tunnel Engineering) or Minimum B.Sc (Mechanical / Electrical/Electronic Engineering with Experience in E&M works of Tunnel Engineering). **Experience:** Preferably ten (10) years relevant experience as E&M expert on Highway/Tunnel Design projects] **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
	Tunnel SCADA & IT Engineer	**Education:** Preferably PhD/MSc. in (Mechanical / Electrical Engineering with Experience in Tunnel E&M works/design) or minimum B.Sc. in (Mechanical/ Electrical Engineering with Experience in Tunnel E&M works/design). **Experience:** Preferably twelve (12) years relevant experience on major Highway and Tunnel Design projects with having specific experience on tunnels. The individual must show his familiarity with international codes and practices for E&M and PLC works on tunnels. He must also be well experienced in critical toxic emissions disposal specific to long tunnels. Relative marking will be made, assigning maximum marks to` the CV with longest tunnel in experience. **Rating**: Ph.D-100%; M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.
	Transport Economist	**Education:** Preferably M.Sc. Transport Economist/ M.Sc. (Transportation Engineering) / M.Sc. Economics with Diploma in Transport Economist or minimum B.Sc. (Transportation Engineering) or M.Sc. Economics. **Experience:** Preferably twelve (12) years' design experience as Transport Economist on National Highways/ Roads Projects]. **Rating**: M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. (Transportation Engineering)/M.Sc. Economics with relevant training - 80%; B.Sc.(Transportation Engineering) or M.Sc. Economics without relevant training - 70%.
	Quantity Surveyor	**Education:** Preferably B.Sc. (Civil Engineering) or minimum DAE (Civil). **Experience:** Preferably twelve (12) years' design experience as Senior Quantity Surveyor on National Highways/ Roads Projects. **Rating**: B.Sc. with relevant training - 100%; B.Sc. without relevant training - 90%; DAE (Civil) with relevant training - 80%; DAE (Civil) without relevant training - 70%.
	Note: The Consultants are advised to submit updated CV's strictly in compliance with the format of CVs given in Technical Proposal Form A-5. CVs submitted without regard to the said format may score low. **For Master's and PhD Qualification, the Consultants are advised to strictly mention**	

	the field of specialization of the proposed individuals.
	e. Training is an important feature of this Assignment: **Yes** √ **No** _____ If Yes, details of training are given in TOR
3.2.3	Professional liability, insurances (description or reference to appropriate documentation): i. The Consultants shall be responsible for Professional Indemnity Bond of the required amount at their own cost. This bond shall be in the joint name of Consultant and the Client. ii. The Consultants are required to insure their Employees and Professionals for Hospitalization/ Medical, Travel and Accident Cover for the duration of the Contract. The details provided in Para 3.5 of Special Conditions of Contract in Model Contract.
3.2.4	The currency of cost shall be expressed in **Pak. Rupees.**
4.1	The number of copies of the Proposal required is: **TECHNICAL PROPOSAL:** **ONE ORIGINAL AND THREE COPIES WITH CD/USB (SOFT FORM OF COMPLETE TECHNICAL PROPOSAL IN PDF FORM) IN SEALED ENVELOPE** **FINANCIAL PROPOSAL:** **ONE ORIGINAL WITH CD/USB (SOFT FORM OF COMPLETE FINANCIAL PROPOSAL IN PDF AS WELL AS MS WORD/ EXCEL FORMS) IN SEALED ENVELOPE** The address for writing on the proposal is: **General Manager (P&CA)** National Highway Authority 28, Mauve Area G-9/1 Islamabad Telephone: +92-51-9032727, Facsimile: +92-51-9260419
4.4	The date and time of proposal submission is: Date: **15th August, 2024** Time: **1130 hours** Location of Submission: **General Manager (P&CA)** National Highway Authority 28-Mauve Area G-9/1 Islamabad
4.5	Validity period of the proposal is: **270 days (Proposal shall be valid for 270 days after the date of submission of proposal).** The location for negotiation of proposal is: **General Manager (P&CA)** National Highway Authority 28-Mauve Area G-9/1 Islamabad Telephone: +92-51-9032727

	Facsimile: +92-51-9260419

5.2 The evaluation of technical proposal shall be based on following criteria:

Sr. No.	Description / Items		Points
1.	**Experience of the Firm**		**100**
	1-a)	General Experience in road Transport Sector *	(25)
	1-b)	Specific Experience related to particular Assignment*	(75)
2.	**Approach & Methodology**		**250**
	2-a	Appreciation of the Project	(70)
	(i).	*Evidence of Site Visit with Photographs*	*(30)*
	(ii).	*Clarity of appreciation*	*(20)*
	(iii).	*Comprehensiveness of appreciation*	*(20)*
	2-b	Problem Statement/ Understanding of Objectives	(50)
	(i).	*Identification of Problems/ Objectives*	*(30)*
	(ii).	*Components of Proposed Services*	*(20)*
	2-c	Methodology	(80)
	(i).	*Proposed Solutions for this Project*	*(30)*
	(ii).	*Quality of Methodology*	*(20)*
	(iii).	*Conciseness, clarity and completeness of proposal***	*(30)*
	2-d	Suggested changes for improvement in TOR	(10)
	2-e	Work Program	(20)
	2-f	Staffing Schedule	(20)
3.	**Key Staff*****		**450**
4.	**Performance Certification from clients********		**100**
5.	**Present Commitments (current engagement and available strength – justification)**		**50**
6.	**Transfer of Knowledge (Methodology/ Plans) *****		**50**
		Total Points:	**1000**
	Minimum qualifying technical score:		**700**

* Maximum fifteen (15) best projects completed, indicating their worth, person man-months of key personnel and duration of the project shall be provided under general experience for consideration in evaluation.

Maximum ten (10) projects completed in the last ten 10 years indicating their worth, person man-months of key personnel and duration of the project shall be provided under specific experience for consideration in evaluation.

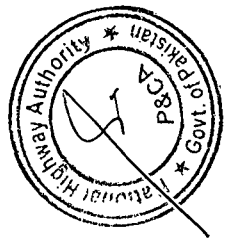
Note: Any project mentioned completed under Form A-2 (*Specific Experience*) will not be considered for evaluation unless Assignment Completion Certificate/ substantially completed with satisfactory remarks by the client's representative, is attached. The Client NHA reserves the right to verify the Performance/ Assignment Completion Certificates.

	** Conciseness and clarity contain 10 marks and 20 marks will be for the completeness of the proposals which includes but not limited to hard binding, sequential page numbering, signing and stamping of each page of proposal. *** Firm affidavit for presence of personnel carries 25 marks out of 450 marks (complete in all respect as per specimen annexed at **Annex-C** placed in Technical Proposal Forms). **** Authentic Performance/ Client Satisfaction Certificates (with proper Letter Reference No., Issued date, Sign/Stamp) shall be provided for assigning score in evaluation (at least for the three projects/ assignments, competed in the last five (05) years prior to date of submission of proposal) indicating the Title of project, Staff-Months of Key Personnel provided by the firm & completion date. The Client NHA reserves the right to verify the Performance/ Assignment Completion Certificates. The Client NHA also reserves the right to verify/ inquire about the performance of the consultants on its ongoing projects. ***(Note: Scoring of Marks will be affected, if any adverse performance rating of consultant, is reported by any section of NHA)*** 25 out of 100 marks will be allocated for provision of affidavit on stamp paper duly attested by the Oath Commissioner to the effect that the firm has neither been blacklisted nor any contract rescinded in the past for non-fulfillment of contractual obligations (complete in all respect as per specimen annexed at **Annex-B** placed in Technical Proposal Forms). ***** Transfer of knowledge would be in the form of association with new/ less experienced firm(s) by sharing upto maximum 7.5% of Assignment viz-a-viz input with them for promoting the consultancy industry in the country. The nomenclature of new/less experience firm be nominated as **sub-consultant**, whose name will be stated in their proposal. *Criteria for New firm is as under:* i) is the one which has not carried out more than three (3) projects. ii) The new /less experienced firm(s) after having executed three relevant projects be promoted to an independent regular firm. The new company will not be overburden with more than two projects simultaneously having overlapping effect. iii) The new firm must be registered with Pakistan Engineering Council (PEC) but the requirement of the specific PEC profile code is mandatory for the input he is likely to render. The points earmarked for evaluation sub-criteria (3) for suitability of Key Staff are:

Sr. No.	Description / Items	Points (%)
i.	Academic and General Qualifications	30
ii.	Professional experience related to the Project	60
iii.	Status with the firm (Permanent & duration with Firm as per Data Sheet Clause 3.1.4 (d)	10
	Total Points:	100

5.3.1	Following is added: The words "three top-ranking qualifying consulting firms" is deleted in its entirety and replaced with the words "qualifying consultants"

	The date, time, and address of the financial proposal opening shall be informed after evaluation and approval of technical proposals, accordingly.
5.3.3	The weights given to the Technical and Financial Proposals are: **Technical (T%): 80%** **Financial (P%): 20%**
6.1	Add following at the end of this Para: Negotiation meeting will be called if required by the client.
7.2	The assignment is expected to commence in **November, 2024**
8	The Clause is deleted in its entirety



SUMMARY EVALUATION SHEET FOR FULL TECHNICAL PROPOSALS (QCBS)

EVALUATION CRITERIA	Max. Weightage	Firm 1		Firm 2	
		Rating	Score	Rating	Score
1. Firms Experience	**100**				
General Experience in road Transport Sector	25				
Specific Experience related to particular Assignment	75				
2. Approach and Methodology	**250**				
2-a. *Appreciation of the Project*	70				
(i) Evidence of Site Visit with Photographs	(30)				
(ii) Clarity of appreciation	(20)				
(iii) Comprehensiveness of appreciation	(20)				
2-b. Problem Statement/ understanding of objectives	50				
(i) Identification of Problems/ Objectives	(30)				
(ii) Components of Proposed Services	(20)				
2-c. Methodology	80				
(i) Proposed Solutions for this Project	(30)				
(ii) Quality of Methodology	(20)				
(iii) Conciseness, clarity and completeness of proposal	(30)				
2-d. Suggested Changes for Improvement in TOR	10				
2-e. Work Program	20				
2-f. Staffing Schedule	20				
3. Key Personnel	**450**				
Firm affidavit for presence of personnel	**25**				
i. Team Leader/Sr. Highway Engineer	70				
ii. Senior Structural / Bridge Engineer	40				
iii. Senior Tunnel Engineer	40				
iv. Junior Structural / Bridge Engineer-I & II	2 x 20				
v. Junior Highway Engineer-I & II	2 x 25				
vi. Junior Tunnel Engineer	40				
vii. Pavement & Drainage Engineer	15				

EVALUATION CRITERIA	Max. Weightage	Firm 1		Firm 2	
		Rating	Score	Rating	Score
viii. Slope Stabilization Expert	30				
ix. Snow Survey & Avalanches Specialist	15				
x. Tunnel E&M Engineer	15				
xi. Tunnel SCADA & IT Engineer	15				
xii. Transport Economist	15				
xiii. Quantity Surveyor	40				
4. Performance Certification from clients	**75**				
Affidavit on stamp paper duly attested by the Oath Commissioner regarding non-blacklisting	**25**				
5. Present Commitments (current engagement and available strength – justification)	**50**				
6. Transfer of Knowledge (Methodology/ Plans)	**50**				
TOTAL:	**1000**				

Excellent - 100% Very Good - 90-99% Above Average – 80-89% Average – 70-79% Below Average – 1-69% Non-complying – 0%,

Score: Maximum Weightage rating / 100. Minimum qualifying score is 70% or 700 marks.

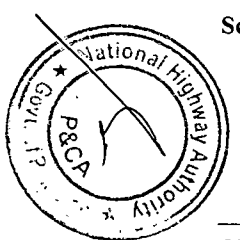
National Highway Authority P&CA Govt. of Pakistan

PERSONNEL EVALUATION SHEET

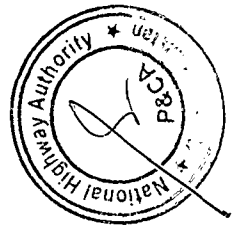
POSITION / AREA OF EXPERTISE	Name	Academic and General Qualification Weightage 30%		Project related Experience Weightage 60%		Status with the Firm 10%		OVERALL RATING (Sum of Weighted Ratings)
(Show all experts to be evaluated)		Percentage Rating	Weighted Rating (A)	Percentage Rating	Weighted Rating (B)	Percentage Rating	Weighted Rating (C)	(A+B+C)
i. Team Leader/Sr. Highway Engineer								
ii. Senior Structural/ Bridge Engineer								
iii. Senior Tunnel Engineer								
iv. Junior Structural / Bridge Engineer								
v. Junior Highway Engineer								
vi. Junior Tunnel Engineer								
vii. Pavement & Drainage Engineer								
viii. Slope Stabilization Expert								
ix. Snow Survey & Avalanches Specialist								
x. Tunnel E&M Engineer								
xi. Tunnel SCADA & IT Engineer								
xii. Transport Economist								
xiii. Quantity Surveyor								

Rating: - Excellent - 100% **Very good – 90-99%** **Above Average – 80-89%** **Average – 70-79%** **Below Average – 1-69%** **Non-complying - 0%**

Score: Maximum Weightage X rating / 100. Minimum qualifying score is 70%.



TECHNICAL PROPOSAL FORMS



Technical Proposal – Forms

{*Notes to Consultant* shown in brackets throughout this Section provide guidance to the Consultant to prepare the Technical Proposal; they should not appear on the Proposals to be submitted.}

Checklist of Required Forms (subparagraph 3.1.3 of ITC)

Required, (√)	FORM	DESCRIPTION	*Page Limit*
√	A-1	Technical Proposal Submission Form	
√	A-1 Attachment	Proof of legal status and eligibility	
"√" If applicable	A-1 Attachment	If the Proposal is submitted by a joint venture, attach a letter of intent.	
"√" If applicable	A-1 Attachment Power of Attorney	Power of attorney for the authorized representative of the lead firm as per instructions given in specimen of letter of intent (**Annexure-D**).	
√	A-2	Consultant's Organization and Experience.	As given below
		A. Consultant's Organization	3
		B. Consultant's Experience/ Client's Reference (excluding certificates)	20
		C. Client's Satisfaction Certificate alongwith details	10
√	A-3	Approach Paper on Methodology proposed for Performing the Assignment	50
√	A-4	Comments/ Suggestions of Consultant	*[See footnote]*[1]
		A. On the Terms of Reference	n/a
		B. On the Counterpart Staff and Facilities	2
√	A-5	Format of Curriculum Vitae (CV) for proposed Key Personnel	8 pages each CV
√	A-6	Completion and Submission of Reports as per TOR	n/a
√	A-7	Composition of the Team Personnel and the Tasks to be Assigned to each Team Member	n/a
√	A-8	Work Plan /Activity Schedule	n/a
√	A-9	Work Plan and Time Schedule for Key Personnel *(Man-months of staff and Project Duration as per TOR.)*	n/a
√	A-10	Current Commitments of the Firm	n/a

Note: **Failure to provide required attachments with Form A-1 will entitle the Client to reject the proposal**

[1] The total number of pages for combined forms A-3 and A-4 should not exceed 50. A page is defined as one printed side of A4 or letter-size paper with font size of 10 or more. In case of non-compliance, scoring for proposal clarity and presentation will be reduced.

Form A-1

TECHNICAL PROPOSAL SUBMISSION FORM

(To be required from lead firm only)

{Location, Date}

To: [Name and address of Client]

Dear Sirs:

We, the undersigned, offer to provide the ... *[NAME OF THE PROJECT]*.in accordance with your Request for Proposals. We are hereby submitting our Proposal, which includes this Technical Proposal and a Financial Proposal sealed in a separate envelope.

(If the Consultant is a joint venture, insert the following):

We are submitting our Proposal in a joint venture with: (Insert a list with full name and the legal address of each member and indicate the lead member). We have attached a copy of our letter of intent to form a joint venture, which details the likely legal structure of and the confirmation of joint and severable liability of the members of the said joint venture.

OR

(If the Consultant's Proposal includes Sub-consultants, insert the following):
We are submitting our Proposal with the following firm(s) as Sub-consultants: (Insert a list with full name and country of each Sub-consultant.)

We hereby declare that:

(a) All the information and statements made in this Proposal are true and we accept that any misinterpretation or misrepresentation contained in this Proposal may lead to our disqualification and/or imposition of any sanction by the client.

(b) Our Proposal shall be valid and remain binding upon us for the period of time specified in the Data Sheet, Clause 4.5.

(c) We have no conflict of interest in accordance with ITC Clause 1.9.

(d) We meet the eligibility requirements as stated in Data Sheet Clause 1.8.

(e) Neither we, nor our JV Partner(s)/sub-consultant(s) or any of the proposed experts prepared the TOR for this consulting assignment.

(f) Within the time limit stated in the Data Sheet, Clause 4.5, we undertake to negotiate a Contract on the basis of the proposed Key Personnel. We accept that the substitution of Key Personnel for reasons other than those stated in ITC, Clause 6.5 may lead to the termination of Contract negotiations.

(g) Our Proposal and any modifications resulting from the Contract negotiations is binding upon us.

(h). Our firm/ each member of our JV is not participating in any other proposal for this Project.

We undertake, if our Proposal is accepted and the Contract is signed, to initiate the Services related to the Project not later than the date mentioned in Data Sheet 4.5 (*or the date extended with the written consent of Consultant in case of delay in procurement process)*

We understand that the Client reserves the right to reject all proposals as per PPRA Rules.

We remain,

Yours sincerely,

Signature of Authorized Representative* of the Lead Firm:

{In full} _____ {and initial}_____

Name and Title of Signatory: _____

Name of Consultant (Firm's name or JV's name):_____

In the capacity of:_____

Address: _____

Contact information (phone and e-mail):_____

** The above signatory or his authorized representative should attend the proposal submission and opening with authority to sign and stamp any missing pages of proposal in line with instructions given in clause 1.8 of the Data Sheet. The specimen of authorization for submission is given at* ***Annexure-D****.*

Form A-2

CLIENT'S REFERENCE

- **A.** Detail about consultant(s) Organization.
  - Hierarchy/ organizational chart, Office address, Employees details, etc.,

- **B.** Relevant Services (as per RFP notice) carried out in the last ten years (10) which best illustrate qualifications
  - General experience in road Transport Sector; maximum fifteen (15) best projects completed. (to be provided in tabular form showing cost, duration, man-months and brief description of services performed)
  - Specific experience (maximum ten (10) projects completed in the last ten (10) years, related to particular assignment, should be given on following format:

Using in the format below, provide information on each reference assignment for which your firm, either individually as a corporate entity or as one of the major companies within a consortium, was largely contracted.

Assignment Name:		Country.
Location within Country:		Professional Staff Provided by Your Firm:
Name of Client:		No. of Staff:
Address:		No. of Staff Months:
Start Date (Month/Year):	Completion Date (Month/Year):	Approx. Value of Services (in Current US$/Rs.)
Name of Associated Firm (s), if any:		No. of Months of Professional Staff Provided by Associated Firm(s)
Name of Senior Staff (Project Director/Coordinator, Team Leader) involved and functions performed:		
Narrative Description of Project		
Description of Actual Services Provided by Your Staff		

- **C.** Performance/ Client Satisfaction Certificates (at least for the last three projects/assignments completed in the last five years) clearly mentioning the performance on the project.

Consultants' Name: _____

Form A-3

APPROACH PAPER ON METHODOLOGY PROPOSED FOR PERFORMING THE ASSIGNMENT

(Form TECH-3: a description of the approach and methodology for performing the assignment, including a detailed description of the proposed methodology, work programme, site visit detail and so forth along with training, if the Terms of Reference specify training as a specific component of the assignment.)

Form A-4 (A and B)

COMMENTS/SUGGESTIONS OF CONSULTANT

[Provide here comments and suggestions on the Terms of Reference that could improve the quality/ effectiveness of the Assignment; and on requirements for counterpart staff and facilities, which are provided by the Client, including: administrative support, office space, local transportation, equipment, data, etc., separately under Forms Form-4A and Form-4B respectively.]

A. On the Terms of Reference (TOR)

1.

2.

Etc.,

B. On the data, services and facilities to be provided by the Client specified in the TOR.

1.

2.

Etc.

Note:

1. The Consultant may propose a team of experts to best achieve the scope of service and activities and to deliver outputs as required in TOR. Proposed changes in position/individual inputs should be indicated and reasoned in the Technical Proposal but incorporated only in the Financial Proposals (showing excess/saving, in datum Price as worked out with the person months indicated in the RFP, which must be clearly bifurcated and marked red at each place for acceptance or otherwise by the Client at its prerogative during negotiations).

   (i) The Proposal may assign person-month inputs differently from TOR. However, Key Personnel input totals in the Proposal should not be less than the minimum totals of person-months inputs mentioned in Data Sheet Sub-Clause-3.1.4 respectively.

   (ii) The Proposal may include additional expert position/s. However, additional expert will be considered Non Key Personnel for the purpose of proposal evaluation.

   (iii) If the Proposal drops or replaces a Key Personnel position with a different one, the original position will receive zero score in the technical evaluation and the new position added in the Proposal will be considered Non Key and will not be evaluated.

   (iv) DO NOT INCLUDE EXCESS/SAVING INFORMATION IN TECHNICAL PROPOSAL. If Technical Proposal includes financial information, the Proposal will be rejected under Clause-3.1.5 of ITC.

2. When the Consultant suggests a change in scope of service, activities or output, the Consultant must describe the details in Form-4A and the change should not be incorporated in the Proposal. Enumerate each suggestion in Form-4A with incremental cost as a separate attachment to Financial Proposal indicating breakdown into individual remuneration and expenses for each suggestion. Forms A-11 to 17 should be prepared without incorporating the changes.

   (i) If Financial Proposal provides no separate attachment about incremental cost to a suggestion, the suggestion will be considered at no additional cost to the Client and no negotiations for an incremental cost shall be done;

   (ii) DO NOT INCLUDE INCREMENTAL COST INFORMATION IN TECHNICAL PROPOSAL. If Technical Proposal includes financial information, the Proposal will be rejected under Clause-3.1.5 of ITC.

Form A-5

FORMAT OF CURRICULUM VITAE (CV) FOR PROPOSED KEY STAFF

1. Proposed Position: _____
2. Name of Firm: _____
3. Name of Staff: _____
4. Profession: _____
5. Date of Birth: _____
6. Years with Firm: _____
7. Nationality: _____
8. N.I.C Number: _____
9. Cell Number: _____
10. Membership in Professional Societies: _____
(Membership Certificate of PEC/relevant council is Mandatory for Engineers. Copy of online updated PEC/relevant council details, as per Membership Number will be attached)
11. Detailed Tasks Assigned on the Project: _____

_____

- Key Qualifications:

[Give an outline of staff member's experience and training most pertinent to tasks on assignment. Describe degree of responsibility held by staff member on relevant previous assignments and give dates and locations. Use up to one page].
For Master's and PhD Qualification, the Consultants are advised to strictly mention the field of specialization of the proposed individuals.

- Education

[Summarize college/university and other specialized education of staff member, giving names of institutions, dates attended and degrees obtained. Mention majors/research work carried out during Post Graduation].

- Employment Record

[Starting with present position, list in reverse order every employment held. List all positions held by staff member since graduation, giving dates, names of employing organizations, title of positions held and location of assignments. For experience, also give types of activities performed and Client references, where appropriate].

- Languages

[Indicate proficiency in speaking, reading and writing of each language: excellent, good, fair, or poor].

- Certification

I, the undersigned, certify to the best of my knowledge and belief that

(i) This CV correctly describes my qualifications and experience.

(ii) I am not a current employee of the Executing or the Implementing Agency.

(iii) In the absence of medical incapacity, I will undertake this assignment for the duration and in terms of the inputs specified for me in Form A-9 provided team mobilization takes place within the validity of this proposal.

(iv) I was not part of the team who wrote the terms of reference for this consulting services assignment

(v) I am not currently debarred by any department/organization/ (semi-autonomous/ autonomous) bodies or such like institutions in Pakistan.

(vi) I certify that I have been informed by the firm that it is including my CV in the Proposal for the {name of project and contract}. I confirm that I will be available to carry out the assignment for which my CV has been submitted in accordance with the implementation arrangements and schedule set out in the Proposal.

If CV is signed by the firm's authorized representative:

(vii) I, as the authorized representative of the firm submitting this Proposal for the {name of project and contract}, certify that I have obtained the consent of the named expert to submit his/her CV, and that s/he will be available to carry out the assignment in accordance with the implementation arrangements and schedule set out in the Proposal, and confirm his/her compliance with paras (i) to (v) above.

(viii) Latest colored attested photograph stapled attached with the CV.

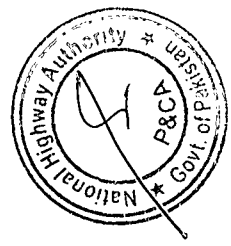
I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

_____

Signature of candidate/ authorized representative of the Lead firm

Date: _____
Day/Month/Year

Note: copy or scanned signatures are not allowed



Form A-6

COMPLETION AND SUBMISSION OF REPORTS AS PER TOR

Reports		Date
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Form A-7

COMPOSITION OF THE TEAM PERSONNEL AND THE TASKS TO BE ASSIGNED TO EACH TEAM MEMBER

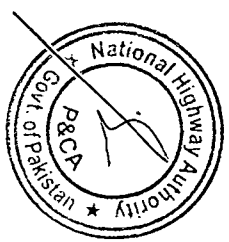
1. Technical/Managerial Staff

NAME	POSITION	Tasks Assignment	Present location	Name of assignment involved and clients name

Form A-8

WORK PLAN /ACTIVITY SCHEDULE

Items of Work/Activities	Monthly Program from date of assignment (in the form of a Bar Chart)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15



Form A-9

WORK PLAN AND TIME SCHEDULE FOR KEY PERSONNEL

Name	Position	Months (in the form of a Bar Chart)															Number of Months
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Full Time: _____
Part Time: _____ Activities Duration _____

Yours faithfully,

National Highway Authority P&CA Govt. of Pakistan

Signature _____
(Authorized Representative)

Full Name _____
Designation _____
Address _____

Form A-10

CURRENT COMMITMENTS OF THE FIRM

(In case of JOINT VENTURE (JV), same will be provided by each member in the JV)

(Current engagement and available Strength-Justification)
(List MUST be comprehensive including projects from clients other than NHA as well)

Name of project	Single or JV/Role	Task Assignment	Start date of the project	Expected date of completion	Current Engagement (Manpower)	Available Strength (Manpower)

Total Manpower of the Consultant: _____

Justification of current engagement and available strength: _____

_____

_____

_____

Note: If the consultant provides misrepresentation or misinterpretation of facts then, the Client has right to reject the proposal at any stage.

