

# National Highway Authority

ISO 9001:2015 Certified



FRINDLY HIGHWAYS

## REQUEST FOR PROPOSAL

For

### CONSULTANCY SERVICES FOR FEASIBILITY STUDY & DETAILED DESIGN FOR CONSTRUCTION OF MANSEHRA-MUZAFARABAD EXPRESSWAY (CPEC LINK) (26.6 KM APPROX.)

Tender No. 6(638)

Pages-1 to 157

July, 2024

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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.

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Consultancy Services for Feasibility Study & Detailed Design for Construction of Mansehra-Muzafarabad Expressway (CPEC Link) (26.6 Km Approx.)

## ATTACHMENTS

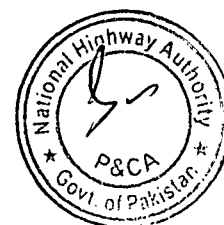
1. Instructions to Consultants
2. Data Sheet
3. Summary Evaluation Sheet
4. Personnel Evaluation Sheet
5. Technical Proposal Forms
6. Financial Proposal Forms
7. Appendix A (Terms of Reference)
8. Appendix B (List of Supporting Documents)
9. Appendix C (Person-Months and Activity Schedule)
10. Appendix 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

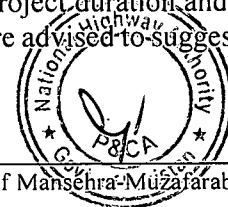
- 2.1 To prepare a proposal, please use the Documents specified in the **Data Sheet**.
- 2.2 Consultants requiring a clarification of the Documents must notify the Client, in writing, not later than twenty-one (21) days before the proposal submission date. Any request for clarification in writing, or 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**.



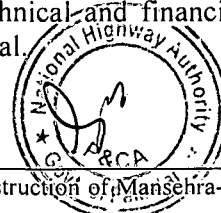
- 3.1.5 The technical proposal shall not include any financial information. The Consultant's comments, if any, on the data, services and facilities to be provided by the Client and specified in the TOR shall be included in the technical proposal.

### 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 envelopes, 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:  $S_t$ . 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 ( $F_m$ ) among all shall be given a financial score:  $S_f$  of 1000 points. The financial scores of the proposals shall be computed as follows:

$$S_f = (1000 \times F_m) / F$$

(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 ( $S_t$ ) 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**:

$$S = S_t \times T \% + S_f \times P \%$$

## 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

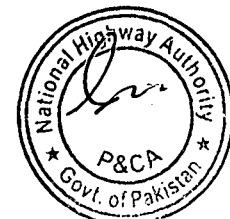
- 8.1 Please inform the Client by telex/facsimile courier or any other means:
- i. That you received the letter of invitation;
  - ii. Whether you will submit a proposal; and
  - iii. If you plan to submit a proposal, when and how you will transmit it.



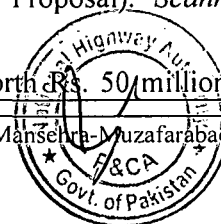
**DATA SHEET**

<b>LOI Clause No.</b>	<b>DESCRIPTION OF CLAUSE</b>
1.1	<p>The name of Assignment is: <b>“Consultancy Services for Feasibility Study &amp; Detailed Design for Construction of Mansehra-Muzafarabad Expressway (CPEC Link) (26.6 Km Approx.)”</b></p> <p>The Client’s Name is: <b>National Highway Authority</b></p>
1.2	The description and the objectives of the assignment are: <b>As per TOR</b>
1.3	<p>Phasing of the Assignment (if any): <b>Nil</b></p> <p>The Consultant shall commence the assignment upon signing of Contract Agreement between NHA and the successful Consultant.</p>
1.5	<p>Pre-Proposal Conference: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The name(s) and address(es) of the Official(s) is (are):</p> <p><b>General Manager (P&amp;CA)</b> National Highway Authority 28, Mauve Area, G-9/1 Islamabad</p> <p>Date, Time and Venue for Pre-Proposal Conference:</p> <p><b>Date: 25<sup>th</sup> July, 2024</b> <b>Time: 1100 hours</b> <b>Venue: General Manager (P&amp;CA)</b> National Highway Authority 28, Mauve Area, G-9/1 Islamabad.</p>
1.6	<p>The Client shall provide the following inputs:</p> <p><b>As per TOR and Appendix E.</b></p>
1.7	<p>Following sub-clauses are added:</p> <p>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.</p> <p>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.</p>

Consultancy Services for Feasibility Study & Detailed Design for Construction of Mansehra-Muzafarabad Expressway (CPEC Link) (26.6 Km Approx.)



	<p>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.</p> <p>vi. The Consultants shall clear all payable dues and salaries of its staff in time and not later than 10<sup>th</sup> 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.</p> <p>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).</p>
1.8	<p>The Invited Consultants/ <b>Eligible Consultants</b> are: <u>Any firm meeting the following requirements:</u></p> <p><b><u>Eligibility of Consultants:</u></b></p> <p><b><u>(I) Technical Proposal:</u></b></p> <p>i. For Single Entity, Valid Registration Certificate of Pakistan Engineering Council with Project Profile Code of 1215 (ii) (<i>Highways/ Bridges/Tunnels as applicable</i>). 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 <u>entitle the Client to reject proposal</u>.</p> <p>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.</p> <p>iii. In case of JV members, Letter of Intent to form JV on each firm's letter head is required in original (<i>scanned copy is not acceptable</i>). <i>The specimen is attached at <b><u>Annexure-A</u></b></i></p> <p>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)</p> <p>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.</p> <p><b><u>(II) Financial Proposal:</u></b></p> <p>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). <i>Scanned financial proposal shall be rejected.</i></p> <p>ii. While engaging in Public Procurement contracts worth <b>Rs. 50/million</b> and above,</p>



	<p>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.</p> <p><b>(III)</b> 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 proposal 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 <b>dis-qualified/ non-responsive</b>.</p> <p><b>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.</b></p>
2.1	<p>The Documents are:</p> <ul style="list-style-type: none"> <li>(a) Letter of Invitation (LOI).</li> <li>(b) Instructions to Consultants (ITC).</li> <li>(c) Data Sheet.</li> <li>(d) Technical Proposal Forms.</li> <li>(e) Financial Proposal Forms</li> <li>(f) Appendix – A: TOR and Background Information.</li> <li>(g) Appendix – B: List of Supporting Documents</li> <li>(h) Appendix – C: Man-Months and Activity Schedule</li> <li>(i) Appendix – D: Client’s Requirements from the Consultant.</li> <li>(j) Appendix – E: Personnel Equipment, Facilities and Other Services to be provided by the Client.</li> <li>(k) Appendix – F: Copy of Model Agreement/ Draft Form of Contract &amp; Appendices etc.</li> <li>(l) Form of Contract (<i>For Consultants to perform services as a Joint Venture</i>)</li> </ul>
2.2	<p>The words “Twenty-one (21)” is deleted in its entirety and replaced with “Ten (10)”. The information will be shared through email or courier.</p> <p>The address for seeking clarification is:</p> <p><b>General Manager (P&amp;CA)</b>  National Highway Authority  28, Mauve Area, G-9/1,  Islamabad  E-mail: <a href="mailto:gmpca.nha@gmail.com">gmpca.nha@gmail.com</a>  <a href="mailto:directorservices.pca@gmail.com">directorservices.pca@gmail.com</a></p>

2.3	<p>Add following clause:</p> <p>“The information will be shared to all prospective consultants through uploading on NHA website/ PPRA Website or publishing on Newspapers whatever the case”.</p>
3.1.4	<p>a. Add following at the end of Sub – Para 3.1.4 (b):</p> <p>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.</p> <p>c. The term associates, if used in the proposal or otherwise shall not be considered as an alternative of JV member. <u>Any personnel proposed for the Assignment but belonging to the so-called associates (Sub-consultants) shall not be marked in evaluation of technical proposal</u> 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.</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The minimum required experience of proposed Key Personnel is given below:</p>
<b>FOR KEY PERSONNEL</b>	
<b>Team Leader / Sr. Highway Engineer</b>	<p><b>Education:</b> Preferably M.Sc. (Transportation Engineering) or minimum B.Sc. (Civil Engineering).</p> <p><b>Experience:</b> Preferably twenty (20) years’ design experience as Team Leader/ Senior Highway Engineer on Highways/ Roads Projects.</p> <p><b>Rating:</b> M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.</p>
<b>Senior Structural /Bridge Engineer</b>	<p><b>Education:</b> Preferably M.Sc. (Structural Engineering) or minimum B.Sc. (Civil Engineering).</p> <p><b>Experience:</b> Preferably fifteen (15) years’ design experience as Senior Structural/ Bridge Engineer on Highways/ Roads Projects.</p> <p><b>Rating:</b> M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.</p>
<b>Pavement &amp; Drainage Engineer</b>	<p><b>Education:</b> Preferably M.Sc. (Transportation Engineering) or minimum B.Sc. (Civil Engineering).</p> <p><b>Experience:</b> Preferably fifteen (15) years’ design experience as Pavement &amp; Drainage Engineer on Highways/ Roads Projects.</p> <p><b>Rating:</b> M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.</p>

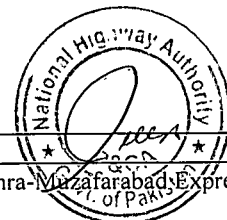


<p><b>Junior Structure Engineer</b></p>	<p><b>Education:</b> M.Sc. (Structural Engineering) or minimum B.Sc. (Civil Engineering).</p> <p><b>Experience:</b> Preferably seven (07) years' design experience as Structural/ Bridge Engineer on Highways/ Roads Projects.</p> <p><b>Rating:</b> M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.</p>
<p><b>Junior Highway Engineer</b></p>	<p><b>Education:</b> Preferably M.Sc. in (Transportation Engineering) or minimum B.Sc. (Civil Engineering).</p> <p><b>Experience:</b> Preferably seven (07) years' design experience as Highway Engineer on Highways/ Roads Projects.</p> <p><b>Rating:</b> M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.</p>
<p><b>ITS Expert</b></p>	<p><b>Education:</b> Preferably Master Degree in (Computer Sciences/ Information Technology) or minimum Bachelor's Degree in (Computer Sciences/ Information Technology)</p> <p><b>Experience:</b> Preferably seven (07) years' experience as ITS Expert on Highways/ Roads Projects.</p> <p><b>Rating:</b> M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. with relevant training - 80%; B.Sc. without relevant training - 70%.</p>
<p><b>Transport Economist</b></p>	<p><b>Education:</b> 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.</p> <p><b>Experience:</b> Preferably twelve (12) years' design experience as Transport Economist on Highways/ Roads Projects].</p> <p><b>Rating:</b> M.Sc. with relevant training - 100%; M.Sc. without relevant training - 90%; B.Sc. (Transportation Engineering) or M.Sc. Economics with relevant training - 80%; B.Sc.(Transportation Engineering) or M.Sc. Economics without relevant training - 70%.</p>
<p><b>Quantity Surveyor</b></p>	<p><b>Education:</b> Preferably B.Sc. (Civil Engineering) or minimum DAE (Civil).</p> <p><b>Experience:</b> Preferably twelve (12) years' design experience as Quantity Surveyor on Highways/ Roads Projects.</p> <p><b>Rating:</b> B.Sc. with relevant training - 100%; B.Sc. without relevant training - 90%; DAE (Civil) with relevant training - 80%; DAE (Civil) without relevant training - 70%.</p>

Consultancy Services for Feasibility Study & Detailed Design for Construction of Mansehra-Muzafarabad Expressway (CPEC Link) (26.6 Km Approx.)



	<p><b><u>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.</u></b></p> <p>e. Training is an important feature of this Assignment:  <b>Yes</b> <input checked="" type="checkbox"/> <b>No</b> <input type="checkbox"/>          If Yes, details of training are given in TOR</p>
3.2.3	<p>Professional liability, insurances (description or reference to appropriate documentation):</p> <p>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.</p> <p>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.</p>
3.2.4	The currency of cost shall be expressed in <b>Pak. Rupees.</b>
4.1	<p>The number of copies of the Proposal required is:</p> <p><b>TECHNICAL PROPOSAL: ONE ORIGINAL AND THREE COPIES WITH CD/USB (SOFT FORM OF COMPLETE TECHNICAL PROPOSAL IN PDF FORM) IN SEALED ENVELOPE</b></p> <p><b>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</b></p> <p>The address for writing on the proposal is:</p> <p><b>General Manager (P&amp;CA)</b>          National Highway Authority          28, Mauve Area G-9/1 Islamabad          Telephone: +92-51-9032727, Facsimile: +92-51-9260419</p>
4.4	<p>The date and time of proposal submission is:</p> <p>Date: <b>13<sup>th</sup> August, 2024</b>          Time: <b>1130 hours</b>          Location of Submission: <b>General Manager (P&amp;CA)</b>          National Highway Authority          28-Mauve Area G-9/1 Islamabad</p>
4.5	<p>Validity period of the proposal is: <b>270 days (Proposal shall be valid for 270 days after the date of submission of proposal).</b></p> <p>The location for negotiation of proposal is:</p> <p><b>General Manager (P&amp;CA)</b>          National Highway Authority          28-Mauve Area G-9/1 Islamabad          Telephone: +92-51-9032727          Facsimile: +92-51-9260419</p>



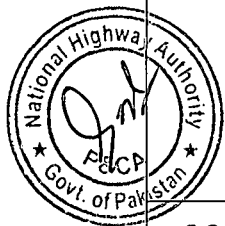


<b>5.2</b>	The evaluation of technical proposal shall be based on following criteria:	
<b>Sr. No.</b>	<b>Description / Items</b>	<b>Points</b>
<b>1.</b>	<b>Experience of the Firm</b>	<b>100</b>
	1-a) General Experience in road Transport Sector *	<u>(25)</u>
	1-b) Specific Experience related to particular Assignment*	<u>(75)</u>
<b>2.</b>	<b>Approach &amp; Methodology</b>	<b>250</b>
	2-a) Appreciation of the Project	<u>(70)</u>
	(i). Evidence of Site Visit with Photographs	<u>(30)</u>
	(ii). Clarity of appreciation	<u>(20)</u>
	(iii). Comprehensiveness of appreciation	<u>(20)</u>
	2-b) Problem Statement/ Understanding of Objectives	<u>(50)</u>
	(i). Identification of Problems/ Objectives	<u>(30)</u>
	(ii). Components of Proposed Services	<u>(20)</u>
	2-c) Methodology	<u>(80)</u>
	(i). Proposed Solutions for this Project	<u>(30)</u>
	(ii). Quality of Methodology	<u>(20)</u>
	(iii). Conciseness, clarity and completeness of proposal**	<u>(30)</u>
	2-d) Suggested changes for improvement in TOR	<u>(10)</u>
	2-e) Work Program	<u>(20)</u>
	2-f) Staffing Schedule	<u>(20)</u>
<b>3.</b>	<b>Key Staff***</b>	<b>450</b>
<b>4.</b>	<b>Performance Certification from clients****</b>	<b>100</b>
<b>5.</b>	<b>Present Commitments (current engagement and available strength – justification)</b>	<b>50</b>
<b>6.</b>	<b>Transfer of Knowledge (Methodology/ Plans) *****</b>	<b>50</b>
	Total Points:	<b>1000</b>
	<b>Minimum qualifying technical score:</b>	<b>700</b>
	<p>* 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.</p> <p>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.</p> <p><b>Note:</b> Any project mentioned completed under Form A-2 (<i>Specific Experience</i>) 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.</p>	

- \*\* 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
<b>Total Points:</b>		<b>100</b>



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”

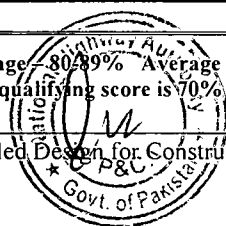
	The date, time, and address of the financial proposal opening shall be informed after evaluation and approval of technical proposals, accordingly.
5.3.3	The weights given to the Technical and Financial Proposals are: <b>Technical (T%): 80%</b> <b>Financial (P%): 20%</b>
6.1	Add following at the end of this Para: Negotiation meeting will be called if required by the client.
7.2	The assignment is expected to commence in: <b>September, 2024</b>
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
<b>1. Firms Experience</b>	<b>100</b>				
General Experience in road Transport Sector	25				
Specific Experience related to particular Assignment	75				
<b>2. Approach and Methodology</b>	<b>250</b>				
2-a. <u>Appreciation of the Project</u>	70				
(i) Evidence of Site Visit with Photographs	(30)				
(ii) Clarity of appreciation	(20)				
(iii) Comprehensiveness of appreciation	(20)				
2-b. <u>Problem Statement/ understanding of objectives</u>	50				
(i) Identification of Problems/ Objectives	(30)				
(ii) Components of Proposed Services	(20)				
2-c. <u>Methodology</u>	80				
(i) Proposed Solutions for this Project	(30)				
(ii) Quality of Methodology	(20)				
(iii) Conciseness, clarity and completeness of proposal	(30)				
2-d. <u>Suggested Changes for Improvement in TOR</u>	10				
2-e. <u>Work Program</u>	20				
2-f. <u>Staffing Schedule</u>	20				
<b>3. Key Personnel</b>	<b>450</b>				
Firm affidavit for presence of personnel	25				
i. Team Leader/ Sr. Highway Engineer	100				
ii. Senior Structural/Bridge Engineer	80				
iii. Pavement & Drainage Engineer	60				
iv. Junior Structure Engineer	40				
v. Junior Highway Engineer	40				
vi. ITS Expert	40				
vii. Transport Economist	35				
viii. Quantity Surveyor	30				
<b>4. Performance Certification from clients</b>	<b>75</b>				
Affidavit on stamp paper duly attested by the Oath Commissioner regarding non-blacklisting	25				
<b>5. Present Commitments (current engagement and available strength – justification)</b>	<b>50</b>				
<b>6. Transfer of Knowledge (Methodology/ Plans)</b>	<b>50</b>				
<b>TOTAL:</b>	<b>1000</b>				

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.



## 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)
		Percentage Rating	Weighted Rating (A)	Percentage Rating	Weighted Rating (B)	Percentage Rating	Weighted Rating (C)	(A+B+C)
(Show all experts to be evaluated)								
i. Team Leader/ Sr. Highway Engineer								
ii. Senior Structural/Bridge Engineer								
iii. Pavement & Drainage Engineer								
iv. Junior Structure Engineer								
v. Junior Highway Engineer								
vi. ITS Expert								
vii. Transport Economist								
viii. 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 ( <b>Annexure-D</b> ).	
		Consultant’s Organization and Experience.	As given below
√	A-2	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
		Comments/ Suggestions of Consultant	[See footnote] <sup>1</sup>
√	A-4	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 ( <i>Man-months of staff and Project Duration as per TOR.</i> )	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**

<sup>1</sup> 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.

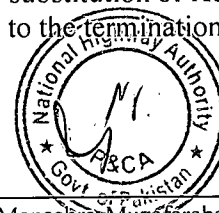
OR

(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**

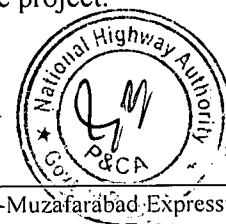
- **A. Detail about consultant(s) Organization.**
- Hierarchy/ organizational chart, Office address, Employees details, etc.,
- **B. Relevant Services (as per RFP notice) carried out in the last ten years (10) which best illustrate qualifications**
- General experience in road Transport Sector; maximum 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 (Month/Year):	Date
		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**

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(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.**

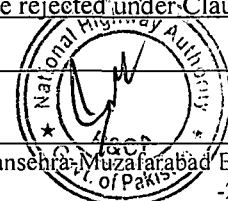
1.

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:

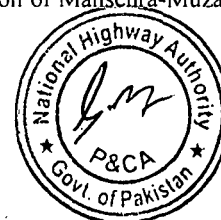
[Give an outline of staff member's experience and training most pertinent to tasks on assignment. Describe degree of responsibility held by staff member on relevant previous assignments and give dates and locations. Use up to one page].

◆ 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

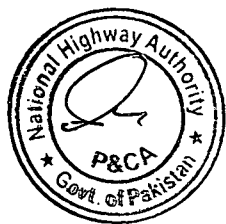
Date: \_\_\_\_\_  
Day/Month/Year

**Note: copy or scanned signatures are not allowed**



**COMPLETION AND SUBMISSION OF REPORTS AS PER TOR**

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



**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





**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



**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,



Signature \_\_\_\_\_  
(Authorized Representative)

Full Name \_\_\_\_\_

Designation \_\_\_\_\_

Address \_\_\_\_\_

**CURRENT COMMITMENTS OF THE FIRM**

**(List MUST be comprehensive including projects from clients other than NHA as well)**

Name of project	Single or JV	Task Assignment	Start date of the project	Expected date of completion



**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;*

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

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).

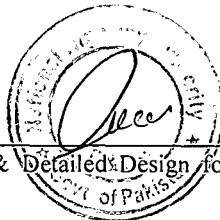
\_\_\_\_\_  
Signature of Authorized  
Representative of the Lead firm

Date: \_\_\_\_\_  
Day/Month/Year

\_\_\_\_\_  
(Seal)

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: \_\_\_\_\_  
Authorized Representative Day/Month/Year  
*[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: \_\_\_\_\_  
Authorized Representative [Lead Firm] Day/Month/Year  
*[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.



## 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**

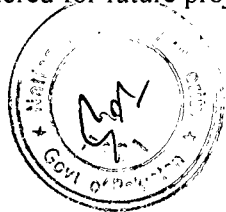
Project: \_\_\_\_\_ Consultant: \_\_\_\_\_

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.



**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.



**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 \$)
<b>A. All Foreign Expatriates including Foreign Specialist Sub-consultant (if any)</b>					
				<b>Sub-Total:</b>	

NOT APPLICABLE



**ESTIMATED LOCAL CURRENCY SALARY COSTS/REMUNERATION**

**KEY EXPERTS**

Sr. No.	Expert Position	No. of persons	Individual Man Months	Monthly Billing Rate	Total Estimated Amount (Rs.)
1	Team Leader/ Sr. Highway Engineer	1	5.00		
2	Senior Structural/Bridge Engineer	1	3.00		
3	Pavement & Drainage Engineer	1	1.00		
4	Junior Structure Engineer	1	4.00		
5	Junior Highway Engineer	1	4.00		
6	ITS Expert	1	1.00		
7	Transport Economist	1	1.00		
8	Quantity Surveyor	1	1.50		
	<b>Sub-Total:</b>				





**Form A-15**

Page 3 of 3

**ESTIMATED LOCAL CURRENCY SALARY COSTS/REMUNERATION****NON-KEY EXPERTS/ SUPPORTING STAFF**

Sr. No.	Position	No. of persons	Individual Man Months	Monthly Billing Rate	Total Estimated Amount (Rs.)
1	Structure Draughtsman/ CAD Operator	1	3.00		
2	Highway Draughtsman/CAD Operator	1	4.00		
3	Computer Operators	2	10.00		
4	Office Boys/Helpers	2	10.00		
5	Trainee Engineer	1	5.00		
				<b>Sub-Total:</b>	

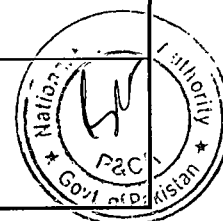
Note: The Consultants are required to quote the rates of Non-Key/Support Staff given in the TOR in above table keeping in view the latest/prevaling notification for minimum wages (i.e., Basic salary) issued by the concerned Labor and Manpower department/Ministry. The Consultant(s) may propose Non-Key/ 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 of Office /Other equipment (On Rental Basis) i. Computer & Accessories ii. Photocopy Machine iii. Communication Equipment iv. Transport Vehicle v. Site Visits and Meetings in Islamabad during currency of project & Construction Works	L.S			
5.	Communication Expenses	L.S			
6.	Drafting /Reproduction of Reports	L.S			
7.	Office /Drafting Supplies	L.S			
8.	Detailed Topographic Survey including Monumentation, GCPs, Inventory of Structures and others references Points, Drawing Production, Instrument Rental Charges, Surveyor (s) & Survey Helpers Salary etc. ( Complete in all respects as per TOR).	L.S			
9.	Tunnel Design including Appraisal Report O&M requirements, Portal requirements ventilation design, including salary if Tunnel Engineer, relevant expert and staff /technicians, simulation of ventilation design. CV of Tunnel Design Engineer and Geotechnical Engineer shall be provided for evaluation purpose only.	L.S			
10.	Soil and Material Investigation including Lab Testing, Report Writing, Salary of Material Engineer, Helpers etc. Evaluation of Pavement and condition Survey, if any (Complete in all respects as per TOR)	L.S			
11.	Slope Stability, Design Analysis including report	L.S			
12.	Geotechnical Investigation for Bridges, tunnels avalanche galleries, landslide prone areas, tunnel portals, including geophysical testing, instrument rental, Salary of	L.S			



Sr. No.	Nomenclature	Unit	Qty.	Unit Price (Rs.)	Total Amount (Rs.)
	Geo-Technical Engineer, Helpers, Report, writing, etc. Detailed Geotechnical Investigation including Vertical Core Drilling for Geotechnical Filed Investigation at tunnel portal location, tunnel alignment, slide Shelter, Slope Stability Measures (Complete in all respects as per TOR)				
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 rental equipment, report writing & Salary of Traffic Engineer & Enumerators (Complete in all respects as per TOR)	L.S			
15.	Geological Survey and Mapping including report (Complete in all respects including report)	L.S			
16.	Hydrology and Hydraulic studies including report (Complete in all respects as per TOR)	L.S			
17.	Highway Safety Audit including Cost of Site Visits, Report Writing, Salary of Highway Safety Engineer & its team, etc. (Complete in all respects as per TOR)	L.S			
18.	Stakeout of alignment on ground along with report complete in all respect	L.S			
19.	Costing & Fixation of ROW Makers (including all fields expenses remuneration of staff, etc. (Complete in all respects as per TOR)	L.S			
20.	Others not covered above to comply with ToR requirement				
	<b>Total</b>				

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 Cost	
2.	Direct /(Non-Salary) Cost	
3.	<b>Sub Total (1+2):</b>	
4.	Sales Tax @17% on Item No. 3 above which shall be kept as provisional Sum in the Contract Agreement <sup>(3)</sup>	
	<b>Grand Total <sup>(1)</sup>:</b>	

- 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 10<sup>th</sup> 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)



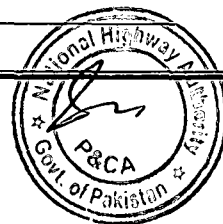
# CHAPTER NO. 1 INTRODUCTION

## 1.1 BACKGROUND:

- The PC-I for the subject project was submitted to Ministry of Communications for onward submission to M/o PD&SI on iPAS on 1st June, 2022.
- The instant version of the PC-I was discussed in CDWP meeting held on 24.06.2022 wherein the CDWP decided as under:
- "The Instant version of the PC-I may be returned in light of CDWP decision dated 24.06.2022 wherein the CDWP decided as under: "The CDWP cleared the project in principle for reflection in PSDP 2022-23 with the recommendations to resubmit in next CDWP, after incorporation of Feasibility study, detail design and details of loan" in light of above decision sponsoring agency has to submit modified PC-I through IPAS for consideration of CDWP. therefore, instant old version of PC-I may be returned."
- The instant PC-I was returned to NHA on iPAS on 12th December, 2022.
- The subject PC-II was discussed in DDWP meeting held on 06-09-2023 and after thorough discussion the DDWP deferred the project with the instructions that the agenda should be resubmitted to this forum once a clear understanding on MOU between both governments emerges after Prime Minister's visit to China.
- As the MOU for Mirpur - Mangla - Muzaffarabad has been signed between both Governments which does not include the section from Mansehra - Muzaffarabad Expressway (CPEC Link) (26.6 Km Approx.), therefore "PC-II for Feasibility Study and Detail Design for Construction of Mansehra - Muzaffarabad Expressway (CPEC Link) (26.6 Km Approx.) is prepared.