Annex-A

Specimen
(On Lead Firm's letterhead)

LETTER OF INTENTION

Subject: Technical and Financial Proposals for Consultancy Services for *(Name of Project)*

This Joint Venture (JV) is made among following parties;

1) M/s _____ as Lead Firm having ___% share.
2) M/s _____ as JV Partner having ___% share.
3) M/s _____ as JV Partner having___% share.
4) M/s _____ as JV Partner having___% share.

The above firms are jointly and severally liable to the Client for preparation of Technical and Financial Proposals for Consultancy Services for "*[NAME OF THE PROJECT]*" (hereinafter called "The Project").

The Firm hereto confirm the understanding as follows:

1. Objective

It is hereby agreed to form a Joint Venture for preparation of Technical and Financial Proposals for Consultancy Services for "The Project" to be submitted to National Highway Authority, Islamabad (hereinafter called "The Client").

The Parties intend to do the following:

a. Prepare and submit a mutually agreed Technical and Financial Proposals for the Project;
b. Agree to propose suitable staffing with high level of competence to form a competitive team for the Project.
c. Enter into the mutually agreed Consultancy Contract Agreement with the Client, if the project is awarded.
d. Perform all the services to be undertaken for the Project under the Consultancy Contract Agreement if signed.

2. The authorized representative of JV shall be M/s..... for the future official correspondence with the client on behalf of JV.

3. The original letter of intention(s) of the JV member(s) on their letterhead is/are attached at... (for Lead Firm only)

For and on behalf of

.....

Sign & Seal of the Firm

.....

(Authorized Representative of the Firm)*

* *Authorized Representative to sign the Letter of Intention can be;*

- *For Sole Proprietor firm; Owner of the Firm, otherwise Owner may authorize any person. (Provided Authorization Letter be submitted)*
- *For Partnership firm; Director of the Firm; otherwise, authorized personnel (provided Authorization Letter be submitted).*
- *For Private Limited firm; Director of the Firm, otherwise, authorized personnel (provided Authorization Letter be submitted).*
- *For Public Private Limited firm; Director of the Firm, otherwise, authorized personnel (provided Authorization Letter be submitted).*

Annex-B

AFFIDAVIT
(Regarding Blacklisting)

Subject: *[NAME OF THE PROJECT]*

I, the undersigned, do solemnly declare that M/s *[NAME OF THE FIRM]* has neither been blacklisted nor any contract rescinded in the past for non-fulfillment of contractual obligations.

Signature of Authorized
Representative of the firm(s)

Date: _____
Day/Month/Year

(Seal)

National Highway Authority ★ P&CA ★ Govt. of Pakistan

Attested by
the Oath
Commissioner

Note:

- The Affidavit is to be submitted on Stamp Paper of minimum Rs. 30/- duly attested by the Oath Commissioner.
- In case of Single Entity, to be provided by the firm.
- In case of JV, to be provided by all the JV members

Annex-C

UNDERTAKING
(Regarding Personnel Availability)

Subject: *[NAME OF THE PROJECT]*

I, the undersigned, do solemnly declare that the proposed personnel shall be available for the subject assignment in the project duration as per the terms and condition specified in the Request for Proposal (RFP).

Signature of Authorized
Representative of the Lead firm

Date: _____
Day/Month/Year

(Seal)

National Highway Authority P&CA Govt. of Pakistan

Attested by
the Oath
Commissioner

Note: The Affidavit, on Stamp Paper of minimum Rs. 30/- duly attested by the Oath Commissioner, is to be submitted by the Lead firm only.

Annex-D

General Manager (P&CA)
National Highway Authority,
Islamabad, **Pakistan**

Power of Attorney
(Regarding submission of proposal)

Subject: *[NAME OF THE PROJECT]*

Dear Sir,

I, the undersigned, authorize Mr. _____S/o Mr._____ having CNIC No. _____to attend the submission and Opening of Proposals on behalf of all JV members. *(Insert name of sole consultant in case of single entity else name of all JV members)*. He is authorized to attend, submit, sign and stamp any missing pages of the proposal (Technical and Financial) for above-mentioned project on... (*Insert date).*

Signature: _____ Initial_____ Date: _____
Day/Month/Year

Authorized Representative
[Name & Designation]

Signature: _____
Name: _____
[Designation (CEO/MD/Sole Propertier)]
[Consultant Name]

If more than one owner or Board of Directors, then the consultant may add other names as per requirements.

Annex-E

General Manager (P&CA)
National Highway Authority,
Islamabad, **Pakistan**

POWER OF ATTORNEY

(To sign the Contract Agreement which will be submitted by successful consultant at the time of signing of contract)

Subject: *[NAME OF THE PROJECT]*

Dear Sir,

I/We, the undersigned, authorize Mr. _____S/o Mr._____ having CNIC No. _____ of *[Name of the Lead Firm]* to sign the Contract Agreement of the project *[NAME OF THE PROJECT]* on behalf of *[CONSULTANT NAME]*. Furthermore, Mr._____, *[Lead Firm]* is the authorized representative as per General Conditions of Contract and Special Condition of Contract (Clause 1.6) for execution of the Contract.

Signature: _____ Initial_____ Date: _____
Day/Month/Year

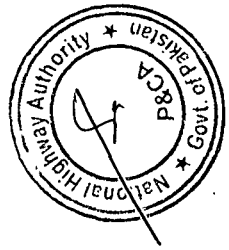
Authorized Representative [Lead Firm]
[Name & Designation]

Signature: _____
Name: _____
[Designation (CEO/MD/Sole Propertier)]
[Consultant Name]

If more than one owner or Board of Directors, then the consultant may add other names as per requirements.

National Highway Authority P&CA Govt. of Pakistan

FINANCIAL PROPOSAL FORMS



Form A-11

FINANCIAL PROPOSAL SUBMISSION FORM

{Location, Date}

To: [Name and address of Client]

Dear Sirs:

We, the undersigned, offer to provide the consulting services for [**Insert the Project Name**]in accordance with your Request for Proposal dated [Insert Date] and our Technical Proposal.

Our attached Financial Proposal is for the amount of {Insert amount in words and figures}, *including all Federal, Provincial &local taxes applicable as per law of the land.* {Please note that all amounts shall be the same as in Financial Proposal Form A-17}.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e. before the date indicated in Clause 4.5 of the Data Sheet.

We confirm that we have no condition to state that may have financial implications over and above the amount quoted above.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature* {In full} _____ {and initial}_____

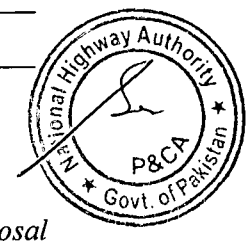
Name and Title of Signatory: _____

Name of Consultant (Firm's name or JV's name): _____

In the capacity of: _____

Address: _____

Contact information (phone and e-mail):_____



* *The above signatory or his authorized representative should attend the proposal submission and opening with authority to sign and stamp any missing pages of proposal in line with instructions given in clause 1.8 of the Data Sheet.*

Form A-12

BREAKDOWN OF RATES FOR CONSULTANCY CONTRACT

Project: _____ Consultant: _____

Name	Position	Name of the Firm	Basic Salary per Cal. Month	Social Charges (%age of 1)	Basic Salary+ Social Charges (1+2)	Over head (%age of 3)	Sub-Total (3+4)	Fee (%age of 5)	Rate per Month for project Office (5+6)	Field Allow. (%age of 1)	Rate per Month for Field Work (7+8)	Rate to be used in Financial Proposal
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

Notes:

Item No. 1 Basic salary shall include actual gross salary before deduction of taxes. **Furthermore, basic salary should at least meet the minimum wages (for support staff) as per Federal Labor Law or Provisional Labor law, whichever the case and the individual staff shall be paid their salaries as per basic rates specified herein above.**

Item No. 2 Social charges shall include Client's contribution to social security, paid vacation, average sick leave and other standard benefits paid by the company to the employee. Breakdown of proposed percentage charges should be submitted and supported (see Form A-13).

Item No. 4 Overhead shall include general administration cost, rent, clerical and junior professional staff and business getting expenses, etc. Breakdown of proposed percentage charges for overhead should be submitted and supported (see Form A-14).

Item No. 6 Fee shall include company profit and share of salary of partners and directors (if not billed individually for the project) or specified in overhead costs of the Company.

Item No. 8 Normally payable only in case of field work under hard and arduous conditions.

Note 1 The consultant is to provide appointment letter and affidavit/undertaking duly signed by each of the individual staff members showing salary rates as above to the project authorities. Further during execution each invoice will also be provided showing that the staff have been paid their salaries as per basic rates specified therein. Failing to which, the Client will take punitive action against the consultant and shall deduct the deficient amount from his monthly invoice. Moreover, it will be considered as a negative mark on his performance that will be considered for future projects.

Full Name: _____
Signature: _____
Title: _____

Form A-13

BREAKDOWN OF SOCIAL CHARGES

Sr.No.	Detailed Description	As a %age of Basic Salary*		
		Firm-1	Firm-2	Firm-3.....

*Note: Each Firm shall use its own social charges (%age) for calculating salaries of its staff i.e. 'Rate to be used in Financial Proposal' in Form A-12.

National Highway Authority * P&CA * Govt. of Pakistan

Form A-14

BREAKDOWN OF OVERHEAD COSTS

Sr.No.	Detailed Description	As a %age of Basic Salary and Social Charges*		
		Firm-1	Firm-2	Firm-3.....

***Note:** Each Firm shall use its own overhead charges (%age) for calculating salaries of its staff i.e. 'Rate to be used in Financial Proposal' in Form A-12.

Form A-15
Page 1 of 3

A - ESTIMATED LOCAL CURRENCY SALARY/ REMUNERATION COSTS EQUIVALENT IN US DOLLARS

[Refer also to Notes under Form A-4]

Sr. No.	Name	Position	Person-Months	Monthly Billing Rate (US $)	Total Estimated Amount (US $)
A.	All Foreign Expatriates including Foreign Specialist Sub-consultant (if any)				
				Sub-Total:	

Form A-15
Page 2 of 3

ESTIMATED LOCAL CURRENCY SALARY COSTS/REMUNERATION

KEY EXPERTS

Sr. No.	Position	No. of persons	Individual Man Months	Monthly Billing Rate	Total Estimated Amount (Rs.)
1	Team Leader/Sr. Highway Engineer	1	6.00		
2	Senior Structural/ Bridge Engineer	1	3.00		
3	Senior Tunnel Engineer	1	3.00		
4	Junior Structural / Bridge Engineer	2	3.00		
5	Junior Highway Engineer	2	4.00		
6	Junior Tunnel Engineer	1	3.00		
7	Pavement & Drainage Engineer	1	1.00		
8	Slope Stabilization Expert	1	2.00		
9	Snow Survey & Avalanches Specialist	1	1.00		
10	Tunnel E&M Engineer	1	1.00		
11	Tunnel SCADA & IT Engineer	1	1.00		
12	Transport Economist	1	1.00		
13	Quantity Surveyor	1	3.00		
				Sub Total:	

Form A-15

ESTIMATED LOCAL CURRENCY SALARY COSTS/REMUNERATION

NON-KEY / SUPPORT STAFF

Sr. No.	Position	No. of persons	Individual Man Months	Monthly Billing Rate	Total Estimated Amount (Rs.)
1	Junior Quantity Surveyor	1	3.00		
2	CAD Operator	3	4.00		
3	Trainee Engineers	5	6.00		
4	Computer Operators	4	6.00		
5	Office Boys/Helper	4	6.00		
				Sub-Total:	

Note: The Consultants are required to quote the rates of Non-Key/Support Staff given in the TOR in above table keeping in view the latest/prevailing notification for minimum wages (i.e., Basic salary) issued by the concerned Labor and Manpower department/Ministry. The Consultant(s) may propose Non-Key/ Support Staff Person-Months in addition to those given in TOR; however, in such a case tenable reason must be given in the Technical Proposal Submission Form A-4 "Comments on TOR". The Client's negotiation committee will deliberate on the requirement of additional staff during negotiation meeting. It is also to be noted that the Client is not bound to agree to the reasons given in Form A-4.

Form A-16

DIRECT (NON-SALARY) COSTS

Sr. No.	Nomenclature	Unit	Qty.	Unit Price (Rs.)	Total Amount (Rs.)
1.	Rent for Office Accommodation	L.S			
2.	Office Utilities Cost	L.S			
3.	Rental of furniture / furnishings	L.S			
4.	Cost / (rentals) of Office / other equipment i). Computers & Accessories ii). Photocopy Machines (Rentals) iii). Communication Equipment iv). Drafting /Engineering Equipment v). Transport Vehicles (rental) vi). Site visits and Meeting in Islamabad during currency of Project	L.S			
5.	Communication expenses	L.S			
6.	Drafting / Reproduction of Reports	L.S			
7.	Office / Drafting Supplies	L.S			
8.	Procurement of 0.3m Satellite Imagery and 4m DTM for initial Alignment Planning (area =235x5=1,175 Sq. Km) (Latest Archive available) (Direct Payment to Vendor)	L.S			
9.	Detailed Topographic Survey through RTK Drones & GCPs, as per Requirements stated in TOR, Inventory of Structures, Collection of GCPs and other reference point, Ground Validation & Stakeout of alignment including Report & Drawing Production, Instrument Rental Charges, Surveyors & Survey Helpers Salary etc. (complete in all respect as per TOR)	L.S	-		
10.	Soil and Material Investigation including sample Collection Lab Testing, Report Writing, Salary of Material Engineer, Helpers, etc. (complete in all respects) (3 Km avg.)	L.S	-		
11.	Geotechnical Investigation for Structures including instrument rental, Salary of Geo-Technical Engineer, Helpers, Report Writing, etc, (complete in all respects) (35 Bridges and many causeways to be converted)	L.S	-		
12.	"Geo-Physical Testing" for Tunnels (as Deemed Appropriate to the Consultant) including the cost of activities mentioned in the TORs, cost of report writing, Instrument Rental Charges (if any), salary of Geo-Tach	L.S			

Sr. No.	Nomenclature	Unit	Qty.	Unit Price (Rs.)	Total Amount (Rs.)
	Engineer Geologist, Lab Technicians and Helpers, etc. (complete in all respect).				
13.	Environmental impact Assessment including Report Writing, NOC Fee, Environmental Engineer Salary, Coordination with Pak EPA & Public Hearing charges, (complete in all respects as per TOR)	L.S	-		
14.	Traffic Survey including report writing & Salary of Traffic Engineer & Enumerators (complete in all respect).	L.S			
15.	Highway Safety Audit including Cost of Site Visits, Report Writing Salary of Highway Safety Engineer & its team, 3rd Party review of report etc. (complete in all respects)	L.S	-		
16.	Hydrology & Hydraulic study including Purchase of Requisite Data (DEM) etc., Report Writing, Salary of Hydrologist/Hydraulic Engineer etc. (complete in all respect)	L.S			
17.	Innovative & Modern Architectural Design, Drawing, Estimates, BoQs of Service Area, Rest Area, Weigh Station, Toll Plaza & Allied Buildings, NHA Office & Rest House.	L.S			
18.	Procurement of Codes, Technical Specifications, Books, Software, Hardware, Equipment, Accessories, etc for Planning Wing.	P.S			1,500,000
19.	Construction, Transportation & Installation of Right of Way Markers in accordance with NHA's CSR Item 610b (complete in all respects) (1200 ROW Markers)	L.S			
20.	Others not covered above to comply with ToR requirement*				
Total					

NOTE:* Any additional item/ cost quoted against this line item must have provided solid/ tenable justification(s) detailed in Technical Proposal Submission Form A-4 "Comments on TOR" without indicating financial value therein. It is also to be noted by the Consultants that the Client is not bound to agree to the reasons given in Form A-4. * Cost quoted against lump sum items (mentioned in above table) is all inclusive and remuneration of staff (if required) shall not be charged separately.

Form A-17

SUMMARY OF COST

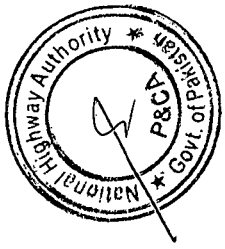
Sr. No.	Description	Amount (Rs.)
1.	Salary Cost/Remuneration	
2.	Direct (Non-Salary) Cost	
3.	**Sub Total (1+2):**	
4.	Sales Tax @16% on Item No. 3 above which shall be kept as provisional Sum in the Contract Agreement [3]	
5.	Contingencies @ 3%	
	Grand Total [1]:	

Note: 1- This cost is supposed to be built up in bid price and if anything is left blank it shall be deemed to be included in the cost. For evaluation purpose, only competitive cost shall be considered for calculation of financial score.

2- The dues and salaries (as per basic rate) of staff are payable by the consultant in time and not later than 10th of the following month positively. In case of failure to do so Client shall intervene and pay these dues and salaries of the concerned Personnel and recover from the invoice of the consultant at actual charges paid plus 1% of the amount. This will also be accounted for adversely in making assessment of the Consultants in the next evaluation process for selection of consultants with report of such defaults.

3- Any Omission or arithmetical error made by the consultants in entering the amount against item 4 above shall also be rectified during evaluation of the Financial Proposal. Deduction of GST will be as per prevailing rules and regulations.

4- The grand total is inclusive of all the applicable Federal, Provincial and Local taxes. All these taxes are required to be built in the quoted rates and GST is to be mentioned separately.



1. PROPOSAL SECURING DECLARATION

[The Consultant shall fill in this Form in accordance with the instructions indicated.]

Date: *[insert date (as day, month and year)]*
Proposal No.: *[insert number of Proposal process]*
Alternative No.: *[insert identification No if this is a Proposal for an alternative]*

To: *[insert complete name of Procuring Agency]*

We, the undersigned, declare that:

We understand that, according to your conditions, Proposals must be supported by a Proposal Securing Declaration.

We accept that we will automatically be suspended from being eligible for Bidding in any contract with the Procuring Agency for the period of time as determined by the Authority if we are in breach of our obligation(s) under the Proposal conditions, because we:

(a) have withdrawn or modified our Proposal during the period of Proposal Validity specified in the Form of Proposal;
(b) Disagreement to arithmetical correction made to the Proposal price; or having been notified of the acceptance of our Proposal by the Procuring Agency during the period of Proposal Validity, (i) failure to sign the contract if required by Procuring Agency to do so or (ii) fail or refuse to furnish the Performance Security or to comply with any other condition precedent to signing the contract specified in the SRFP Documents.

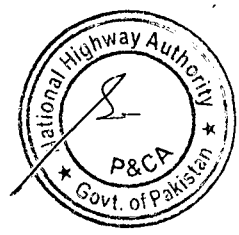
We understand this Proposal Securing Declaration shall expire if we are not the successful Service Provider, upon the earlier of (i) our receipt of your notification to us of the name of the successful Service provider; or (ii) twenty-eight (28) days after the expiration of our Proposal.

Signed: *[insert signature of person whose name and capacity are shown]* In the capacity of *[insert legal capacity of person signing the Proposal Securing Declaration]*

Name: *[insert **complete name of person signing the Proposal Securing Declaration**]*

Duly authorized to sign the Proposal for and on behalf of: *[insert **complete name of Service Provider**]*

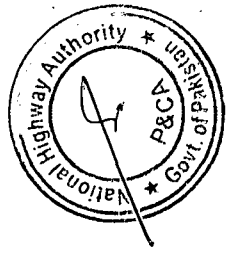
Dated on _____ day of _____, _____ *[insert **date of signing**]*
Corporate Seal (where appropriate)



APPENDIX-A

TERMS OF REFERENCE

(TOR)



CHAPTER NO. 1
INTRODUCTION

1.1 BACKGROUND:

- National Highway N-15 is running from Mansehra District to the town of Chilas in Diamer District in the Khyber Pakhtunkhwa and GB provinces of Pakistan.
- Mansehra – Chilas road section has been completed since long and warrants improvement /upgradation to provide better road facility to commuters.
- Conversion of 2-lane Highway to 4-lane expressway has been necessitated to further tap tourism potential of the area to a greater extent.
- The subject Expressway will be made all weather in order to make it available for use throughout the year and to reap full benefits of the project. The whole project including Bypasses etc. will be fenced.
- The subject project is providing an alternate route to KKH will saving of 100 Km (approx.) in length.
- Under the MOU recently signed between the Government of China and Pakistan whereby the Babusur tunnel shall be taken up by the Govt. of China whereas the Pakistani Counterpart (The Consultant) shall conduct the Joint Feasibility for the Babusur Tunnel.
- Promotion of Tourism, Flora and Fauna etc. shall be given due consideration.
- Now NHA intends to appoint the Consultant for "Feasibility Study & Detailed Design for Upgradation of Existing National Highway (N-15) Mansehra-Naran-Jalkhad-Chilas to a 4-lane divided Expressway (235 Km Approx.)".
- Consultant will study the alignment in detail and suggest improvement in alignment where required with regards to geometry, gradient etc. to ensure safe and speedy vehicular movement. Consultant will also explore various options like tunnels, Snow galleries, Slide/shelter Galleries etc. and will come up with best

solution considering all pros & cons. To make the expressway all weather.

1.2 NEED ASSESSMENT:

- The project will facilitate construction material, agricultural product, industrial products, commercial freight traffic movement of Surrounding areas.
- The project will fetch tourists and will promote tourism to greater extents.
- Massive impact of the project on land use will surely help in the uplift of area and local people, as employment and business will be generated in the vicinity by implementation of the project.

1.3 PROJECT DEFINITION:

NHA intends to appoint a Consultant to conduct "Feasibility Study & Detailed Design for Upgradation of Existing National Highway (N-15) Mansehra-Naran-Jalkhad-Chilas to a 4-lane divided Expressway (235 Km Approx.)."

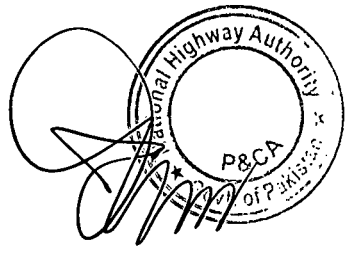
Consultant will study the alignment in detail and suggest improvement in alignment where required with regards to geometry, gradient etc. to ensure safe and speedy vehicular movement. Consultant will also explore various options like tunnels, Snow galleries, Slide/ shelter Galleries etc. and will come up with best solution considering all pros & cons. To make the expressway all weather.

1.4 PROJECT OBJECTIVES:

- This section is intended to provide safer, quicker and more efficient all weather passage.
- After Construction of subject Expressway as per detailed design, smooth and safe traffic flow will be possible to a great extent throughout the year.
- Vehicle operating cost will be reduced & travel time will be saved.
- Job opportunities will be created for local people.

1.5 TECHNICAL PARAMETERS: -

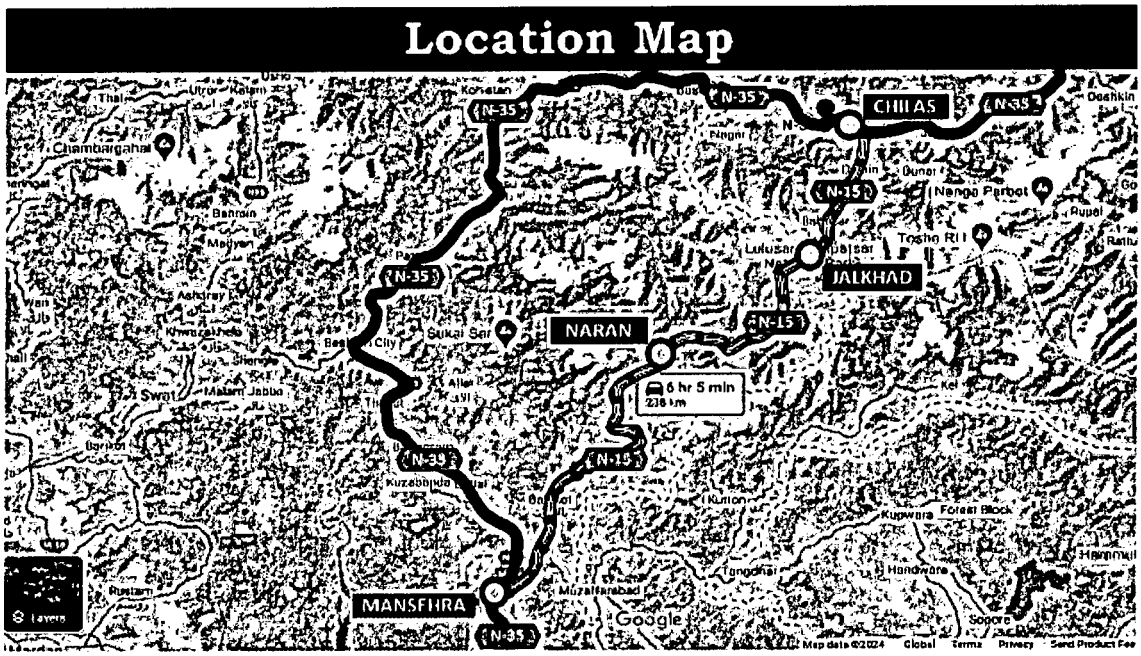
Sr#	Design Element for Road	Unit	Parameters
For Road			
1	No. of Lanes	No.	4
2	Lane Width	m	3.65 each
3	Design Speed Mountainous/Rolling/ plain.	KPH	60/80/100
4	Design Life		As per AASHTO
For Structures (Tunnels/Bridges)			
5	Carriageway width	m	7.3
6	Vertical Clearance	m	5.3
7	Design Speed (Tunnels)	KPH	40 / 60
	Design Speed (Bridges)	KPH	60/80/100
8	Sidewalks/Emergency Egress Walkway		As per AASHTO/Site Requirement
9	Drainage		As per Requirement
10	Geometric Design		As per AASHTO
11	Structural Design		As per AASHTO
12	Design Life		As per AASHTO



CHAPTER NO. 2
DESCRIPTION OF PROJECT

2.1 LOCATION OF PROJECT:

The project under consideration is located in Khyber Pakhtunkhwa and GB provinces.