## 1.2 NEED ASSESSMENT:

- The Manshera - Muzaffarabad Expressway (approx. 26.6 Km) will be an important link of the envisioned Economic Corridor of the country. The project has been explored, structured and evaluated in context



*[Handwritten signature]*

of its connectivity and its importance as a potential economic corridor.

- The purpose underlying the proposed extension of MMM is to provide a 4-lane divided Expressway connecting Muzaffarabad with Manshera passing through Dhani, Dhoondha, Masahan, Thurman and Jab Villages and terminates on M-15 near Shinkiari. The Muzaffarabad - Manshera Expressway (approx. 26.6 Km) comprises of 11 bridges and 2 tunnels on the left bank of river Jehlum and Kunar will be an important link of the envisioned Economic Corridor of the country.

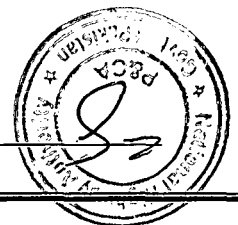
### **1.3 PROJECT DEFINITION:**

NHA intends to appoint a Consultant to conduct “Detail Design for Construction of Muzaffarabad-Mansehra Expressway (26.6 Km)”.

### **1.4 TECHNICAL PARAMETERS:**

Following Technical parameters will be considered for conducting Detail Design for Construction of subject project”.

Length of Road	:	26.6 KM
Scope	:	4-lane divided controlled access Expressway
Bridges	:	11 Nos. (Approx.)
Tunnel	:	2 Nos.
Culverts	:	13 Nos (Approx.)
Interchanges	:	2 Nos.
Design Speed	:	60/80/100
Mountainous/Rolling/Plain	:	





## 1.5 PROJECT OBJECTIVES:

- Reduction in the vehicle operating cost due to less traffic congestion, better pavement surface and improved geometry.
- Less time will be required for travelling and reaching the destination;
- To accelerate the economic activity by providing smooth access to national wide markets;
- During the construction phase, local labour will be accommodated in the construction activities;
- To provide sustainable delivery of a productive and efficient national Highway system contributing to decrease the transportation cost;
- To provide the livelihood and to educate the poor people of the project area.

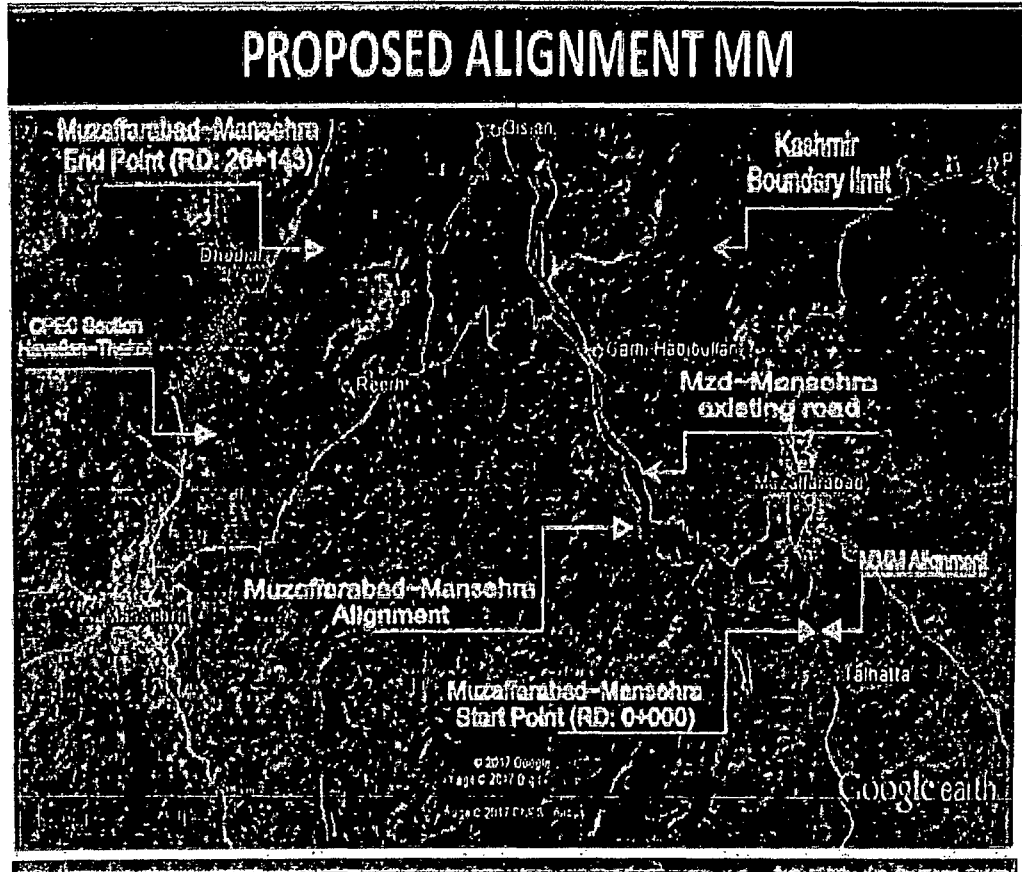


# CHAPTER NO. 2

## DESCRIPTION OF PROJECT

### 2.1 LOCATION OF PROJECT:

The project is located in the Khyber Paktunkhawa Province of Pakistan and Azad Jammu Kashmir territory.



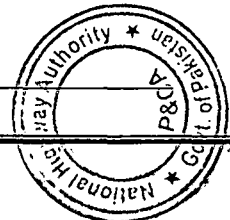
### 2.2 PROJECT SCOPE OF WORK:

The project envisages "Detailed Design for Construction of Muzaffarabad - Mansehra Expressway (26.6 Km)".

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

#### STAGE-I

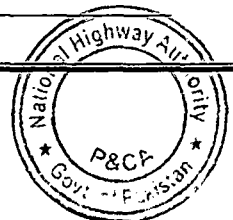
Collection of Data and Inception Report



Reconnaissance survey & Alignment Study Report along with KMZ /KML
Traffic Study Report
Topographic Survey Report and Plans
Soil & Material Investigation Report
Hydrology & Hydraulic Study Report
Slope Stability Survey, Investigation, Analysis
Feasibility Study Report
<b>STAGE-II</b>
Geotechnical Investigation Report including Geophysical
Geological Survey and mapping
Environmental Impact Assessment (EIA) Report along with NOC
Highway Safety Audit Report
Intelligent Transport System Design
Geometric Design Report along with Plan and Profile Drawings
Structure Design Report with backup calculations
Pavement Design
Tunnel, Portal Facilities & Electro Mechanical including Ventilation Design
Land Acquisition & Utilities Folders
<b>STAGE-III</b>
Tender Documents, Engineers Estimate, C-Factor, BOQ, Backup calculations etc. (Volume-I to IV) along with Construction Machinery report
PC-I
Stakeout of finalized Alignment
Fixation of ROW on ground

### 2.3 TIME PERIOD:

The services specified in the TOR shall be completed and all relevant reports submitted in the form and format acceptable to the Employer, within 05 months from the date of signing of Contract Agreement.



**2.4 FINANCING:**

The project will be financed by the Government of Pakistan through **PSDP 2024-25 under Design and Feasibility head.**

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



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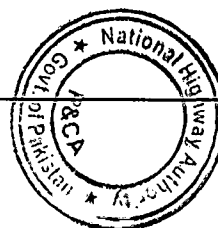
## CHAPTER No. 3

### TOR/SCOPE OF SERVICES FOR FEASIBILITY STUDY & DETAILED DESIGN

#### 3.1. Scope of Work

The Scope of Work for the present Terms of Reference comprises of following but not limited to:

Sr. No.	DESCRIPTION
<b>STAGE-I (Feasibility Stage)</b>	
a)	Collection of Data and Inception Report
b)	Reconnaissance survey, Review and update of alignment along with KMZ /KML
c)	Traffic Study Report
d)	Topographic Survey Report and Plans
e)	Soil & Material Investigation Report
f)	Hydrology and Hydraulic study report
g)	Slope stability Survey , Investigations ,Analysis
e)	Feasibility Report
<b>STAGE-II</b>	
f)	Geotechnical Investigation Report including Geophysical Testing
g)	Geological survey and mapping
h)	Environmental Impact Assessment (EIA) Report along with NOC
i)	Highway Safety Audit
j)	Intelligent Transport System Design
k)	Geometric Design Report along with Plan and Profile Drawings
l)	Structure Design Report with backup calculations
m)	Pavement Design
n)	Tunnel, Portal Facilities & Electro Mechanical Works including Ventilation Design
o)	Land Acquisition & Utilities Folders
<b>STAGE-III</b>	
p)	Tender Documents, BOQ, Engineer's Estimate, C-factor Backup calculations etc.(Volume I to IV) along with Construction Machinery Report
q)	PC-I
r)	Stakeout of Finalized Alignment
s)	Fixation of ROW Markers on ground



### 3.2. Correctness of Design

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 tasks to be carried out by the consultant are elaborated in the following paragraphs.

### 3.3. Design Parameters, Codes, & Standards etc.

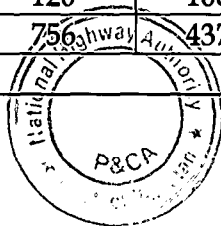
#### 3.3.1 Geometric Design Standards

The project will be (four) 4-lane divided carriage way access controlled facility with following features.

No of lanes	4 lanes (2-lane in each direction)
Lane width	3.65m
Shoulder Width	Outer: 3 m Inner: 1.0 m
Cross fall normal	Carriageway 2% Shoulder 4%
Median	NJB
Maximum Grade	6%
Design vehicle	Truck-trailer 6-Axle
ROW	Shall be proposed by the Consultant as per site requirements

Some of the important road design parameters, but not limited to, are stated as below:

Sr. #	Design Elements	Unit	Design Parameters			
			Main Carriageway			Interchange
			Terrain			
			Plain	Rolling	Mountai nous	
1.	Design Speed	Km/hr	120	100	80	60
2.	Minimum Radius	m	75	437	252	



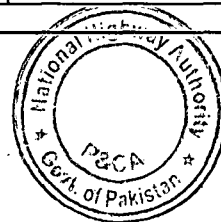
3.	Maximum super-elevation	%	6	6	6	6
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Note: All Design Parameters for Design of Road shall be in accordance with the guidelines "A policy on Geometric Design of Highways & Streets 2018/latest".

In case of any deviation proposed by Consultant from said guidelines due to site constraints/requirements, Consultant will accordingly intimate the same through presentation to the Client before proceeding further in order to achieve most economical and safe design.

Technical standards for Tunnels are given as hereunder:

Sr. #	Design Elements	Unit	Design Parameter
1.	Twin tube tunnel: One tube Carriage way width	m	7.3m
2.	Sidewalks/emergency walkway egress	m	As mentioned in the note below
3.	Inspection Gallery	m	As mentioned in the note below
4.	Maximum grade	%	2 Maximum Grade 2 % If maximum grade is to be changed due to unavoidable circumstances, Consultant will give complete presentation to client before proceeding further.
5.	Design speed	KPH	60-80(Mountainous terrain) If Design speed is to be changed due to unavoidable circumstances, Consultant will give complete presentation to client before proceeding further.
6.	Vertical clearance	M	5.3
7.	Cross fall normal(carriageway)	%	



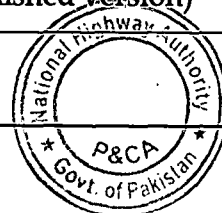
			2
8.	Geometric Design		" A Policy on Geometric Design of Highway and streets"2018
9.	Tunnel Excavation+ support system		NATM
10.	Refuge Facility		Emergency parking Bay@750m Emergency shelter@250m/ as mentioned below note
11.	Drainage +Ventilation+ Lighting+ IT		As mentioned in the note below

Note: The Consultant shall recommend the technical design parameters of Tunnels in the light of "A policy on Geometric Design of Highways & Streets 2018/latest", International re-known / reputed Tunnel Standards / as specified in this TOR and other relevant tunnel Projects of NHA on the basis of specialized knowledge and expertise in the context of project in order to achieve most economical and safe option

### 3.3.2 Design Standards and Codes

Following design standards, Codes and requirements shall be followed:

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.
Pavement Design	AASHTO Guide for Design of Pavement Structures-1993
Roadside Design	AASHTO Roadside Design Guide (preferably latest published version)
Lighting	Roadway lighting design guide by AASHTO (preferably latest published version)
Structural Design	AASHTO Guide Specifications for LRFD Seismic Bridge Design (preferably latest published version) along with West Pakistan Code of Practice for Highway Bridges(for live load truck axle load and spacing & tank loading only) and Seismic Zone Mapping of Pakistan
Drainage Design	Highway Drainage Guidelines by AASHTO (preferably latest published version)





Design of Traffic Control Devices, Work Zone Safety, and preparation of 'Maintenance & Protection of Traffic (MPT) Plans'	<i>Manual of Uniform Traffic Control Devices (MUTCD)</i> by FHWA USA (preferably latest published version) with due consideration to the requirements of NHA
For testing and specifications of materials, following codes and standards will be followed:	ASTM, AASHTO, NHA General Specifications etc.
Capacity Analysis and Level of Service analysis	<i>Highway Capacity Manual</i> (preferably latest published version)
Engineer's Estimate	As per prevailing CSR of NHA
Road user facilitation requirement complete in all respect as per Motorway standards	<p>Provision of breakdown and accident response system.</p> <p>Provision of vehicle fitness checking system on applicable international standards.</p> <p>Provision of fog lighting system for vehicular guidance in identified area of fog.</p> <p>Emergency call service along the Motorway Fully automated 24/7 (Electronic Toll Collection system) Toll Plazas.</p> <p>The automated vehicle detection system using video technology; Automatic License Plate Reader (ALPR) using high-resolution high-speed cameras and image recognition.</p> <p>Weigh-in-motion (WIM) station at every interchange</p> <p>Lighting of Interchanges, Major Bridges and critical areas i.e., Toll Plazas, weigh stations and vicinity of interchanges as per practice in-vogue on Motorways</p>
Tunnels-Safety	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Systems and Equipment for Fire and Smoke Control in Road Tunnels, World Road Association (PIARC) Committee on Road Tunnels Operation (C3.3), Report 2007.</li> <li>• Road Tunnels: Vehicle Emissions and Air Demand for Ventilation, World Road Association (PIARC) Technical Committee C4 Road Tunnel Operation, Report 2012.</li> </ul>

	<ul style="list-style-type: none"> <li>• Human Factors and Road Tunnel Safety regarding Users, World Road Association (PIARC), Report, 2008.</li> <li>• Road Safety in Tunnels, World Road Association (PIARC), Report 05.04.B, 1995.</li> </ul> <p>Guide for the lighting of Road Tunnels and underpasses (International Commission of Illumination, CIE 88: 2004), Austria</p>
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**3.4. Kick-Off Meeting**

Kick-off meeting will be held wherein Consultant will present to NHA the approach & methodology for carrying out services and the corresponding timelines etc.

**3.5. Detailed Scope of Services**

**3.5.1 Data Collection & Coordination with Concerned Organizations**

The consultant will collect available data & information required for preparing the documents, reports and design etc. of the Project. The consultant will also collect requirements and development plans etc. (if any) of all the concerned agencies/organizations/departments/stake holders through extensive and close coordination; this is an essential requirement and should be given due importance by the consultant.

**3.5.2 Inception Report**

The consultant will carry out desk studies and then proceed for reconnaissance visit. An Inception Report will be submitted which should elaborate the observations made in the reconnaissance visit along with photographs and describe the project in appropriate detail. The report should also explain the methodology for adhering to the requirements spelled out under this ToR along with timelines in the form of activity schedule/bar chart.

**Deliverable:** Inception Report

**3.5.3 Reconnaissance survey and Alignment Study Report**

The consultant shall review the alignment study based on preliminary design cleared by CDWP. Consultant may update the alignment study based on following TOR.

Consultant shall carry out the desk study of possible alignment options, using maps and Google imageries. Same shall then be investigated in the field reconnaissance. The site visits shall be carried out by a senior Highway Engineer. Coordinated meetings with local departments shall be done and minutes recorded (same shall be made part of the Alignment Report). During the reconnaissance visit, particular requirements of project shall be identified that will be addressed in the Detailed Design.

The consultant will study the alignment in view of connection of Muzaffarabad with Mansehra, all the possible options shall be studied in detail and submit Alignment



Study Report along with KMZ file(all details interchanges, toll plazas, bridges, tunnels (if required), marked on KMZ file). A detailed presentation on alignment options along with recommended alignment will be given to NHA for perusal and consideration.

The Report should contain self-explanatory maps & chainage-wise photographs, detailed description of the alignment along with key features, district-wise division, significance, description of structures especially bridges on major rivers, interchanges, tunnels(if required), areas prone to landslides and mudflow, obstructions in the form of urban centers etc., requirement of link roads, and recommendations regarding geometric improvement etc.

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, pros & cons of each option 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 carry out the detailed design of the project on the recommended alignment after the consent of NHA. Final alignment map along with other details shall be provided in the Final alignment study report.

**Deliverable:** Reconnaissance Survey and Alignment Study Report along with KMZ/KML with duly marked structures,interchanges,tunnels(if required) and obstructions

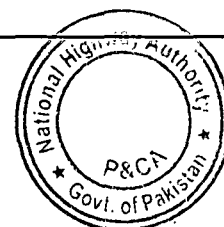
### 3.6. Traffic Study Report

The first step in measuring the benefits of a transport investment is to estimate its future use, that is, the traffic it will have to carry or serve during its useful life. Consultant shall obtain relevant traffic data from concerned agencies such as NTRC, C&W department and concerned Departments prior to conducting the traffic counts. Fresh traffic counts for minimum seven (07) days at selected nodes shall be carried out.

Traffic volume at count station to be forecasted at-least for 20 years. Various alternative growth rates from various agencies or based on historical increases in fuel consumptions, vehicle registration etc., shall be utilized. After review of the various growth rates and resulting traffic volume, the consultant will recommend the growth rate to be adopted as basis for design and coordinate the same with NHA.

Traffic mapping for present and also for future traffic be patternized. This comprehensive model must include scientific projections and movements in all directions i.e. network level traffic study must be conducted that will affect the traffic load on highway from the adjacent routes/suburbs/highways.

Traffic count forms the basis for capacity analysis, pavement design and economic analysis etc. consultant is required to carry out classified traffic counts at required



locations along the project and on the connected network to develop an understanding of traffic pattern. The study will also entail the estimation of diversion and generated traffic. The consultant shall submit in Inception report, detailed program of traffic count along with locations, duration and methodology. Same shall be exercised after the approval of the Client.

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

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

#### Journey Time

For with and without Project scenario, the journey time survey of various classes of vehicles in peak hours and off-peak hours shall be done. It shall be used in economic analysis.

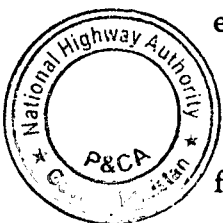
#### Origin & Destination Survey

If required, the O&D Survey shall be carried out to identify the traffic likely to be diverted to the Bypass. Consultant shall justify if they consider that O & D Survey is not required for this project.

#### Traffic Diversion Plans

Traffic Diversion Plans shall be provided for the following situations:

- a. At toll plazas
- 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 construction like construction of box culverts and underpasses, proper traffic diversion plans shall be provided.
- f. At places where overhead bridge construction is likely to take place, proper traffic diversion plans shall be provided.



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

**Deliverable:** Traffic Survey Report including Traffic Diversion plan (if required).

### 3.7. Feasibility Report

Consultant shall prepare a comprehensive Feasibility Study Report which shall cover technical, economic, etc aspects:

The Technical area shall cover all the activities in the scope of work. All tasks shall be wisely covered in the Feasibility Report. The Consultant shall also carryout capacity analysis to determine the Level of Service for next 20 years.

Following tasks shall also be carried out by the Consultant for Feasibility Study in the Economic part:

- 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 economic 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 economic 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. 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 and also indicate Economic Indicators.

- f. The Consultant shall also carryout capacity analysis to determine the Level of Service for next 20 years

Consultant shall give recommendations and conclusions based on the above analysis and submit findings at the end of report in the Feasibility Report, enabling the Client to decide to proceed further or not on the project.

**Deliverable:** Feasibility Study Report

### 3.8. Detailed Topographic Survey

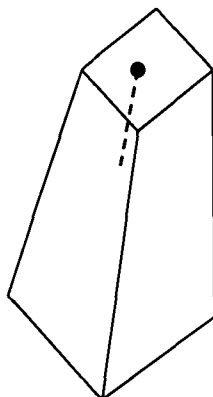
The Consultant is required to carry out detailed topographic Survey of the identified route / alignment. The detailed TOR for topographic survey is given as under:

Topographic survey forms the basis for the Detailed Design. Poor quality of survey work produces not only incorrect designs but also results in post construction problems with variations in cost and claims. It is desired that the Survey work is of top most order.

As per recent "Surveying & Mapping Act 2014", the Survey Company must comply with the requirement of the Act. It is therefore recommended that consultant should use the latest technology for the topographic surveys, which include at least 4 (four) GPSDF for establishment of high accuracy control points (as per required plan, specified herein). A network of control points along the corridor shall be developed involving at least 4 instruments.

#### Survey Monuments

The type and dimensions of Survey monuments to be installed at site is shown here. Besides start and at the end, it is required that these markers shall be fixed in the traverse line at an interval of about 300 to 400 meters. These shall be fixed at such locations that these are least



Permanent Ground Monument made of Concrete 1:4:8 with 75 mm steel nail embedded at centre. 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.

susceptible to disturbance and damage. The consultant shall fill out a Performa for each traverse station as attached in Annexure T1.

#### 3.8.1 Control for Traverse

Projection: UTM



Datum: WGS84

Vertical Datum: MSL

### 3.8.2 Horizontal Control

#### Precise Primary Controls (ITRF CONTROLS)

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 shall not be more than 10 kms. Minimum observation time shall be at least ten (10) hours or as required for each of these points. These points shall 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.

### 3.8.3 Primary Controls

DGPS Primary Controls shall 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 shall 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) shall be established which may be used for Total station if needed for topographic survey.

### 3.8.4 Secondary Controls

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

### 3.8.5 Vertical Control

Vertical Control shall 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 shall be used. The maximum distance between the two successive reading points shall 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.

#### Monuments for Horizontal and Vertical Controls



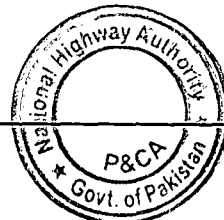
The monuments for controls shall be as per NHA specifications. The ITRF Controls, Primary Controls shall be tied with two permanent points as per NHA Specifications.

**3.8.7 Topographic survey (scale 1:1000); including on ground features, buildings, Utilities and Crossing Roads**

- a. Topographic Survey will be performed within the ROW Limits. 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) shall be taken to create a topographic map in the scale of 1:1000.
- b. The Consultant is required to observe 10 cross-section 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 upon which the Model study survey was done should be incorporated in the traverse/ level circuit.

**3.8.8 Centerline Points (stake) and Measurement of elevation of route stake**

- a. The distance between the centerline points shall be 20m 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 shall be measured. For the places where the topography is changed and bridge pier and abutment, more stakes shall be established.
- f. For the culverts, the chainage and elevation of the crossing point shall be measured; the longitudinal section of the water channel 50m upstream and downstream of the crossing point shall 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 shall 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 shall be measured

#### **3.8.9 Cross section Points**

- a. The cross section should be measured one by one.
- b. The cross section of the embankment should be measured at 25m interval for the straight line sections and curve sections with radius larger than 5000m. At curves having radius less than  $R=5000$  m, the cross sections shall be measured at 20m interval.
- c. The cross section shall be measured to the ROW limit.
- d. For the alignment sections with proposed retaining wall, the cross section shall 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

#### **3.8.10 Interchanges (1:1000) Map**

- a. Extraction of features shall be done & points shall 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.

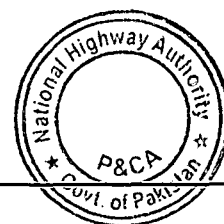
#### **3.8.11 Riverine Survey for Crossing Canals - Short Bridge**

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.

#### **3.8.12 Riverine Survey for Crossing Rivers - Long Bridge**

In case the crossing of Major River is encountered, sufficient cross-sections shall be required to run the HEC-RAS for computation of water surface profiling. Location of cross-sections shall be as per requirement of the Software.

#### **3.8.13 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 shall be 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 shall not be more than 5m for wider water channels/Nullahs.

### **3.8.14 Survey corridor**

The detailed topographic survey in normal circumstances shall be carried out in a corridor of 100 m. At locations of crossing rivers, nullahs the detail of survey extent is given in respective sections.