2.2 PROJECT WORKS

The Scope of work comprises of following but not limited to:

Stage-I:

Inception Report (Collection of Data & Coordination)
Reconnaissance Survey
Existing Condition Survey and Assessment
Alignment Study
Traffic Study
Topographic Survey
Soil & Material Investigation
Hydrology & Hydraulic Study Report
Slope Stability Analysis and Remedial Measures including Snow Avalanche Study

Geophysical Survey of the Area
Geological Survey of the Area including geological mapping of the structures including bridges, tunnels/ Snow Galleries, and avalanche galleries (if any).
Feasibility Study, (Technical, Financial, Social, Environmental aspects). Special consideration should be given to the development of tourism spots and shelter areas along the alignment for the safety of commuters.

Stage-II:

Geotechnical Investigation Report
Structure Design Report
Pavement Design Report
Geometric Design Report
Design of Tunnel/ Snow Galleries, Avalanche Galleries, *Portal facilities and Electro-Mechanical works
Environmental Impact Assessment and NOC
Road Safety Audit Report
Innovative & Modern Architectural Design / Plan to Boost Tourism, as well as Drawings detailed Estimates for Services Areas, Rest Areas, Weigh Station, Toll Plaza & Allied Buildings, NHA Office & Rest House
Ground Validation & Alignment Stakeout
PC-I

Stage-III:

Tender Documents, Drawings, BOQ, Engineer's Estimate, C-Factor, Take off Sheets etc.
Land Acquisition & Utility Relocation Folders
Construction Machinery & Manpower Report
Building Information Modelling of Infrastructure
Installation of RoW Markers
Stakeout of design alignment after approval for ground validation
Mass Haul Diagram

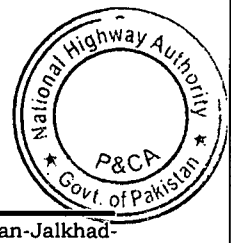
2.3 TIME PERIOD:

The services specified in the TOR shall be completed and all relevant reports be submitted in the form and format acceptable to the Employer, within (06) months from the date of signing of Contract Agreement.

2.4 FINANCIAL ARRANGEMENT:

The project will be financed by the Government of Pakistan through PSDP Design & Feasibility head.

*PC-II of the subject project is attached at Annex-A



CHAPTER NO. 3
Scope of Services

This Chapter augments & elaborates the scope of services outlined in the preceding Chapter(s). The following table presents an overall summary of the services/deliverables for which the Consultant is required to coordinate with the Design Section of NHA.

Stage-I: Feasibility Study

Task No.	Description
3.1	Inception Report (Collection of Data & Coordination)
3.2	Reconnaissance Survey
3.3	Existing Condition Survey and Assessment
3.4	Alignment Study
3.5	Traffic Study
3.6	Topographic Survey
3.7	Soil & Material Investigation
3.8	Hydrology & Hydraulic Study Report
3.9	Slope Stability Analysis and Remedial Measures including Snow Avalanche Study
3.10	Geophysical Survey of the Area
3.11	Geological Survey of the Area including geological mapping of the structures including bridges, tunnels/ Snow Galleries, and avalanche galleries (if any).
3.12	Feasibility Study, (Technical, Financial, Social, Environmental aspects). Special consideration should be given to the development of tourism spots and shelter areas along the alignment for the safety of commuters.

Stage-II: Detailed Design

Task	Description
3.13	Geotechnical Investigation Report
3.14	Structure Design Report
3.15	Pavement Design Report
3.16	Geometric Design Report
3.17	Design of Tunnel/ Snow Galleries, Avalanche Galleries, *Portal facilities and Electro-Mechanical works
3.18	Environmental Impact Assessment and NOC
3.19	Road Safety Audit Report
3.20	Innovative & Modern Architectural Design / Plan to Boost Tourism, as well as Drawings detailed Estimates for Services Areas, Rest Areas, Weigh Station, Toll Plaza & Allied Buildings, NHA Office & Rest House
3.21	Ground Validation & Alignment Stakeout
3.22	PC-I

Stage-III: Tender Documents

Task	Description
3.23	Tender Documents, Drawings, BOQ, Engineer's Estimate, C-Factor, Take off Sheets etc.
3.24	Land Acquisition & Utility Relocation Folders
3.25	Construction Machinery & Manpower Report
3.26	Building Information Modelling of Infrastructure
3.27	Installation of RoW Markers
3.28	Stakeout of design alignment after approval for ground validation
3.29	Mass Haul Diagram

The Consultant will be required to prepare and give detailed Presentations at different forums when & where required.

1. DESIGN CODES / STANDARDS

NHA understands that the Codes/Standards etc., given in following table should be followed for carrying out the services required under this contract:

Geometric Design	*A Policy on Geometric Design of Highways and Streets* by AASHTO (preferably latest published version). Roller Coaster profile will not be acceptable at all.
Structural Design	*AASHTO Guide Specifications for LRFD Bridge Design* (preferably latest published version) along with *West Pakistan Code of Practice for Highway Bridges* and Seismic Zone Mapping of Pakistan etc. Also refer to Clause 1.2
Tunnel Design	*AASHTO LRFD Road-Tunnel Design and Construction guide Specification 2017.*
Seismic Design	*AASHTO (LRFD) Latest Edition.*
Pavement Design	*AASHTO Guide for Design of Pavement Structures - 1993*
Geotechnical Investigation	*AASHTO (LRFD) Latest Edition.*
Drainage Design	*Highway Drainage Guidelines* by AASHTO (preferably latest published version)
Roadside Design	*AASHTO Roadside Design Guide* (preferably latest published version)
Lighting	*Roadway lighting design guide* by AASHTO (preferably latest published version)
Design of Traffic Control Devices, Work Zone Safety, and preparation of 'Maintenance & Protection of Traffic (MPT) Plans'	*Manual of Uniform Traffic Control Devices (MUTCD)* by FHWA USA, and *Roadside Design Guide by AASHTO* (preferably latest published versions) with due consideration to the requirements/SoPs/Policies/Guidelines etc. of NHA
Testing and Specifications of Materials	ASTM, AASHTO, NHA General Specifications etc.

Capacity Analysis and Level of Service analysis	*Highway Capacity Manual* (preferably latest published version)
Engineer's Estimate	As per prevailing CSR of NHA

1.1 TUNNELS – INTERNATIONAL SAFETY STANDARDS

- Directive 2004/54/EC of The European Parliament and of the Council on Minimum Safety Requirements for Tunnels in the Trans-European Road Network, 2004.
- Systems and Equipment for Fire and Smoke Control in Road Tunnels, World Road Association (PIARC) Committee on Road Tunnels Operation (C3.3), Report 2007.
- Road Tunnels: Vehicle Emissions and Air Demand for Ventilation, World Road Association (PIARC) Technical Committee C4 Road Tunnel Operation, Report 2012.
- Human Factors and Road Tunnel Safety regarding Users, World Road Association (PIARC), Report, 2008.
- Road Safety in Tunnels, World Road Association (PIARC), Report 05.04.B, 1995.
- Guide for the lighting of Road Tunnels and underpasses (International Commission of Illumination, CIE 88: 2004), Austria

1.2 STANDARDS FOR STRUCTURES

Following codes, standards and loads will be adopted for analysis and design of structures:

- **AASHTO-(LRFD) – Latest Edition:**

  For analysis and design for all loads and load combinations.

- All load factors have to be used as recommended by AASHTO LRFD. Only the Vehicular Live Load to be compared between AASHTO LRFD and WPHBC so as to arrive at the conservative loading.

- **Pakistan Highway Code of Practice for Bridges 1967: -**

  For vehicular loads, their spacing.

- **Pakistan Building Code (PBC):**

  For seismic zoning in addition to the revised seismic risk map of Pakistan.

- **ASTM:**

For material specifications & testing.

- **ACI:**

For analysis, design and detailing, only in case such details are not specified in AASHTO.

- **Vehicles Live Load:**

The Consultant shall carryout analysis based on both the Codes as mentioned below at Serial A & B and recommend the most conservative Code based on analysis results and subsequently follow the results of the conservative system for performing the detailed design.

A. WEST PAKISTAN CODE OF PRACTICE FOR HIGHWAY BRIDGES 1967 (WPCHB)

- **Class AA Loading:**

The 70-Ton tracked military vehicle to be placed in accordance with WPCHB to give maximum stresses. Modifying factors to be applied in consultation with Client to cater for overloading.

- **Class A Loading:**

The 54.5 Ton train of trailers (with different axle loads) to be placed in accordance with WPCHB to give maximum stresses. Modifying factors to be applied in consultation with Client to cater for overloading.

B. AASHTO LRFD (Latest Edition)

- **HL -93 Loading**
- **Load Calibration Factor:**

Live Load Modifying factors to be applied in consultation with Client to cater for overloading.

- **Check Deck Slab for Punching Shear:**

The Compressive Strength of Deck Concrete should not be less than 4000 Psi and the thickness of Deck slab should not be less than 200 mm.

The above Design Codes and Standards have been developed with best efforts, but may be reviewed by the consultant and improvement may be proposed on the basis of specialized knowledge and expertise in the context of project. Proposed improvements, if any, should be realistic, practicable, and cost effective in project context. If consultant requires any clarification, then same must be solicited in written and a timely manner instead of making a presumption. Bare minimum standards or inappropriate combinations of the recommended standards must be avoided in all design aspects.

The Consultant must ensure that the design criteria is in complete harmony with the project requirements; best international practices, codes, standards etc.; and any applicable SoPs, Policies, Guidelines etc. of NHA.

1.2 Technical Parameters

Sr#	Design Element for Road	Unit	Parameters
For Road			
1	No. of Lanes	No.	4
2	Lane Width	m	3.65 each
3	Design Speed Mountainous/Rolling/ plain	KPH	60/80/100
4	Design Life		As per AASHTO
For Structures (Tunnels/Bridges)			
5	Carriageway width	m	7.3
6	Vertical Clearance	m	5.3
7	Design Speed (Tunnels)	KPH	40 / 60
	Design Speed (Bridges)	KPH	60/80/100
8	Sidewalks/Emergency Egress Walkway		As per AASHTO/Site Requirement
9	Drainage		As per Requirement
10	Geometric Design		As per AASHTO
11	Structural Design		As per AASHTO
12	Design Life		As per AASHTO

2. KICK-OFF MEETING

The Consultant will hold kick-off meeting with NHA and give detailed presentation on the approach & methodology for carrying out services and the corresponding timelines. Detailed schedule of activities along with resources to be deployed will also be presented to NHA.

3. DETAILED SCOPE OF SERVICES

Stage-I: Feasibility Study

3.1 Inception Report (Collection of Data & Coordination)

Deliverable	Inception Report

The consultant will coordinate with all concerned departments as well as field/maintenance authorities of NHA and accordingly collect any data pertaining to this project *inter alia* availability of Right of Way. The data shall be shared with NHA in 'Inception Report' and duly referred in the submissions made later on to NHA in order to avoid any disparity.

The consultant will also collect requirements and development plans etc. (if any) of all the concerned agencies/organizations/departments/stakeholders through extensive & close coordination. These plans will be required to be considered in carrying out studies under this contract. This is an essential requirement and must be given due importance by the consultant.

Inception Report should elaborate the methodologies for detail design and for requirements spelled out in the TOR. In Inception report, the Consultant should clearly state the timelines and plan for field surveys, investigations and studies.

The consultant should study tourist attraction spots so as to propose the measures to boost the tourism in the area as part of the design. Moreover, the consultant should also propose the shelter area along the road to facilitate the commuters in case of any emergency.

3.2 Reconnaissance Survey Report

Deliverable	Reconnaissance Survey Report

The consultant will carry out desk studies and then proceed for detailed reconnaissance visit in coordination with concerned field authorities. During the reconnaissance visit, particular requirements of the project shall be identified that will be addressed in the detailed design. The observations made during reconnaissance visit along with geotagged photographs should be presented in the Reconnaissance Survey Report.

The consultant will also be required to determine the requirement of all the Clearances/NoCs from concerned organizations which may be required in connection with design, construction, operation, and maintenance etc. of project and accordingly apprise NHA in the Reconnaissance Survey Report. At the reconnaissance stage, social, economic and environmental aspects shall also be considered.

The Consultant shall also procure Latest available archived Satellite Imagery of 0.3 m Resolution and Digital Terrain Model (DTM) of 4m resolution (approximate area of 1,175 Sq. Km.) for carrying out initial planning. Sufficient Ground Control Points (GCPs) will be collected to accurately georeferenced the Image. GCPs should be uniformly selected in the Image and should also respect terrain

variations in the Image. Selected ground control point should represent clearly identifiable point in the image.

3.2.1 For Tunnel / Snow Galleries

In case of Structures like bridges, tunnels and avalanche galleries, the team will obtain and record the preliminary visual information during Reconnaissance survey along with GPS inter alia the following: -

- Potential areas of portals with respect to the alignment of Tunnel(s)/avalanche gallery (s).
- Economically feasible location of area for portal platform by earthwork, retaining wall and protective structures.
- Extent of Link Access Road to portal areas from the existing road.
- Potential quarry site for fine and coarse aggregate.
- Preliminary information about identification of location of landslides.
- Existing Geological Conditions.
- Preliminary information on potential location of flash flood and debris & mud flow around potential portal areas.
- Availability of other civic amenities nearest to portal area; particularly relating to health care/tourist activities.
- The Consultant shall carryout Control Survey. The reconnaissance should cover the immediate project vicinity as well as larger regional area so that regional geologic, hydrologic and seismic influences can be accounted for. A preliminary horizontal and vertical control survey may be required to obtain general site data for route selection and for design.

3.3 Existing Condition Survey and Assessment Report

Deliverable	Existing Condition Survey and Assessment Report

Under this task, the Consultant is required to assess the extent of damages whether due to Flood or other factors and the need for rehabilitation and reconstruction of the damaged assets and infrastructure in order to restore the livelihoods and economic productivity. The report should quantify physical damage and present recovery and reconstruction strategies. Taking into account the extent of the damage and the proposed strategies, the report then quantifies corresponding needs.

The Consultant is required to carry out Survey with Build Back Better & Smarter (BBB & BBS) Approach with the purpose to make Disaster Resilient & Sustainable infrastructure development.

National Highway Authority PR&CA Govt. of Pakistan

3.4 Alignment Study Report

Deliverable	Alignment Study Report

As the proposed road is All weather road therefore the Consultant should propose measures to keep the road snow free so as to remain congruent to its intended function.

It is advised that all efforts shall be exercised to avoid any disturbance to the natural terrain as well as preserve the flora & fauna so that the natural beauty and stability of the ground in the area is insured. Depending upon project requirements, the consultant will study the alignment in detail and submit Alignment Study Report along with KMZ file with all the proposed features for the road are clearly marked. A detailed presentation on the alignment will be given to NHA for perusal and consideration.

If a new alignment is required to be identified, then all possible alignment options will be explored, analyzed, compared, and then presented in Alignment Study Report. The Report should contain detailed description of all alignment options along with self-explanatory maps, photographs, and comparative analysis etc. Detailed/elaborated description of the recommended alignment will be provided along with key features, district-wise division, significance, maps & photographs, tentative list of required/proposed structures especially bridges on major rivers, obstructions in the form of urban centers etc., requirement of link roads etc.

The Consultant shall highlight the merits and demerits of alignment options (at least three), considering the Technical viability, economy of Construction Cost and extent of physical difficulties to be encountered during construction and operational phase. The Consultant shall develop and submit a Map showing alignment alternatives (if any) and recommended Option duly marked on Satellite imagery & SOP Sheet.

3.5 Traffic Survey Report

Deliverable	Traffic Survey Report

The consultant will submit the proposed Traffic Survey Program to NHA, wherein enough points for traffic study should be proposed in order to have best possible estimation of volume as well as classification of anticipated traffic and carry out reliable analysis.

3.5.1 Traffic Count & O-D Survey

The consultant will carry out minimum three (3) days classified 24-hr traffic volumes counts, O&D Survey, journey / travel time survey, tyre pressure survey

etc. Generated / diverted traffic volumes will be worked out. Origin-Destination Surveys will be carried out as and where required. Weekly and monthly correction factors will be worked out to arrive at Annual Average Daily Traffic (AADT). Growth factors will be worked out based on which the traffic will be forecasted.

The classified traffic count shall include following classifications:

- Non-motorized traffic	Animal drawn, bicycle
- Motorized traffic	M/cycle, Car / Pickup / Jeep, Minibus/wagon, Bus, 2-Axle, 3- Axle, 4-Axle, 5-Axle, 6-Axle, Tractor trolley

For truck traffic, axle configurations of NTRC (Axle Load Study on National Highways 1995) should be used.

The traffic count shall be done with hourly classification. In peak hour, 15-minute interval count shall be done to ascertain PHF.

As an evidence of Traffic Count Activity, the Consultant is required to submit Geo-Tagged Photographs along with Date and Time Stamp of the Traffic Count Locations. Also, the Consultant will submit the originally filled Traffic Count Survey Forms duly stamped and signed by the Traffic Enumerators as well as the Traffic Engineer of the Consultant, failing to which the report shall not be acceptable.

3.5.2 Axle Load Survey

Consultant shall use latest NTRC axle load factors to be used in the pavement design. Factors shall also be annexed in the final report.

3.5.3 Traffic Diversion Plans (If Required Any)

Traffic Diversion Plans shall be provided for the following situations:

a. At toll plazas (If required)
b. At Intersections and interchanges
c. In urban areas including methodology for separating the local and through traffic.
d. On at-grade railway crossings.
e. At places where underground constructions like construction of box culverts and underpasses.
f. At places where overhead bridge construction is likely to take place.

Consultant shall fully define the methodology for construction sequence, diverting traffic and maintaining the diversion roads.

3.6 Topographic Survey Report along with Plans

Deliverable	Topographic Survey Report and Plans

Topographic survey forms the basis for Design. Poor quality of survey work produces not only incorrect designs but also results in post construction problems. Thus, Survey work should be of top-most order & quality. An effort has been made to elaborate all the activities generally required in topographic survey in the following paragraphs. The consultant is required to undertake the requisite activities in an intelligent manner in the light of project requirements with due consideration to all the related legislation e.g., *Rules for Publication, Classification, Issue and Custody of Maps-1981; Surveying & Mapping Act 2014; Surveying and Mapping Rules-2015* etc.

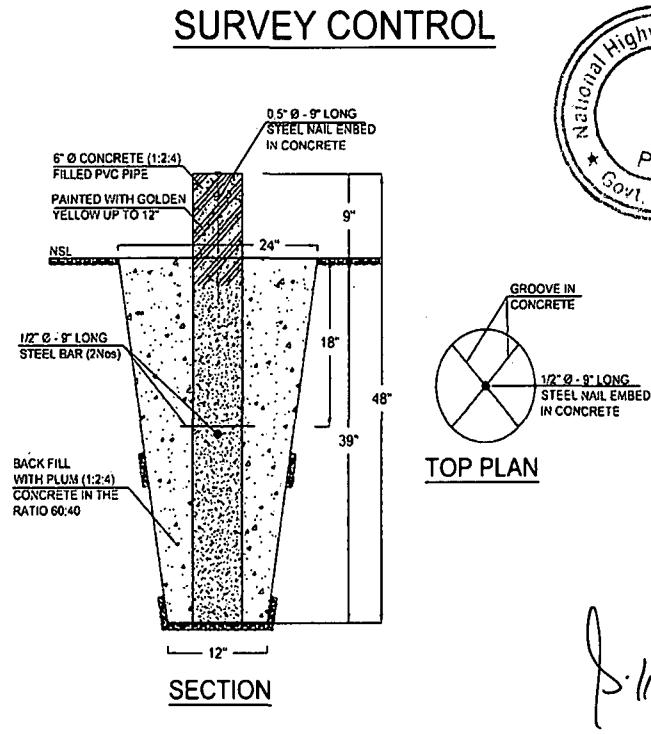
The Consultant should carry out detailed Topographic Survey using Dual Frequency Global Positioning System (DGPS) / RTK Devices. A network of high accuracy control points along the corridor should be developed involving at least 04 instruments.

The Consultant will submit detailed Topographic Survey Program with actual human resources planned to be deployed. The consultant will specify the time line of survey program. The total number of equipment with models and calibration certificates not more than 6 months old will be produced.

3.6.1 Survey Monuments

Permanent Ground Monument made of Concrete 1:4:8 with 75 mm steel nail embedded at center. Using spray paint and a stencil, the monument number shall be painted. The size of monument shall be 150 mm square at top and 300 mm square at bottom. The height of monument shall be 900 mm. Out of which 750mm shall be buried in the ground.

Besides start and at the end, it is required that Monuments will be fixed in the traverse line at an interval of about 300 to 400 meters. These will be fixed at such locations that these are least susceptible to disturbance



and damage and do not pose a threat to traffic on existing roads/tracks etc.

3.6.2 Control for Traverse

Projection: UTM
Datum: WGS84
Vertical Datum: MSL

3.6.3 Horizontal Control

Minimum four (4) DGPS Primary Controls at start and End of the Project or as many as may be required such that the distance between these points will not be more than 10 kms. Minimum observation time will be at least ten (10) hours or as required for each of these points. These points will be validated/verified with International Fixed Stations in WGS84/ITRF reference frames for an average ambiguity resolution of 50% or better for a reliable network solution.

Primary Controls

DGPS Primary Controls will be established at a maximum distance of 2.5 kms with one base and one rover using leapfrog method, by applying adjustments to create network. Minimum observation time will be at least two (2) hours for each of these points. At every 5 kms one additional DGPS point with two (2) hours observation (to form an inter-visible pair) will be established, which may be used for Total station if needed for topographic survey.

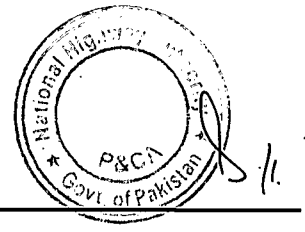
Secondary Controls

DGPS Secondary Controls will be established at a maximum distance of 333 meters with one base and two rovers at alternate sides of Alignment (to form triangular network) using leap frog method, by applying adjustments to create network. Minimum observation time will be at least 45 minutes for each of these points.

3.6.4 Vertical Control

Vertical Control will be established using MSL from first order SOP Bench Marks with double run leveling. Digital level with an accuracy of 0.3 mm or less and single section 2m/3m staff or invar staff with change plate on bottom will be used. The maximum distance between the two successive reading points will not be more than 50m. All horizontal control points are connected with monuments made for Horizontal primary and secondary controls with double run level to control the height as mentioned above.

3.6.5 Monuments for Horizontal and Vertical Controls



The monuments for controls will be as per NHA specifications. The ITRF Controls, Primary Controls will be tied with two permanent points as per NHA Specifications.

3.6.6 Topographic survey (scale 1:1,000); including on ground features, buildings, Utilities and Crossing Roads

a. At important control section, if the large-scale structures are proposed to be built on the sections, the survey range can be extended reasonably if necessary. Enough Spot Levels (points) will be taken to create a topographic map in the scale of 1:1,000 and 1:100 H:V scale

b. The Consultant is required to observe 10 cross-sections across the River Khadir, Bank to Bank. Three cross-sections at the Bridge Site (one center-line and other two adjacent to centerline up and down stream of the bridge. The BM for upon which the Model study survey was done should be incorporated in the traverse/ level circuit.

3.6.7 Centerline Points (stake) and Measurement of elevation of route stake

a. The distance between the centerline points will not be more than 50m in general, in case of the pond the stake is fixed on the bank of the inclination and waterline.

b. The distance between the stakes is 5m-8m on the section of roads which have retaining walls.

c. The distance between the stakes is 10m on the interchange slip road whose radius is less than 60m.

d. The distance between the stakes is 5m for the 10m before and after the chainage of the abutment for a total distance of 20m.

e. Minimum three longitudinal sections (parallel to Alignment) including the center axis, the left and right edge lines of the bridge will be measured. For the places where the topography is changed and bridge pier and abutment, more stakes will be established.

f. For the culverts, the chainage and elevation of the crossing point will be measured; the longitudinal section of the water channel 50m upstream and downstream of the crossing point will also be measured.

g. The stakes are placed on the edges of the crossed roads. The stakes should be fixed on the crossing points. There is also a need to collect the coordinates, elevation, angle, width and road level of the crossing points (50m around the crossing point). The coordinates, elevation, and angle of left, middle and right lines of the important crossed roads should be collected (100m around the crossing point).

h. The position of 10KV high-pressure pole(tower) around the route within 100m, and the power line's lowest elevation on the crossing point

i. The stake's elevation will be measured one by one.

j. It is necessary to establish more stakes in case there is any pipeline or building crossing the alignment; the height difference between the bottom elevation of such pipeline or building and the ground will be measured

3.6.8 Cross section Points

a. The cross section should be measured one by one.

b. The cross section of the embankment should be measured at 50m or less interval for the straight-line sections and curve sections with radius larger than 5,000m. At curves having radius less than R=5000 m, the cross sections will be measured at preferably 25m interval.

c. The cross section will be measured to the ROW limit.

d. For the alignment sections with proposed retaining wall, the cross section will be measured at 5m interval

e. For the bridge pier, the measuring range of the cross section is 10m at both left and right sides of the center; for the bridge abutment, the measuring range is till the ROW limit

3.6.9 Interchanges (1:1,000) Map

Extraction of features will be done & points will be taken beyond the ROW of 100m and inside the minimum Region defined for Interchanges to create 1:1000 map. The minimum length of existing road to be included in topographic survey (for interchange ramps merging) should not be less than 250 m.