### **3.8.15 Mapping (Unit of Measurement)**

Metric units shall be used throughout

#### **Scale**

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

### **3.8.16 Details to be Shown**

#### **Buildings/Structures**

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

#### **Roads, Tracks and Footpaths**

1. Kerb line or edge of surfacing to carriageways, and along the edge line markings
2. Tracks
3. Pedestrian bridges and footpaths
4. Traffic islands (similar to kerb line)
5. Destination of road for junctions level
6. Bridges ( over railway, river, etc )
7. Levels over railway line in case of at grade or grade separated crossings



8. In case of power transmission lines crossing alignment, level of electric wire with respect to survey control shall be recorded.

**Industrial**

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

**Boundary Features**

1. Fences
2. Gates
3. Boundary stones located/used for fieldwork
4. Walls
5. Burial grounds
6. Historical areas

**Railways**

1. Gauge faces of railway running rails with elevations of rail top
2. Level crossings
3. Platforms
4. Bridges (over road, river, etc.)
5. Station building
6. Telegraph poles (indicate the reference numbers)

**Survey**

1. Survey Department Trigonometric Stations
2. Permanent Ground Markers (IP's, RM's, TBM's, etc)
3. Survey Department Benchmarks used (Indicate reference number and level)

**Woods, Trees & Recreation Areas**

1. Playing field
2. Land-use and vegetation, etc
3. 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 shall be in respective layers.

**Slopes and Earthworks**

1. Cutting and embankments with any protection work done
2. Terraced slopes
3. Borrow pits / Quarries
4. Retaining wall

5. Rock outcrops
6. Mining tips
7. Indicate date of survey if on-going earthworks is present and mark the affected area

#### Services and Utilities

1. Transformers (boundary fences only)
2. Electricity sub-stations and switch boxes (boundary fences only)
3. Pylon lines (indicate levels at lowest point at sag and at pylon towers)
4. Pylon bases
5. Pylon reference numbers and voltage of transmission
6. Radio, TV station masts or towers
7. Telecom poles
8. Electricity poles
9. Water mains pipes and stop valves (Indicate diameter of pipe)
10. Manholes (circular and square)

#### Water & Drainage

1. Lakes
2. Ponds or mining pools
3. Reservoirs
4. Rivers (name to be indicated)
5. Streams
6. Ditches (width to be indicated)
7. Canals
8. Wells (diameter or width to be indicated)
9. Swamps
10. Lined drains (width, depth and type to be indicate)
11. Water towers
12. Culverts
13. Waterfalls
14. Jetties (if any)
15. The top of banks of all water features over 1.0 meter wide shall 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 shall be indicated.
16. 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.



17. Slope conventions shall be drawn as near as possible to indicate the actual shape of the slope face, i.e., all berms and terraces shall be detailed.

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

### 3.8.17 Bridge details

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

- a) The coordinates and levels of the four corners of the bridge (points shall 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.

### Culvert details

Details of each culvert are to be shown on the survey plans and a separate sheet (annexure-c) 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 (dia > 2.0m) the outlet structures are to be properly measured enough points shall be recorded so that the culvert can be modeled in CAD.

### 3.8.18 Digital Ground Models ( DGM )

The product of the filed survey data, after processing shall be DGM. The accuracy of DGM shall 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 shall 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 shall also be marked. The topography shall be fully labeled for every object recorded.

All survey feature lines will herein be referred as 'strings'. The data shall 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 shall be simulated by strings of coordinated information along characteristic lines on the terrain. The models shall consist of three-dimensional (3D) contour strings.

The existing road surface over the required area shall 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 shall obtain prior approval 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.

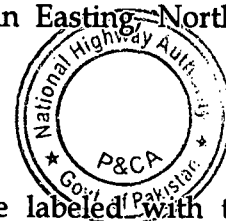
TIN (Triangular irregular network) shall be developed by using software. Using TIN, Contour generation shall be done.

### 3.8.19 Grid

The coordinates of the DGM shall be referred to the grid system as described in the Section 3.1.2. The coordinates of the DGM shall be in Easting-Northing and elevations.

### 3.8.20 String Labeling

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



DGM.

### 3.8.21 Property Model

This model shall 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 shall be appended to in the AutoCAD format. Such information shall be used by the Surveyor when preparing Land Utility folders at the end.

### 3.8.22 Contours

After digital data collection of survey points at site, the contour generation shall be done by using computer software. The interval shall 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.

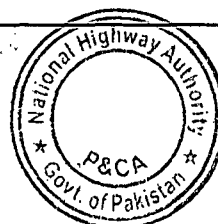
If in the project, where steep slopes are likely to be encountered, the surveyor is required to use the laser equipped total stations that does not require and prism to record the coordinates.

Contours shall be shown by continuous lines with a thicker line for every fifth contour (Prominent Contour). Contour and spot heights shall be differentiated from other detail. The value of each contour shall 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.

### 3.8.23 Longitudinal Profile and Cross-Section

The longitudinal profile plan shall be plotted in A1/A3 size (as requested by Client) 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 shall be plotted in A1 size to a scale of 1:100 both horizontal and vertical with 25 m interval. The plan shall show the chainage interval as specified and the existing ground profile and all the existing features.

### **3.8.24 Survey Of Areas Prone To Landslide, Debris Flow And Mudflow**

Based on the preliminary identification during Reconnaissance Survey, further detailed observations, measurement of affected areas prone to Landslide, Debris flow and mud flow would be carried out. The information is required to re-align the road if possible or preliminary assessment of the protection measures to be taken along the Alignment for preparing the Alignment Alternatives.

### **3.8.25 Original Drawings & Preliminary Copies**

Preliminary copies shall be submitted in the form of stable based paper. Every sheet of the drawings shall be marked as preliminary copy along with the date of submission, until the final approved copy which shall be marked as "Final Tender Drawings". Each drawing shall be stamped and signed by the Designer.

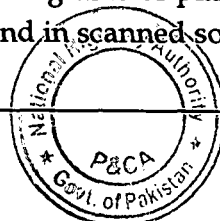
### **3.8.26 Soft Submission of Data and Drawings**

The Surveyor shall supply the digital ground model data, All Drawings, Reports suitable for input to the computer specification acceptable to Client. The USB and hard copy shall be supplied with an index scheduling the contents and referencing and shall remain the property of the Client.

### **3.8.27 Field Books and Record**

All field books and computer data must be properly kept and shall record truthfully all the survey work carried out. The Surveyor shall do all workings in proper books, adequately in good style and according to best practice. All field books shall be done in ink. Unsatisfactory works and errors shall be struck off and there shall 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 shall 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 shall be certified by the qualified surveyor.

The Surveyor shall submit the required number of copies of Final Survey Report on completion of all survey works in a format as approved by the client. All photographs for all the copies shall be original copies and any diagrams or plans presented together with the report shall be in a clean and neat form and in scanned soft format.





**Deliverable: Topographic Survey Report**

The Surveyor shall submit the required number of copies of Final Survey Report on completion of all survey works in a format as approved by the client. All photographs for all the copies shall be original copies and any diagrams or plans presented together with the report shall be in a clean and neat form and in scanned soft format. Each & every page of the final report must be signed by the concerned specialist/expert and stamped by consulting firm.

**3.9. Soil & Material Investigation**

Soil & Material investigation shall 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.

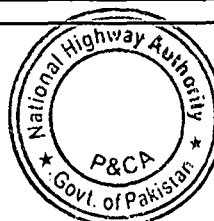
Field investigations shall be carried out in three main areas.

- 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, quality/engineering characteristics and quantity of naturally occurring construction materials
- Examine specific sites such as deep cuts, retaining walls and culverts etc.

Following table shows the guidelines for the quantity of roadway pits or borings and testing required for the Final Design Report. The values given are average investigation requirements for normal highway work and that actual scope will depend upon the complexity of the problem.

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

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Cut	<2	Uniform Rolling Hilly	1000 500 250	1.0 below subgrade
	2-10	Uniform Rolling Hilly	800 400 200	1.0 below subgrade
	>10	Uniform Rolling Hilly	600 300 150	1.0 below subgrade

Guidelines for testing requirements are given below:

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

For testing of materials, following codes and standards shall be followed:

- a) ASTM - American Society for Testing & Materials.
- b) AASHTO - American Association of State Highway and Transportation Officials.

### 3.9.1 Identification of Quarry sites and construction material survey

The Consultant shall identify approximate Source of locally available construction materials along the approved Alignment options. With respect to Construction Material Survey, the consultant would study the availability of the following:

- Course aggregate
- Fine aggregate
- Water from construction activity and their storage facility



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 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.

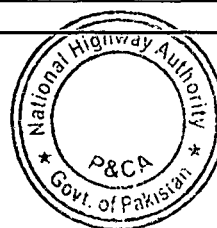
As an evidence of Soil & Material Investigation Activity, the Consultant is required to submit Geo-tagged Photographs along with Date and Time Stamp of each investigated site. The Consultant is also required to submit Linear Plan of all the locations where Investigations have been carried out and same shall be made part of the Soil & Material Investigation Report. Also, the Consultant will submit the original Lab Reports / Testing Results duly stamped and signed by the Material Engineer of the Consultant, failing to which the report shall not be acceptable.

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.

Considerable amount of water is likely to be required for the 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.

The following table shows guidelines for the testing requirements for aggregates and water.

Test	Test Requirement					Water
	Fine Aggregate		Coarse Aggregate			
	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		•			•	



(11)

Soluble Chlorides		•			•	
Friable Particles		•	•	•	•	
Thin & Elongated Particles			•	•	•	
Fineness Modulus		•		•		
Water Quality						•
Marshall Test				•		
Stripping Test				•		

**3.9.2 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* shall include field strength, moisture content, bedding state if applicable discontinuities and state of weathering. *Material Characteristics* shall cover Color, Composition, grading, particle shape, soil name and soil group. Both Unified and AASHTO classification shall be used.

**Deliverable:** Soil and Material Investigation Report. Report should be comprehensive and each & every page of the report must be signed by the concerned specialist/expert and stamped by consulting firm.

**3.10 Geotechnical Investigation**

The design consultant shall submit a tentative sub-surface investigation plan to NHA based on reconnaissance survey suggesting a total number of bore holes, depth of each bore hole (based on geological formation at site & the type of foundations proposed for the structures) and a list of proposed tests based on available data and prevailing site conditions to get consent from NHA before carrying out detailed geotechnical investigation.

The Standard Penetration Test (SPT), Cone Penetration Test (CPT) or any other test deemed necessary based on underlying soil strata as per approved plan.

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 international testing / ASTM procedures / standards.

The site investigation to be undertaken shall consist of the following: -

- Trial Pits to a maximum depth of 3 meters.
- Hand auger holes to a maximum depth of 7.5 meters.



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- Separate BOQ shall be prepared by the Consultant with all required tests for deep boring. It is required to carry out grain size analysis at required scour depth.
- Submission of proper site investigation report comprising all relevant notes and pertinent information required by this TOR together with laboratory test results. The above scope of work may be varied or deleted depending on the findings as the investigation proceeds. All Sections in this Specification and the Bill of Quantities, which relate to work or materials not required shall be deemed not to apply.

As an evidence of Geo-Technical Investigation Activity, the Consultant is required to submit Geo-Tagged Photographs along with Data and Time Stamp of each investigated site. The Consultant is also required to submit Linear Plan of all the locations along the road (Left + Right Side) where Investigation & Testing have been carried out and same shall be made part of the Geo-Technical Investigation Report. Also, the Consultant will submit the original Lab Reports / Testing Results duly stamped and signed by the Geo-Tech Engineer of the Consultant, failing to which the report shall not be acceptable.

#### **Drilling at Bridges and Structures**

As per site conditions and requirements, deep Machine boring and associated field-tests for Bridge Piles, Avalanche Galleries and other structures shall be carried out.

#### **Drilling along Tunnel Alignment and Portal (if required)**

At-least two (02) Boreholes at Each Tunnel up to appropriate depth at appropriate/accessible location along with associated tests to obtain "Rock Quality Designation (RQD)", compressive strength of Rock and to evaluate the joint properties of rock strata under RMR and Q-system. Exact numbers and Depth of boring along tunnel alignment shall be recommended by Consultant based on site condition and requirements. After the finalization/approval of Alignment of Tunnel and location of portals as per Alignment Study, the Consultant may be required to carry out Geotechnical Investigation through drilling boreholes at each portal location of depth as per site requirement. The information then obtained would be used in the Design of Tunnel Portal.

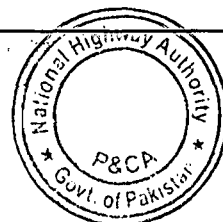
#### **Drilling at Landslide Areas for slope stability Analysis and Design**

Vertical borings shall be done up to a depth as per site condition and requirements at the locations required slope stability to assess the soil/rock characteristics along the slopes. A piezometer shall be installed in each of the boreholes to measure the water table.

#### **Drilling Boring Details**

Exact numbers, types and Depth of boring / drilling with all necessary details for all types of structure (Tunnel portals, on Tunnel alignment (if required), Bridges, area prone to landslide, avalanche gallery etc) shall be submitted by Consultant based on site condition and requirements for the review of client before finalizing the said details.