3.6.10 Riverine Survey for Crossing Canals - Short Bridge

Measure the center longitudinal section of the canal from 100m upstream to 50m downstream, and measure the cross section of the canal at 10m interval which is perpendicular to the axis of river. The canal edges must be taken recorded along with all break points to clearly define the canal shape.

3.6.11 Riverine Survey for Crossing Rivers - Long Bridge (if any)

In case the crossing of Major River is encountered, sufficient cross-sections will be required to run the physical or numerical model for computation of water surface profiling. Location of cross-sections will be as per requirement of the Software.

3.6.12 Survey for Crossing Water Channels/ Nullahs

Measure the center longitudinal section of the water Channel/Nullahs from 100m upstream to 50m downstream, and measure the cross section of the water

channel/nullahs at 10m interval, which is perpendicular to their axis. Minimum 5 points will be taken at each taken at each cross section to correctly depict the top and bottom of the sloping bank, width of bank and center of channel. The distance between the cross-section points will not be more than 5m for wider water channels/Nullahs.

3.6.13 Survey for Potential Portal Areas

The Consultant shall carryout Topographic Survey with UAV with less than 1cm resolution printable on a suitable scale (1:500 or 1:250 as per requirement) of all potential portal areas for approximately 25 Hectares for each portal with establishment of permanent survey control points at potential portal areas.

3.6.14 Survey corridor

Detailed topographic survey will be carried out in a corridor width of 100m to meet the project requirements in the most effective manner. At locations of crossing rivers, nullahs the detail of survey extent is given in respective sections.

3.6.15 Mapping (Unit of Measurement)

Metric units will be used throughout.

3.6.16 Scale

Besides soft copy, mapping of drawings will be plotted to a scale of 1:1000.

3.6.17 Details to be shown

Buildings/Structures

- The plinth line of all permanent buildings.
- Construction type of building (whether brick (B), semi-concrete (SC), concrete (C). double storey (D) etc.).
- Ruins or partially demolished buildings or foundations – by the wall and masonry visible at the time of the survey.
- Names and type of usage of all buildings, schools etc.
- Buildings under construction.

Roads, Tracks and Footpaths

- Kerb line or edge of surfacing to carriageways, and along the edge line markings.
- Tracks.
- Pedestrian bridges and footpaths.
- Traffic islands (similar to kerb line).

- Destination of road for junction's level.
- Bridges (over railway, river, etc.)
- Levels over railway line in case of at grade or grade separated crossings.
- In case of power transmission lines crossing alignment, level of electric wire with respect to survey control will be recorded.

Industrial

- Name and type of industry, Boundary wall and building structure inside.
- Tanks (indicate type of material stored e.g. fuel, gas, water, etc.)
- Sewage disposal works details.
- Chimneys (substantial).

Road Furniture (In case of existing road)

- KM post (value to be noted).
- Bus stop facilities.
- Traffic signal posts and controllers.
- Guardrails.
- Road signs.

Boundary Features

- Fences.
- Gates.
- Boundary stones located/used for fieldwork.
- Walls.
- Burial grounds.
- Historical areas.

Railways

- Gauge faces of railway running rails with elevations of rail top.
- Level crossings.
- Platforms.
- Bridges (over road, river, etc.)
- Station building.

- Telegraph poles (indicate the reference numbers).

Survey

- Survey Department Trigonometric Stations.
- Permanent Ground Markers.
- Survey Department Benchmarks used (Indicate reference number and level).

Woods, Trees & Recreation Areas

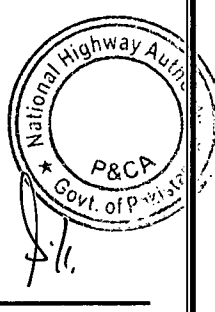
- Playing field.
- Land-use and vegetation, etc.
- In case of trees in the survey corridor, the surveyor has to assign a code defining the girth of the tree. Trees with varying girth as specified in the CSR for payment will be in respective layers.

Slopes and Earthworks

- Cutting and embankments with any protection work done.
- Terraced slopes.
- Borrow pits / Quarries.
- Retaining wall.
- Rock outcrops (if any).
- Mining tips (if any).
- Indicate date of survey if on-going earthworks is present and mark the affected area.

Services and Utilities

- Transformers (boundary fences only).
- Electricity sub-stations and switch boxes (boundary fences only).
- Pylon lines (indicate levels at lowest point at sag and at pylon towers).
- Pylon bases.
- Pylon reference numbers and voltage of transmission.
- Radio, TV station masts or towers.
- Telecom poles.
- Electricity poles.
- Water mains pipes and stop valves (Indicate diameter of pipe).

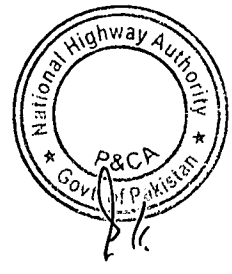


- Manholes (circular and square).

Water & Drainage

- Lakes.
- Ponds or mining pools.
- Reservoirs.
- Rivers (name to be indicated).
- Streams.
- Ditches (width to be indicated).
- Canals.
- Wells (diameter or width to be indicated).
- Swamps.
- Lined drains (width, depth and type to be indicate).
- Water towers.
- Culverts.
- Waterfalls.
- Jetties (if any).
- The top of banks of all water features over 1.0m wide will be detailed and the bottom of banks as indicated by the water level at the time of the survey. The direction of flow of all river, streams and watercourses will be indicated.
- Slopes with height greater than 1.0 meter of too sharp gradient to be shown by contours, including river and stream banks are to be shown on conventional markings and the top and bottom of slopes are to be shown as dotted lines.
- Slope conventions will be drawn as near as possible to indicate the actual shape of the slope face, i.e., all berms and terraces will be detailed.

Any other features not listed, which are requested by the Client will also be shown.



3.6.18 Bridge details

The bridge details will be shown on a separate drawing for each bridge. The bridge observations in form of coordinates will include the following: -

a) The coordinates and levels of the four corners of the bridge (points will be on the adjacent road surface), the two edges of the piers, abutment and wing walls.

b) The coordinates and levels of the bridge deck to the intermediate piers (if any) of the bridge.

c) Length, width and type of construction of bridge.

d) The type and location of services adjacent to the bridge.

e) The coordinates and levels of the centerline and the road on the bridge at approximate intervals of 5 m.

f) The cross-sectional clearance envelope at the two sides of an overpass ridge (with respect to the road centerline passing underneath) showing all the relevant levels, offsets and skew angle.

3.6.19 Culvert details

Details of each culvert are to be shown on the survey plans and a separate sheet with tabulation of the following information is to be submitted with the plans: -

a) Type of culvert and diameter.

b) Chainage of culvert at the road centerline.

c) Skew angle of the culvert from the centerline.

d) Length of culvert from each side of the centerline.

e) Invert levels of the inlet and outlet.

f) A sketch of the inlet and outlet structures including all visible dimensions to a scale of 1:200.

For major culverts (diameter > 2.0m) the outlet structures are to be properly measured enough points will be recorded so that the culvert can be modeled in CAD.

3.6.20 Existing Road/embankment

In case alignment runs along the existing road, sufficient points should be taken across the existing road to fully define the cross-section. Below are minimum points shown for the existing roadway cross-section. For the existing carriageway, the width of carriageway, inner and outer shoulders should be clearly identified and coded.

3.6.21 Details of Junctions and Existing Roads

The Surveyor will survey all junctions to enable the designer to design the junction properly. A corridor width of 70m and will be taken for a distance of not less than 150 meters up and down the proposed intersection of the road or as required by the client.

All paved roads, main roads and footpaths or tracks having the width greater than 2m will have a minimum of two (2) points defining both edges of the carriageways. Consecutive points along the road feature will not exceed 20m in rural areas and 10m in urban or built-up areas. More points are generally needed to define curved feature such as slip roads, islands, etc.

Levels of the road centerline will be recorded for paved roads having widths greater than 6.0m. The main destination of the road from the junction will be recorded by the Surveyor.

Where necessary to survey along an existing road, the Surveyor will follow the marked changes along the centerline. In addition to the road edges consecutive points along the edges of the carriageway (i.e. along the edge line marking on both sides) will be picked up and will not exceed 10m. More points are generally to define super-elevation changes at curve sections.

3.6.22 Digital Ground Models (DGM)

The product of the field survey data, after processing will be DGM. The accuracy of DGM will depend upon the accuracy of the digital data collected in the field. Before processing the data, it is important to run the data filtration. All data points with incorrect x, y or z values will be removed. It is also important as well to properly identify the break lines like road, nullah edge with natural faults. Void areas like buildings will also be marked. The topography will be fully labeled for every object recorded.

All survey feature lines will herein be referred as strings. The data will be presented by the Surveyor in a form suitable for input to the software to be used for generation of DGM. Using the recorded data in x, y, z format on data logger, the ground surface over the required area will be simulated by strings of coordinated information along characteristic lines on the terrain. The models will consist of three-dimensional (3D) contour strings.

The existing road surface over the required area will be simulated by 3D strings of coordinated information along characteristic lines on the existing carriageway. Any other strings that do not affect the accuracy of the ground surface may be assigned a null level.

The Surveyor may like to obtain consent from the Client for any strings that are to be digitized but that do not absolve the Surveyor from the subsequent accuracy and definition of the model. TIN (Triangular irregular network) will be developed by using software. Using TIN, Contour generation will be done.

3.6.23 Grid

The coordinates of the DGM will be in Easting, Northing and elevations.

3.6.24 String Labeling

The ground features including break lines will be labeled with the exact description shown under AUTOCAD LAYER NAME. Any additional labels may be considered and the Surveyor may like to submit the list for consent of the client prior to their usage in the DGM.

3.6.25 Property Model

This model will be stimulated by a series of 3D null level strings and text strings and includes the following: -

a) Strings of land lots (null level strings)

b) Land use and type (Text Strings)

Attributes to land type and use will be appended to in the AutoCAD format. Such information will be used by the Surveyor when preparing Land Utility folders at the end.

3.6.26 Contours

After digital data collection of survey points at site, the contour generation will be done by using computer software. The interval will be 1 m. The smoothness factor to be defined in the software should be such that it should not distort the ground contour representation. The contours should be well labeled.

During data collection, break lines on the ground should be very well picked that affects the contour generation. Contours will be shown by continuous lines with a thicker line for every fifth contour (Prominent Contour). Contour and spot heights will be differentiated from other detail. The value of each contour will be indicated along the contours at intervals not exceeding 200 mm and / or the edges of the Mapping area.

Where because of undergrowth, on-going earthworks, swampy areas, or other obstructions, the ground surface is obscured, or access is restricted, and provided the Client prior agreement is obtained, contour can be shown by broken lines to indicate that their accuracy cannot be guaranteed.

3.6.27 Longitudinal Profile and Cross-Section

The longitudinal profile plan will be plotted in A1/A3 size to a scale of 1:1000

Horizontal and 1:100 Vertical with chainage interval of 25 m unless otherwise specified or instructed by the Client. The cross-sectional plan of the existing road will be plotted in A1 size to a scale of 1:100 both horizontal and vertical with 25 m interval. The plan will show the chainage interval as specified and the existing ground profile and all the existing features.

3.6.28 Field Books and Record

All field books and computer data must be properly kept and will record truthfully all the survey work carried out. The Surveyor will do all workings in proper books, adequately in good style and according to best practice. All field books will be done in ink. Unsatisfactory works and errors will be struck off and there will be no superimposed writing or erasure. Client's Representative may check the field books now and then to ensure that a high standard of work is maintained. He may request the Surveyor to carry out some spot checks if he has reasonable doubt on the accuracy of the survey work. The Surveyor will comply with such requests unless he can prove to the client's representative for his satisfaction that such checks are unnecessary. All field books and computer data will be certified by the qualified surveyor.

Topographic Survey Report along with Plans will be submitted on 1:1,000 scale for main carriageway and 1:5,000 for interchanges. Each control/traverse station will be shown in the report along with coordinates thereof, location map/diagram, sketch with reference to permanent features, and at least one photograph.

Total number of equipment with models and calibration certificates not more than 6 months old will also be made part of Report. The names of surveyors will also be submitted.

3.7 Soil & Material Investigation Report

Deliverable	Soil & Material Investigation Report.

Soil & Material Investigation will be done to ascertain the index and engineering properties of soil & rock encountered. The consultant is required to seek, interpret and evaluate subsurface and surface data in order to predict the behavior of the soils and materials along, and adjacent to, the alignment. The resulting information should be presented in a logical and intelligible manner so that it can be used correctly and efficiently by the non-specialist. As per fixed horizontal and vertical alignment, identify the areas of deep cuts and high fills. Study precise geometry of the roadway structures and develop design requirements. Investigations will be carried out in three main areas: -

- Investigation along the length of the proposed alignment and to determine the pavement support potential offered by the subgrade soils;

- Investigation to determine the source & quantity of naturally-occurring materials;
- Examine specific sites such as deep cuts, retaining walls and culverts etc.

Following table presents the guidelines for the quantity of roadway pits or borings and required testing. The values given are tentative investigation requirements and the actual scope will be ascertained by the consultant in context of the project requirements:

Roadway type	Height (m)	Terrain type	Spacing (m)	Depth (m)
Embankment	< 2	Uniform I Rolling I Hilly	1000 I 500 I 250	1.0
	2-10	Uniform I Rolling I Hilly	500 I 400 I 200	1/3 of embankment of refusal
	> 10	Uniform I Rolling I Hilly	600 I 300 I 150	2/3 of embankment of refusal
Cut	< 2	Uniform I Rolling I Hilly	1000 I 500 I 250	1.0 below subgrade
	2-10	Uniform I Rolling I Hilly	800 I 400 I 200	1.0 below subgrade
	> 10	Uniform I Rolling I Hilly	600 I 300 I 150	1.0 below subgrade

Tentative guidelines for testing requirements are given as following:

Test	Test Requirement		Frequency	
	Embankment	Subgrade	Alignment	Borrow area
Gradation	•	•	1 per km	1 per boring/ pit
Moisture Content	•	•	1 per km	1 per boring/ pit
Classification	•	•	1 per km	1 per boring/ pit
Moisture Density	•	•	2 per 5 km	1 per borrow area
CBR	-	•	1 per 1 km	1 per borrow area

3.7.1 Material Investigation

Every effort should be made to locate sufficient quantities of naturally occurring construction materials at regular intervals along the alignment and as close to the alignment as possible. In case of potential quarry sites, test borings are likely

to be necessary to confirm the quantity and quality of material available. Bulk samples for quality testing may be obtained from adjoining bedrock outcrops provided that the samples obtained from such sources are truly representative. Test results from any nearby operational quarries should also be included. Guidelines for testing requirements of materials are as following: -

Test	Test Requirement				
	Fine Aggregate		Coarse Aggregate		Water
	Asphalt Concrete	P.C. Concrete	Subbase/ Base	Asphalt Concrete	P.C. Concrete
Gradation	•	•	•	•	•
Atterberg Limits	•		•	•	
Sulphate Soundness	•	•	•	•	•
Loss by Abrasion			•	•	•
Organic Impurities		•			
Sand Equivalent		•	•	•	
Soluble Sulphates		•			•
Soluble Chlorides		•			•
Friable Particles		•	•	•	•
Thin & Elongated Particles			•	•	•
Fineness Modulus		•		•	
Water Quality					•
Marwill Test				•	
Stripping Test				•	

Water is required for proper compaction of earthworks, and water points will be necessary at frequent intervals along the alignment. An assessment should be made of the likely sources of water from any existing wells and from the geological formations underlying the route. Samples for tests to assess the suitability of water for concrete will be necessary.

3.7.2 Soil Classification

Soil description is necessary for all test pits and boring logs. The descriptions should be standardized so that the main characteristics are given in the same order i.e. *Mass Characteristics* will include field strength, moisture content, bedding state if applicable discontinuities and state of weathering. *Material Characteristics* will cover Color, Composition, and grading. Particle shape, soil name and soil group. Both Unified and AASHTO classification will be used.

3.7.3 Rock Classification

Depending upon location and alignment of the project, the consultant will carry out rock classification along the alignment as per best international practices,

codes, and standards. The same shall be made part of Soil & Material Investigation Report and the BoQ formulated accordingly.

3.7.4 Material Survey

This would inter alia include:

- Identification of Source of locally available construction materials.
  - Course aggregate
  - Fine aggregate
  - Availability of water from construction activity and their storage

The Consultant will identify the potential areas for the above items, and assess the approximate quantity particularly with the storage facility of water during construction activities.

It is normal that the Excavated Rock material from the Tunnel/Galleries would be used for development of portal platform and widening/construction of Link Access Road but initially the availability of material from outside tunnel may be required.

3.8 Hydrology & Hydraulic Study Report

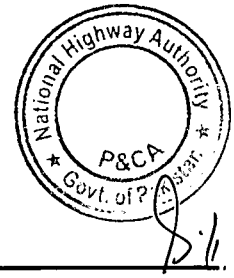
Deliverable	Hydrology and Hydraulic Study Report.

3.8.1 Objective

The objective of the hydrological and hydraulic study is to mathematically/numerically model the project area to design cross drainage structures and road embankment height to protect it from future floods. The major objectives are:

- Establishment of Waterway.
- Marking extents of the catchments' area along with its characteristics.
- Calculating Maximum Peak Flood Discharge based on meteorological data.
- Marking of flood plains and High Flood Levels
- Location of Cross Drainage structures.
- Hydraulic Design of Cross Drainage structures (Type, sizes / geometry and Energy dissipaters for erosion control etc.)
- Calculating Scour Depth for bridges.

3.8.2 Activities



The consultant will adopt mathematical modeling approach using industry-standard software's along with Satellite Image & DEM of atleast 5m resolution of reasonable area for the hydrological and hydraulic assessment that will incorporates following activities:

a. Reconnaissance Survey

The field survey will include geo-tagged photographs of the existing cross drainage structures, measurement of structure sizes; evaluation of structural condition, general soil evaluation and land use in the area. In case there is track alignment, all possible locations of water crossings will be identified with water marks and width of waterway.

b. Riverine Survey (if any)

The consultant will determine, in a timely manner, any requirement of Hydraulic Model Study of Bridge(s). Accordingly, the consultant will be required to carry out riverine survey as per requirement and complete satisfaction of concerned Irrigation Research Institute, and extend complete support & assistance to them during model study. The findings/recommendations etc. of the Model Study Report will be duly considered in detailed design of project.

Extent of riverine survey may be more than six (06) miles, each for upstream and downstream side. Exact extent of survey should be confirmed by the consultant from the concerned Institute.

c. Hydrology and hydraulics study for Tunnels/Snow Galleries (if any)

Hydrology & Hydraulic Study shall include but not limited to hydrological observations and field data collection at Tunnel/ Snow Gallery Approaches to protect the structure from flash flood, avalanche, debris & mud flow. The phenomena related to hydrology would be broadly divided into two categories under two seasonal variations.

i). Summer & Monsoon Period:

The pattern of rainfall, existence of nearby mountainous stream, and the information from the locals regarding nature and extent of flow of water during rainfall would be collected besides theoretical calculation from catchment areas and rainfall dates.

ii). Winter Season:

The information regarding depth of snowfall would be obtained with preliminary identification of Snow Avalanches location at and nearby portal area. Detailed snow survey and measurement may be carried out depending upon the available time frame.

Both the hydrological information and data would be needed for designing of Bridges, Culverts and Protective Structures near the portals and Link Access Road.

d. Meteorological Analysis

The meteorological analysis will be based on maximum available record (preferably more than 30 years) from all the surrounding observatories. The analysis should include: -

- Review and analysis of historic Rainfall and Peak Storm events.
- Use of statistical methods to evaluate meteorological and hydrometric records and determining best data best fitting on either of Gumbel Max, Weibull or Log Pearson- 3 distributions.
- Calculation of return periods for 25 years, 50 years, 100 years.
- Instead of using meteorological station data far away from the road, the consultant will use spatial analysis (for meteorological models) for finding out design storm value in the study area / watershed derived from the surrounding observatories.
- Selecting and calculating design storm for hydrological model.

e. Watershed Delineation

The activity includes delineation of watershed affecting road and evaluating physiography and topography of the catchment / watershed-area. The watershed delineation will be carried out using industry standard tools e.g. ArcHydro, Topaz, WMS and DHI MIKE suite etc. The digital elevation model (DEM) for watershed delineation shall be of at least 8-meter resolution or better, cost of which has to be included in Direct Cost. Satellite imagery and any available topographic survey will be used for stream / river correction in the DEM.

f. Soil & Land Use

The hydrological soil type and land use will be assessed in the catchment to evaluate Loss, routing and roughness. The hydrological soil type and land use may be marked using satellite imagery and classification methods available in GIS with spot site verification.

g. Surface Runoff Model

The surface runoff for all ungauged basins will be calculated using tools like "Hydrological Modeling System" (HEC-HMS) and Watershed Modeling System (WMS) for large basins and for small TR-20 can be used. The model will be prepared using GIS techniques / software like HEC-GeoHMS and WMS etc. The preparation will include complete sub-basin characterization like basin area, slope, roughness and lag-time etc. The preferred method is as follows:

- Land use marked according to Anderson method / Land use type

- Loss Method = SCS Curve No.
- Roughness = Manning's "n"
- Transform SCS Unit Hydrograph
- CN curve numbers estimated from Land use
- Muskingum-Cunge or dynamic for routing
- Streams sections estimated from DEM

The hydrological model will be integrated into hydraulic model based on field survey and judgment, stream and cross drainage structures identification through imagery and marking streams through GIS methods. The consultant may also take into consideration future catchment changes likely to influence flooding risk.

h. Hydraulic Analysis

The calculated storm flows will be modeled through or around road structures using 1D models like HEC-RAS, HY-8, MIKE 11 and SWMM. The culverts in general will be designed using HY-8 based on data prepared through "Watershed Modeling System" and field survey. The bridges and mapping of flood plains will be carried out through 1D hydraulic models like HEC-RAS or MIKE 11. The hydraulic model will be prepared using GIS techniques like HEC-GeoRAS, WMS or MIKE 11. The hydraulic model results will be used for assessment of flood impact and analysis of alternatives for its mitigation. The hydraulic structures will be designed taking into account standard design criteria for highways.

Design Annual Exceedance Probability (AEP)						Check Flood
Functional classification and structure type	50% (2-yr)	20% (5-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)
Freeways (main lanes):						
Culverts					•	•
Bridges+					•	•
Principal arterials:						
Culverts			•	•	•	•
Small bridges+			•	•	•	•
Major river crossings+					•	•
Minor arterials and collectors (including frontage roads):						
Culverts		•	•	•		•
Small bridges+			•	•	•	•
Major river crossings+				•	•	•
Storm drain systems on controlled access highways (main lanes):						
Inlets, drain pipe, and roadside			•			

ditches						
Inlets for depressed roadways*					•	
Storm drain systems on other highways and frontage roads:						
Inlets, drain pipe, and roadside ditches	•	•	•			
Inlets for depressed roadways*				•	•	
+ The 0.5% (200-yr) and 0.2% (500-yr) AEP events should be calculated for scour computations.						

All structures must be evaluated to the 1% Annual Exceedance Probability (AEP) flood event or 100yr return period. Selecting a design flood is a matter of judgment; it requires balancing the flood risk with budgetary constraints. The designer should design a facility that will operate:

- Efficiently for floods smaller than the design flood.
- Adequately for the design flood.
- Acceptably for greater floods.

Hydrology & Hydraulic Study Report will be submitted. The report must be self-explanatory in nature and organized in an intelligible manner. Each & every page of the report must be signed by the concerned specialist/expert and stamped by consulting firm. The report must include but not necessarily limited to the following: -

a. Executive Summary.
b. Reconnaissance survey report.
c. Detailed flowchart of whole analysis process along with description of tools used at different stages. The flowchart must be supported by comprehensive explanation.
d. Geo-tagged pictures marked on satellite imagery with respect to catchments.
e. Detail watershed delineation and analysis.
f. Meteorological analysis.
g. Soil and land use classification.
h. Surface runoff model results.
i. 1D hydraulic model results for design.
j. Hydraulic design of structures.
k. Embankment height according to HFL.
l. Design of all river training works including but not limited to Guide Banks (if required).

3.9 Slope Stability analysis and Remedial Measures & Snow Avalanche Survey

Deliverable	(i) Slope Stability Analysis and Remedial Measures Report (ii) Snow Avalanche Survey Report

3.9.1 Slope Stability Analysis and Remedial Measures

The consultants shall carry out detailed mapping of the area, classify the mass movement if any particularly consider the engineering geology, movement morphology, type of material, its properties and evaluate causes of movement and triggering mechanism (internal, external). Depending on economic and technical conditions, the consultants shall propose remedial measure required to stabilize the slope, its cost and feasibility of the stability measures and its magnitude, considering the most appropriate land use along with stability conditions. The consultants shall propose remedial measures required to stabilize the slope. The slopes must be stabilized through measures using local/indigenous methods and materials like benching, breast/retaining walls, gabions, wire meshes and vegetation. Heavy and expensive structures must be avoided as far as possible. However, if necessary various alternatives will be suggested with detailed evaluation.

3.9.2 River Training Works/Protection Works

In case of road crossing any river or running along water body the consultant shall propose appropriate protection measures and training works.

3.9.3 Snow Avalanche Survey

This is an independent exercise to be undertaken during winter snow season. It is a commonly experienced phenomenon that the accumulated snowfall including drifted snow becomes alarming and matter of concern after an altitude of about 8,000 ft and above. Therefore, to meet the project objectives, it is necessary to overcome the snow hazard in general and due to falling Snow Avalanche along the Road.

One of the prime duties of the Consultant's Avalanche Specialist shall be to visit the site during the optimum time of the winter snow to observe and assess the depth of the winter snow along the Road and the location of potential Snow Avalanches. The information thus obtained would be used to extend the effort required for cleaning the Snow and to identify the length of Snow/Avalanche Galleries for safe/ all-weather access.

For proper drainage of snow melt water along with rainfall, special attention would be required for designing drainage structures and protective structures for the disposal of water with the least inconvenience to traffic.

3.10 Geophysical Testing

Deliverable	Geophysical Testing Report

Geophysical tests are indirect methods of exploration in which changes in certain physical characteristics such as magnetism, density, electrical resistivity, elasticity, or a combination of these are used as an aid in developing subsurface information. Geophysical methods provide an expeditious and economical means of supplementing information obtained by direct exploratory methods, such as borings, test pits, and in situ testing; identifying local anomalies that might not be identified by other methods of exploration; and defining strata boundaries between widely spaced borings for more realistic prediction of subsurface profiles. Typical uses of geophysical tests include the determination of the top of bedrock, the rip ability of rock, the depth to groundwater, the limits of organic deposits, the presence of voids, the location and depth of utilities, the location and depth of existing foundations, and the location and depth of other obstruction. In addition, geophysical testing can also obtain stiffness and dynamic properties which are required for numerical analysis. Geophysical testing can be performed on the surface, in boreholes (down or cross hole).

The consultant shall conduct a geophysical survey of proposed bridge locations and Landslide prone areas to ascertain the type, nature, arrangement and thickness of various sub-surface strata including overburden deposits and bedrock together as they exist to the depth. A geophysical survey will assist the consultant in the selection of the type of foundation, either deep or shallow foundation etc.

Geophysical testing includes seismic refraction survey, electrical resistivity and electromagnetic survey.

3.11 Geological Survey and Mapping

Deliverable	Geological Survey Report & Drawings

3.11.1 GEOLOGICAL SURVEY AND MAPPING

Firsthand information about the general geology of the project would be required, which can be conveniently prepared from the visual inspection of mountainous terrain along the existing road in proposed project vicinity supported with the information available from the Geological Map to be obtained from Geological Survey of Pakistan. This would be required for preliminary classification of Rock

Mass and Excavation class of Rock for preparation of BOQ. However, actual geological conditions would be exactly revealed as the excavation proceeds inside the Tunnel. The output is the Geological survey map.

3.11.2 Geological Mapping along the Alignment including Existing Road and Tunnel/ Galleries

Geological mapping is done to obtain and provide basic knowledge about the prevailing field conditions, not only through direct observations but also by collecting and analyzing rock, mineral and sediment samples. The features recorded during geological mapping are the following: -

- Rock types and Contacts
- Discontinuities type, orientation, infilling, spacing, persistence and weathering
- Shape of the rock bodies
- Note on the sequence and relative ages
- Note on the primary porosity and permeability.
- Note on the weathering and their patterns
- Note on the depositional or magmatic flow features - Structures including

a) Folding - dip, strike, deformation, orientation of grains
b) Joints – attitude, size, open or closed
c) Faults – look for slickensides, fault gouge, breccia and their visible displacements.

By interpreting and extrapolating all these data, the geologist should have a better understanding of the rock conditions likely to be present along the proposed tunnel / Snow Galleries and at the proposed portal and shaft excavations. The collected mapping data can be used in stereographic projections for statistical analysis using appropriate computer software (e.g., DIPS).

3.11.3 Geology Specific to Portal Areas:

A detailed geological observation would be importantly required at the proposed portal areas of Tunnel/ Snow Galleries, to ensure that all the structures in the portal areas are safe and well protected keeping in view the altitude of the area. The Rock conditions near and above portal locations must be sound and competent and not excessively fractured and fragmented causing rock fall & landslide during summer and monsoon season. These portals must be safe from large scale flash flood.

3.11.4 Testing of Overburden Collected Samples

The Consultant shall collect the representative overburden samples along the Alignment **(at every 1000m along Road and 250m along Tunnel/ Snow**

Galleries) depending on the accessibility and need for petrographic testing and determination of index properties. The Cost of petrography and index properties testing will be made as per cost incurred against the Lump sum.

The Consultant will identify the potential areas for the above items, and assess the approximate quantity, particularly with the storage facility of water during construction activities.

It is normal that the Excavated Rock material from the Tunnel / Snow Galleries would be used for development of portal platform and widening of Link Access Road but initially the availability of material from outside tunnel may be required.

3.12 Feasibility Report

Deliverable	Feasibility Study Report

Consultant shall prepare a comprehensive Feasibility Study Report which shall cover following two aspects for the Highway section:

i. Technical part
ii. Financial part

The Technical area shall cover all the activities in the scope of work. All tasks shall be wisely covered in the feasibility Report. Preliminary design drawings shall also be included in the report.

For the Financial Part, following tasks shall be carried out:

a. Obtain data on vehicle operating costs (VOC) for various types of vehicles, and develop cost estimates. To be effective in guiding the consultant in preparing cost-effective designs, the economics analysis should be undertaken concurrently with the design, using preliminary cost estimate, where necessary. Following the decision on the design and preparation of the finalized engineer's cost estimates, the economics analysis can be refined and finalized.
b. Calculate economic savings in vehicle operating cost, travel time and accident cost savings over a 20 year analysis period due to the proposed works. Also include savings in Highway Maintenance due to improved conditions for the road sections and the project as a whole.
c. The consultant may use the Highway Design and Maintenance standards Model (HDM-4) with congestion analysis routine, or equivalent analysis software for this task.

d. Estimate the return on the investment in terms of net present value (NPV), economics internal rate of return (EIRR), and ratio of benefits to cost for each of the road sections and the project as a whole.
e. Perform sensitivity analysis and switching value study to assess the likely effects of project risks (such as implementations delay, cost increase, benefits decrease, etc) and uncertainties on economic indicators. The report shall present, at least for the project as a whole, the annual benefit and cost streams and EIRR/NPV in a spreadsheet format.
f. The consultant shall also study the national and regional economic developments and estimate benefits of the project section on the economy at national and regional level.

Consultant shall give recommendations and conclusions based at the end of report on the above findings in the Feasibility Report.

3.12.1 Joint Feasibility with International Counter Part (Babusar Tunnel)

Under the MOU recently signed between the Government of China and Pakistan, Joint Feasibility for the Babusur Tunnel will be conducted. Both sides will have their representative as agreed during the Joint working Group (JWG) meeting and bear their respective cost of services.

The Consultant shall provide full assistance and coordination to the International Counter Part for the "Joint Feasibility Study" of the Babusar Tunnel.

Stage-II: Detailed Design

3.13 Geotechnical Investigation Report

Deliverable	Geotechnical Investigation Report

The consultant will submit proposed Geotechnical Investigation Plan to NHA. The plan should include detailed scope as well as timelines of investigations suggesting the total number of bore holes, location and depth of each bore hole, list of proposed tests and prevailing site conditions etc. Standard Penetration Test (SPT), Cone Penetration Test (CPT) or any other test deemed necessary based on underlying soil strata shall be carried out. Sub-surface investigations consisting of boreholes / drill holes / test pits of required depth, supplemented by field and laboratory testing to accurately assess the engineering properties of the underlying soil strata for detailed design of foundations, substructures and roads

shall be undertaken satisfying design requirements. Testing of samples collected from site shall be carried out in a reputed laboratory, under strict quality control and adherence to relevant procedures / standards.

3.13.1 Horizontal Core Drilling at Portal areas and Core drilling along Tunnel /Snow Gallery

After the finalization of recommended Alignment of Tunnels/Avalanche Galleries and location of portals as per Feasibility Study, the Consultant will carry out Geotechnical Investigation through one horizontal core drilling at each portal location up to a minimum length of 30 meters, two (2) vertical core drillings from the surface up to the Tunnel Profile up to minimum length of 100m to determine the RQD, joint patterns of rock mass. The information then obtained would be used in the Design of Tunnel / Snow Galleries.

3.14 Structural Design Report

Deliverable	Structural Design Report

Design of structures will be carried out by following the design codes & standards specified in earlier section of the TOR, followed by preparation and submission of Structural Design Report and Structural Drawings. The structural analysis shall preferably be performed using industry-standard international software. Input & output files may also be made part of the report and also submitted in soft format. The Structural Design Report shall include but not limited to the following: -

- Project-specific design criteria regarding serviceability and safety, applicability of the design standards regarding design loads and materials etc.
- Definitions and magnitudes of loads such as: wind, seismic, and vehicular loads etc.
- Modeling and analysis assumption, such as geometry and boundary conditions, load case definitions, load combinations and force envelopes etc.
- Gravity, wind and seismic load paths etc.
- Design of foundation and soil-structure interaction modeling based on geotechnical data etc.
- Deflections, movements and joint articulations etc.
- Dynamic characteristics and vibration etc.

- Design of all components of structures, including main members of superstructure, cables, substructure, foundation, their forces and their sizes, and their limit states for ultimate, fatigue and service etc.
- Appropriate Drainage design for all structures.
- Protection and training work if required (any).

3.15 Pavement Design Report

Deliverable	Pavement Design Report

The consultant will submit Pavement Design Report complete in all respect based on Soil investigation /material characterization on the finalized alignment and finalized Traffic & Axle Load study. The Pavement Design Report will include / contain all necessary soil material investigation tests and complete process of ESALs determination starting from AADT. All typical pavement cross-sections clearly elaborating all details will also be made part of pavement design report. In addition, the consultant will provide the details of Embankment Design as well as drainage design. Pavement will be designed for a period of 10 years design life. In addition, overlay design for other 10 years or for remaining numbers of year to cover complete concession period will also be provided. In this regard, Design Consultant will also submit suitable assumptions used for the overlay design. Each input to design should be duly calculated/justified through proper referencing in the Report.

The pavement design shall be carried out by the consultant on the basis of AASHTO Guide for Design of Pavement Structure-1993. In this regard, pavement type selection process of AASHTO Pavement Design Guide-1993 shall also be followed. In addition, pavement design shall also be validated through Mechanistic-Empirical approach using KENPAVE software. Shell Model shall be used under KENLAYER analysis. All calculations shall be attached in the report in hard and provided in soft (editable) form as well.

3.16 Geometric Design Report

Deliverable	Geometric Design Report

The geometric design will be carried out by the consultant followed by preparation of plan & profile drawings. A comprehensive Geometric Design Report will be prepared and submitted.

3.17 Design of Tunnel/Galleries & Electro-Mechanical Works of Tunnels

Deliverable	Tunnel Design and E&M Works Report

3.17.1 Design of Tunnel, Avalanche Galleries, *Portal facilities and Electro-Mechanical works

Portal facilities including Admin Building, Operation Center, Emergency Building, Electrical and Generator Rooms, Parking Sheds, Rest Areas.

The scope of works under this Task is mostly the same as already explained in relevant sections, however, some works are added and some are further elaborated with respect to Tunnel/snow galleries and Portal Requirements as follows:

b) **General**

- Identification of Underground Structure and Other Obstacles
- Subsurface, geological and geo-hydraulic conditions
- Structure Preconstruction Survey
- Location of Tunnel/snow galleries
- General Description of Various Tunnel Types, Planning of Tunnel / Snow Galleries, Shape and Internal Elements
- Route Study with Traffic / cross-section
- Environmental and Community Issues
- Operational SOP
- Sustainability
- Tunnel/snow gallery Design Methodology/Process
- Groundwater/tunnel water burst Control
- Tunnel Portals
- Fire-Life Safety Systems
- E & M Systems
- Tunnel/snow gallery Drainage
- Operational and Financial Planning
- Risk Analysis and Management
- Structure Design
- Tunnel/ Snow Galleries Lining
- SCADA / IT system
- Determination and Identification of Problematic Areas with Nature of Problems & their Suggested Solution w.r.t seismology of the area
- Collection and review of available Information (Published topographical, hydrological, geological, geotechnical, environmental,

zoning and other information should be collected, organized and evaluated).

c) **Tunnel/ Snow Galleries Design, Documentation and Cost Estimates**

The Scope of Work under this sub-task would inter alia include the following:

- Design of alignment and cross-section of Tunnel / Snow Galleries at critical locations along the alignment.
- Preliminary Design of Electro-Mechanical Works required for incorporating into Civil Work Design and Cost Estimates.
- Design of Pavement and Service area for utilities in the Tunnel / Snow Galleries cavity.
- Pavement Design with surface for Link Access Road.
- Design of Bridges, Culverts, Retaining Walls, Avalanche Galleries, Drainage Structures on the Link Access Road, Slope Protection and Tunnel / Snow Galleries Lining with or without Ceiling Slab.
- Horticulture and Landscaping, if feasible.
- Road furniture design including traffic signs and gantries.

d) **Detail Design, Specifications of Electro-Mechanical Works**

The Consultant shall prepare detail design for E & M works for Tunnels/ Snow Galleries as per best engineering practices commensurate with technical specifications of manufacturer. The Consultant shall also update the Electro-Mechanical (E&M) Design and Specifications during the construction period (if required).

The Construction Works of E&M are stipulated to be taken up after the completion of all Civil Works inside the Tunnel/ Snow Galleries after a couple of years of time. By that time, there is a likelihood of improved technology in the matter of E&M Equipment/Instrumentation and Electronics and IT technology for improved performance and economy in cost.

The Consultant shall review and update the Design and Specifications of E&M Works including IT system during the Construction Period for most effective and economic performance.

Long Tunnel / Snow Galleries Parameters shall be followed if tunnel length exceeds 3.5Km.

Consultant shall do the efficient planning for a road tunnel / Snow Galleries which requires multi-disciplinary involvement and assessments, while considering lighting, ventilation, life safety, fire safety, instrumentation and monitoring, operation and maintenance, etc. The design life shall be 150

years. The aspects which shall be considered for a Tunnel/ Snow Galleries Route study are Subsurface, geological, geo-hydraulic conditions, Constructability, Long-term environmental impact, Seismicity, Land use restrictions, Potential air right developments, Life expectancy, Economical benefits and life cycle cost, Operation and maintenance, Security and Sustainability.

The Consultant shall finalize the Alignment of Tunnel / Snow Galleries based on relative positions of the portals and directions of approaches, geology, clearances from external obstacles, gradients, vertical curve, and horizontal curves. Geotechnical issues such as the soil or rock properties, the ground water regime, the ground cover over the tunnel/ Snow Galleries, the presence of contaminants along the alignment, presence of underground utilities and obstructions such as boulders or buried objects, and the presence of sensitive surface facilities should be taken into consideration when evaluating tunnel / Snow Galleries alignment.

Based on the road class, traffic characteristics, capacity of road, the Consultant shall finalize the Geometrical Shape. While considering space required for traffic and other facilities including construction methods, the Consultant shall finalize the cross section of tunnel/ Snow Galleries which is the important factor in designing the tunnel/ Snow Galleries as construction costs vary greatly accordingly.

The Consultant shall perform the Geological Investigations and Geotechnical Interpretation for Tunnels/ Snow Galleries. Tunnel / Snow Galleries design, method of its excavation and stability are greatly influenced by the geological conditions such as Lithology, Geological structures and Groundwater conditions. Good knowledge of the expected geological conditions is essential. The type of the ground encountered along the alignment would affect the selection of the tunnel/ Snow Galleries type and its method of construction.

Ground conditions including geological, geotechnical, and hydrological conditions, have a major impact on the planning, design, construction and cost of a road tunnel/ Snow Galleries, and often determine its feasibility and final route. Fundamentally, subsurface investigation is the most important type of investigations to obtain ground conditions, as it is the principal means for: defining the subsurface profile (i.e. stratigraphy, structure, and principal soil and rock types), determining soil and rock material properties and mass characteristics, Identify geological anomalies, fault zones and other hazards (squeezing soils, methane gas, etc., defining hydrogeological conditions (groundwater levels, aquifers, hydrostatic pressures, etc.) and Identifying potential construction risks (boulders, etc.).

The Consultant shall perform:

- Borings / Drilling; to identify the subsurface stratigraphy, and to obtain disturbed and undisturbed samples for visual classification and laboratory testing.
- In situ tests; to obtain useful engineering and index properties by testing the material in place to avoid the disturbance inevitably caused by sampling, transportation and handling of samples retrieved from boreholes; in situ tests can also aid in defining stratigraphy;
- Geophysical tests quickly and economically obtain subsurface information (stratigraphy and general engineering characteristics) over a large area to help define stratigraphy and to identify appropriate locations for performing borings;
- Laboratory testing soil samples and rock core retrieved from the borings.

The Consultant shall perform the Rock Mass Classification for performing the design under RMR, Q-system and Convergence & confining method. The Tunnel / Snow Galleries Support system and Excavation classes shall be determined based on these systems.

- Based on the ground conditions along the Tunnel/ Snow Galleries, the Consultant shall select the method of excavation i-e Drill and Blast or TBM using NATM approach.
- The Consultant shall design the Tunnel / Snow Galleries to meet the fire safety requirements as per latest codes.
- The Consultant shall design the Lighting System as per international Codes.
- The Consultant shall prepare detail design for E & M works for Tunnel / Snow Galleries as per best engineering practices commensurate with technical specifications of manufacturer.
- The Consultant shall review and update the Design and Specifications of E&M Works including IT system during the Construction Period for most effective and economic performance.

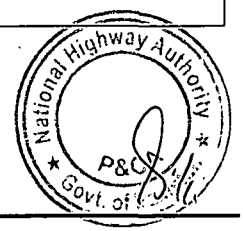
3.18 EIA Study Report and NoC (where required)

Deliverable	Environmental Assessment Report (EIA)

The consultant will be required to carry out EIA Study and obtain NoC thereof from the EPA concerned. For detailed scope of services, refer to the chapter on EIA Study.

3.19 Road Safety Audit Report

Deliverable	Road Safety Audit Report



The Consultant will get the project design audited by a certified Road Safety Auditor and solicit a formal RSA Report containing observations, suggestions, recommendations etc. For those comments of RSA Report which are agreed by the Consultant, necessary improvements in the design may be made by the Consultant. However, for those comments of RSA Report which are not agreed by the Consultant, appropriate replies/justifications may be prepared by the Consultant.

Afterwards, the Consultant will submit 'Road Safety Audit Report' to NHA duly containing the observations, suggestions, and recommendations etc. of the Road Safety Auditor and the detail of actions taken thereupon by the Consultant.

3.20 Innovative & Modern Architectural Design / Plan to Boost tourism as well as Drawings detailed Estimates for Services Areas, Rest Areas, Weigh Station, Toll Plaza & Allied Buildings, NHA Office & Rest House

Deliverable	Standard Drawings, Estimates, BoQs of Services Areas, Rest Areas, Weigh Station, Toll Plaza & Allied Buildings, NHA Office & Rest House.

Consultant shall provide detailed architectural design / plan & drawings with innovation along with detailed Estimates and BOQs for the service areas / rest areas, Weigh Station, Toll Plaza & Allied Buildings, NHA Office. At least 3 different architectural design options shall be prepared and submitted to the client. Accordingly, Consultant shall proceed with detailed design, drawings and estimation of the approved option.

3.21 Ground Validation & Alignment Stakeout

Deliverable	Ground Validation and Alignment Stakeout Report

The Consultant may be required to carry out ground validation and stakeout the alignment on ground followed by submission of a detailed report with photographs for sections only where realignment is required. Appropriate cost of this service should therefore be covered by the consultant in financial proposal. The centreline markers shall be fixed on ground at 100m interval. A 1.5m long bamboo stick with orange cloth 1m x 0.5m shall be fixed at each point. The stake out may be checked by representative(s) of NHA.

3.22 PC-I

Deliverable	PC-I

The consultant shall prepare the revised PC-I for the project road section, based on detailed design, including economic analysis on prescribed Performa of PC-I by Planning Commission. The Consultant shall also be required to upload the same on IPAS Portal as well. Also, the Consultant will be required to attend meetings at TWP, NHEB, CDWP & ECNEC level along with replies to observations of different forums and updation of PC-I if required.

Stage-III: Tender Documents

3.23 Tender Drawings & Documents along with Engineer's Estimate, C-Factor, Take-off Sheets etc.

Deliverable	Tender Drawings & Documents along with Engineer's Estimate, C-Factor, Particular Specifications, Special Provisions, Take-off Sheets, Rate Analysis, Cross-Section Sheets, CAD Model, etc.

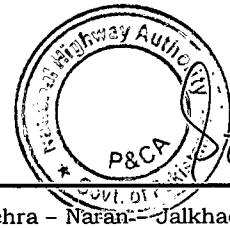
The Consultant will prepare and submit detailed design along with Tender Documents, Drawings, Engineer's Estimate, C-Factors, Take-off Sheets & Rate Analysis, etc. which shall include but not necessarily limited to the following: -

3.23.1 Detailed Design Drawings

The consultant will prepare and submit Detailed Design in form of Drawings. The Drawings will include the following details. (An effort has been made to enlist all the elements generally required in detailed design drawings. Any of the elements not applicable for this project will be excluded from the drawings): -

- Title Sheet.
- Index Sheet.
- QC sheet wherein full names, designations, and full signatures of designer, reviewer, draftsman etc. will be shown.
- Project summary sheet(s) wherein project will be explained in appropriate detail to provide at a single place all the salient features of project.
- Design criteria, codes, and standards.
- Detail of design exceptions, assessment of risks associated with exceptions, and risk management measures.
- General notes.

- Legends & Symbols Sheet.
- Key & Location Plans with Coordinates and alignment with stationing.
- Location plan showing/demonstrating existing number of lanes (if applicable) and right of way along the project length.
- Location plan showing/demonstrating proposed number of lanes and right of way along the project length.
- Soil investigation linear plan. Pits of soil investigations will also be marked.
- A plan showing major quarry sites/ borrow area sites including mass haul diagram showing cut and full along the alignment.
- Traverse data, Bench Mark data, setting out data, Super-elevation data, and Design alignment data including curve data.
- Typical Cross-Sections with locations of applications showing Pavement Design for main carriageway, interchanges, and toll plaza (if any) approach roads, and road network (if any) within service areas.
- River training works (if applicable)
- Design along with proposed locations of toll plazas, bus bays, weigh stations etc. Number of toll lanes/toll booth facilities are to be designed based on queue length analysis.
- Detailed design along with drawings of Intelligent Transportation Systems as per best international standards & requirements of NHA.
- Detailed design of rest areas, service areas etc.
- Cross-sections generated at an interval not exceeding 50m.
- Super-elevation details and Linear Plan.
- Road Furniture (Guard rails, Pavement Marking plans & details thereof, Traffic signage plans & details thereof as per MUTCD & NTRC etc). Proposed Location of traffic signs and gantries etc., along the alignment must be shown on the drawings.
- Retaining walls (if any) with location tables.
- Intersection & Interchanges Details. Number of lanes on exit/entrance ramps should be based on proper capacity analysis, preferably for minimum 20 years.
- Drainage plan for surface runoff and urban areas.
- Plan and Profile Drawings.
- Structural Drawings for: new structures and, if applicable, old/existing structures requiring rehabilitation/reconstruction etc.
- Proposed Landscaping & Horticulture as per best international practices and experiences on similar projects, wherever required.
- Roadside Design.



- Proposed Design for Lighting as per best international practices with tailoring considerations to suit local conditions. (This activity will be carried out with prior consent of NHA).
- Highway Drainage design.
- Requirement of Traffic Control Devices, Work Zone Safety, and "Maintenance & Protection of Traffic (MPT) Plans". MPT shall be for, but not necessarily limited to, the following situations: -
  a) Where any existing road intersection will be affected during project execution.
  b) In urban areas including methodology for separating the local and through traffic.
  c) At places where underground construction like construction of box culverts and underpasses is involved.
  d) At places where overhead bridge construction is proposed.
- Design of pedestrian overhead bridges (if any)
- Design for provision of ducts/crossing of future utilities like OFC, pipelines etc.
- Design along with location tables of U-turns, side drains, service road, median barrier, as per international standards and best safety practices.
- Occupational safety and health measures as per international standards and best safety practices.
- Proposed design and linear plan of anti-glare screens (if any)
- Landslide and Slope stabilization measures. (if applicable)

3.23.2 Engineer's Estimate

The consultant will prepare Engineer's Estimate of the project by using the applicable Composite Schedule of Rates. For items not specified in NHA CSR, rate analysis will be provided based upon market price. Estimate must be submitted along with soft copy (MS Excel) of take-off sheets.

For review of Engineer's Estimate, the Consultant shall provide:

- Backup calculations / Measurement Sheets of the Engineer's Estimate in soft editable format.
- Earthwork Cross-Sections generated at every 25m interval. Same shall be submitted in a separate folder titled "Cross-Sections" for verification of the earthwork quantities.
- The Consultant shall also submit a "Project Data Sheet" showing the location and dimensions of bridges, culverts, subways, underpasses, cattle creeps, retaining & breast walls, traffic & road signs, slope stability works etc.

3.23.3 Bill of Quantities

The consultant will prepare comprehensive BoQ to be calculated to accuracy of **±5%** encompassing all the items of work, properly cross referenced to the Technical Specifications. Standard format of Bill of Quantities shall be adopted. The BOQ must be submitted along with take-off sheets in hard as well as soft format (MS Excel).

3.23.4 "C" Factor

The consultant may be required to work out "C" factor and submit the same along with complete take-off sheets in soft format (MS Excel).

3.23.5 Certificate for Technical Sanction

The consultant may be required to submit a Certificate for Technical Sanction, wherein soundness of design, amount of estimate, basis of estimate etc. will be certified. NHA reserves the right to modify the specimen format. Latest copy of specimen may be obtained from NHA at the time of Technical Sanction.

3.24 Land Acquisition & Utility Folders

Deliverable	Land Acquisition Folders, Utilities Relocation Folder, Deputy Commissioner Certified Land Rates, Existing RoW Folder.