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### 3.10.1 Geo-Physical Testing

Geophysical tests are indirect methods of exploration in which changes in certain physical characteristics such as density, electrical resistivity survey, 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 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 geophysical survey of proposed bridge locations, tunnels with portal area (if required) and Landslide prone areas to ascertain type, nature, arrangement and thickness of various sub surface strata including overburden deposits and bedrock together as they exist to the depth. Geophysical survey will assist the consultant in selection of type of foundation, either deep or shallow foundation etc.

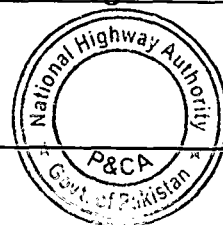
Geophysical testing includes seismic refraction survey, electrical resistivity etc.

**Deliverable:** A comprehensive Geotechnical Investigation Report will be submitted to NHA including geophysical testing. Bore logs along with original lab reports shall be attached in the soil report along with colored photographs.

### 3.11 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 (if required). The output is the Geological survey map.

Geological Mapping Along the Road , Tunnel Alignment alongwith portals(if required)



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 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).

#### Geology Specific to Portal Areas(if required):

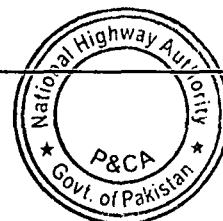
A detailed geological observation would be importantly required at the proposed portal areas of Tunnel, to ensure that all the structures in the portal areas are safe and well protected keeping in view the altitude of the area. The Rock conditions near and above portal locations must be sound and competent 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.

#### 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 (if required) depending on the accessibility and need for petrographic testing and determination of index properties. The Cost of petrography and index properties testing will be included against the Lump sum cost of this item.

**Deliverable: Geological survey and mapping report**

### **3.12 Hydrology & Hydraulic Study**



### 3.12.1 Objective

The objective of the hydrological and hydraulic study is to model the project area to design cross drainage structures and road embankment height to protect it from future floods. The Hydrological Observations would also be carried out near the portal areas and Link Access Road (If required). The major objectives are:

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

### 3.12.2 Scope of Work / Activities

The consultant shall adopt state-of-the-art modeling approach using industry-standard software's for the hydrological and hydraulic assessment that shall incorporate 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.

The phenomena related to hydrology would be broadly divided into two categories under two seasonal variations.

- i. **Summer & Monsoon Period:**
- ii. **Winter Season**

Both the hydrological information and data obtained under (i) and (ii) would be needed for designing of Bridges, Culverts and Protective Structures near the portals and Link Access Road. Study of some after effect of Debris & Mud Flow may be studied during these seasons too.





The meteorological analysis shall be based on maximum available record (preferably more than 30 years) from all the surrounding observatories. The analysis must 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 25year, 50 year(for culvert Design), 100 year (For Design Flood)and for bridge 500year(For check flood).
- Where the station is not available, the consultant shall 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

c. **Watershed Delineation**

The activity includes delineation of watershed affecting road and evaluating physiography and topography of the catchment / watershed-area. The watershed delineation shall be carried out using industry standard GIS software's like ArcHydro, Topaz, WMS and DHI MIKE suite etc. The digital elevation model (DEM) for watershed delineation shall be of at least 30meter resolution or better. Satellite imagery and any available topographic survey shall be used for stream / river correction in the DEM.

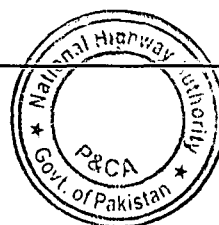
d. **Soil and Land Use**

The hydrological soil type and land use shall 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.

e. **Surface Runoff Model**

The surface runoff for all ungauged/gauged basins shall be calculated using standard design packages such as "Hydrological Modeling System" (HEC-HMS) and Watershed Modeling System (WMS) for large basins and for small TR-20 can be used. The model shall be prepared using GIS techniques / software's like HEC-GeoHMS and WMS etc. The preparation shall 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 shall 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.

f. **Hydraulic Analysis**

The calculated storm flows shall be modeled through or around road structures using models like HEC-RAS, HY-8, MIKE 11 and SWMM. The culverts in general shall be designed using HY-8 based on data prepared through "Watershed Modeling System" and field survey. The bridges and mapping of flood plains shall be carried out through hydraulic models like HEC-RAS or MIKE 11. The hydraulic model shall be prepared using GIS techniques like HEC-GeoRAS, WMS or MIKE 11.

The hydraulic model results shall be used for assessment of flood impact and analysis of alternatives for its mitigation. The hydraulic structures shall be designed taking into account standard design criteria for highways.

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



- 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. Embankment Hydraulic design for structures.
- k. height according to HFL.

**Deliverable:** Hydrology Study Report. A comprehensive report shall be submitted by the Consultant. Each & every page of the report must be signed by the concerned specialist/expert and stamped by consulting firm.

### 3.13 Geometric Design

The geometric design will be carried out by the consultant followed by preparation of plan & profile drawings. The drawings will become a part of Design Drawings. A comprehensive Geometric Design Report will be submitted along with Plan and Profile Drawings with duly marked structures and interchanges.

Geometric improvement of the existing road/alignment (if applicable) will also be considered.

**Deliverable:** Geometric Design Report along with plan and profile drawings.

### 3.14 Structural Design

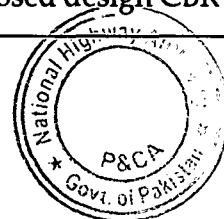
Design of structures will be carried out by following the design codes & standards specified in earlier section i.e., 3.3.2 of the TOR, followed by preparation of Structural Drawings including but not limited to design of toll plazas, admin building, weigh stations control building, interchanges, cross drainage structures, structures on crossings, side drains, median barrier, sub structures etc. These drawings will become a part of Design Drawings.

**Deliverable:** Structure Design Report along with Backup calculations.

### 3.15 Pavement Design Report

Consultant will submit Pavement Design Report complete in all respect based on Soil investigation /material characterization on the finalized alignment and finalized traffic study. Consultant is required to support the proposed design CBR with necessary

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soil testing of borrow area / existing cut material. The Pavement Design Report will include / contain all necessary soil material investigation tests and complete process of ESALs determination starting from AADT. Consultant shall study and take relevant data / damaging factors from NRTC Axle load Survey Report for use in the pavement design. All typical pavement cross-sections clearly elaborating all details will also be made part of Pavement Design Report. Consultant is also required to explain ground water position, water logging, HFL and Ponding area (if any) in the project area and propose counter measures in the Pavement Design Report. Consultant shall ensure the necessary provision of surface and sub-surface drainage design to have safe embankment / subgrade and pavement. Pavement will be designed for a period of 10 years design life. 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 addition, pavement design shall 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 soft form (editable).

**Deliverable:** Pavement Design Report complete in all respect as per site requirements.

### **3.16 DETAILED DESIGN OF TUNNEL, PORTAL FACILITIES & ELECTRO-MECHANICAL WORKS INCLUDING VENTILATION DESIGN(if required)**

Portal facilities including Admin Building, Operation Center, Emergency Building, Electrical and Generator Rooms, Parking Sheds, Rest Areas and any other facility required as per Project Requirement

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 and Portal Requirements as follows:

#### **a) General**

- Identification of Underground Structure and Other Obstacles
- Subsurface, geological and geo-hydraulic conditions
- Structure Preconstruction Survey
- Location of Tunnel
  
- General Description of Various Tunnel Types, Planning of Tunnel Shape and Internal Elements
- Route Study with Traffic / cross-section
- Environmental and Community Issues
- Operational SOP
- Sustainability
- Tunnel Design Methodology/Process
- Groundwater/tunnel water burst Control



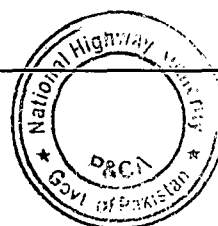
- Tunnel Portals
- Fire-Life Safety Systems
- E & M Systems
- Tunnel Drainage
- Operational and Financial Planning
- Risk Analysis and Management
- Structure Design
- Tunnel Lining
- SCADA / IT system
- Determination and Identification of Problematic Areas with Nature of Problems & their Suggested Solution 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).

b) **Reconnaissance Survey**

A team of relevant staff will visit the project area to acquaint themselves with all the relevant physical features of the area. The team will obtain and record the preliminary visual information as mentioned below:

- Identification of Potential areas of portals with respect to the alignment of Tunnels.
- Development of portal platform by earthwork, retaining wall and protective structures.
- Extent of Link Access Road to portal area.
- Potential quarry site for fine and coarse aggregate.
- Preliminary Identification of site for Contractor's Camps and Storage of Equipment & Machinery.
- A preliminary information about identification of location of landslides along with the Access Road to Portal.
- Preliminary 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.
- Identification of area and limit from subsequent detailed topo survey & hydrological study

The Consultant is required to submit Appraisal Report containing assessment of numbers and length of Tunnels, approximate Elevations at various locations, for approval by the Client. The task under this site assessment would be carried out expeditiously based on the information obtained through Reconnaissance Survey and use of GPS and other available information.



The Consultant will make a presentation to client of the various proposed Tunnels with relative Merits and Demerits based on Appraisal Report

c) **Control Survey**

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.

d) **Topographic Survey with UAV (with less than 0.1 cm resolution)**

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) on finalized tunnel alignment and of all potential portal areas for approximately 25 Hectares for each portal with establishment of permanent survey control points at potential portal areas. The Specifications of Topographic Survey shall be the same as already stated under Article 3.8 of this document.

e) **Geological Survey**

Firsthand information about the general geology of the Tunnel project would be required, which can be conveniently prepared from the visual inspection of mountainous terrain along the existing road supported with the information available from the Geological Map to be obtained from Geological Survey of Pakistan. The following surface features should also be observed and documented during geologic mapping program;

- Slides, new or old, particularly in proposed portal and shaft areas.
- Faults
- Rock weathering
- Sinkholes and karstic terrain
- Groundwater springs
- Volcanic activity
- Stress relief cracks
- Presence of talus and boulders
- Anhydrite, gypsum, pyrite or swelling shales



This would be required for preliminary classification of Rock Mass and Excavation class of Rock for preparation of BOQ. The Consultant is required to do the scale line geological survey along the Alignment of the Tunnels to determine the joint patterns, shear zones and fault zones along the proposed Alignment of the Tunnel along with collection of samples @ 200m. Actual geological conditions would be exactly revealed as the excavation proceeds inside the Tunnel, however, very careful geological observation will be required at the portal area.

### Geology Specific to Portal Areas:

A detailed geological observation would be importantly required at the proposed portal areas of Tunnel, 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 snow Avalanche and flash flood.

The Consultant is required to quote the cost for "Geological Survey for Tunnels", which must include the cost of aforementioned activities, cost of petrographic testing of overburden samples along the proposed alignment @ 250m approx, report writing, Instrument Rental Charges (if any), Salary of Material Engineer, Lab Technicians and Helpers, etc (complete in all respects). The cost for said "Geological Survey for Tunnels" shall be included in the lump sum cost of task 3.11 Geological Survey and Mapping.

### f) Hydrology and Hydraulic Study

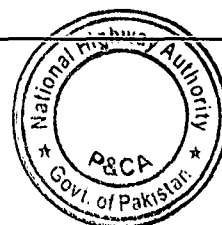
Hydrology and Hydraulic study shall be carried out in accordance with the Task 3.12 of this document. For Tunnel Specific, Hydrology and Hydraulic Study shall include but not limited to Hydraulic observations and field data collection at Tunnels approaches to protect the structures from flash flood, avalanche, debris and mud flow. The Phenomena related to Hydrology would be broadly divided into two categories under two seasonal variations.

#### i) Summer & Moonsoon 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 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 portal and access roads.

g) **Construction 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 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.

h) **Tunnel 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 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 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 Lining with or without Ceiling Slab.
- Horticulture and Landscaping, if feasible.
- Road furniture design including traffic signs and gantries.

i) **Detail Design, Updation & Specifications of Electro-Mechanical Works**

The Consultant shall prepare detail design for E & M works for Tunnels 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 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.

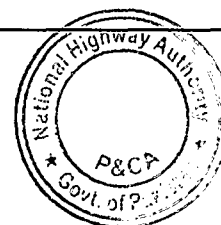
Consultant shall do the efficient planning for a road tunnel which requires multi-disciplinary involvement and assessments, while considering lighting, ventilation, life safety, fire safety, instrumentation and monitoring, operation and maintenance, etc. The design life shall be 150 years. The aspects which shall be considered for a Tunnel 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 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, 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 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 which is the important factor in designing the tunnel as construction costs vary greatly accordingly.

The Consultant shall perform the Geological Investigations and Geotechnical Interpretation for Tunnels. Tunnel 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 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, 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 (to be performed under item 3.10).
- 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.

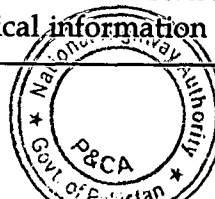
The Consultant shall perform the Rock Mass Classification for performing the design under RMR, Q-system and Convergence & confining method. The Tunnel Support system and Excavation classes shall be determined based on these systems.

- Based on the ground conditions along the Tunnel, the Consultant shall select the method of excavation i-e Drill and Blast or TBM using NATM approach.
- The Consultant shall design the Tunnel 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 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.

**Deliverable:** Tunnel Design Report including Portal facilities, electromechanical works and ventilation with backup calculations,

### **3.17. Slope Stability Survey, Investigation, Analysis And Design**

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). The consultant shall study natural factors (e.g topography, Seismic analysis, rock quality, soil condition, geological formation, precipitation, ground water, infiltration capacity, hydrological data and analysis etc) and artificial factors (e.g. excavation, embankment etc) that may affect the slope stability. In the light of said natural and artificial factors, slope stability analysis will be carried out to examine slope failure mechanism. The consultant will use latest software for this purpose and preferably check the results of one software from another. They will model the area based on the topographic and geological information and incorporate soil and



rock parameters based on the studies carried out and literature of the area. Based on the studies and modeling of landslide / unstable areas, the Consultants should then proceed to explore various possible solutions for stabilizing these areas with detailed evaluation. These stabilization measures should also be modeled in the softwares and the results shown to prove that satisfactory Factors of Safety have been achieved. 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 Consultant shall identify all areas prone to failure with respect to slope either in slip circle or shear failure of soil stratum whereas planar failure, wedge failure, toppling failure and for Rock fall in case of Rock mass. Kinematic analysis on stereo net and limit Equilibrium Analysis may be performed to determine the factor of safety against failures. The Consultant shall propose the latest and proven methodology / technology for stabilization of slopes using latest software of the design of stable slopes.

#### UAV Survey for Slope Stability Locations

The Consultant shall perform the UAV Survey for a resolution of less than 1cm for its accurate depiction at each of the vulnerable areas prone in terms of slope stability.

#### Geotechnical / Soil Investigations for Slope Stability Locations.

The Consultant will perform vertical borings for about 30 m depth to assess the index properties of the material at each of the potential slide areas for their analysis and the design of protective measures. A piezometer shall be installed in each of the boreholes to measure the water table.

The cost of drilling/boring shall be paid through item 3.10 (Geotechnical Investigations).

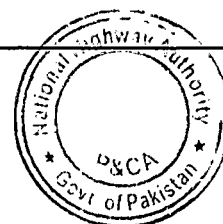
Deliverable: Slope stability Report including survey, investigation analysis and Design

### **3.18 Land Acquisition and Utility Infrastructure Report**

The consultant shall identify land and property falling in the right of way (ROW) to be acquired, if available. The consultants shall submit ROW plans showing the alignment with 5 copies thereof to NHA to facilitate timely action for acquisition of land to define the right of way. ROW permanent markers shall be set up by the consultant. The Consultant shall also prepare estimate for acquiring any additional and removal of structures and utilities, particularly in the built-up areas. Folders shall be submitted in soft format in CAD with reference to grid coordinates.

Following Items necessarily be indicated in Land Acquisition & Utilities Folder:

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- i. Exact width of existing/ present Right of Way (ROW) and proposed alignment/road must be shown in the folder.
- ii. Detail of Structures with type, exact measurement coming in proposed alignment/ road.
- iii. Detail of trees with kind, girth and no of each type must be explicitly indicated in the folder.
- iv. Permanent point like Railway Line, schools, Electric Poles etc and others Government buildings / Structures must be shown with type of structures and its condition.
- v. Graveyards, Mosques, any other religious site of minorities or Shrines must be explicitly indicated in the folder.
- vi. Chainage/kilometer wise name of villages /Towns /cities, where alignment passes must be indicated in the folder. Settled populations, Graveyards, Mosques, Khanqah, Shrines or any other religious site of Muslims/Minorities may preferably be avoided.
- vii. Bridges, Culverts, Rainwater channels existing on present or proposed road must be shown in the Folder.
- viii. 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 required to be acquired.
- ix. Consultant will calculate the land cost on the basis of latest DC rates and also enclose documentary evidence.

**Deliverable:** Land Acquisition and Utility Infrastructure Report. Each & every page of the final report must be signed by the concerned specialist/expert and stamped by consulting firm.

### 3.19 Installation of ROW Markers

Consultant will be required to cast and install ROW Markers at an interval of 100m on straight portions of alignment and 25 m on curves. The activity shall be completed under the supervision of field authorities under intimation to Design Section before start of activity. The payment shall be made as per verification report submitted by the field authorities. The activity should be carried out as and when required by NHA before the commencement of construction Contract of the Project.

**Deliverable:** Complete Report for fixation of ROW markers including site photographs and verification report of field authorities.

### 3.20 Stakeout of Finalized Alignment

Consultant will be required to stake out the finalized alignment on ground in coordination with field authorities under intimation to Design Section before



start of activity. The Centreline markers shall be fixed on ground at 25 m interval. A 1.5m long "Bamboo stick" with orange colour cloth 1m x 0.5 m shall be fixed at each point. The alignment including river training works shall be shown to the Field authorities. The payment shall be made as per verification report submitted by the field authorities. The activity should be carried out as and when required by NHA before the commencement of construction Contract of the Project.

**Deliverable:** Complete stakeout of finalized alignment including site photographs and verification report of field authorities.

### 3.21 Environmental Impact Assessment

As per EIA Rules, Consultant is required to carry out the EIA Study for the Project. It involves collection of required data from site, formulation of Report, getting it reviewed from NHA EALS Section. Submission of EIA Report to EPA KPK/AJK, addressing their requirements, to their entire satisfaction (Including submission fee). Conducting the Field hearing and obtaining NOC for NHA.

For EIA, Consultant shall directly coordinate with GM (EALS) office under intimation to this office. The vetting of the EIA Report, and verification/processing of invoices etc. shall be dealt by the office of GM (EALS). Detailed ToR for EIA study is provided in a separate Chapter.

**Deliverable:** EIA Report with NOC. Each & every page of the final report must be signed by the concerned specialist/expert and stamped by consulting firm.

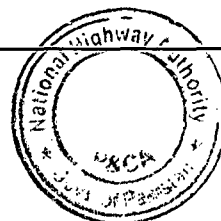
### 3.22 Highway Safety Audit (HSA)

Road safety is recognized as a major socioeconomic concern facing the Asia and Pacific region. NHA is committed to perpetually and continuously improve safety on National Highways and Motorways network through conscious endeavours. As a part of this endeavour, Road Safety Audit (RSA) of final design will be carried out by a subject matter expert/specialist having Certification as Road Safety Auditor from an international organization.

The expert will carry out detailed review of safety aspects of design by conducting RSA as per international standards and/or requirements of NHA. Formal RSA Report shall be submitted upon completion of the audit, duly signed by the Expert. Use of statistical analysis techniques should also be given consideration. Formal/Informal feedback from relevant stakeholders should also be made part of the Report.

**Deliverable:** Highway Safety Audit Report

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### 3.23 Construction Machinery Report and Mass Haul Diagram

Consultant shall work out and recommend construction period for civil works. A detailed report on construction resource shall be prepared along with Mass Haul diagram. Report will include, based on the construction duration, the amount and type of construction machinery required. Based on the Construction plan developed in Primavera/Microsoft Project, the resource allocation/ the Cash flow required shall be stated. Computations and assumptions for productions shall be attached in the report. The cost of any equipment to be imported shall be reflected in the foreign currency portions of the cost estimates and PC-I.

**Deliverable:** Construction Machinery Report and Mass Haul Diagram

### 3.24 Intelligent Transportation Systems

Given the wide range of Intelligent Transportation Systems (ITS), the following list is not inclusive of all possible ITS applications however it includes the most prominent ones, which are the focus of this document. ITS applications are grouped within three primary categories:

Advance Travelers Information Systems	Real time travel information system
	Route guidance/Navigation system
	Roadside weather information system
	Road user Internet facility
	Radio Channels
Advance Transport Management System	Traffic operation centers
	Dynamic Message Signs (or VMS)
	Driving assistance in low visibility
	Accident / Emergency Reporting system. Automatic Incident Detection (AID). The AID enabled cameras will be installed not more than 5 km interval (as per efficient working)
ITS Enabled Vehicle Pricing System	Electronic Toll Pricing System

**Deliverable:** The consultant will actively coordinate with NHA and prepare and accordingly submit an ITS Report along with detailed drawings. The Report must propose suitable ITS components in the light of best international practices in a way that estimation of costs and quantities thereof is possible so that same can be reflected in the BOQ and Engineer’s Estimates.

### 3.25 Formulation of PC-I

The consultant shall prepare, update and improve the PC-I for the project road sections including economic analysis on prescribed Performance of PC-I by Planning Commission. Land acquisition cost, based on DC rates, alongwith details shall also be incorporated in the PC-1.



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**Deliverable: PC-I****3.26 Tender Documents**

Tender Documents shall comprise of the following:

**a. Volume-I**

- Instructions to Bidders.
- Conditions of Contract (Part-I) (General Conditions)
- Conditions of Contract (Part-II), (Conditions of Particular Application).
- Conditions of Contract (Part-III), (Supplementary Conditions)
- Forms and Appendices

**b. Volume-II**

- General Specifications.

**c. Volume-III**

- Particular Specifications, Special Provisions and Bills of Quantities.

**d. Volume-IV**

Drawings should cover, but not limited to the following details:

- Title Sheet
- Sheet Index
- Key & Location Plan
- Sheet of Legends & Symbols
- Traverse, Bench Mark and Design alignment data including curve data
- Typical Cross-Sections with locations of applications
- Super-elevation details
- Structural plans and Design Drawings for structures and approach roads
- Interchange drawings
- Road Furniture Details complete in all respect (Guard rails, Pavement Markings & Traffic signs, Cat eyes (where required from safety point of view), Chevron, Reflective tape shall be fixed on new jersey barrier Anti glare screen on Median Barrier (where required) etc.
- Controlled drainage along curbed shoulder with chutes and water inlets in inner shoulder at super elevated section.
- For Road furniture, location tables
- E& M details for tunnels(if required)
- Ventilation details, tunnel design details, drainage details, structural design including lining, tunnel cross sectional details, tunnel portal details and facilities(if required)
- Generator and Electrification Building for tunnels(if required)
- Operational Building including SCADA system(if required)
- Electrification and Lighting Details. Design for lighting as per best international practices.
- Design of Traffic control devices, work zone safety, and preparation of maintenance and protection of Traffic (MPT plans)
- Provision of Toll Plaza and Weigh station alongwith administrative building with complete design.

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- Design of Acceleration and Deceleration lanes as per geometric Design Standards
  - Provision of Service Road (If required)
  - Provision of Fence along limit of ROW as per Motorway M-2 standard
  - Rest area and Service area as per M-2 standards (If required)
  - Emergency repair / restoration
  - Retaining walls with location tables
  - Interchange/Intersection Details
  - Drainage plan for surface runoff and urban areas
  - Plan and Profile Drawings
  - General Notes for Structural Drawings
  - Drawings for Small drainage structures
  - Drawings for Large structures
  - Drawings earth retaining structures
  - Road user facilitation requirement complete in all respect as per Motorway standards.
  - Landscaping and Horticulture details. Details as per best international practices and experiences on similar projects.
  - Complete design drawings of Intelligent Transport System
  - Miscellaneous Details/ Ancillary Works including training works.
  - Road side design
  - Design for provision of duct/crossing of future utilities like OFC, pipelines, etc.
  - Detail drawing folders of Utilities/Infrastructure for Land Acquisition and removal of all utilities/ infrastructure etc., having all the requisite information.
  - Drawings related to Environmental Mitigation Measures
- NHA has standardised Volume-I (Part-I) and Volume-II. Consultants shall study and adopt these documents after careful scrutiny and modification where required.

e. **Contract Conditions (Legal Part)**

NHA has prepared Standard Tender Documents sections on instructions to Bidders. Conditions of Contract, Bid Forms etc. and has used them for similar project in the past. Consultant shall study these standardised contract conditions and amend them in accordance with the requirements of this project. The Special Conditions of Contract can be added pertaining to the project as supplement to the General Conditions of Contract.

f. **Technical Specifications**





The consultants shall study the NHA Specifications and prepare particular specification for the project for specified items not covered in the General Specifications.

g. **Bill of Quantities**

Consultant shall prepare comprehensive Bill of Quantities to be calculated to accuracy of  $\pm 5\%$  encompassing all the items of work, properly cross referenced to the Technical Specifications. Standard format of Bill of Quantities shall be adopted.

h. **Engineer's Estimate**

Consultant shall prepare the Engineer's Estimate of the project based on the detailed design, drawings and final Bill of Quantities, using NHA's Latest Schedule of Rates. Total project value based on fair local market prices, materials, work methodology, machinery and equipment required and on the basis of 90% management efficiency shall also be worked out. For items not specified in NHA's latest CSR, rate analysis shall be provided based upon market price.

i. Consultant shall also provide Certificate for Technical Sanction as per NHA prescribed standard format.

**Note:** The following shall also be submitted/ provided by the design consultants as an integral part of the Bill of Quantities/Engineer's Estimate:

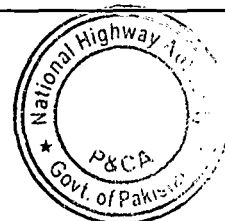
- Complete BOQ take off sheets
- "C" Factor Backup Calculations
- Non-CSR item Rate Analysis
- Special Provisions (SP) item Specifications

### 3.27 Submission of Deliverables

The following requirements should be fulfilled by the consultant: -

- All submissions should be signed & stamped by Authorized Representative.
- All pages/sheets must be properly numbered with complete project name indicated in header/footer/sidebar.
- After finalization of draft submissions in the light of review comments (if any) three (03) hard copies produced from signed and stamped copy 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, AutoCAD etc.) except PC-I and EIA Study for which requisite number of 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.