The consultant will identify, take photographs, and then digitize land, properties, trees, utilities, existing roads etc. falling in right of way (ROW). The consultant will prepare Land Acquisition & Utility Folders wherein following items must be indicated:

- Exact width of ROW/road, must be shown in the folder.
- Detail of Structures with type, exact measurement along with exact chainage indicating its location with respect to centre line of new proposed road.
- Detail of trees with kind must be explicitly indicated in the folder along with girth and number of each type. Exact chainage and location with respect to centerline of new proposed road.
- Permanent point like Railway Line etc. or permanent schools and others Government buildings must be shown, as per detail above, giving type of structures and its condition.
- Settled populations, Graveyards, Mosques, Khanqah, Shrines or any other religious site may preferably be avoided.

- Graveyards, Mosques, Khanqah etc. and any other religious site must be explicitly indicated in the folder.
- Chainage /Kilometer wise name of villages /Towns /cities, where alignment passes must be indicated in the folder.
- Bridges, Culverts, Rain water channels existing on present/ existing/ proposed road must be shown in the Folder.
- Complete detail of Private and Government land falling in the proposed alignment must be shown in the folder by giving its Mouza name & number in which the land is acquired.

Coordination/Consultation with concerned departments through field/regional authorities of NHA (if any) during survey for alignment of Road/RoW & Bypasses etc. for preparation of Land Acquisition & Utility Folder and related cost estimation. A Certificate in this regard should also be furnished that land acquisition folder has been prepared in coordination with concerned departments and field/regional/zonal authorities of NHA.

3.25 Construction Machinery & Manpower Report

Deliverable	Construction Machinery & Manpower Report

The consultant will prepare and submit Construction Machinery & Manpower Requirement Report as per best international practices, codes, and standards. The report should be in line with proposed schedule of project execution, BoQ, General Specifications of NHA, prevailing practices in the field of highway construction, and actual performance characteristics of various types of equipment used etc. The report will determine the type, size and numbers of different construction equipment and machinery required for carrying out the work in safe, economic, efficient, and timely manner.

3.26 Building Information Modeling of Infrastructure

Deliverable	Building Information Model

NHA intends to take advantages of the cost and time saving resulting from BIM implementation practiced worldwide. Therefore, the Consultant is required to develop & update BIM of Project including model on Infraworks, Civil 3D or equivalent, etc. which must be readily accessible to Client for progress monitoring and issue identification / resolution in BIM 360 or equivalent software. The Consultant is also required to seek approval of alignment on Infraworks or equivalent software depicting different components of roads in 3D perspective. The Consultant is also required to model and associate different activities / components of projects with Contractor's Work Programme in Navisworks or equivalent software.

3.27 Installation of Right of Way Markers

Deliverable	Right of Way Marker Installation Report

The Consultant may be required to fix temporary Right of Way (RoW) markers in coordination with field authorities of NHA in form of 4-inch PVC pipe filled with concrete having 4ft height (2ft inside ground while 2ft above the ground). Subsequently, a report will be submitted which must contain *inter alia* photographs and coordinates of all the markers, duly countersigned/verified by the field authorities. NHA understands that interval should be 100m on straight reaches and 25m interval on curves.

3.28 Stakeout of Alignment on Ground

Deliverable	Stakeout of Alignment on Ground

After the Design drawings are approved, the Consultant shall be asked to stake out the alignment on ground. The Centerline markers shall be fixed on ground at 25 m interval. A 1.5m long PVC pipe 4" diameter filled with lean concrete and orange color spray paint shall be erected. All verification and payment shall be processed by the Nominated project director of NHA.

3.29 Mass Haul Diagram

Deliverable	Mass Haul Diagram

Consultant shall submit the mass Haul Diagram which shall be represented directly below the longitudinal section of the alignment plan. It shall clearly depict the following:

- The distances over which the cut and fill will balance
- Quantities of materials to be moved and direction of movement
- Areas where earth have to be borrowed/wasted and amounts involved

4. Certificate of Technical Sanction

As per Para 55-56, Chapter-Two, NHA Code, Vol-I & NHA's Circular No. 11(19)/Secy(Coord)/NHA/15/569, dated November 04, 2015, the Consultant is required to submit a Technical Sanction Certificate according to the standard format.

Note: Consultant is required to provide all the submission with each and every page properly signed and stamped.

5. Presentation

The Consultant may be required to give presentation on the project as, when, and where required/directed by NHA. The presentation should include but not limited to following details.

- Description of road alignment.
- Description of design criteria and functional requirements.
- Important components of project like major bridges, flyovers etc.
- Important parameters of sub-soil investigation like CBR, Pile Capacity and General Soil Classification etc.
- Results of traffic studies.
- Location of quarry sites.
- Traffic management plans.
- Description of specialized equipment and machinery required for the construction.
- Description of methodology and codes for design including details of computer models.
- A plan showing major quarry sites/ borrow area sites including mass diagram showing cut and full along the alignment will be presented.
- Any other points, which the consultant may like to highlight, should be included.

The consultant may also be required to give a separate presentation to Design Section on methodology, tools, software, and techniques etc. used in, including but not limited to, Topographic Surveying, Traffic studies, Pavement Design, Geometric Design etc.

6. In-House Desk Review

If any in-house desk review is carried out by NHA, then consultant will coordinate and collaborate directly with the concerned experts/officers of NHA to expedite the review process for finalizing the related documents/reports in a timely manner. The consultant will give consideration to review comments/observations (if any) of the in-house experts/officers; however, any review or no review at all will not be construed to absolve the consultant from responsibility for correctness, safety, soundness, and economy etc. of design including Engineer's Estimate, and all other services carried out under this contract.

7. Submission of Deliverables

The following requirements should be fulfilled by the consultant: -

a. A checklist should be attached by the consultant with each deliverable (initial as well as final submission) which should correctly correlate the deliverable to all the requirements spelled out in ToR.

b. All pages/sheets of each deliverable (initial as well as final submission) must be signed & stamped by the consultant, irrespective of the fact that the service has been carried out by the consultant himself or any sub-consultant/sub-contractor appointed under Sub-Clause 3.6 of Special CoC, and duly numbered with complete project name indicated in header/footer/sidebar.
c. After finalization of draft submissions in the light of in-house review process (if any), three (03) hard copies of final version of each deliverable will be submitted to NHA along with soft copy (Portable Document Format as well as editable document format e.g., MS Word, MS Excel, Civil 3D format etc.) except PC-I and EIA Report for which requisite number of hard copies will be submitted as per requirement of concerned sections of NHA. Provision of soft copies in editable format will be a mandatory requirement failing which contract close-out will remain in abeyance. The soft copies must be properly indexed.
d. If requested by NHA, Consultant will provide two (02) additional sets of all documents/reports at a later stage at no extra cost.

8. Provision of Data on External Hard Disks

The Consultants shall submit complete set of documents, drawings and deliverables mentioned in this ToR as listed above on three (01) External Hard Disk Drive for record of NHA. Files (Word, Excel, AutoCAD, Graphical Images, Photographs etc.) shall be properly indexed / catalogued for record purposes and use / reproduction at a later stage by NHA.

9. Correctness of Design / Liability of Consultant

The Consultant is entrusted with the Scope of Work outlined above. It is required that the consultant should undertake the job in a professional manner to the best of his ability and resources. NHA as Client may offer comments through in-house review. Any comments offered by the Client do not absolve the consultant from its obligation to develop correct and cost-effective engineering solutions for the Projects. NHA reserves the right to take punitive actions as required at appropriate forum even during construction stage. The Liability of the Consultants is already defined in SCC 3.4 of the Contract Agreement and Section 5 "Professional Liability" of the "PEC By-laws 1986 (Conduct and Practice of Consulting Engineers)".

10. Important Considerations for Consultant

The following points must be given due consideration by Consultant:

- Consultant is responsible for coordination with all concerned stakeholders. In case of any discrepancy or design change, arising out

at any stage of the project due to lack of coordination with the relevant departments, the Consultant shall be held liable for such a change. In such a case, the Consultant shall not only modify the design but may also be subjected to penalty.

- If the consultant wants to outsource any part of the scope of work, it will be mandatory to take prior approval of the Client.
- If the Consultant wants to deploy any party to carry out Geo-Technical and Soil Investigations, the party may have experience of at least 15-20 Years in Highway /Mega Projects.
- Consultant should strictly adhere to the work plan submitted in the Proposal or submitted during the Kickoff Meeting.
- Client will not accept any submission unless and until the pre-requisites for that submission are submitted.
- The Consultant is required to submit Geo-Tagged Photographs along with date and time stamps for each survey and investigation location such as Soil, Material & Geotechnical Investigation, etc.
- The Consultant is required to submit original Testing Reports of Soil, Material and Geo-Technical Investigations. Same shall be stamped and signed by the concerned Engineer of the Consultant.
- The Consultant shall provide full assistance and coordination to the International Counter Part for the "Joint Feasibility Study" of the Babusar Tunnel.
- Full assistance and coordination during review of the Final Design submitted by the Consultant to the Supervisory Consultant / Design Review Consultant during the execution phase. All the necessary cost and man power shall be included within bid.
- The Consultant shall propose whether to design the carriageway using split level concept or to dualize the existing carriageway.
- The carriageway should be designed as "sun facing" (if applicable) as heavy snowfall often leads to road blockages for long periods, taking significant time to melt.
- The Consultant shall propose large parking facilities as part of the Project and the Project shall be designed with fencing to prevent hotels from encroaching on NHA (RoW).
- Propose rest areas which can be utilised for generating revenue.

11. Performance Rating

Performance of the consultant may be evaluated and rated by NHA as per following:

Rating	Description
A+	Excellent
A	Good
B	Requiring improvement
Poor	Poor

12. Future Assistance

The consultant will be required to provide professional assistance in future in addressing any audit observations, fact-findings, inquiries, investigations, litigation, or any other reasonable requirement related to the services carried out and solutions proposed under this ToR.

13. Training Opportunities

The Consultant will manage Training of Six (06) Graduate Engineers as Trainee / Junior Engineers regarding the design activities in these services as per the advice of Design Section. All the Trainee Engineer will be selected with the approval of GM (Design). Moreover, the Consultant is also responsible to pay a minimum stipend of Rs. 75,000/- per month after of all applicable taxes and Consultant's overhead to each Trainee Engineer.

14. Capacity Development

The Consultant will be required to organize, complete in all respects, capacity development opportunities for NHA officers (Planning Wing). These opportunities will be in form of 3x Days trainings by the Consultant each on Geometric Design, Structure Design, Pavement Design, Quantity Estimation, Hydrology and Hydraulic Study, BIM Design at NHA premises through leading and state of the art Software. The cost of this capacity development is deemed to be included in the Consultant's fee and no separate payment will be admissible.

15. Procurement for Planning Wing

Procurement of Codes, Technical Specifications, Books, Software, Hardware, Equipment, Accessories etc. for Planning Wing.

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MODE OF PAYMENT

STAGE-I: FEASIBILITY STUDY		
Task No.	**Description**	**% of "A"**
3.1	Inception Report (Collection of Data & Coordination)	5%
3.2	Reconnaissance Survey Report	5%
	Satellite Imagery	LS
3.3	Existing Condition Survey and Assessment Report	5%
3.4	Alignment Study Report	5%
3.5	Traffic Survey Report	LS
3.6	Topographic Survey Report along with Plans	LS
3.7	Soil & Material Investigation Report	LS
3.8	Hydrology & Hydraulic Study Report	LS
3.9	Slope Stability Analysis and Remedial Measures including Snow Avalanche Study Report	5%
3.10	Geophysical Testing Report	LS
3.11	Geological Survey Report	5%
3.12	Feasibility Study, (Technical, Financial, Social, Environmental aspects). Special consideration should be given to the development of tourism spots and shelter areas along the alignment for the safety of commuters.	5%
	Sub-Total (a)	**35%**
STAGE-II: DETAILED DESIGN		
3.13	Geotechnical Investigation Report	LS
3.14	Structure Design Report	5%
3.15	Pavement Design Report	5%
3.16	Geometric Design Report	5%
3.17	Design of Tunnel/ Snow Galleries, Avalanche Galleries, *Portal facilities and Electro-Mechanical works	5%

3.18	Environmental Impact Assessment and NOC	LS
3.19	Road Safety Audit Report	LS
3.20	Innovative & Modern Architectural Design / Plan to Boost Tourism as well as Drawings detailed Estimates for Services Areas, Rest Areas, Weigh Station, Toll Plaza & Allied Buildings, NHA Office & Rest House	LS
3.21	Ground Validation & Alignment Stakeout	5%
3.22	Submission of PC-I	10%
	Sub-Total (b)	**35%**
STAGE-III: TENDER DOCUMENTS		
3.23	Tender Documents, Drawings, BOQ, Engineer's Estimate, C-Factor, Take off Sheets etc.	10%
3.24	Land Acquisition & Utility Relocation Folders	5%
3.25	Construction Machinery & Manpower Report	5%
3.26	Building Information Modelling of Infrastructure	5%
3.27	Installation of RoW Markers	LS
3.28	Stakeout of design alignment after approval for ground validation	2.5%
3.29	Mass Haul Diagram	2.5%
-	Procurement of Codes, Technical Specifications, Books, Software, Hardware, Equipment, Accessories etc. for Planning Wing.	PS
	Sub-Total (c)	**30%**
	Grand Total	**100%**

Notes Regarding Payment:

1) "A" is to be calculated by excluding above LS/PS amounts from the Contract amount. The above LS amounts are deemed to include all direct/indirect expenses and taxes etc. Payment against any PS items shall be as per actual, with prior approval of NHA, primarily against provision of 3x Quotations and recommendations of the lowest bidder. Payment against PS Items shall be made directly to the 3rd Party.

2) The Consultant will submit all the Invoices to Design Section of NHA.
3) Detailed mode of payment for 'EIA Study Report and NoC' is given in Chapter-4.
4) Any service reflected in ToR but not mentioned in the Mode of Payment or vice versa should be duly carried out without failure. Moreover, if any service is mentioned in ToR but not reflected in Mode of Payment then its cost will be deemed to be built-in the services mentioned in the Mode of Payment.
5) Initial payment up to 50% against any deliverable shall be approved by NHA subject to fulfillment of following conditions: -
   a) Copy of the letter through which deliverable has been submitted is duly attached by the consultant with the invoice.
   b) The deliverable is substantially responsive to ToR requirements.
6) NHA reserves the right to reject any deliverable and associated invoice, if the consultant does not adhere to the stage-wise deliverable submission.
7) Remaining/Final payment against any deliverable shall be approved by NHA subject to fulfillment of following conditions: -
   a) Copy of the letter through which deliverable has been submitted is duly attached by the consultant with the invoice.
   b) The consultant certifies that the final deliverable is complete, correct in all respects, and compliant to the requirements spelled out in ToR, duly indicating exceptions/deviations (if any) from ToR. If the consultant fails to provide said certificate or the final deliverable has any quality issues, then partial or full payment against the deliverable may be deducted besides adverse performance rating of consultant. This deduction will not absolve the consultant of any penalty on account of delayed submissions.
   c) The consultant certifies that review comments/observations (if any) of concerned in-house experts/officers of NHA have been appropriately addressed and the concerned report accordingly finalized.
   d) Full assistance and coordination during review of the Final Design submitted by the Consultant to the Supervisory Consultant / Design Review Consultant during the execution phase. All the necessary cost and man power shall be included within bid.

***

Information for fixed Traverse Stations

Name of Traverse Stations _____

Northing _____

Easting _____

Elevation _____

Affix Photograph of Traverse station

SKETCH OF FIXED TRAVERSE STATION

ENVIRONMENTAL IMPACT ASSESSMENT OF ROADS/ HIGHWAYS PROJECTS

1. Need for Environmental Impact Assessment (EIA)

Highway projects are generally undertaken to improve the economic and social welfare of the people. At the same time, they may also create adverse impacts on the surrounding environment. People and property in the direct path of the road works are affected. The environmental and social impact of highway projects include damage to sensitive eco-systems, soil erosion, changes to drainage pattern and thereby groundwater, interference with animal and plant life, loss of productive agricultural lands, resettlement of people, disruption of local economic activities, demographic changes, accelerated urbanization and increase in air pollution. Highway development and operation should, therefore, be planned with careful consideration of the environmental impact. To minimize these adverse effects that may be created by highway development projects, the techniques of EIA become necessary. Identification and assessment of potential environmental impact should be an integral part of the project cycle it should commence early in the planning process to enable a full consideration of alternatives and to avoid later delays and complications.

2. In view of the above, an EIA will be carried out for the Environmental aspects of all stages of the projects i.e. preconstruction, construction and post construction with the following objectives:

- Establishing the environmental baseline in the study area and identifying any significant environmental issue;
- Assessing these impacts and providing for the requisite avoidance, mitigation and compensation measures;
- Integrating the identified environmental issues in the project planning and design;
- Developing appropriate management plans for implementing, monitoring and reporting of the environmental mitigation and enhancement measures suggested;

The EIA studies and reporting requirements to be undertaken this TOR must conform to the guidelines and regulations issued by the Pakistan Environmental Protection Agency (Pak EPA), Ministry of Climate Change, Govt. of Pakistan (GOP) which comprise mainly of the Pakistan Environmental Protection Act 1997, its implementing regulations, the EIA Guidelines and Review of IEE and EIA Regulations, 2000. These guidelines include the amendments and subsequent rules for the EIA of projects.

i) **Regulations and Standards.** Describe the pertinent legislation, regulations and standards, and environmental policies that are relevant and applicable to the proposed project, and identify the appropriate authority jurisdictions that will specifically apply to the project.

ii) **Project Categorization.** The Consultants should categorize the project (category A or B and IEE or EIA) as per Environmental Protection Act and guidelines & procedures derived therein and as per donor agencies Environmental Safeguards and Policies which ever are applicable.

iii) **Project Description.** The Consultants should provide a brief history of the project, a detailed location and maps with scales (km) of the projects with any alignment (starting point to end point). In the project description the Consultants should also highlight but not limited to bridges information, project components, scope and schedule of operation and construction, construction camps, and construction materials.

iv) **Description of Environment.** Assemble, evaluate and present baseline data on the relevant environmental characteristics of the project area. In addition to general information, the Consultants should provide methodology for preparing the essential environmental data. The data should emphasize but may not be limited to the information about Physical Environment which could include, meteorology and climate, geology and soil, seismology, air and water quality, noise, topography and drainage patterns, hydrology and/or hydraulic regime, surface and ground water and land use. Ecological Resources should discuss about forests/flora/vegetation profile, crop and horticulture activities, and fauna/wild life and local livestock species (should specify mammals, birds, fish, reptiles and insects), protected and/or endangered wildlife species. Social and Cultural Resources may discuss about the methodology of surveys, settlement pattern, political and administrative setup, population and communities, socioeconomic conditions, protective and sensitive areas, archaeological and cultural sites, health and facilities, educational facilities, industrial/commercial activities, physical and cultural heritage, utilities, railway links or alignment, tourism facilities and potentials and others. Availability of Resources for Construction should also highlight about borrow soils, construction material, water and power availability and any other resources. Hazard vulnerability-identify vulnerability of area to flooding, hurricanes, storm surge, and earthquakes. Characterize the extent and quality of the available data, indicating significant information, deficiencies and any uncertainties associated with the prediction of impacts.

v) **Environmental Impacts and Mitigation Measures.** Identify any negative positive, direct, indirect, short term and long term impacts of the project, during pre-construction/design, construction and operation phases. Identify any information gaps and evaluate their importance for decision-making. The Consultants must recommend appropriate mitigation and rehabilitation measures for the environmental damage and other impacts identified for specific road corridors, and how they would be implemented with regards to: coordination between highway design and environmental issues, ambient air, water and noise quality, water resources, drainage, mineral resources, flora and fauna, social and cultural environment,

historical sites. The Consultants should attempt to identify creative measures that would also have positive social implications, such as participatory tree planting that would also serve as job creation for affected communities. Consultants should identify biological environment, and must discuss about national parks, game reserves and endangered species. Consultants should also identify the impacts and mitigation measures for topography, social / cultural issues, land acquisition and resettlement, community development, borrow open pits, waste disposal, geology and soil, surface and ground water, hydrologic regime, traffic flow, wastage of fertile humus layer, utilities issue and poverty alleviation etc.

However, report should not be limited to the above mentioned constituents of the environmental impacts and their mitigation measures. The Consultants should be more creative according to the specified project alignment. It should also include maps, figures and photographs when necessary.

In order to assess environmental impacts and recommend various mitigation measures to minimize the environmental impacts, identify and develop data.

vi) **Development of Environmental Data.** Identify EPA NEQS and guidelines and analyze following parameters to develop base line environmental data of the project:

- Ambient air quality.
- Noise levels.
- Water.
- Biological environment.
- Socio economic profiles.

i) **AMBIENT AIR QUALITY:**

Consultants should monitor the ambient air quality along the selected road site.

The parameters need to be monitored include Ozone (O_3) Carbon monoxide (CO) Sulphur dioxide (SO_2), Nitrogen dioxide (NO_2), and particulate matter (PM_{10}). Acceptable standard analysis methodology should be selected to measure the NEQS parameters.

Air quality data will be collected over a 24-hour period at all the sampling points *(a reasonable number of sampling and their analysis should depend upon the road length and other environmental factors which should provide a reasonable image of air quality).*

High pollutant concentrations spots should be selected for sampling to assess 'worst-case' scenarios, and measurements will be made in areas with extensive ribbon development and schools/hospitals where traffic will be expected to be a little heavier.

ii) NOISE LEVELS:

Roadside noise level measurements should be taken at a distance of ~ 6 m from the edge of the highway (corresponding roughly to 7.5 m from source vehicles). The noise parameter should be measured for 24 hours at various locations of the specified site. The permissible limit of noise is 85 dBA prescribed by the NEQS for motor vehicles. The NEQS do not prescribe a noise level limit for receptors. *(a reasonable number of sampling and their analysis should depend upon the road length and other environmental factors which should provide a reasonable image of noise pollution).*

iii) WATER QUALITY:

During field investigations, water samples from various sources in the vicinity of the proposed sections should be analyzed for important parameters with respect to human consumption. Although, NEQS include 32 water criteria pollutants for effluents and 16 NEQS for gaseous emissions, NHA prefer and recommend basic water quality analysis which may include but not limited to pH, turbidity, alkalinity, TDS, TSS, 5 day BOD at 20oC, COD, OD, total hardness, chloride, sodium nitrates, lead, mercury, arsenic, cadmium, total toxic metals, phenolic compounds as phenols, pesticides / herbicides / fungicides *(in farmland areas) and E-coli. (a reasonable number of sampling and their analysis should depend upon the road length, other environmental factors which should provide a reasonable representation of water quality).*

Consultants **must identify** standard and recognized laboratories. Consultants should also provide Analytical Laboratory Reports along with methodologies and analytical techniques used for each parameter. The analysis reports must include information, address and contact persons of analytical laboratories.

vii) **Analysis of Alternatives.** Describe the alternatives examined for the proposed project that would achieve the same objective including the "no change in alignment". Distinguish the most environmentally friendly alternatives. In case of minor impacts, which can be successfully mitigated within the ROW and without change in alignment, there will be no need for the analysis of alternative. In all other cases, and especially in the case of major or critical issues, a systematic comparison will be undertaken of the proposed design, site technology and operational alternatives in terms of:

Their potential environmental and social impacts;

Capital and recurrent costs;

Suitability under local conditions; and

Institutional, training and monitoring requirements.

For each alternative, the environmental cost and benefits should be quantified to the possible extent, and economic values should be attached where feasible. The basis for the selection of alternative proposal for the project design must be stated.

viii) (A) **Public Consultation, Involvement and Disclosure.** During the field surveys the Consultants will organize workshops and formal public consultation sessions at province level to identify main stakeholder, their categories, their views on the existing condition of the project, volume of traffic concern's stemming from the impact of improvement works, as well as safety related issues. If possible, Consultants will assist in inter-agency coordination, and public/NGO participation.

(B) Grievance Redress Mechanism (GRM). An effective, feasible and project Specific GRM will be proposed with all required details.

ix) **Environmental Management Plan (EMP).** Identify and prepare EMP including an implementation schedule and supervision program with associated costs and contracting procedures for the execution of environmental mitigation and social issues for pre-construction, design, construction and implementation phases. The EMP cost plus monitoring cost together will be minimum 1% of total project cost so that these can be implemented in true letter & spirit at later stages. Same cost will be given in PC-I for EMP. This cost will be part of Bill of Quantities as separate item. The Consultants should describe the objectives of EMP and key environmental and social components, role of functionaries, and road safety. The key components of EMP should emphasize but not limited to:

alignment and shoulder width options, road side safety, structural recommendations, topography, geology and soil, seismic activities, flood hazards, environmentally sound camp sites & borrow pits identification, mapping and characterization, archaeological sites, land acquisition and resettlement, local communities their social and cultural heritage, archaeological sites, waste disposal, air and water quality including ground and surface water, noise, flora including roadside vegetation cutting and plantation, fauna including wildlife, endangered species and their protection, traffic management, utilities, use of fertile humus soil recommendation of environmental protection sign boards, and health risk of workers. EMP should identify the training and workshops programs.

x) **Environmental Monitoring Plan.** Identify the critical issues requiring monitoring to ensure compliance to mitigation and environmental management plans and to measure and monitor the environmental impacts during construction and operation. The objectives of the plan are to monitor the actual impact of the works on the project corridor's physical, biological and socio-economic receptors within the corridor. This will indicate the adequacy of the EIA. The monitoring plan should recommend mitigation measures for any unexpected impact or where the impact level exceeds the limits. The plan should ensure compliance with legal and community obligations including safety on construction sites. Consultants should

monitor the rehabilitation of borrow areas and the restoration construction campsites according to EMP report. The monitoring plan should ensure the safe disposal of excess construction materials. Consultants should also evaluate the effectiveness of the mitigation measures proposed in the EMP and recommend improvements if necessary. Apart from regular compliance checks the Consultants should generate a tabular matrix for air, water and noise analysis, asphalt plant emissions, soil erosion and contamination, plantation, safety and traffic rules compliance for construction and operation phases.

Environmental Monitoring Plan will list the procedure through which mitigation measures proposed in EIA will be implemented. It will also include environmental parameter need monitoring, frequency and responsibilities of key players. In case of disagreement with local communities or stakeholders, grievances addressable mechanism shall be part of plan. The management plan will develop the institutional requirement and type of training to enhance the capabilities of staff. The total environmental mitigation, Monitoring, equipment and training cost shall also be included.

xi) **Economic Assessment.** This section should include the overall cost estimate in relation to the project benefits, environmental costs and total cost of the proposed project. The Consultants should address the cost analysis of training, monitoring activities, environmental analysis and activities, resettlement, land and property acquisition, and mitigation measures.

xii) **Role of Functionaries and Government Agencies Involvement.** This section should include role of all the functionaries and variable involvement of government agencies or authorities for the project accomplishment.

xiii) **Recommendation and Conclusions.** An adequate summary should emphasize on the project description and environment, environmental impacts and mitigation measures, alternatives, socio-cultural and socio economics, public consultation and the resulting issues and recommendations, environmental management and monitoring plans, economic assessment, recommendation and conclusions.

xiv) **Submission of Reports.** The report should be prepared and presented in strict conformity to IEE/EIA regulations, 2000 and Guidelines for preparation and submission of IEE/EIA 1997 issued under the Pakistan Environmental Protection Act, 1997.

The title page of the report should specify the report name, project name, highway length, scaled maps and / or colored photographs, date of the report, Consultants company name, address, phone numbers, e-mail and logos.

The reports should include acronyms list and a copy right certificate in the name of NHA. The reports should include all the key articles but not limited to the executive summary, introduction, description of the project, policy, all legal and administrative framework, description of the project environment, alternative analysis,

environmental impacts and mitigation measures, public consultation and resettlement action plan, inter-agency and public/ NGO consultation process, environmental Management & monitoring plans, economic assessment, conclusions and recommendations.

All figures, maps, appendices, tables, photographs, matrices and list of references should be chronologically organized and each page should be numbered.

(i) Initially Consultants should submit two draft copies of the report to NHA.

(ii) It will be the responsibility of EIA Consultant to arrange joint visit (Consultant and Environment NHA HQ team) to the field before finalization of EIA Report.

(iii) After incorporating the comments from NHA, bureau of Environmental Protection/Provincial EPAs and donor agencies Consultants should finalize the report.

(iv) Consultants required submitting two hard copies and one soft copy of final EIA report to NHA.

(v) Must fill and attach the application form for Environmental approval under Sec (12) of Pakistan Environmental Protection Agency (PEPA) Act 1997 (PEPA- Review of IEE and EIA-Schedule IV regulations, 2000). The form requires information of the description, Location, objective, alternative alignment, topography and land use of the project. In addition it also required information about the land acquisition in acres, environmental quality standard (NEQS) analyzed and measured, estimates & sources of water & powers usage, estimates of liquid & solid waste generation for the project construction and number of labor force (employees) required for the project construction and operation phases.

(vi) The prepared Environmental Impact Assessment (EIA) report will be submitted to the concerned EPA for formal concurrence and will be disclosed to the public, stake holders etc.

*Ten hard copies and two electronic copies (format on CD) of the report are to be submitted should be labeled properly.

Public Hearing:

It will be the responsibility of the Consultants to obtain NOC from the respective EPA fulfilling all codal requirements. Further to this publishing of advertisements regarding public hearing and preparation of presentations, banners, sitting arrangements and all other will be responsibility of the consultant.

Consultants' Fee for Services:

The payments to the Consultants for EIA shall be made in the following manner:

Sr. No.	Description	% of A'
(i)	Inception Report for services (within first 7 days of commencement).	10%
(ii)	Submission of draft EIA/IEE report.	20%
(iii)	Submission of final EIA/IEE report (ten hard and two soft copies) to concerned EPA.	20%
(iv)	Submission of final EIA/IEE report after attending all observation and comments of EPA.	30%
(v)	Obtain NOC from concerned EPA including public hearing aspects.	20%
	Total:	**100%**

Where A' is the total payable amount in respect of EIA Study.

Consulting Service Period: Consultants shall submit the final report within four (04) months from the Date of Commencement of Services.

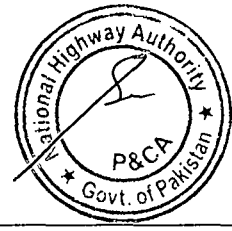
Non Compliance: If consultant fails to comply NHA's instruction and is not able to obtain NOC from concerned EPA in minimum defined period in law; 50% of total cost will be deducted what so ever the reasons are.

National Highway Authority P&C Govt. of Pakistan

APPENDIX B

(List of Supporting Documents)

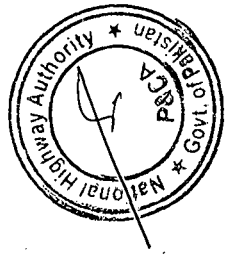
S. No	Description	Page No
1.	Valid Registration Certificate of Pakistan Engineering Council with Project Profile Code of 1215. *In case of JV member, experts proposed by each consultant should have relevant project profile code of 1215 (ii) Highways/ Bridges*. In case of formation of JV with foreign consultant, in such case foreign consulting firms shall make JV in accordance with Byelaw 6(2) and Byelaw 9 of the Pakistan Engineering Council (Conduct and Practice of Consulting Engineers) Bye-Laws 1986. Failure to comply with the above will result in rejection of proposal.	
2.	Audit Reports (minimum 03 Nos) of the firm(s) during last five years, prepared by registered Chartered Accountant (signed/stamped) appearing on list of firms on ICAP directory (To be attached with Technical Proposal). (Refer **Annexure-II** at the end of RFP).	
3.	Lists of facilities available with the Consultant to perform their functions effectively (software, hardware, etc.). In case of JV, the same will be provided by the lead firm only.	
4.	Client's satisfaction certificates (Performance Reports) for the last three relevant assignments from the respective Clients.	
5.	Affidavit on stamp paper duly attested by the Oath Commissioner to the effect that the firm has neither been blacklisted nor any contract rescinded in the past for non-fulfillment of contractual obligations	
6.	Firm affidavit for availability of personnel.	
7.	Letter of Intention on lead firm's letter head along with original letter of intention of all JV members.	
8.	Power of attorney or authorization letter of authorized person of the lead firm.	
9.	Declaration of inclusion of new/ less experienced firm(s) in association (as sub-consultant) by sharing upto 7.5% of Assignment with them for promoting the consultancy industry in the country.	
10.	While engaging in Public Procurement contracts worth **Rs. 50 million and above**, each Consultant (lead and their JV Members) shall provide duly filled Performa of "Declaration of Ultimate Beneficial Owners Information for Public Procurement Contracts", in their Financial Proposals, which is attached as **Annexure-I** at the end of this RFP.	
11.	Any other document.	



APPENDIX C

MAN-MONTH AND ACTIVITY SCHEDULE

To estimate Consultant's inputs and costs for the assignment, man-month and activity schedules are to be provided as per enclosed format (Forms A7 and A8). These two schedules should correlate.



APPENDIX D

CLIENT'S REQUIREMENTS FROM THE CONSULTANTS

CLIENT'S REQUIREMENTS FROM THE CONSULTANTS

Some important requirements are:

1. Selecting a Consulting Engineer is one of the most important decisions an owner or Client makes. The most important standards for this are technical competence, managerial ability, professional integrity and fairness of fee structure. The Client will seek information on all these aspects by:

   a. Obtaining comprehensive written information from the Consultant in form of RFPs and should be completed in full providing all details as correctly known as possible. It has been experienced that some Consultants try to hide their deficiencies viz-a-viz the requirements of TOR by making unclear and vague statement. It will be policy of evaluators that vague statement and lack of clarity in proposals on specific issues may be reason to downgrade the rating.

   b. Talking to the senior personnel of the Consultants.

   c. Consulting their Clients.

   d. Viewing the projects that they have accomplished and visit the users.

   e. Visiting the premises of the Consultant and examining systems and method of works as well as hardware and software abilities available. **Senior Management (minimum Director level) shall regularly visit** the site at least once a month and hold meeting with the Client's representative.

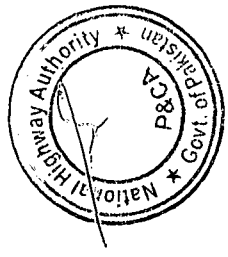
   f. The approach and methodology proposed including work plan, activity and man-month schedule should be meaningful and fully coordinated to judge the understanding of the proposed assignment by the Consultant.

2. For Items (b) to (e), the inspection can be held any time prior to or after award of work to the Consultants. During the inspection if the scenario found is not compatible with what is presented during presentations or as per Contract, the Consultant is liable for action debarring for two (2) years for future projects which may or may not include black listing action (in accordance with Rule 19 of the Public Procurement Rules, 2004).

APPENDIX E

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

AS PER TOR



APPENDIX-F

COPY OF MODEL AGREEMENT
(To be finalized during Negotiations)

Contract for Engineering Consultancy Services (Lump Sum)

Between

(NATIONAL HIGHWAY AUTHORITY)

And

(NAME OF THE CONSULTANTS)

FOR

Consultancy Service for Feasibility Study and Detailed Design for Upgradation of Existing National Highway (N-15) Mansehra-Naran-Jalkhad-Chilas to a 4-lane divided Expressway (235 Km Approx.)

Month and Year

TABLE OF CONTENTS

Appendix F-Services and Facilities to be Provided by the Client
Appendix G-Integrity Pact
Appendix H-Minutes of Pre-Proposal Meeting along with addendum

V ALTERNATE TITLE PAGE IN CASE OF JV
ALTERNATE FORM OF CONTRACT IN CASE OF JV

FORM OF CONTRACT

[Notes: 1. Use this Form of Contract when the Consultants perform Services as Sole Consultants.

2. In case the Consultants perform Services as a Member of the joint venture, use the Form included at the end.

3. All notes should be deleted in the final text.]

This CONTRACT (hereinafter called the "Contract") is made on the __ day of __ month) of ___ (year), between, on the one hand _____
(Hereinafter called the "Client" which expression shall include the successors, legal representatives and permitted assigns) and, on the other hand, _____ (hereinafter called the "Consultants" which expression shall include the successors, legal representatives and permitted assigns).

WHEREAS

(a) the Client has requested the Consultants to provide certain consulting services as defined in the General Conditions of Contract attached to this Contract (hereinafter called the "Services"); and

(b) the Consultants, having represented to the Client that they have the required professional skills, and personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract;

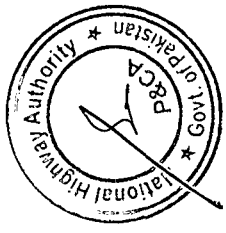
NOW THEREFORE the Parties hereby agree as follows:

1. The following documents attached hereto shall be deemed to form an integral part of this Contract:

   (a) the General Conditions of Contract;
   (b) the Special Conditions of Contract;
   (c) the following Appendices:

   [Note: If any of these Appendices are not used, the words "Not Used" should be inserted below/next to the title of the Appendix and on the sheet attached hereto carrying the title of that Appendix.]

   Appendix A: Description of the Services
   Appendix B: Reporting Requirements
   Appendix C: Key Personnel and Sub consultants
   Appendix D: Breakdown of Contract Price in Foreign Currency
   Appendix E: Breakdown of Contract Price in Local Currency
   Appendix F: Services & Facilities to be Provided by the Client
   Appendix G: Integrity Pact (for Services above Rs.10 million)



2. The mutual rights and obligations of the Client and the Consultants shall be as set forth in the Contract, in particular:

   (a) the Consultants shall carry out the Services in accordance with the provisions of the Contract; and

   (b) the Client shall make payments to the Consultants in accordance with the provisions of the Contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names in two identical counterparts, each of which shall be deemed as the original, as of the day, month and year first above written.

For and on behalf of

_____

Witness (CLIENT)

Signatures_____ Signatures _____

Name _____ Name _____

Title _____ Title _____

(Seal)

For and on behalf of

_____

Witness (CONSULTANTS)

Signatures_____ Signatures _____

Name _____ Name _____

Title _____ Title _____

(Seal)

II. GENERAL CONDITIONS OF CONTRACT

1. GENERAL PROVISIONS

1.1 Definitions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

(a) "Applicable Law" means the laws and any other instruments having the force of law in the Islamic Republic of Pakistan, as those may be issued and in force from time to time;

(b) "Contract" means the Contract signed by the Parties, to which these General Conditions of Contract (GC) are attached, together with all the documents listed in Clause 1 of such signed Contract;

(c) "Contract Price" means the price to be paid for the performance of the Services, in accordance with Clause 6;

(d) "Effective Date" means the date on which this Contract comes into force and effect pursuant to Sub-Clause 2.1;

(e) "GC" means these General Conditions of Contract;

(f) "Government" means the Government of the Islamic Republic of Pakistan and/or Provincial Government(s);

(g) "Foreign Currency" means currency other than the currency of Islamic Republic of Pakistan.;

(h) "Local Currency" means the currency of the Islamic Republic of Pakistan;

(i) "Member" in case the Consultants consist of a joint venture of more than one entity, means any of the entities, and "Members" means all of these entities;

(j) "Party" means the Client or the Consultants, as the case may be, and "Parties" means both of them;

(k) "Personnel" means persons hired by the Consultants or by any Sub consultant as employees and assigned to the performance of the Services or any part thereof;

(l) "SC" means the Special Conditions of Contract by which the GC are amended or supplemented;

(m) "Services" means the work to be performed by the Consultants pursuant to this Contract, as described in Appendix A;

(n) "Sub consultant" means any entity to which the Consultants subcontract any part of the Services in accordance with the provisions of Sub-Clause 3.6;

(o) "Third Party" means any person or entity other than the Client, the Consultants or a Sub consultant; and

(p) "Project" means the work specified in SC for which engineering consultancy services are desired.

1.2 Law Governing the Contract

This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law.

1.3 Language

This Contract has been executed in the English language which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract. All the reports and communications shall be in the English language.

1.4 Notices

Any notice, request, or consent made pursuant to this Contract shall be in writing and shall be deemed to have been made when delivered in person to an Authorized Representative of the Party to whom the communication is addressed, or when sent by registered mail, telex, or facsimile to such Party at the address of the Authorized Representatives specified under Sub-Clause SC 1.6. A Party may change its address for notice hereunder by giving the other Party notice of such change.

1.5 Location

The Services shall be performed at such locations as are specified in Appendix A and, where the location of a particular task is not so specified, at such locations as mutually agreed by the Parties.

1.6 Authorized Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed, under this Contract by the Client or the Consultants shall be taken or executed by the Authorized Representatives specified in the SC.

1.7 Taxes and Duties

Unless specified in the SC, the Consultants, Sub consultants, and their Personnel shall pay such taxes, duties, fees, and other impositions as may be levied under the Applicable Law, the amount of which is deemed to have been included in the Contract Price.

1.8 Leader of Joint Venture

In case the Consultants consist of a joint venture of more than one entity, the Consultants shall be jointly and severally bound to the Client for fulfillment of the terms of the Contract and

designate the Member named in the SC to act as leader of the Joint Venture, for the purpose of receiving instructions from the Client.

2. COMMENCEMENT, COMPLETION, MODIFICATION, AND TERMINATION OF CONTRACT

2.1 Effectiveness of Contract

This Contract shall come into force and effect on the date (the "Effective Date") of the Client's notice to the Consultants instructing the Consultants to begin carrying out the Services. This notice shall confirm that the effectiveness conditions, if any, listed in the SC have been met.

2.2 Termination of Contract for Failure to Become Effective

If this Contract has not become effective within such time period after the date of the Contract signed by the Parties as shall be specified in the SC, either Party may, by not less than twenty eight (28) days written notice to the other Party, declare this Contract to be null and void, and in the event of such a declaration by either Party, neither Party shall have any claim against the other Party except for the work (if any) already done or costs already incurred by a Party at the request of the other Party.

2.3 Commencement of Services

The Consultants shall begin carrying out the Services at the end of such time period after the Effective Date as shall be specified in the SC.

2.4 Expiration of Contract

Unless terminated earlier pursuant to Sub-Clause 2.9, this Contract shall expire when, pursuant to the provisions hereof, the Services have been completed and the payments of remunerations including the direct costs if any, have been made. The Services shall be completed within a period as is specified in the SC, or such extended time as may be allowed under Sub-Clause 2.6.

The term "Completion of Services" is as specified in the SC.

2.5 Modification

Modification of the terms and conditions of this Contract, including any modification of the scope of the Services or of the Contract Price, may only be made in writing, which shall be signed by both the Parties.

2.6 Extension of Time for Completion

If the scope or duration of the Services is increased:

(a) the Consultants shall inform the Client of the circumstances and probable effects;

(b) the increase shall be regarded as Additional Services; and

(c) the Client shall extend the time for Completion of the Services accordingly.

2.7 Force Majeure

2.7.1 Definition

(a) For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party and which makes a Party's performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial actions (except where such strikes, lockouts or other industrial actions are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.

(b) Force Majeure shall not include (i) any event which is caused by the negligence or intentional action of a Party or such Party's Sub consultants or agents or employees, nor (ii) any event which a diligent Party could reasonably have been expected to both (A) take into account at the time of the conclusion of this Contract and (B) avoid or overcome in the carrying out of its obligations hereunder.

(c) Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

2.7.2 No Breach of Contract

The failure of a Party to fulfill any of its obligations under the Contract shall not be considered to be a breach of, or default under this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event; (a) has taken all reasonable precautions, due care and reasonable alternative measures in order to carry out the terms and conditions of this Contract; and (b) has informed the other Party in writing not later than fifteen (15) days following the occurrence of such an event.

2.7.3 Extension of Time

Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

2.7.4 Payments

During the period of their inability to perform the Services as a result of an event of Force Majeure, the Consultants shall be entitled to continue to be paid under the terms of this Contract, as well as to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purpose of the Services and in reactivating the Services after the end of such period.

2.8 Suspension of Payments by the Client

The Client may, by written notice of suspension to the Consultants, suspend all payments to the Consultants hereunder if the Consultants fail to perform any of their obligations under this Contract, including the carrying out of the Services, provided that such notice of suspension

(i) shall specify the nature of the failure, and (ii) shall request the Consultants to remedy such failure within a period not exceeding thirty (30) days after receipt by the Consultants of such notice of suspension.

2.9 Termination

2.9.1 By the Client

The Client may terminate this Contract, by not less than thirty (30) days written notice of termination to the Consultants, to be given after the occurrence of any of the events specified in paragraphs (a) through (e) of this Sub-Clause 2.9.1 and sixty (60) days' in the case of the event referred to in paragraph (f):

(a) if the Consultants do not remedy a failure in the performance of their obligations under the Contract, within thirty (30) days after being notified or within any further period as the Client may have subsequently approved in writing;

(b) if the Consultants become (or, if the Consultants consist of more than one entity, if any of their Members becomes) insolvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary;

(c) if the Consultants fail to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause 7 hereof;

(d) if the Consultants submit to the Client a statement which has a material effect on the rights, obligations or interests of the Client and which the Consultants know to be false;

(e) if, as the result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days;

(f) if the Client, in its sole discretion, decides to terminate this Contract.

2.9.2 By the Consultants

The Consultants may terminate this Contract, by not less than thirty (30) days written notice to the Client, such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (d) of this Sub-Clause 2.9.2:

(a) if the Client fails to pay any monies due to the Consultants pursuant to this Contract and not subject to dispute pursuant to Clause 7 within forty-five (45) days after receiving written notice from the Consultants that such payment is overdue;

(b) if the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Consultants may have subsequently approved in writing) following the receipt by the Client of the Consultants' notice specifying such breach;

(c) if, as a result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days;

(d) if the Client fails to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause 7 hereof.

2.9.3 Cessation of Services

Upon receipt of notice of termination under Sub-Clause 2.9.1, or giving of notice of termination under Sub-Clause 2.9.2, the Consultants shall take all necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum. With respect to documents prepared by the Consultants, and equipment and materials furnished by the Client, the Consultants shall proceed as provided, respectively, by Sub-Clauses 3.8 or 3.9.

2.9.4 Payment upon Termination

Upon termination of this Contract pursuant to Sub-Clauses 2.9.1 or 2.9.2, the Client shall make the following payments to the Consultants:

(a) Remuneration and reimbursable direct costs expenditure pursuant to Clause 6 for Services satisfactorily performed prior to the effective date of termination. Effective date of termination for purposes of this Sub-Clause means the date when the prescribed notice period would expire;

(b) except in the case of termination pursuant to paragraphs (a) through (d) of Sub-Clause 2.9.1, reimbursement of any reasonable cost incidental to the prompt and orderly termination of the Contract, including the cost of the return travel of the Personnel, according to Consultants Traveling Allowance Rules.

In order to compute the remuneration for the part of the Services satisfactorily performed prior to the effective date of termination, the respective remunerations shall be proportioned.

2.9.5 Disputes about Events of Termination

If either Party disputes whether an event specified in paragraphs (a) through (e) of Sub-Clause 2.9.1 or in paragraph (a) through (d) of Sub-Clause 2.9.2 hereof has occurred, such Party may, within forty-five (45) days after receipt of notice of termination from the other Party, refer the matter to arbitration pursuant to Clause 7 hereof, and this Contract shall not be terminated on account of such event except in accordance with the terms of any resulting arbitral award.

3. OBLIGATIONS OF THE CONSULTANTS

3.1 General

The Consultants shall perform the Services and carry out their obligations with all due diligence, efficiency, and economy, in accordance with generally accepted professional techniques and practices, and shall observe sound management practices, and employ appropriate advanced technology and safe methods. The Consultants shall always act, in respect of any matter relating to this Contract or to the Services, as faithful advisers to the Client, and shall at all times support and safeguard the Client's legitimate interests in any dealings with Sub consultants or third parties.

3.2 Consultants Not to Benefit from Commissions, Discounts, etc.

The remuneration of the Consultants pursuant to Clause 6 shall constitute the Consultants' sole remuneration in connection with this Contract or the Services, and the Consultants shall not accept for their own benefit any trade commission, discount, or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations under the Contract, and the Consultants shall use their best efforts to ensure that the Personnel, any Sub consultants, and agents of either of them similarly shall not receive any such additional remuneration.

3.3 Confidentiality

The Consultants, their Sub consultants, and the Personnel of either of them shall not, either during the term or after the expiration of this Contract, disclose any proprietary or confidential information relating to the Project, the Services, this Contract, or the Client's business or operations without the prior written consent of the Client.

3.4 Professional Liability

The Consultants are liable for the consequence of errors and omissions on their part or on the part of their employees in so far as the design of the Project is concerned to the extent and with the limitations as specified herein below.

If the Client suffers any losses or damages as a result of proven faults, errors or omissions in the design of a project, the Consultants shall make good such losses or damages, subject to the conditions that the maximum liability as aforesaid shall not exceed twice the total remuneration of the Consultants for design phase in accordance with the terms of the Contract.

The liability of the Consultants expires after one (1) year from the stipulated date of completion of construction or after three (3) years from the date of final completion of the design whichever is earlier.

The Consultants may, to protect themselves, insure themselves against their liabilities but this is not obligatory. The extent of the insurance shall be up to the limit specified in second para above. The Consultants shall procure the necessary cover before commencing the Services and the cost of procuring such cover shall be borne by the Consultants up to a limit of one percent of the total remuneration of the Consultants for the design phase for every year of keeping such cover effective.

The Consultants shall, at the request of the Client, indemnify the Client against any or all risks arising out of the furnishing of professional services by the Consultants to the Client, not covered by the provisions contained in the first para above and exceeding the limits set forth in second para above provided the actual cost of procuring such indemnity as well as costs exceeding the limits set forth in fourth para above shall be borne by the Client.

3.5 Other Insurance to be taken out by the Consultants

The Consultants (a) shall take out and maintain, and shall cause any Sub consultants to take out and maintain, at their (or the Sub consultants', as the case may be) own cost but on terms and conditions approved by the Client, insurance against the risks, and for the coverage, as are specified in the SC; and (b) at the Client's request, shall provide evidence to the Client showing that such insurance has been taken out and maintained and that the current premiums have been paid.

3.6 Consultants' Actions Requiring Client's Prior Approval

The Consultants shall obtain the Client's prior approval in writing before taking any of the following actions:

(a) Appointing such Personnel as are listed in Appendix-C merely by title but not by name;

(b) entering into a subcontract for the performance of any part of the Services, it being understood (i) that the selection of Sub consultants and the terms and conditions of the subcontract shall have been approved in writing by the Client prior to the execution of the subcontract, and (ii) that the Consultants shall remain fully liable for the performance of the Services by the Sub consultants and its Personnel pursuant to this Contract;

(c) any other action that may be specified in the SC.

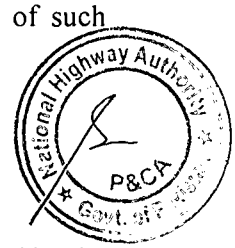
3.7 Reporting Obligations

The Consultants shall submit to the Client the reports and documents specified in Appendix B in the form, in the numbers, and within the periods set forth in the said Appendix.

3.8 Documents Prepared by the Consultants to be the Property of the Client

All plans, drawings, specifications, reports, and other documents and software prepared by the Consultants in accordance with Sub-Clause 3.7 shall become and remain the property of the Client, and the Consultants shall, not later than upon termination or expiration of this Contract, deliver (if not already delivered) all such documents and software to the Client, together with a detailed inventory thereof. The Consultants may retain a copy of such documents and software.

Restriction(s) about the future use of these documents is specified in the SC.



3.9 Equipment and Materials Furnished by the Client

Equipment and materials made available to the Consultants by the Client or purchased by the Consultants with funds provided exclusively for this purpose by the Client, shall be the property of the Client and shall be marked accordingly. Upon termination or expiration of this Contract, the Consultants shall make available to the Client an inventory of such equipment and materials and shall dispose of such equipment and materials in accordance with the Client's instructions or afford salvage value of the same. While in possession of such equipment and materials, the Consultants, unless otherwise instructed by the Client in writing,

shall insure them at the expense of the Client in an amount equal to their full replacement value.