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- If requested by NHA, Consultant will provide two additional sets of all documents/reports at a later stage at no extra cost.

### 3.28 Review of Documents

Consultant will give consideration to review comments/observations of NHA (if any); however, any review or no review at all will not be construed to absolve the consultant from contractual responsibility for correctness, safety, soundness, and economy etc. of design including Engineer's Estimate, and all other services carried out under this contract.

### 3.29 Performance Rating

Performance of the consultant may be evaluated by NHA on basis of multiple factors including but not necessarily limited to quality of submissions, compliance with TOR requirements & instructions of NHA, responsiveness, timeliness, diligence, efficiency, consideration of economy, management of scope, schedule, cost, resources, and risks, and above all the level of faithfulness as an adviser. Performance rating will broadly be made in the following manner:

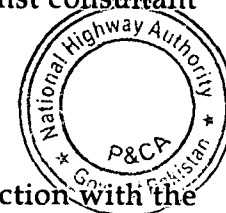
Rating	Description
A+	Excellent
A	Good
B	Requiring improvement
Poor	Poor

NHA reserves the right to develop a breakdown/matrix for implementing above mentioned ratings. In addition to this, it is highlighted that NHA Code (Revised 2005) authorizes NHA to exercise appropriate actions against consultant in case of errors in design.

### 3.30 Trainee Engineer

A trainee engineer shall be hired by Consultant for Design Section with the approval of GM(Design). Minimum Salary to be paid to Trainee Engineer shall be Rs 50,000/Month irrespective of quoted salary in the contract.

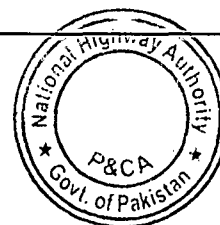
### 3.31. Mode of Payment



Sr. No.	DESCRIPTION	Percentage of "A" ("A" to be calculated by excluding LS items hereunder only)
<b>STAGE-I</b>		
a)	Inception Report	5%
b)	Reconnaissance survey & Alignment study report along with KMZ file	5%
c)	Traffic Study Report	LS
d)	Detailed Topographic Survey Report along with plans	LS
e)	Hydrology & Hydraulic Study Report	LS
f)	Soil & Material Investigation Report	LS
g)	Slope stability survey, Investigations ,Analysis	LS
h)	Feasibility Study Report	10%
	<i>Sub-Total (i)</i>	<b>20%</b>
<b>STAGE-II</b>		
i)	Geotechnical Investigation Report including Geophysical Testing	LS
j)	Geological survey and mapping	LS
k)	EIA Report along with NOC	LS
l)	Land Acquisition and utility Folders	5%
m)	Geometric Design Report with plan and profile drawings	10%
n)	Structure Design Report with backup calculations	10%
o)	Pavement Design Report	10%
p)	Detailed Design of tunnel, Portal Facilities & Electro Mechanical Works including Ventilation Design	LS
q)	Highway safety audit report	LS
r)	Intelligent Transport System Design Report	5%
	<i>Sub-Total (ii)</i>	<b>40%</b>
<b>STAGE-III</b>		
s)	Tender Documents , Engineers Estimate-factor , BOQ, Backup calculations, Construction Machinery Report and Mass Haul Diagram	20%
t)	PC-1	20%
u)	Stakeout of alignment on ground	LS
v)	Installation of ROW Markers	LS
	<i>Sub-Total (iii)</i>	<b>40%</b>
	<b>TOTAL (i+ ii+ iii)</b>	<b>100%</b>

**Notes Regarding Payments and Submissions:**

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M

- 
- i. "A" is to be calculated by excluding all LS items listed above only
  - ii. Any deliverable reflected in ToR but not mentioned in the mode of payment or vice versa will be duly submitted without failure.
  - iii. A checklist will be prepared and provided by the consultant with each deliverable which should correlate the deliverable to requirements spelled out in ToR. Up to 50% payment may initially be released by NHA.
  - iv. Remaining/Final payment against any deliverable shall only be released when the final deliverable is of acceptable quality and completely responsive to ToR; comments (if any) of NHA have been appropriately responded by consultant; and hard copies of final deliverable are submitted in requisite quantity along with soft copies (Portable Document Format as well as editable document format e.g., MS Word, MS Excel, Civil 3D/DWG, .shp format etc.).
  - v. If final deliverable/report is not completely responsive to ToR and/or has quality issues, then penalty will be imposed by deducting partial or full payment against the report/deliverable and/or adverse performance rating report of consultant.
  - vi. Payment against Provisional Sum (if any) will be as per actual expenditure. Detail/Proof of the expenditure will be submitted along with the corresponding Invoice(s).
  - vii. All correspondence and reports will be addressed/submitted in original to GM (Design). The consultant will be required to appropriately address and respond to the comments/feedback of NHA. All correspondences/ original report should be signed & stamped. No scanned signature shall be acceptable and such correspondence/report may be returned to Consultant without any consideration. All pages/sheets must be properly numbered with complete project name indicated in header/footer/sidebar.



# Annexure-T1

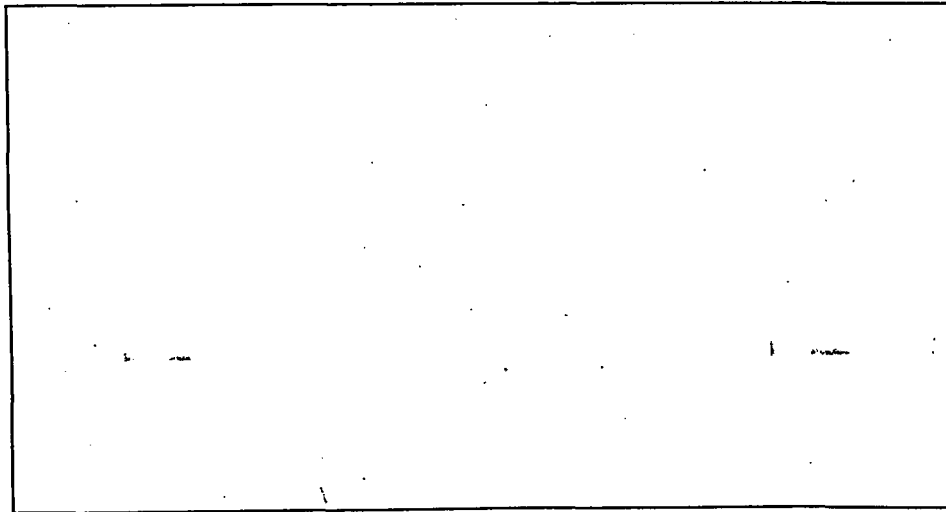
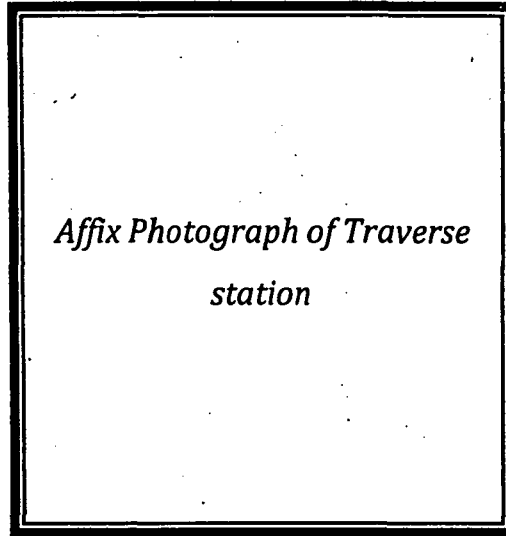
## Information for fixed Traverse Stations

Name of Traverse Stations \_\_\_\_\_

Northing \_\_\_\_\_

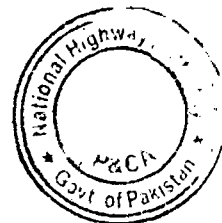
Easting \_\_\_\_\_

Elevation \_\_\_\_\_



**SKETCH OF FIXED TRAVERSE STATION**

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## 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 ecosystems, 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.

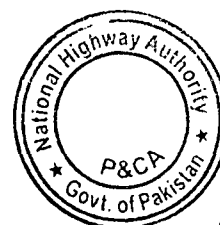
### 2. In view of the above, an EIA will be carried out for the Environmental aspects of all stages of the projects i.e. preconstruction, construction and post construction with the following objectives:

- 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.

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- 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,



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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<sub>3</sub>) Carbon monoxide (CO) Sulphur dioxide (SO<sub>2</sub>), Nitrogen dioxide (NO<sub>2</sub>), and particulate matter (PM<sub>10</sub>). 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.

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**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 20°C, 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.

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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-1 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

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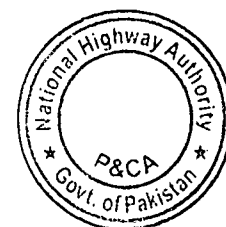
monitor the rehabilitation of borrow areas and the restoration construction campsites according to EMP report. The monitoring plan should ensure the safe disposal of excess construction materials. Consultants should also evaluate the effectiveness of the mitigation measures proposed in the EMP and recommend 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:**



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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%
	<b>Total:</b>	<b>100%</b>

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.

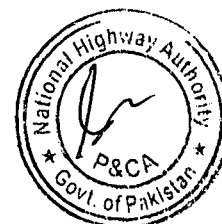
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**APPENDIX B****(List of Supporting Documents)**

S. No	Description	Page No
1.	Valid Registration Certificate of Pakistan Engineering Council with Project Profile Code of 1215. <u>In case of JV member, experts proposed by each consultant should have relevant project profile code of 1215 (ii) Highways/ Bridges.</u> 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. <u>Failure to comply with the above will result in rejection of proposal.</u>	
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 <b>Annexure-II</b> 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 <b>Rs. 50 million and above</b> , 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 <b>Annexure-I</b> 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.



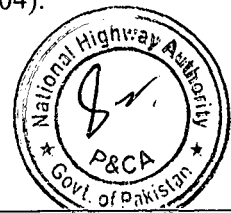
## APPENDIX D

### 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 Services for Feasibility Study & Detailed Design for Construction of  
Mansehra-Muzafarabad Expressway (CPEC Link) (26.6 Km Approx.)**

\_\_\_\_\_  
**Month and Year**



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[Details to be finalized by the users]

#### IV. APPENDICES

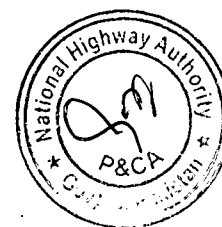
Appendix A-Description of the Services

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- 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**

Sample



## 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)





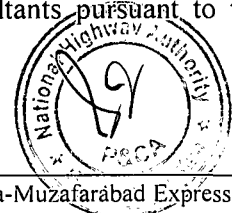
## II. GENERAL CONDITIONS OF CONTRACT

### 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

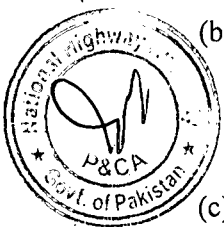
The Client may terminate this Contract, by not less than thirty (30) days written notice of termination to the Consultants, to be given after the occurrence of any of the events specified in paragraphs (a) through (e) of this Sub-Clause 2.9.1 and sixty (60) days' in the case of the event referred to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

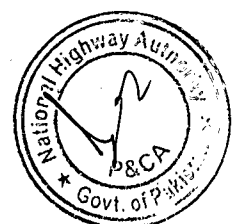
The Consultants are liable for the consequence of errors and omissions on their part or on the part of their employees in so far as the design of the Project is concerned to the extent and with the limitations as specified herein below.

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.

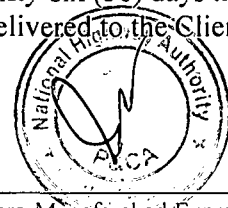
### 6.3 Terms and Conditions of Payment

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 & Detailed Design for Realignment of Motorway M-2 in Salt Range Area (Approx. 10 km)"

**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 **five (05) 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**

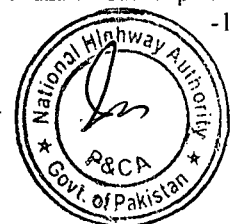
The Consultants shall save harmless and indemnify the Client from and against all claims and proceedings on account of or for infringement of any patent right, design, trademark or name or other protected rights in respect to any patented designs, features or equipment they may use for carrying out the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

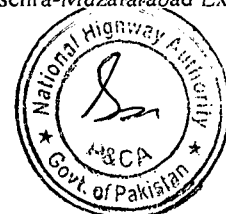


## Appendix B

### Reporting Requirements

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

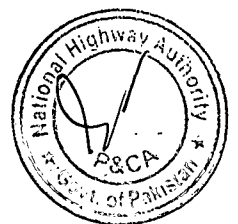
[List format, frequency, and contents of reports; persons to receive them; dates of submission and the number of copies of each submittal; etc. If no reports are to be submitted, state here "Not applicable".]



### 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 expenditure = (1 + 2)

**Note:**

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

NOT APPLICABLE



## 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 times 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

Name of Seller/Supplier: .....

Signature: .....

Signature: .....

[Seal]

[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)



### 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.