3.10 Accounting, Inspection and Auditing

The Consultants (i) shall keep accurate and systematic accounts and records in respect of the Services hereunder, in accordance with internationally accepted accounting principles and in such form and detail as will clearly identify all relevant time charges, and cost, and the basis thereof, and (ii) shall permit the Client or its designated representatives periodically, and up to one year from the expiration or termination of this Contract, to inspect the same and make copies thereof as well as to have them audited by auditors appointed by the Client.

4. CONSULTANTS' PERSONNEL AND SUBCONSULTANTS

4.1 Description of Personnel

The titles, agreed job descriptions, minimum qualifications, and estimated periods of engagement in the carrying out of the Services of the Consultants' Key Personnel are described in Appendix C. The Key Personnel and Sub consultants listed by title and/or by name, as the case may be, in Appendix C are deemed to be approved by the Client.

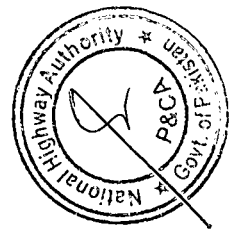
4.2 Removal and/or Replacement of Personnel

(a) Except as the Client may otherwise agree, no changes shall be made in the Key Personnel. If, for any reason beyond the reasonable control of the Consultants, it becomes necessary to replace any of the Key Personnel, the Consultants shall provide as a replacement a person of equivalent or better qualifications;

(b) If the Client, (i) finds that any of the Personnel have committed serious misconduct or have been charged with having committed a criminal action; or (ii) has reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Consultants shall, at the Client's written request specifying the grounds therefore, provide as a replacement a person with qualifications and experience acceptable to the Client.

(c) Except as the Client may otherwise agree, the Consultants shall; (i) bear all the additional travel and other costs arising out of or incidental to any removal and/or replacement; and (ii) bear any additional remuneration, to be paid for any of the Personnel provided as a replacement to that of the Personnel being replaced.

5. OBLIGATIONS OF THE CLIENT



5.1 Assistance, Coordination and Approvals

5.1.1 Assistance

The Client shall use its best efforts to ensure that the Client shall:

(a) provide at no cost to the Consultants, Sub consultants and Personnel such documents prepared by the Client or other consulting engineers appointed by the Client as shall be necessary to enable the Consultants, Sub consultants or Personnel to perform the

Services. The documents and the time within which such documents shall be made available, are as specified in the SC;

(b) Assist to obtain the existing data pertaining or relevant to the carrying out of the Services, with various Government and other organizations. Such items unless paid for by the Consultants without reimbursement by the Client, shall be returned by the Consultants upon completion of the Services under this Contact;

(c) issue to officials, agents and representatives of the concerned organizations, all such instructions as may be necessary or appropriate for prompt and effective implementation of the Services;

(d) Assist to obtain permits which may be required for right-of-way, entry upon the lands and properties for the purposes of this Contract;

(e) Provide to the Consultants, Sub consultants, and Personnel any such other assistance and exemptions as may be specified in the SC.

5.1.2 Co-ordination

The Client shall:

(a) co-ordinate and get or expedite any necessary approval and clearances relating to the work from any Government or Semi-Government Agency, Department or Authority, and other concerned organization named in the SC.

(b) Co-ordinate with any other consultants employed by him.

5.1.3 Approvals

The Client shall accord approval of the documents within such time as specified in the SC, whenever these are applied for by the Consultants.

5.2 Access to Land

The Client warrants that the Consultants shall have, free of charge, unimpeded access to all land of which access is required for the performance of the Services.

5.3 Changes in the Applicable Law

If, after the date of this Contract, there is any change in the Applicable Law which increases or decreases the cost of the Services rendered by the Consultants, then the remunerations and direct costs otherwise payable to the Consultants under this Contract shall be increased or decreased accordingly, and corresponding adjustment shall be made to the amounts referred to in Sub-Clause 6.2 (a) or (b), as the case may be.

5.4 Services and Facilities

The Client shall make available to the Consultants, Sub consultants and the Personnel, for the purpose of the Services and free of any charge, the services, facilities and property described in Appendix F at the times and in the manner specified in said Appendix F,

provided that if such services, facilities and property shall not be made available to the Consultants as and when so specified, the Parties shall agree on; (i) any time extension that it may be appropriate to grant to the Consultants for the performance of the Services; (ii) the manner in which the Consultants shall procure any such services, facilities and property from other sources; and (iii) the additional payments, if any, to be made to the Consultants as a result thereof pursuant to Clause 6 hereinafter.

5.5 Payments

In consideration of the Services performed by the Consultants under this Contract, the Client shall make to the Consultants such payments and in such manner as is provided by Clause 6 of this Contract.

6. PAYMENTS TO THE CONSULTANTS

6.1 Lump Sum Remuneration

The Consultants' total remuneration shall not exceed the Contract Price and shall be a fixed lump sum including all staff costs, incurred by the Consultants in carrying out the Services described in Appendix A. Other reimbursable direct costs expenditure, if any, is specified in the SC. Except as provided in Sub-Clause 5.3, the Contract Price may only be increased above the amounts stated in Sub-Clause 6.2 if the Parties have agreed to additional payments in accordance with Sub-Clauses 2.5, 2.6, 5.4 or 6.6.

6.2 Contract Price

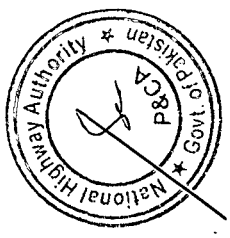
(a) Foreign currency payment shall be made in the currency or currencies specified as foreign currency or currencies in the SC, and local currency payment shall be made in Pakistani Rupees.

(b) The SC shall specify the breakup of remuneration to be paid, respectively, in foreign and in local currencies.

6.3 Terms and Conditions of Payment

Payment will be made to the account of the Consultants and according to the payment schedule stated in the SC. Payments shall be made after the conditions listed in the SC for such payments have been met, and the Consultants have submitted an invoice to the Client specifying the amount due.

6.4 Period of Payment



(a) Advance payment to the Consultants shall be affected within the period specified in the SC, after signing of the Contract Agreement between the Parties.

(b) Any other amount due to the Consultants shall be paid by the Client to the Consultants within twenty-eight (28) days in case of local currency and fifty-six (56) days in case of foreign currency after the Consultants' invoice has been delivered to the Client.

6.5 Delayed Payments

If the Client has delayed payments beyond the period stated in paragraph (b) of Sub-Clause 6.4, financing charges shall be paid to the Consultants for each day of delay at the rate specified in the SC.

6.6 Additional Services

Additional Services means:

(a) Services as approved by the Client outside the Scope of Services described in Appendix A;

(b) Services to be performed during the period extended pursuant to Sub-Clause 2.6, beyond the original schedule time for completion of the Services; and

(c) any re-doing of any part of the Services as a result of Client's instructions.

If, in the opinion of the Client, it is necessary to perform Additional Services during the currency of the Contract for the purpose of the Project, such Additional Services shall be performed with the prior concurrence of both the Parties. The Consultants shall inform the Client of the additional time (if any), and the additional remuneration and reimbursable direct costs expenditure for such Additional Services. If there is no disagreement by the Client within two weeks of this intimation, such additional time, remuneration and reimbursable direct costs expenditure shall be deemed to become part of the Contract. Such remuneration and reimbursable direct costs expenditure shall be determined on the basis of rates provided in Appendices D and E, in case the Additional Services are performed during the scheduled period of the Services, otherwise remuneration for Additional Services shall be determined on the basis of Consultants' billing rates prevailing at the time of performing the Additional Services.

6.7 Consultants' Entitlement to Suspend Services

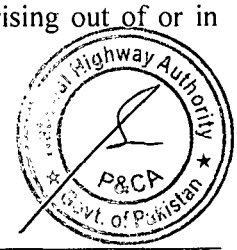
If the Client fails to make the payment of any of the Consultants' invoice (excluding the advance payment), within twenty-eight (28) days after the expiry of the time stated in paragraph (b) of Sub-Clause 6.4, within which payment is to be made, the Consultants may after giving not less than fourteen (14) days' prior notice to the Client, suspend the Services or reduce the rate of carrying out the Services, unless and until the Consultants have received the payment.

This action will not prejudice the Consultants entitlement to financing charges under Sub-Clause 6.5.

7. SETTLEMENT OF DISPUTES

7.1 Amicable Settlement

The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.



7.2 Dispute Settlement

Any dispute between the Parties as to matters arising pursuant to this Contract which cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement may be submitted by either Party for settlement in accordance with the provisions of the Arbitration Act, 1940 (Act No x of 1940) and of the Rules made there under and any statutory modifications thereto.

Services under the Contract shall, if reasonably possible, continue during the arbitration proceedings and no payment due to or by the Client shall be withheld on account of such proceedings.

8. INTEGRITY PACT

8.1 If the Consultant or any of his Sub consultants, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Consultant as Appendix-G to this Form of Contract, then the Client shall be entitled to:

(a) recover from the Consultant an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Consultant or any of his Sub consultant, agents or servants;

(b) terminate the Contract; and

(c) Recover from the Consultant any loss or damage to the Client as a result of such termination or of any other corrupt business practices of the Consultant or any of his Sub consultant, agents or servants.

On termination of the Contract under Sub-Para (b) of this Sub-Clause, the Consultant shall proceed in accordance with Sub-Clause 2.9.3. Payment upon such termination shall be made under Sub-Clause 2.9.4 (a) after having deducted the amounts due to the Client under Sub-Para (a) and (c) of this Sub-Clause.

III. SPECIAL CONDITIONS OF CONTRACT

No. Amendments of, and Supplements to, Clauses in the General Conditions of contract of GC Clause.

1.1 Definitions

(p) "Project means "*Consultancy Services for Feasibility Study and Detail Design for Upgradation of Existing National Highway (N-15) Mansehra-Naran-Jalkhad-Chilas to a 4-lane divided Expressway (235 Km Approx.).*"

1.2 Law Governing the Contract

The Consultants personnel shall at all times endeavor to observe and respect all laws, rules, regulations and customs prevailing within the Islamic Republic of Pakistan.

1.6 Authorized Representatives

The Authorized Representatives are the following:

For the Client:

General Manager (Design)
National Highway Authority
Plot No. 28, Mauve Area, G-9/1 P.O. Box 1205,
Islamabad.
Telephone: (+92) 51-9032901

For the Consultants: **(To be Finalized during Contract Negotiation)**

_____ (Name of Project Manager)
_____ (Project)
_____ (Address)
_____
Telephone : _____
Facsimile : _____
E-Mails : _____

1.7 Taxes and Duties

Payment of Taxes will be the responsibility of the Consultants in accordance with Pakistan Tax Laws.

[All notes should be deleted in final text. All blanks should be filled in.]

1.8 Leader of the Joint Venture

The leader of the Joint Venture is..... (Name of the Member of the Joint Venture).

[Note: If the Consultants do not consist of more than one entity, the Sub-*Clause 1.8 should be deleted.]*

2.1 Effectiveness of Contract

The date on which this Contract shall come into effect is the date when the Contract is signed by both the Parties.

2.2 Termination of Contract for Failure to Become Effective

The time period shall be thirty (30) days, or such other period as the Parties may agree in writing.

2.3 Commencement of Services

The Consultant shall commence the services immediately after signing of the Contract Agreement or such other time as the Parties may agree in writing.

2.4 Expiration of Contract

The services specified in the TOR shall be completed and all relevant reports submitted in the form and format acceptable to the Employer, within Two (02) Months from the date of signing of Contract Agreement or such other period as the Parties may agree in writing.

2.7.4 Payments

Following text is added at the end of the Para:

"Excluding overheads and profits."

3.4 Professional Liability

Professional indemnity bond for twice the remuneration in the joint name of Client and Consultants shall be provided as per last paragraph of GC 3.4 within 30 days after the issuance of Letter of Acceptance. The Consultants is to cover this cost in its overheads.

3.5 Insurance to be taken out by the Consultants

The risks and the coverages shall be as follows:

(a) Third Party motor vehicle liability insurance in respect of motor vehicles operated in Pakistan by the Consultants or their Personnel or any Sub-consultants or their Personnel, with a minimum coverage of Rs. 100,000/-.

(b) Insurance against loss of or damage to equipment purchased in whole or in part with funds provided under the Contract.

(c) The Consultants are required to insure their Employees and Professionals for Hospitalization/ Medical, Travel and Accident Cover for the duration of the Contract.

3.7 Reporting Obligations

Moreover, along with the hard copies "contractor/ consultant" etc. must provide duly certified Soft/ scanned copies of the all the documents prepared/ used/ referred etc. during the contract period. The soft/ scanned copies shall be stored in the appropriate storage media like external hard disk in a secure and structured manner. The scanned copies must have proper file names/ titles etc in appropriate folders for quick retrieval. The soft/ scanned copies provided by the contractor/ consultant must have third party certification and traceability.

3.8 Documents Prepared by the Consultants to be the Property of the Client

The Client and the Consultants shall not use these documents for purposes unrelated to this Contract without the prior written approval of the other Party.

5.1.1 Assistance

(a) The Client shall make available within 14 days from the Commencement Date, the documents namely: to be inserted as and when required.

5.1.2 Coordination

(a) The departments and agencies include as per requirement from time to time.

5.1.3 Approvals

The Client shall accord approval of the documents immediately but not later than fourteen (14) days from the date of their submission by the Consultants.

6.1 Lump Sum Remuneration

[Note: In case there are other expenditures in respect of which reimbursement is allowed in addition to the lump sum remuneration, details of such reimbursable direct costs expenditure which may include Sub consultants' costs, printing, communications, travel, accommodation etc., may be indicated herein. Each item shall be specified whether it is payable on the basis of (a) lump sum monthly rate; or (b) reimbursement of actual expenditures.].

6.2 Contract Price

(a) The amount in foreign currency is.....
The amount in local currency is Pakistani Rupees.....

(b) The breakup of foreign and local currencies shall be as under:

- For Planning and Designing, total foreign currency comprising.... (Name the currency/currencies) is ..... and total Pak Rs. is

6.3 Terms and Conditions of Payment

A lump sum amount in local currencies against services referred under SC 6.2 shall be paid to the Consultants for the Services to be completed within the period specified in SC 2.4. Payments shall be made according to the following schedule:

AS PER TOR

6.4 Period of Payment

(a) The time period for advance payment shall be .....() days after signing of Contract Agreement by both the Parties. (Fill in the time period e.g., thirty (30) days).

6.5 Delayed Payments

Financing charges are as under:

(ii) for local currency = Eight percent (08%) per annum.

6.6 Additional Services

The Consultants shall be prepared at any time during the project to provide expert technical advice and skill to the Client who may ask and need such assistance on any phase or specific feature of the Project. The Consultants will be separately compensated for all such services not covered in the original Services.

9. Priority of Documents

Following is to indicate priority of documents forming part of this Contract to resolve an ambiguity or non-clarity in the provision:

- ✓ Contract Agreement;
- ✓ Minutes of Contract Negotiation Meeting;
- ✓ The Special Conditions of Contract;
- ✓ The General Conditions of Contract;
- ✓ Minutes of Pre-Proposal Meeting and Addenda;
- ✓ Scope of Services/ Terms of Reference;
- ✓ Other documents including Integrity Pact and JV agreement (if any).

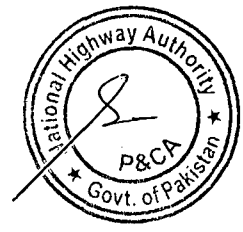
10. Royalties

The Consultants shall save harmless and indemnify the Client from and against all claims and proceedings on account of or for infringement of any patent right, design, trademark or name or other protected rights in respect to any patented designs, features or equipment they may use for carrying out the Services, and shall pay all royalties etc. thereto.

11. Penalty

If the Consultants fails to comply with the time to completion as given in the Contract, the Client will impose a penalty at the rate of 0.05% of the fee for incomplete portion of work as per Appendix-E for each day of delay up to a maximum of 10% of the same amount.

IV APPENDICES



Appendix A

Description of the Services

[Give detailed descriptions of the Services to be provided, dates for completion of various tasks, place of performance for different tasks, specific tasks to be approved by Client, etc.]

Appendix B

Reporting Requirements

Pursuant to Sub-Clause GC-3.7, the Consultants shall submit the following reports:

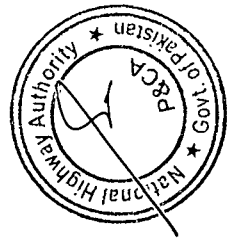
[List format, frequency, and contents of reports; persons to receive them; dates of submission and the number of copies of each submittal; etc. If no reports are to be submitted, state here "Not applicable".]

Appendix C

Key Personnel and Sub consultants

[List under: C-1 Title [and names, if already available], activities of job descriptions of key Personnel to be assigned to work and staff-months for each.

C-2 List of approved Sub consultants (if already available); same information with respect to their Personnel as in C-1.]



Appendix D

Breakdown of Contract Price in Foreign Currency

[List here the elements of cost used to arrive at the breakdown of the Contract Price-foreign currency portion:

1. Remuneration for various items on the basis of rates as mutually agreed.

2. Other reimbursable direct costs expenditure.

3. Total, remuneration and reimbursable direct costs expended (1 + 2)

Note:

This appendix will exclusively be used for determining remuneration for Additional Services in accordance with Sub-Clause GC 6.6.]

Appendix E

Breakdown of Contract Price in Local Currency

[List here the elements of cost used to arrive at the breakdown of the Contract Price-local currency portion:

1. Remuneration for various items on the basis of rates as mutually agreed.

2. Other reimbursable direct costs expenditure related to:

   (a) Support staff, and work charged staff;

   (b) Office expenditures related to:

      (i) rentals;

      (ii) furnishing and equipment;

      (iii) operation and maintenance of office, office equipment and furniture, office supplies.

   (c) Transport including running and maintenance, and other associated costs;

   (d) Traveling etc.

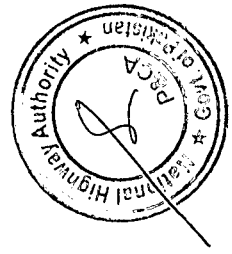
   (e) Other costs

3. Total, remuneration and reimbursable direct costs expenditure = (1 + 2).

   Note:

   1. Each item of reimbursable direct costs expenditure shall be specified whether it is payable on the basis of (a) lump sum monthly rate; or (b) reimbursement of actual expenditures.

   2. This appendix will exclusively be used for determining remuneration for Additional Services in accordance with Sub-Clause GC 6.6.]



Appendix F

Services and Facilities to be provided by the Client

As Per TOR

Appendix G
(INTEGRITY PACT)

Declaration of Fees, Commission and Brokerage etc. Payable by the Suppliers of Goods, Services & Works in Contracts Worth Rs.10.00 million or More

Contract No._____ Dated: _____ Contract Value: _____

Contract Title: ..... [name of Supplier] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GOP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GOP through any corrupt business practice. Without limiting the generality of the foregoing, [name of Supplier] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GOP, except that which has been expressly declared pursuant hereto.

[name of Supplier] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GOP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Supplier] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to GOP under any law, contract or other instrument, be voidable at the option of GOP.

Notwithstanding any rights and remedies exercised by GOP in this regard, [name of Supplier] agrees to indemnify GOP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GOP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GOP.

Name of Buyer: National Highway Authority

Signature: .....

[Seal]

Name of Seller/Supplier: .....

Signature: .....

[Seal]

CONTRACT FOR ENGINEERING CONSULTANCY SERVICES

Between

_____

(NAME OF THE CLIENT)

And

_____

(NAME OF THE JOINT VENTURE OF THE CONSULTANTS)

For

_____ **(BRIEF SCOPE OF SERVICES)**

OF_____ **(NAME OF PROJECT)**

_____

Month and Year

_____ **(NAME OF THE JOINT VENTURE OF THE CONSULTANTS)**
_____ **(Name of Individual Consultants)**
_____ **(Name of Individual Consultants)**

FORM OF CONTRACT

[Note: Use this Form of Contract when the Consultants perform Services as a Joint Venture.

This CONTRACT (hereinafter called the "Contract") is made on the _____ day of ___ (month) of ____ (year), between, on the one hand, _____

_____

(Hereinafter called the "Client" which expression shall include the successors, legal representatives and permitted assigns) and, on the other hand, a joint venture consisting of the following entities, each of which will be jointly and severally liable to the Client for all the Consultants' obligations under this Contract, namely:

_____

_____

_____

(Hereinafter collectively called the "Consultants" which expression shall include its successors, legal representatives and permitted assigns).

WHEREAS

(a) the Client has requested the Consultants to provide certain consulting services as defined in the General Conditions of Contract attached to this Contract (hereinafter called the "Services"); and

(b) the Consultants, having represented to the Client that they have the required professional skills, and personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract;

NOW THEREFORE the Parties hereby agree as follows:

1. The following documents attached hereto shall be deemed to form an integral part of this Contract:

   (a) the General Conditions of Contract;
   (b) the Special Conditions of Contract;
   (c) the following Appendices:

   [Note: If any of these Appendices are not used, the words "Not Used" should be inserted below next to the title of the Appendix and on the sheet attached hereto carrying the title of that Appendix.]

Appendix A: Description of Services
Appendix B: Reporting Requirements
Appendix C: Key Personnel and Sub-consultants
Appendix D: Breakdown of Contract Price in Foreign Currency
Appendix E: Breakdown of Contract Price in Local Currency
Appendix F: Services & Facilities to be Provided by the Client and Counterpart Personnel to be Made Available to the Consultants by the Client.
Appendix G: Integrity Pact (for Services above Rs. 10 Million)

2. The mutual rights and obligations of the Client and the Consultants shall be as set forth in the Contract, in particular:

(a) The Consultants shall carry out the Services in accordance with the provisions of the Contract; and

(b) The Client shall make payments to the Consultants in accordance with the provisions of the Contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names in two identical parts each of which shall be deemed as the original, as of the day, month and year first above written.

For and on behalf of

_____

CLIENT'S NAME

Witness

Signature _____ Signature _____

Name _____ Name _____

Title _____ Title _____

(Seal)

For and on behalf of

_____

NAME OF THE JOINT VENTURE OF THE CONSULTANTS

_____

_____

Name of Member No. 1

Witness

Signature _____ Signature _____

Name _____ Name _____

Title _____ Title _____

(Seal)

_____

Name of Member No. 2

Witness

Signature _____ Signature _____

Name _____ Name _____

Title _____ Title _____

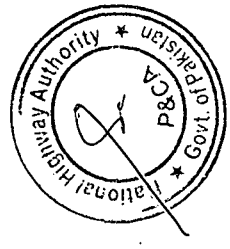
(Seal)

Name of Member No. 3

Witness

Signature _____
Name _____
Title _____

Signature _____
Name _____
Title _____
(Seal)



Declaration of Ultimate Beneficial Owners Information for Public Procurement Contracts

(For contracts worth Rs. 50 million and above)

1. Name
2. Fathers Name/Spouse's Name
3. CINIC/NICOP/Passport No.
4. Nationality
5. Residential address
6. Email Address
7. Date on which shareholding, control or interest acquired in the business.
8. In case of indirect shareholding, control or interest being exercised through intermediary companies entries or other legal person or legal arrangements in the chain of ownership or control, following additional particulars to be provided:

1	2	3	4	5	6	7	8	9	10
Name	Legal form (company/ Limited Liability Partnership/ Association of Persons/Single Member Company/ partnership Firm/ Trust/ Any other individual, body corporate (to be specified)	Date of incorporation/registration	Name of registering authority	Business Address	Country	Email Address	Percentage of shareholding, control or interest of BO in the Legal person or legal arrangement	Percentage of shareholding, control or interest of legal person or legal arrangement in the company	Identify of natural person who ultimately owns or controls the legal person or arrangement

9. Information about Board of Directors (Details Shall be provided regarding number of shares in the capital of the company as set opposite respective names).

1	2	3	4	5	6	7	8
Name and surname (in Block Letters)	CINIC No.(in case of foreigner, Passport No.)	Father's/ Husband's Name in full	Current Nationality	Any other Nationality (ies)	Occupation	Residential address in full or the registered/ principal office address for a subscribers other than natural person	Number of share taken by cash subscriber (in figures and words)
			Total Number of shares taken (in figures and words)				

10. Any other information incidental to or relevant to Beneficial owner(s)

Name and signature
(Person authorized to issue notice on behalf of the company)

National Highway Authority P&CA Govt. of Pakistan

REQUIREMENTS OF AUDIT REPORTS

Sr. No.	Types of Organization	Minimum requirement of auditors	Basis of Preparation of Audit Reports	Basis of preparation of Financial Statements
1.	Corporate entities (duly registered with Securities and Exchange Commission of Pakistan)	Licensed Chartered Accountant Firms (Minimum Partnership Firm with international affiliation) enlisted and appearing on the list of firms in ICAP directory as at the finalization of procurement.	International auditing standards as applicable in Pakistan.	i. Companies Ordinance 1984 or Companies Act 2017 (Whichever is applicable). ii. International accounting and financial reporting standards as applicable in Pakistan at the time of issuance of the reports.
2.	Partnership Firm/ AOPs/ Joint Ventures	Licensed Chartered Accountant Firms (Minimum Partnership Firm) enlisted and appearing on the list of firms in ICAP directory as at the finalization of procurement.		International accounting and financial reporting standards as applicable in Pakistan at the time of issuance of the reports.
3.	Individuals/ Sole Proprietorship	Licensed Cost & Management Accountant Firms enlisted and appearing on the list of firms in ICMAP directory as at the finalization of procurement for organization of net worth up to 10 million only. In all other cases Licensed Chartered Accountant Firms enlisted and appearing on the list of firms in ICAP directory as at the finalization of procurement.		Consistent and acceptable Accounting policies.